Linguistica ONLINE
Issue Ten
ISSN 1801-5336

Readings in Axiomatic Functionalism

II

July 2009 • Department of Linguistics and Baltic Languages, Masaryk University

Linguistica ONLINE

ISSN 1801-5336
electronic journal of the Department of Linguistics and Baltic Languages, Masaryk University, Czech Republic

home: **http://www.phil.muni.cz/linguistica/**
email: **linguistica@phil.muni.cz**

editor-in-chief:

Aleš Bičan (Masaryk University / Academy of Sciences of the Czech Republic)
bican@phil.muni.cz

editorial board:

Ondřej Šefčík (Masaryk University, Czech Republic)
Václav Blažek (Masaryk University, Czech Republic)
Vít Boček (Academy of Sciences of the Czech Republic)
Paul Rastall (City University of Hong Kong, China)
James Dickins (University of Salford, UK)
Barry Heselwood (University of Leeds, UK)

READINGS IN AXIOMATIC FUNCTIONALISM II

http://www.phil.muni.cz/linguistica/art/issues/issue-010.pdf
published: July 10, 2009

copyright of all material submitted is retained by the author or artist

CONTENTS

Issue Ten
http://www.phil.muni.cz/linguistica/art/issues/issue-010.pdf

Foreword by Aleš Bičan
http://www.phil.muni.cz/linguistica/art/issues/intro-010.pdf

Aleš Bičan
Mulder and Hervey's Postulates for Axiomatic Functionalism: An introduction to the new edition
http://www.phil.muni.cz/linguistica/art/bican/bic-004.pdf
previously unpublished

Jan W. F. Mulder & Sándor G. J. Hervey
Postulates for Axiomatic Functionalism
http://www.phil.muni.cz/linguistica/art/mulderhervey/muh-001.pdf
previously unpublished in this form

James Dickins
Extended Axiomatic Functionalism: Postulates
http://www.phil.muni.cz/linguistica/art/dickins/dic-001.pdf
previously unpublished

Michael A. L. Lamb
Free allomorphy or synonymy?
http://www.phil.muni.cz/linguistica/art/lamb/lam-001.pdf
previously unpublished

Jan W. F. Mulder
Paul Rastall: *A Linguistic Philosophy of Language* (review article)
http://www.phil.muni.cz/linguistica/art/mulder/mul-001.pdf
previously unpublished

Paul Rastall
Messages, Mind and Brain – a response to Mulder's review of *A Linguistic Philosophy of Language*
http://www.phil.muni.cz/linguistica/art/rastall/ras-003.pdf
previously unpublished

Linguistica ONLINE. Published: July 10, 2009
http://www.phil.muni.cz/linguistica/art/issues/intro-010.pdf
ISSN 1801-5336

FOREWORD

Aleš Bičan (Masaryk University / Academy of Sciences of the Czech Republic)

Linguistica ONLINE brings another installment of *Readings in Axiomatic Functionalism* which is a collection of papers related to the approach known as Axiomatic Functionalism. The approach was originally developed in 1960s by Jan W. F. Mulder together with Sándor G. J. Hervey. It has since appealed to many linguists, works of some of which were already published in the previous *Readings*; this volume offers a few more.

The present issue could also be called *Postulates for Axiomatic Linguistics* because the Postulates are the topic of the first three papers of this volume. The Postulates form the theoretical basis of Axiomatic Functionalism. From one perspective, they are a network of definitions where most of the notions of the theory are defined. From another, they are an example of how a scientific (and not only linguistic) theory could be axiomatically and deductively formulated. Though I can be accused of bias in favor of the theory, I still think it is fair to say that this approach surpasses other theories in this respect because only a few of them have managed to delimit their theoretical side as clearly and precisely as Axiomatic Functionalism has.

The original Postulates for Axiomatic Functionalism were compiled by Jan Mulder and Sándor Hervey, though they have never been published as one full text. This issue of *Linguistica* ONLINE publishes their complete form for the first time. They have been edited by me and I have also written an introduction to it which, after having gradually added up on details, is published as a separate article, "Mulder and Hervey's Postulates for Axiomatic Functionalism".

Another version of the Postulates is published here, the one by James Dickins, but before we get to it, we have to do an excursion to the history and introduce the fourth article in this issue: "Free allomorphy or synonymy?" by Michael A. L. Lamb.

Every theory in order to be useful should be stable. However, it should also evolve and improve itself. It would be wrong to say that Axiomatic Functionalism has petrified in some form and has not been constantly developing and searching for self-improvement. Were we to go to extremes, we might say that there are as many Axiomatic Functionalisms as there are linguists working with this approach, because every one of them brings in new elements and modifications. This is after all true for any linguistic approach. However, we can still recognize two main streams of this approach. They have become known as Standard Axiomatic Functionalism and Extended Axiomatic Functionalism. There is not space here to explain the difference between them (this is in fact done in Dickins's paper published in this issue) but we can shed light on the historical background. We should return to 1960s to Oxford in England. Here Jan Mulder, the originator of the approach, met two people: Michael A. L. Lamb and Sándor G. J. Hervey. Both had a strong influence on Axiomatic Functionalism—that of Hervey became apparent the moment he defended, in

1970, his doctoral thesis presenting there a wholly new component of the theory: axiomatically formulated functional semantics. The influence of Lamb is hard to track in published writings because he has published a little during his academic career. Yet Mulder has acknowledged him on several occasions. And though on one such occasion he has mentioned that Lamb was often defending his views, they have not been in agreement on every point. But disagreement need not always lead to breakdown of a theory; instead, it could materialize itself in an alternative view opening new vistas and offering perhaps better solutions. This happened in 1980s when Lamb became dissatisfied with certain aspects of Axiomatic Functionalism and proposed new solutions to some problem. One of them is so-called free allomorphy—the idea that signs can have variants/allomorphs freely replaceable in any context. Mulder and Hervey have rejected this but Lamb has not agreed with it. He expresses his view in the paper "Free allomorphy or synonymy?" dating back to 1980s but never published until now. Lamb's views eventually transformed in a new theory, a modified or extended version of Axiomatic Functionalism: Extended Axiomatic Functionalism. As already mentioned, Lamb published a little but his thoughts are reflected in works of two of his students, Barry Heselwood and James Dickins. It is the latter to whom we owe for a detailed statement of the extended theory. And just as Standard Axiomatic Functionalism has its Postulates, so does Extended Axiomatic Functionalism whose Postulates are published here as well.

The last two papers of this issue turn around a book by Paul Rastall, *A Linguistic Philosophy of Language*, published in 2000. Jan Mulder wrote a comprehensive review of this book and he agreed with its publication in *Linguistica* ONLINE. Having read a review of his former teacher and mentor, Paul Rastall decided to defend himself and to write a response to it. This is not to say that Mulder's review was unfavorable, on the contrary, it is definitely positive, yet Rastall has felt that some points could be clarified. And discussion is a good way to progress. So *Linguistica* ONLINE provides him this opportunity.

Readings in Axiomatic Functionalism are hoped to promote a functionalist-structuralist approach called Axiomatic Functionalism. Its name may be a little uncommon and strange but its essence is not at all strange. Linguists can find this by themselves by getting acquainted with it. In order to facilitate this, a new web site has been launched:

http://www.phil.muni.cz/af/

We hope you'll enjoy it just as you'll enjoy this issue.

* * *

Linguistica ONLINE. Published: July 10, 2009
http://www.phil.muni.cz/linguistica/art/bican/bic-004.pdf
ISSN 1801-5336

MULDER AND HERVEY'S POSTULATES FOR AXIOMATIC FUNCTIONALISM: AN INTRODUCTION TO THE NEW EDITION[*]

Aleš Bičan (Masaryk University / Academy of Sciences of the Czech Republic)

Abstract. This article is an introduction to the new edition of the Postulates for Axiomatic Functionalism published in *Linguistica* ONLINE (see the first paragraph for the web address). The Postulates represent the theoretical core of the semiotic/linguistic approach known as Axiomatic Functionalism and developed by Jan W. F. Mulder and Sándor G. J. Hervey. This introduction discusses the nature of the Postulates, their history of revision and the way the new edition has been prepared for publication. In addition, there is a short discussion on possible revisions which Mulder might have considered in one of his unpublished manuscripts.

I. Introduction

This text is an introduction to the new edition of the Postulates for Axiomatic Functionalism. It describes their nature, previous versions and the way the new edition was produced. The new edition has also been published in *Linguistica* ONLINE and can be found at the following address:

http://www.phil.muni.cz/linguistica/art/mulderhervey/muh-001.pdf

The Postulates form the core of the theory of Axiomatic Functionalism (henceforth: AF), a semiotic paradigm introduced in 1960s by Jan W. F. Mulder and since then developed mostly by Mulder in association with Sándor G. J. Hervey. The Postulates, as Mulder (1989: 457) noted, are:

> the theory [of Axiomatic Functionalism] in a nutshell, as it were. Though they may not contain everything in every detail, most of the other things that can be regarded as belonging to the theory are theorematic, or logically implied. One could regard the postulates as the formally codified nucleus of the theory. There may be some freedom outside those, as long as this freedom is used in consistency with the postulates, and the rules of further consistency, adequacy, and simplicity are observed.

The Postulates are divided into six sections, each containing to an axiom accompanied by numbered definitions. The axioms, six in total, are labeled A to F. Axioms A to E, the relevant definitions and commentaries were written by Mulder, apparently with contribu-

[*] Previously unpublished. Peer-reviewed before publication. [Editor's note]

tions by Hervey and other linguists (cf. Hervey 1979: xix). Axiom F, the axiom for semantics, and all coming with it were devised by Hervey. As Mulder was the supervisor of Hervey's D. Phil. thesis (= Hervey 1970, later published as Hervey 1979) where the theory of axiomatic semantics was presented in detail, we may assume his involvement in producing Axiom F, too. Though certainly meant to be a coherent whole, the Postulates have not until now been published as a full continuous text. Mulder's part (i.e. Axioms A to E) and Hervey's part (i.e. Axiom F) appeared for the first time officially in English as separate chapters in the book *The Strategy of Linguistics* in 1980. No revision of Hervey's part has been published since but Mulder revised his postulates and this new version appeared in his book *Foundations of Axiomatic Linguistics* in 1989. The present edition incorporates Mulder's postulates from 1989 and Hervey's postulates from 1980 with some modifications to be mentioned below.

II. Nature of the Postulates

The Postulates consists of six axioms[1]; they are basic, arbitrary, though appropriate propositions expressing the basic ideas of the theory. Each of them is accompanied by a network of numbered definitions. The axioms and the definitions are the *postulates* of the theory. They are supplemented with several authorial commentaries but these merely clarify some details without introducing new postulates. Introduction of additional axioms is theoretically possible if there is ever a need to extend the theory to cover more phenomena. It is desirable that the number of axioms be kept as small as possible, as any new one would introduce a new extension of the theory calling for appropriate definitions, notions and models. As of now, however, the six axioms are currently fully capable of dealing with most aspects of core-linguistics. On the other hand, it is perfectly legitimate to add new definitions which would introduce new notions to the theory if the notions are recognized as necessary, and throughout the years the Postulates were indeed enriched by new definitions.

AF is a functionalist and structuralist approach; the axioms thus reflect the basic tenets of such a stream of thought. First of all, semiotic phenomena are grasped in terms of autonomous structures or systems which consist of mutually interrelated sub-structures or sub-systems. This idea is not explicitly expressed in the Postulates since it is a feature shared by all structuralist schools. Second, all these systems, their members or constituents, all their aspects, features and relations between them are functional, i.e. separately relevant to the purport of the system they are part of (cf. Axiom A). Everything that is not functional falls outside the scope of a functionalist theory and hence of AF. Third, two types of semiotic entities are recognized, *signa* as those having both a form and an information-value, and *figurae* as those with only a form (cf. Axiom B). These are founding stones of all functionalist-structuralist approaches, and in AF these ideas are explicitly incorporated into the theory. However, the Postulates contain additional ideas peculiar to AF, though some of them are shared by other linguistic schools.

Apart from the clear functionalist and structuralist nature of the Postulates, there is another, one may say, ideological feature or an *a priori* methodological assumption incorpo-

[1] For a short outline of the scope of each axiom see Hervey 1996.

rated into the theory of AF: hypothetico-deductivism of the philosopher Karl Popper[2]. It is a generally agreed-upon conviction that any scientific theory should be built and construed deductively. It is for that reason the theory of AF is postulated prior to its application on concrete phenomena, though the application is its ultimate goal. This is to say, this type of theory does not represent generalizations of various phenomena encountered in descriptions of semiotic systems but offers a toolbox used for their simple, adequate and consistent descriptions. As such the Postulates for Axiomatic Functionalism differ from e.g. "A set of postulates for the science of language" compiled by Leonard Bloomfield (Bloomfield 1926) which are built rather inductively, i.e. they contain notions generalized from descriptions of various languages. The present postulates are built deductively; their axioms are interpreted step by step by a network of definitions providing the theory of AF with models appropriate for application on various semiotic phenomena. Moreover, additional notions can be logically implied from the axioms and definitions included in the Postulates. These are called *theorems* or *theorematic* notions; they are not explicitly included in the Postulates though some of them are mentioned in commentaries and others are used in other axiomatic-functionalist works.

Unlike mathematics, the axioms in the Postulates for AF do not contain symbols and/or other formal devices but simple ordinary English words. This is intentional. Mulder, the originator of the theory, has repeatedly stressed that his aim is not *formulization* but *formalization* of linguistics. In this respect Mulder and Hervey's axiomatic method is different from the axiomatic method of, for instance, Tadeusz Batóg (see Batóg 1967) who merely formularized the phonology of Zellig S. Harris. It should also be noted that although the approach uses that term *axiomatic* in its very name, Mulder has not in fact strived for axiomatization of linguistics in the modern sense of the term *axiomatization* (cf. Falkenberg 1995). As Paul Rastall noted (personal communication) "Mulder's way of theorising allows clear and explicit thinking about the research area from a particular point of view (the sort of thing Bühler ([1934] 1990) was talking about and Hjelmslev [cf. Hjelmslev 1961] also tried through definitions)". Thus, the purpose of the Postulates for Axiomatic Functionalism is to offer a solid theoretical base upon which extensions and further deductions of the theory should be built up, and particularly, to provide applicable notions enabling the linguist to produce simple, adequate and consistent descriptions of semiotic phenomena. The theory of AF has in this respect been continuously tested and numerous descriptions done within the framework of AF show they have proven their mettle.

Though using ordinary words, the axioms are, to be precise, meaningless as they stand. It is the purpose of the accompanying definitions to allow for their correct interpretation. The words used are hence to be viewed as variables whose values (meanings) are provided by the definitions. All definitions have the following structure:

> '*Definiendum* (i.e. term(s) to be defined)' for '*definiens* (i.e. terms serving to define the term(s))'.

[2] Note, however, that Mulder has had some reservations toward Popper's thoughts and his version of hypothetico-deductivism is slightly different to Popper's one, cf. Mulder 1989: 36ff. For instance, Mulder insists a sharp distinction between theory and description should be made.

The definitions attach a meaning to various terms. These are either the terms used in the axioms or those used in definientia of the definitions. This is to say, a definiens of a definition may contain terms which need to be further defined in other definitions. The purpose of the definitions is to ultimately reduce all terms to so-called primitive terms which are the ones whose meaning is regarded as self-evident and which are not specifically defined within the Postulates. If we take Axiom A ("All features in semiotic sets are functional."), the terms *all*, *in*, *sets* and *are* are such primitive terms.[3] Generally, the number of primitive terms is limited to minimum in order to avoid confusion. Thus among primitive terms are words expressing grammatical relations (the verb "to be", prepositions, conjunctions etc.), terms from set-theory (set, class, member, intersection) or words expressing some general or "primitive" notions (e.g. element, item, bundle). All other terms are defined; in Axiom A these are the terms *feature*, *semiotic* and *functional*.

Besides the definitions defining terms used in axioms or in definientia of other definitions (we might call them primary), there is yet another type of definitions in the Postulates: the ones introducing new terms *qua* notions of the theory. The presence of these definitions is not directly required by the axioms and/or primary definitions but is necessitated by the way the theory of AF is conceived. Some notions have proven useful in the application of the theory, i.e. in descriptions of semiotic phenomena (e.g. a distinction between proper and nonce symbols), or have proven themselves as essential in keeping the theory consistent (e.g. hyperphoneme, see Mulder 1978). Once all terms are defined, we are left with primitive terms whose meaning is assumed to be obvious. One should, however, mention at this point that in this assumption lies a weakness of the Postulates: the primitive terms not defined, they may be open to multiple interpretations. This possibility is, however, purposely reduced to minimum and in case of any contradictions, the Postulates (and AF *in toto*) are inherently endowed, due to their (its) transparency, with a capacity to be revised and made more efficient. Mulder and Hervey have produced the Postulates with a desire to delimitate the meaning of terms commonly used in linguistics as precisely as possible, and by so doing, to avoid misunderstandings and to make linguistics a more rigorous science. As already noted by Rastall, Louis Hjelmslev strived for the same goal, though in a different way.

III. Textual history

The history of revision of the Postulates for Axiomatic Functionalism is complex and there are several versions of them. In anticipation of what follows let us list them and the way they are referred to if necessary:

P1968	Mulder's primitive postulates in Mulder 1968
P1974	Mulder's and Hervey's postulate as presented at the First Colloquium of Functional Linguistics (not available)
P1976	Mulder's postulates given as an appendix in Howkins [1976] 1977 (perhaps an actual reproduction of Mulder's part of P1974)
P1977	French translation of Mulder's postulates in *La Linguistique* 13

[3] In this connection see also the discussion in Rastall 1993: 140–3.

P1979	abridged version of Mulder's postulates, based on P1976 or P1974
P1980	Mulder's and Hervey's postulates in *The Strategy of Linguistics*
P1980h	French translation of Hervey's postulates in *La Linguistique* 16
P1984	Mulder's and Hervey's postulates given as an appendix in Gardner [1984] 1985 (identical to P1980)
P1985	abridged version of Mulder's postulates in Shimizu & Lamb 1985
P1989	Mulder's revised postulates in *Foundations*
P2009	new edition of Mulder's and Hervey's postulates (i.e. the edition discussed here)
PE1989	Extended Postulates in Dickins's doctoral thesis (Dickins 1989)
PE1998	Extended Postulates in Dickins 1998
PE2009	revised version of PE1998 (= Dickins 2009)

The first published version of the Postulates appeared in *Sets and Relations in Phonology* (Mulder 1968: 10–12). It was a rather primitive and preliminary version, because it contained only Axiom A and B (in a different form than they have now) and a handful of definitions. The book is a revised publication of Mulder's doctoral thesis submitted in the University of Oxford in April 1966 (not available to the present writer) and it is thus expected that the primitive postulates already existed at that time. The exact date at which the idea of the Postulates emerged for the first time cannot, however, be traced down for sure. The theory of AF as such "acquired a certain recognizable form by about 1960" (Mulder 1989: 87).

Mulder's set of postulates were subject to continuous revision after the publication of *Sets and Relations*. In 1968 he moved to the University of St. Andrews with an appointment to establish a department of linguistics there. Hervey shortly joined him and together they created a milieu for further development of AF. The Postulates were thoroughly revised and enlarged, particularly in the years 1971–73 when circulating among staff and students of the Department (cf. Mulder 1980). Already in Oxford Hervey started, under Mulder's supervision, working on his doctoral thesis (Hervey 1970) where the theory of axiomatic semantics crystallized. Hervey's research in semantics subsequently led to the introduction of Axiom F, the axiom for semantics, though it is not certain at which point this axiom was introduced but it must have existed by 1974.

At that time the Postulates reached the first definitive form: both Mulder's set and Hervey's one were presented at the First Colloquium of Functional Linguistics (Premier Colloque International de Linguistique Fonctionnelle), held on 10–14 June in Groningen. They were meant to be published in the conference proceedings, but no such thing happened, and the official publication of the Postulates was delayed until 1977 when they appeared in the journal *La Linguistique*, in a French translation. The 1974 version, P1974, presented at the colloquium is not available but we may infer that by that time the Postulates contained all axioms and most definitions. The evidence is the appendix to the doctoral thesis *Syntactic Relations of San Martín Quechua* by Angela Howkins submitted in 1976 (Howkins [1976] 1977) which presents the original English version of Mulder's postulates and refers to *Actes du premier colloque de linguistique fonctionnelle*, the proceeding to the Croningen colloquium[4]. The Howkins thesis thus contains the first known and

[4] The *Actes* were eventually published in 1984, without the Postulates.

earliest complete version of Mulder's postulates. However, as there is no full record of theses supervised by Mulder (and Hervey), we cannot rule the possibility that earlier or even other versions of the Postulates appeared prior to 1976 (or after the date).

It was as late as 1977 that Mulder's set was published officially for the first time in *La Linguistique* (= Mulder 1977) in a French translation by Paul Rastall (who also wrote a comprehensive introduction to it, Rastall 1977). A comparison of the version in Howkins's thesis with the French version has revealed that the latter is an exact or nearly exact translation of the former[5]. This is to say, Rastall translated a version of the Postulates that existed as early as 1976 and which appeared as an appendix to the thesis by Howkins.[6] In the thesis, the Postulates are said to be published in the proceedings to "Premier Colloque International de Linguistique Fonctionnelle", thus suggesting it was the same version as in the year 1974 when it was presented at the colloquium. However, it is somewhat hard to believe that the Postulates were not, at least slightly, revised in the years 1974–76.

The English version of Mulder's set was published for the first time in 1980 in *The Strategy of Linguistics*. Though in the preamble Mulder mentions that "[a] translation of the present set of postulates […] was published in *La Linguistique* 1977, I" (Mulder 1980: 40), this is not quite correct because Mulder revised the postulates since 1977, and the version used for the French translation was the one appearing in Howkins's thesis instead. He himself suggests this in a footnote mentioning a certain Carmel Fogarty (Mulder 1980: 63). She is said to have made useful observations during the 1977/78 Syntax Seminar at the University of St. Andrews with regard to sentential apposition and sentential ellipsis being redundant which resulted in the fact that these notions were no longer considered in P1980[7]. This is actually the only major revision, though a few other minor points were changed, too[8].

The Strategy, besides Mulder's set, also contained Hervey's postulates, i.e. Axiom F and the ensuing definitions; in other words, postulates for axiomatic functionalist semantics as they were entitled. Though the book allowed for the possibility, the postulates were not published as one continuous text but as two separate chapters: Mulder's as the chapter 4 and Hervey's as the chapter 15. In the same year, i.e. in 1980, a French version of Hervey's postulates appeared in *La Linguistique* (= Hervey 1980b), again translated and

[5] I have not made a one-to-one comparison of the versions, so they may actually differ in details. One point may be mentioned at least: in Howkins's thesis the term *phrase* is given as an alternative to *syntagm* (see Def. 9b, Howkins [1976] 1977: 326) but it is only *syntagme* in the French translation (Mulder 1977: 29). The reasons are obvious to anyone speaking French; as Mulder himself noted: "In past publications I have also used the term 'phrase' as an alternative to syntagm. As this term may, however, be confusing for French functionalists (French *phrase* = sentence) I am dropping that term" (Mulder 1980: 48).

[6] In private communication Paul Rastall confirmed his translations were based on the texts circulating in St. Andrews from about 1973.

[7] To witness the revision the reader should compare the definition 11d (relation of apposition) and the respective commentary, and the definition 21 (ellipsis) and the commentary in P1976 with P1980.

[8] In P1976 the term *plerematic* was used in places where *plerological* appears in P1980 (compare e.g. Def. 2a3a (grammar) in Howkins [1976] 1977, p. 316 or Mulder 1977, p. 24 with the version in *The Strategy*, p. 63). This is to say that, originally, the term *plerematic* was used to refer to grammar as a whole whereas later it referred only to the paradigmatic aspect of grammar. In subsequent revisions a terminological difference between *plerematics* and *plerotactics* was made for plerology (grammar) to reflect a parallel difference between *cenematics* and *cenotactics* in cenology (phonology). The latter was already present in P1976. – In addition to this minor revision some commentaries were shortened.

introduced by Paul Rastall (= Rastall 1980). Both versions appear to be identical. In fact, Hervey's set of postulates, either in English in *The Strategy* or in French in *La Linguistique*, is the only version of these postulates. If we do not count the new edition to which this paper is an introduction, no other version has been published to date and it is not even certain whether Hervey had ever tried to revise his postulates. However, it is possible that Hervey's postulates were reproduced in unpublished theses but as already mentioned, no full record of them exists. Only one such reproduction is known to the present writer: a complete set of the Postulates (i.e. Mulder's and Hervey's parts) is reproduced as an appendix to a doctoral thesis called *Parasyntax and the Sentential Level in Axiomatic Functionalism* by Sheena Gardner ([1984] 1985, pp. 227–40). The Postulates are, however, reproduced from *The Strategy*.

Hervey's postulates are postulates for axiomatic semantics whose theoretical basis they provide. In 1979 a major publication of Hervey's called *Axiomatic Semantics – A theory of linguistic semantics* appeared and it is here where axiomatic semantics is explained in detail. Curiously enough, the book does not contain Hervey's postulates for axiomatic semantics, though it would be logically expected, to say the least. Instead, it contains a selection from Mulder's postulates, from the 1974 version[9]: Axioms A and B plus several definitions. As Hervey mentioned (p. xxvi), he made "minor alterations" to it[10]. The absence of the postulates for axiomatic semantics in Hervey's book may be partly explained by the fact that it is actually a revised publication of his doctoral thesis defended as early as 1970, and the postulates need not have been definitively formulated then. Since 1980 Hervey's part has remained intact, though Hervey might have worked on a revision. We must realize the external circumstances at that time: in 1983 the Department of Linguistics at the University of St. Andrews was dissolved, Mulder went to early retirement whereas Hervey had to retrain for a different post at the University leaving him, unlike Mulder, probably with little time for research alongside axiomatic functionalist linguistics, and, as can be judged from works of his published after 1983, Hervey's research moved to other issues. However, when Mulder's revised set was published, it became apparent some revisions of Hervey's postulates would be desirable, though we cannot be sure to what extent Hervey agreed with Mulder[11].

On the other hand, Mulder never ceased to work on his part and by further research and applications he produced a revised set of his postulates which was published in 1989 in his book *Foundations of Axiomatic Linguistics*. In her, already mentioned, thesis Gardner ([1984] 1985) makes a note on this revised set, so the revision must have existed as early as September 1984 when the thesis was submitted. Many existing definitions were changed and many new ones were introduced; even the axioms were altered (in particular Axioms C

[9] In a footnote (p. xxii) a reference is made to the Croningen proceedings, even though no such thing appears in Bibliography of Axiomatic Functionalism appearing at the end of the book. The latter must have been added on a later date.

[10] The only revision is actually the use of the term *plerological* instead of *plerematic* (see the footnote 8), though the latter appears in Def. 5 (semiotic system) but it is an obvious slip (see Hervey 1979: xxiv).

[11] One point subject to revision concerns the formalization of signum-theory, see below in the section IV. Mulder revised it in his *Foundations of Axiomatic Linguistics* (1989) whose parts Hervey read in draft but apparently not the section discussing the revised formalization, see Mulder 1989: xi. In private communication Paul Rastall wrote to me: "I believe Sándor [Hervey] did not agree with the changes in signum-theory – and nor did I".

and D). The changes were so numerous that there is no space to discuss the details. In her thesis Gardner herself suggested some revisions some of which found their way into the revised version of the Postulates which Mulder worked out for *Foundations*. Though he discusses various aspects of the theory in the book, the rationale behind the revisions is not always provided and in this respect Gardner's thesis is a useful source for understanding them[12]. Mulder described the process of revision in the following way (*Foundations*, pp. 434–4):

> In the course of these sixteen years [meaning roughly from 1974 to 1989] they have been subjected to discussion, been the basis for teaching the essential features of the theory, and — most importantly — used in the solution of descriptive problems over a very wide range. That is, their consistency, adequacy, and simplicity have been severely tested over that period, and — though there have been no indications as to a major lack of consistency — 'adequacy' and 'simplicity' have turned out to be in need of improvement. Also a few terminological inconsistencies had to be ironed out. In the first place, some of the defined notions were hardly ever used in practice, whereas other notions, sometimes rather informally and implicitly (i.e. theorematically) defined in the so-called 'explanations', have proven to be important enough to be included in the formal (i.e. specifically numbered) definitions. Secondly, as I have now written the present work [i.e. *Foundations of Axiomatic Linguistics*], many of the explanations, which were included because they did not appear elsewhere, can now be omitted, or considerably shortened, or changed. Furthermore, as, when producing the 1974 set, my attention was focussed on syntax, and therefore some of the definitions were in the first place geared to this, it was noted that certain definitions could be given a wider scope — and so made more powerful — by making small changes, e.g. by replacing such terms as 'chain' (a syntactic term) by 'construction' (a general term), and by other minor changes of that kind. Also the order of presentation has been changed here and there, and Axiom D, i.e. 'all semiotic systems contain sentences', reads now 'All semiotic systems contain sentences, constituted by a base and para-syntactic features'. That is, the necessity for sentences to have the latter is now also duly axiomatized.[13]

In 1985 another version of Mulder's postulates appeared in the article "Axiomatic functionalism: Mulder's theory of the linguistic sign" written by Shūyū Shimizu and Michael A. L. Lamb's (Shimizu & Lamb 1985). As they mention (*op. cit.*: 112), "we give here a selection of relevant axioms and definitions reproduced with some omissions and alterations from Mulder's 'Postulates for Axiomatic Functionalism' ". The source was Mulder's set in *The Strategy* to which they refer. The alterations Shimizu and Lamb made thereto are, however, not numerous. In fact, they involve the following three points only: First,

[12] As an illustration we can mention the definition of distinctive function (Def. 7a3). In the 1980 version it is defined as "the set of commutations in which a semiotic entity may partake". As an alternative definition the following one is given: "the set of oppositions into which a particular semiotic entity enters" (see Mulder 1980: 44). On the other hand, in the 1989 version the first definition was abandoned and the definition for distinctive function now reads: "the set of oppositions in which an entity may partake". One may wonder why the reference to commutations was removed, because the concept of commutation is naturally connected with that of opposition. However, as Gardner pointed out ([1984] 1985: 69–71), commutation implies a particular context of immediate constituents but since sentences cannot be by definition immediate constituents, it would imply they do not have distinctive function, which cannot be the case. The new definition remedies the problem: sentences are opposed to each other and have thus distinctive function, even though not mutually commutable.

[13] This revision has been criticized by some linguists, see Dickins 2009: 33.

there are alterations that correct errors arisen during the printing of the 1980 version[14] and as such they cannot really be regarded as true revisions. Second, the definition 18b of distinctive para-syntactic features was extended (see *op. cit.*: 115 and cf. with Mulder 1980: 54)[15]; the reasons for this are not discussed but they become apparent in the revised version, P1989. Third, the formalization of the signum-theory is different, corresponding to the one found in *Foundations* (see the next section)

The year 1989 was the last time the Postulates, Mulder's set, were published. They became the official version and replaced the one in *The Strategy of Linguistics*. Yet it is hard to believe that Mulder stopped thinking over them and that they petrified in this form. AF and its theory have always been a living and evolving organism, and there are hints that Mulder continually thought about certain aspects and parts of the Postulates. Suggestions to this effect are scattered in Mulder's articles published after 1989, though no other version of the Postulates has been appeared until now. It is not even certain whether any such version exists. Some of the suggestions occur in the article "Epistemology and linguistics: Anatomy of an approach" (Mulder 1998).

Other revisions are suggested in one of Mulder's so far unpublished manuscripts[16]. During our personal communication Mulder gave me a copy of a manuscript (a printed typescript) entitled "Introduction. Outline of Axiomatic functionalism. Differences with orthodox functionalism. Differences with other approaches", dated 18-2-2003. The manuscript appears to be an introduction to a book never published. In this chapter Mulder indeed outlines the theory, methodology of AF and discusses briefly the Postulates of Axiomatic Functionalism. Throughout the text the axioms and definitions are quoted and some of the latter differ from the 1989 version; they will be discussed below. It is likely Mulder based the chapter on a revised version of the Postulates he had ahead of him but this is merely a speculation.

Although the Postulates have not been published by their authors in a revised form since 1989 and/or 1980, it is not correct to say that there has been no revision at all. But "revision" may not be the correct word. When still in Oxford in 1960, Mulder met and won to his just emerging theory Michael A. L. Lamb "of whom I [Mulder] already said in the sixties that he often understood what I meant better than I did myself, and who has contributed many ideas of his own to Axiomatic Functionalism" (Mulder 1998: 155). Mulder has discussed with Lamb various aspects of the theory but, apparently, they have not always been in agreement. According to James Dickins (2009) "Michael Lamb became increasingly dissatisfied with aspects of the linguistic descriptions engendered by the standard version of axiomatic functionalism […] developed by Mulder and Hervey since the 1960s". Initially, these disagreements concerned the notion "free allomorphy" (cf. Lamb 2009, Dickins 1998, 2009) and has ultimately led Lamb to create his own version of AF

[14] In P1980 the definition 2a3 for grammatical entity reads "*signum* in grammar (plerology)" whereas in P1985 it is "signum in a semiotic system that has a grammar". The latter parallels the definition of cenological entity (2b1), which in both versions reads "figura in a semiotic system that has a cenology". In P1976 and P1977 the definition of grammatical entity is the same as in P1985.

[15] In P1985 the definition reads "para-syntactic features […] that are in a relation of commutation with one or more other para-syntactic features, *or with any prosodic features in grammar assigned the status of 'zero'* "; the part in italics is not included in P1989, not even in P1976 or P1977. In P1989 the definition reads: "para-syntactic features that are in a direct relation of opposition with other para-syntactic features or with ∅".

[16] The one discussed here is hoped to be published soon.

which has become known as Extended Axiomatic Functionalism (abbreviated: EAF). However, Lamb has, unfortunately, never published any treatment of this theory and his thoughts are mostly available only through works of two students of his, Barry Heselwood and James Dickins (cf. Heselwood 1992 and Dickins 1989). The latter eventually developed the theory of EAF, discussed its aspects in contradistinction to the version by Mulder and Hervey (accordingly called Standard Axiomatic Functionalism or SAF). I will not go into details here, as they are well explained in Dickins's book *Extended Axiomatic Linguistics* (1998). Suffice it to say that EAF is in many cases markedly different to SAF, though both theories are very tightly connected, as the extended version naturally builds upon the standard one. The introduction of the new theory has necessitated its own set of postulates. Such a set is published in the appendix of Dickins's book (pp. 351–417) and called "Provisional postulates for extended axiomatic functionalism". The first version of these postulates appeared in Dickins's doctoral thesis (Dickins 1989; supervised by Lamb) on pp. 505–69. A revised new edition entitled as "Extended Axiomatic Functionalism: Postulates" (Dickins 2009) has been published in *Linguistica* ONLINE.

The Extended Postulates, as they will be called here, include the axioms A, B, C, D, E and F and a network of definitions. They do not, however, represent a revision of Mulder and Hervey's postulates in the proper sense. Although the axioms A to F are very similar to Mulder and Hervey's standard ones and are ultimately based on them, the way they are interpreted by the accompanying definitions is different. This is not to say that the definitions are completely dissimilar; on the contrary, many are quite similar to the "standard" ones but others are different and some are even removed and new ones introduced. However, as Dickins has repeatedly pointed out, SAF is recoverable from EAF and some of the suggested revisions could be thought as an impulse for the revision of the standard Postulates (Dickins discusses them in his book). For instance, the sub-theory of systemology is practically identical in both theories and some concepts introduced in EAF could be well and easily incorporated into the standard version[17].

To supplement the publication of the revised Extended Postulates (Dickins 2009), Dickins produced a spreadsheet (an .xls file) entitled "Comparison between the postulates for Standard Axiomatic Functionalism and those for Extended Axiomatic Functionalism" which is available on his personal webpage at this address:

<http://www.languages.salford.ac.uk/staff/EAFandSAFposPCbased4.10.08.xls>

The spreadsheet contains the text of the Extended Postulates and that of the Standard Postulates and is thus an excellent source for a comparison of both versions.

The new edition is the most current version available of Mulder and Hervey's Postulates but it is not an authorial version, because neither Mulder nor Hervey have seen it[18]. For that reason Mulder's version from 1989 and Hervey's one from 1980 are still superior to the new edition, even though only minimal changes have been done to the new edition.

[17] For instance, the notion "phonotheme" which could, if nothing else, replace the dubious concept "semi-cluster", see Heselwood 2008.

[18] Although the edition is not authorial, it is by no means unauthorized! Jan Mulder permitted me to publish his set in *Linguistica* ONLINE and so did Diana Hervey, wife of late Sándor Hervey.

The process of how the new edition of the Postulates for Axiomatic Functionalism was produced is described in the following section.

IV. Preparing the new edition

The purpose of the new edition of the Postulates for Axiomatic Functionalism is not to produce a revised version but to make them widely available via the Internet. They offer a valuable example how an axiomatic-deductive theory could be built. In order to retain authenticity of the Postulates only minimal changes have been introduced to the Postulates.

The new edition contains the complete set of the Postulates, i.e. Mulder's part as well as Hervey's part. Since the most current version of Mulder's set appeared in *Foundations* and that of Hervey's in *The Strategy*, these texts have been used as the basis for the new edition. However, this immediately brings in a question of their compatibility. If Mulder's set and Hervey's sets were fully compatible in 1980 in *The Strategy*, this is not quite true in 1989 after Mulder published a revised version of his part. At that time there was still a possibility Hervey would react to the revisions and produce a revised version of his set, but this never happened and thus the question of (in)compatibility is even more topical.

The incompatibility in question concerns mostly the revision of the formalization of signum-theory appearing under Axiom E. The definitions of notions like signum, allomorph, phonological form are expressed in set-theoretical terms, and the way of expressing had been changing since 1968, when the first version appeared (in Mulder 1968[19]) until 1989, when Mulder offered a revised and the most current version of this formation in his *Foundations*[20]. The formalization was naturally part of the Postulates and appears in P1980. The following scheme gives a comparison of the formalizations of the notions which underwent revision. The '{}' brackets as well as the superscript 'i…n' are to be read as "a class of", and the formula 'R *d*' read as "having and in capacity of having a distinctive function"[21].

	Postulates 1980	**Postulates 1989**
phonological form	$p = \{f\}\ R\ d$	$p = \{f^{i\ldots n}\ R\ d\}$
utterance	$i\ R\ s$	$(i\ R\ d)\ R\ d$
allomorph	$p\ R\ s$	$p\ R\ d$
signum	$\{p\}\ R\ s$	$\{p^{i\ldots n}\ R\ d\}$

The scheme shows that the way the notions are expressed in set-theoretical and relational terms is different. We will not discuss all details here, because Mulder does it himself *in extenso* in his book (Mulder 1989, ch. IV, 2). What is relevant for us now is the fact that Mulder originally, i.e. in P1980 and earlier, distinguished between *d* as the distinctive function in phonology and *s* as the distinctive function in grammar. In the revised version

[19] Or since 1966, as it must have already appeared in Mulder 1966.

[20] Another version exists in Extended Axiomatic Functionalism, see Dickins 1998.

[21] Or, for the 1980 version, "each member in its capacity of having", see Mulder 1989: 156.

of the formalization in P1989 there is only *d*, so that, for instance, the notion *utterance* previously defined as '*i* R *s*' (i.e. image with a distinctive function in grammar, see Mulder 1980: 59) is now defined as '(*i* R *d*) R *d*' "where the first *d* stands for distinctive function in a phonological sense, and the second *d*, being the further distinctive function of a phonologically distinctive entity, for the distinctive function of that entity as the *signum* level" (Mulder 1989: 153). The formalization for allomorph and signum was redefined in a similar fashion. Mulder advocated the change by the following words (*op. cit.*: 158–9):

> In previous publications *s*, rather than *d* was used for distinctive function at the signum level, in order to distinguish it from distinctive function in phonology. I see now that it is both unnecessary and misleading to mark this difference by using different symbols for distinctive function according to the level on which it operates. It is unnecessary, as the fact that in the formulae we have [i.e. $\{f^{i..n}$ R $d^i\}$ for phonological form, $\{p^{i..n}$ R $d^i\}$ for expression and $\{d^i$ Ř $p^{i..n}\}$ for content instead of older $\{f\}^i$ R d^i, $\{p\}$ R s^i and s^i Ř $\{p\}^i$, respectively] *p* rather than *f* in the case of grammatically distinctive function already marks the difference, and moreover marks it exactly where the difference resides. It is misleading, as the concept 'distinctive function' is one and the same, whether operating in phonology, or in grammar, or anywhere else. In fact, one might say that it violates the principle of consistency to use different symbols for what is actually the same thing.

Although Mulder's conclusions are reasonable, a problem arises once this is to be incorporated into Hervey's definitions under Axiom F where a distinction between *d* and *s* is made as it was in Mulder's postulates in 1980. Furthermore, as is suggested in the footnote 11 above, Hervey need not have agreed with this change. Be it as it may, it is apparent that Mulder's revised postulates have become incompatible in this respect with Hervey's postulates. One complication has been voiced by James Dickins (in Dickins 1998: 422–3):

> This proposal [i.e. the one quoted above] can also be made to appear to work if one considers only Mulder's definition for form – i.e. (*i*Rd)Rs in this book [i.e. Dickins 1998], and (*i*Rd)Rd in Mulder (1989: 166). Mulder's definition for form, (*i*Rd)Rd[22], contrasts with his definition for allophonon […] *i*Rd (Mulder 1989: 166), which is the same as that given in this book. Once, however, we consider Hervey's definition for form, i.e. *i*Rs [see Def. F1b1a under Axiom F], it will be seen that it is necessary to maintain the distinction between d, distinctive function in phonology, and s, distinctive function in grammar. For if d were to be adopted for distinctive function throughout, there would be no distinction between the formal definition of form in Hervey's sense, which would become *i*Rd, and the formal definition of allophonon […], i.e. also *i*Rd.

In the Extended Postulates Dickins has resolved this by the retention of the difference between the phonologically distinctive function *d* and grammatically distinctive function *s*. There are advantages of this as well as disadvantages, but it is obvious that the whole issue

[22] In the scheme given above this formula is said to stand for *utterance*. Strictly speaking, utterance is a conjunction of form and reference just as signum is a conjunctive of expression and content. However, as utterance, form and reference on the one hand, and signum, expression and content mutually imply each other, it is possible to speak about utterance from the perspective of form just as is possible to talk about signum from the perspective of expression. Thus what is mentioned in Dickins's quotation is really form rather than utterance just as what is given as signum in the scheme is, properly speaking, expression of signum.

still requires a further discussion. In the new edition of the Postulates, however, no attempt has been made to resolve this problem. The restoration of the original difference between *d* and *s* would partly remove the inconsistency but no such change has been introduced in order to keep authenticity of the Postulates. At the same time, Hervey's formalization under Axiom F has not been altered—for the same reason and also because it is not obvious that a simple change of *s* to *d* in Hervey's notations would remedy the whole issue. For that reason, the readers should keep in mind that in this respect the Postulates are internally inconsistent.

Another inconsistency that had to be faced is of formal nature only. All the definitions in the Postulates are continuously numbered: in P1989 Axiom A begins with Def. 1a and ends with Def. 1d, Axiom B begins with Def. 2 and ends with Def. 16c. This goes on as far as Axiom E which ends with Def. 29. In P1980 the numbering was different and Axiom E ended with Def. 29b. However, in P1980 Hervey's definitions under Axiom F did continue in the numbering but began again with Def. 1a. This becomes confusing when it comes to referring to the definitions, but such numbering must be a product of external circumstances. Mulder's postulates were subject to continuous revision whereas there is actually only one version of Hervey's postulates. It was therefore likely that the numbering in the former would change (and it actually did), which would affect the numbering in the latter. It was no doubt more practical to have a separate numbering for the definitions under Axiom F. This numbering has been retained in the new edition, but in order to avoid having the same numbers for different definitions, the numbers of the definitions under Axiom F have all been prefixed with 'F'[23].

With the problem of numbering is connected another one: cross-references. In his postulates Hervey refers to Mulder's definitions, but the references are obviously to the 1980 version. There are two types of cross-references: first, those mentioning Mulder's definitions in Hervey's commentary to the definitions, second, those directing to a particular definition is an alternative to another occurring in the Postulates. For the new edition, references of the first type have been corrected to agree with the new numberings but all references of the second type were removed from the text and replaced by more informative cross-references in editorial notes. This step allows for a more effective network of cross-references because even some other definitions have been supplemented with such references, originally not having them. The same has been done with Mulder's postulates.

This brings us to the editorial notes with which the whole text of Postulates has been supplemented. They occur in footnotes and contain three sorts of information. Either there are references lifted up from the original text as described in the previous paragraph. In Mulder's postulates this includes his own references to chapters in *Foundations* where he discussed details of many definitions. Or there are references to other works that deal with particular topics covered by respective definitions. Finally, there are references to this very introduction in case a particular problem is discussed here. Furthermore, all axioms and definitions are accompanied by a number in square brackets referring, in the case of Mulder's postulates, to a page number in *Foundations of Axiomatic Linguistics* where a particular axiom or definition is located, and in the case of Hervey's postulates, to the page

[23] Originally, there are two definitions numbered 1a: one for "functional" under Axiom A and one for "utterance" under Axiom F. Now the latter is numbered 'F1a'. This solution has been adopted from Dickins's Extended Postulates (see Dickins 2009).

number in *The Strategy of Linguistics*. This provides an easy reference to the original versions.

Among other formal changes incorporated into the new edition also belongs the rearrangement of the Postulates. Naturally, they had to be prepared for publication in some form and the form had to be unified. But apart from that, the way the authorial commentaries to definitions are arranged has been changed. In the original, the commentaries immediately follow the definitions, i.e. are part of the same paragraph. In the new edition the commentaries have been placed to separate paragraphs and their font size has been shrunk. Also, many definitions contain alternative definitions; even these are placed to new paragraphs but their font size was not altered.

Other formal changes are rather minor and were done in order to unite formally Mulder's postulates and Hervey's postulates. They can be conveniently illustrated on the first definition under Axiom F. In P1980 it has the following form:

> Def. 1*a*. "utterance" for "member of a *signum* (as a class) such that it is a model for a single realisation (in actual communication) of that *signum*".

In the new edition it has this form:

> Def. F1a. 'Utterance' for 'member of a signum (as a class) such that it is a model for a single realization (in actual communication) of that signum'.

All changes follow the form of Mulder's postulates. First, italics in numberings and elsewhere were removed if they are in plain roman type in Mulder's set; the same is true about upper indices. Second, double quotation marks in definitions were changed to single. Third, the spelling of *realisation* (and similar forms) was changed to *realization*. The last change is not to suggest American-English spelling was introduced (the spelling of *colour* remained unchanged), but the change was done in order to reflect a parallel change between Mulder's postulates in P1980 and in P1989: in the former the spelling *realisation* was used whereas in P1989 it was *realization*.

In addition to formal ones the only changes made to the new edition of the Postulates are those that correct *obvious* errors in the original texts. The word *obvious* is highlighted because I have refrained from bringing in any changes which are in any way speculative and would call for the authors' consent. It is inevitably true that all publications (even the new edition) contain errors which are results of either the author's oversight or were introduced during typesetting and printing. And only such errors have been corrected, the minor ones silently without any explanation[24] while the major one are described in the following paragraphs.

There are two major changes. The first concerns the definition 7d for "plerotactic (syntactic) entity". In *Foundations* (p. 442) it reads:

> 'Plerotactic (syntactic) entity' for 'tactic relations in plerological (grammatical) system'.

[24] For instance, in a commentary to Axiom C (see *Foundations*, p. 452) Mulder writes "Axiom B and related definitions deal with the para-cenotactic […]" and it is obvious it should read "Axiom C and related definitions" instead.

The definition given is the same definition as that for "plerotactic (syntactic) entity" (Def. 7e, *loc. cit.*) and it is obviously a slip. According to the logic of the Postulates and P1980 (see also *Foundations*, p. 191[25]) it were corrected to the following reading:

> 'Plerotactic (syntactic) entity' for 'syntagmatic entity in plerological (grammatical) systems'.

Another slip occurs in the definition 18b for "distinctive para-cenotactic features" (p. 451). Its original reading is:

> 'Distinctive para-cenotactic features' for 'para-cenotactic features that are in a relation of direct opposition with one or more other cenotactic features, or with ∅'.

As para-cenotactic features must be opposed to features of the same level of abstraction, i.e. to *para*-cenotactic features, not cenotactic feature, the definition had to be changed to following form:

> 'Distinctive para-cenotactic features' for 'para-cenotactic features that are in a relation of direct opposition with one or more other para-cenotactic features, or with ∅'.

V. Possible revisions to the Postulates

As already suggested, Mulder seems to have considered revising his postulates after 1989. Moreover, several revisions were suggested by other linguists. It is the power of the Postulates that they are open for revisions and are not presented as a series of dogmas. However, it is not possible to discuss all of the suggested revisions here. Instead, we will focus only on several ideas in Mulder's unpublished manuscript entitled "Introduction. Outline of Axiomatic functionalism. Differences with orthodox functionalism. Differences with other approaches" and dated "18-2-2003". The manuscript has already been mentioned and will be from now on referred to as "Outline".

Let us start with Mulder 1998, which is the latest published comprehensive account of AF. Here, another revision was suggested and as far as can be judged from "Outline", this change has really been considered. It regards the difference between distributional unit and cenotagm (phonotagm), and syntactic structure and syntagm. Let us first give the definitions of distributional unit and syntagm from the Postulates:

> Def. 9a. 'Distributional unit' or 'cenotagm (in natural language: phonotagm)' for 'self-contained bundle of positions in cenotactics', or for 'instance of a self-contained bundle of positions in cenotactics'. Alternative definition for 'distributional unit' in the former, i.e. abstract, sense: 'minimum type of structure within which the distribution of cenotactic (natural language: phonotactic) entities can be described completely and exhaustively'.

[25] Here, however, the definition is given as "syntagmatic entity in a grammatical system", i.e. 'grammatical system' is in the singular while I have corrected the definition to contain 'grammatical systems' in the plural. This reflects the fact that the parallel definition of 'cenotactic entity' contains also 'cenological systems' in plural.

> Def. 9b. 'Syntagm (plerotagm)' for 'self-contained bundle of positions in plerological (grammatical) system' or for 'instance of a self-contained bundle of positions in plerological (grammatical) system'. Alternative definition for 'syntagm' in the first sense: 'underlying structure of a self-contained bundle of plerotactic (syntactic) entities', and in the second sense: 'self-contained bundle of plerotactic (syntactic) entities, as immediate constituents', or 'plerotactic complex'.

Mulder commented on this (1998: 147) as follows:

> In fact, in the beginning […] the terms 'distributional unit' and 'syntagm' stood for theoretical notions, *as well as* for the instances of them in the description. However, in practice we tended to call an instance of a distributional unit a 'phonotagm', and the theoretical notion behind 'syntagm' a 'syntactic structure' or 'syntactic pattern' […].

The quotation suggests that the definition 9a for distributional unit is to be split and a separate definition for cenotagm (phonotagm) introduced. Similarly, the definition 9b of syntagm is to be adjusted. This conclusion is supported by "Outline":

> If we leave in definition 9b [sic! read 9a] the word "instance" out, we have a definition of what I have called a *distributional unit*. An earlier alternative definition of the latter is "Minimum type of structure within which the distribution of phonotactic entities can be described completely and exhaustively", but this is rather a description than a true *a priori* definition.[26] The distributional unit is the parent model for phonotagms. If we leave in definition 9b the word instance out, we have in a similar way a definition of the notion *syntactic structure*.[27]

Thus, it seems that Mulder finally decided for having separate definitions for these notions and abandoned the idea of the terms *cenotagm* (*phonotagm*) and *syntagm* having two senses as they do in the published Postulates. However, no change in this respect has been attempted in the new edition.

Another thing mentioned in "Outline" is the definition of para-phonotactic features and para-syntactic features. Let us give the respective definitions as they appear in the published Postulates:

> Def. 18. 'Para-cenotactic features' for 'features corresponding to cenological form, accompanying, but not determining the identity of cenotactic entities'.
> Def. 19. 'Para-syntactic features' or 'para-plerotactic features' for 'features accompanying, but not determining the identity of, syntactic entities or conglomerations of syntactic entities'.

Now, let us quote from "Outline":

---

[26] This is apparently to suggest that the alternative definition be removed from the Postulates and moved rather to commentaries.

[27] Note that the Postulates also contain a definition of 'underlying syntactic structure': "abstract representation of a syntactic complex in terms of positions, with or without indication of occurrence dependency", see Def. 14c.

> *Para-**phonotactic** features* (def. 18) are "features corresponding to phonological form, accompanying, but not determining, merely adding to, the identity of phonotactic features". There are two types, i.e. "tone" (in tone languages, such as Chinese and Thai), and *ordinary* accent (i.e. excluding occasional *connotative* modulations). *Para-**syntactic** features* (def. 19) are "Features accompanying, and further determining, the identity of syntactic entities or conglomerations of syntactic entities". Such entities or conglomerations in combination with para-syntactic features assume an identity of their own at the sentential level. I.e. they are not mere syntagms, but they are *sentences*, or *clauses*.

The definition of para-phonotactic (para-cenotactic) features is practically identical but the definition of para-syntactic features is different, namely, they are now viewed as features *further determining* the identity of syntactic entities whereas previously they were said to be features *not determining* their identity. Unless we take it a slip of Mulder's hand, we must ask what lead Mulder to revise this definition. However, "Outline" does not seem to provide an answer for it, and it is hard to say what Mulder's intentions were. In our personal communication Paul Rastall noted:

> [T]here have always been some problems with determining the limits of syntactic structures and often paratactic features are a clue. I discussed this in "Realisational Sequences" [Rastall 2004] and Jan [Mulder] seemed to agree with me that in practice whether a structure is one unit or two is determined by features of intonation, juncture, timing, etc. So in the sequence *That's true I guess* we could have *(that's true (I guess))* or *That's true. I guess.* with one unit or two respectively.

The last point to mention in connection with "Outline" is the definition of syntactic entity. Before discussing definitions in "Outline", Mulder notes that their numbering corresponds to that of P1989 and "but if an extra definition is added, it will have the symbol 'x' placed after the number of the definition". However, there is only one such definition in the text—the definition of syntactic entity, *vide*:

> The notion *syntactic entity* (7b2x) stands for "grammatical entity that can stand in ordering relations with other such entities".

Strictly speaking, this definition is not added because the Postulates already contained a definition of syntactic entity but, as is discussed above, its definition was actually misplaced and confused with the definition of plerotactic relations, which, for the new edition, was corrected to read "syntagmatic entity in plerological (grammatical) systems" (see above and Mulder 1989: 191). It is thus possible Mulder wanted to correct this and not to introduce a new definition.

At this occasion it may be useful to mention the definition of 'syntagmatic entity' as it is given in P1989 and in the new edition:

> Def. 7b2. 'Syntagmatic entity' for 'tactic entity'.

To understand it, one must look for the definitions of 'tactic' and of 'entity' the latter of which is not relevant here. The definition of 'tactic' (7c) says that it stands for 'cenotactic'

or 'plerotactic (syntactic)', thus a syntagmatic entity is either a cenotactic entity or a plerotactic (syntactic) entity. The following are their definitions:

> Def. 7c1. 'Cenotactic entity' for 'syntagmatic entity in cenological systems'.
> Def. 7d. 'Plerotactic (syntactic) entity' for 'syntagmatic entity in plerological (grammatical) system'.

The definitions are a little problematic, as they appear to be circular: a plerotactic (syntactic) entity is a syntagmatic entity in plerological (grammatical) systems and since a syntagmatic entity is either a cenotactic entity or plerotactic entity, then a plerotactic (syntactic) entity is a plerotactic (syntactic) entity in plerological (grammatical) systems, which is circular.

The definition of 'syntagmatic entity' as 'tactic entity' was actually introduced in P1989; in previous versions the definition was different, cf. P1980[28]:

> "Syntagmatic entity" for "entity *capable* of standing in ordering relations with other entities or having an internal structure such that it is capable of containing – as constituents – entities capable of standing in ordering relations with other entities".

This form of the definition does not bring in any complications: a plerological (syntactic) entity is such an entity (in plerological (grammatical) systems) capable of standing in ordering relations with other entities or having an internal structure such that it is capable of containing – as constituents – entities capable of standing in ordering relations with other entities. And this definition is actually very close to the definition of 'syntactic entity' as given in "Outline", i.e. grammatical entity that can stand in ordering relations with other such entities.

References

BATÓG, Tadeusz. 1967. *The Axiomatic Method in Phonology*. London: Routledge & Kegan Paul.

BLOOMFIELD, Leonard. 1926. "A set of postulates for the science of language". *Language* 2.153–64.

BÜHLER, Karl. 1990. *Theory of Language: The representational function of language*. Amsterdam – Philadelphia: Benjamins. (Translation by Donald Fraser Goodwin of Bühler, Karl. 1934. *Sprachtheorie: Die Darstellungsfunktion der Spracher*. Jena: Gustav Fischer.)

DICKINS, James. 1989. *Extended axiomatic functionalism: a contrastive assessment with application to aspects of Arabic*. Heriott-Watt University. Doctoral thesis, published as Dickins 1998.

—. 1998. *Extended Axiomatic Linguistics* (Trends in Linguistics: Studies and Monographs 111). Berlin – New York: Mouton de Gruyter.

[28] The same definition is actually given in *Foundations*, p. 191 with a reference to the respective definition in the Postulates in that book.

—. 2009. "Extended Axiomatic Functionalism: Postulates". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/dickins/dic-001.pdf>.

FALKENBERG, Thomas. 1995. "Axiomatic Functionalism and the use of the axiomatic method in linguistics". *Lingua Posnaniensis* 37.7–27.

GARDNER, Sheena. 1985. *Parasyntax and the Sentential Level in Axiomatic Functionalism*. University of St. Andrews. Unpublished doctoral thesis submitted in 1984, available online via the EThOS service: <http://ethos.bl.uk>.

HERVEY, Sándor G. J.. 1970. *Functional semantics; a linguistic theory, with application to Pekingese.* University of Oxford. Doctoral thesis, published as Hervey 1979.

—. 1979. *Axiomatic semantics – A theory of linguistic semantics*. Edinburgh: Scottish Academic Press.

—. 1980a. "Postulates for axiomatic functionalist semantics". Mulder & Hervey 1980: 201–11.

—. 1980b. "Les postulats de la sémantique fonctionnelle axiomatique". *La Linguistique* 16:1.119–44.

—. 1996. "Functionalism, Axiomatic". *Concise Encyclopedia of Syntactic Theories* (eds. Keith Brown & Jim Miller), 110–3. Cambridge: Pergamon (Cambridge University Press).

HESELWOOD, Barry. 1992. *Extended axiomatic-functionalist phonology: an exposition with application to Arabic*. New University of Ulster. Unpublished doctoral thesis.

—. 2009. "Simultaneous phonemes in English". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/heselwood/hes-001.pdf>.

HJELMSLEV, Louis. 1961_2. *Prolegomena to the Theory of Language*. Madison – London: The University of Wisconsin Press.

HOWKINS, Angela. 1977. *Syntactic relations of San Martín Quechua*. University of St. Andrews. Doctoral thesis submitted in 1976, available online: <http://hdl.handle.net/10023/529>.

MULDER, Jan W. F.. 1966. *Sets and relations in phonology – A theory of linguistic description with special reference to Pekingese*. University of Oxford. Doctoral thesis, later published as Mulder 1968.

—. 1968. *Sets and Relation in Phonology: An axiomatic approach to the description of speech*. Oxford: Clarendon Press.

—. 1977. "Les postulats de la linguistique fonctionnelle axiomatique". *La Linguistique* 13:1.15–46.

—. 1978. "Phoneme tables and the functional principle". *La Linguistique* 14:1.3–27. (Reprinted in Mulder & Hervey 1980: 104–21.)

—. 1980. "Postulates for axiomatic functionalism". Mulder & Hervey 1980: 40–63.

—. 1989. *Foundations of Axiomatic Linguistics* (Trends in Linguistics: Studies and Monographs 40). Berlin – New York: Mouton de Gruyter.

—. 1998. "Epistemology and linguistics: Anatomy of an approach". *Productivity and Créativity: studies in general linguistics in honour of E. M. Uhlenbeck* (ed. Mark Janse), 115–60. Berlin: Mouton de Gruyter.

—. ms. "Introduction. Outline of Axiomatic functionalism. Differences with orthodox functionalism. Differences with other approaches". Unpublished manuscript, dated 2003.

MULDER, Jan W. F. & Sándor G. J. HERVEY. 1980. *The Strategy of Linguistics*. Edinburgh: Scottish Academic Press.
—. 2009. "Postulates for Axiomatic Functionalism". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/mulderhervey/muh-001.pdf>.
RASTALL, Paul. 1977. Introduction to Mulder 1977. *La Linguistique* 13:1.15–23.
—. 1980. Introduction to Hervey 1980b. *La Linguistique* 16:1.15–46.
—. 1993. "La linguistique fonctionnelle axiomatique". *La Linguistique* 29:1.135–48.
—. 2004. "Realisational sequences in grammar". *La Linguistique* 40:2.43–52.
SHIMIZU, Shūjū & Michael A. L. LAMB. 1985. "Axiomatic functionalism: Mulder's theory of the linguistic sign". *Language, Culture and Communication* 1.101–22. Yokahama: Keio University.

Linguistica ONLINE. Published: July 10, 2009
http://www.phil.muni.cz/linguistica/art/mulderhervey/muh-001.pdf
ISSN 1801-5336

POSTULATES FOR AXIOMATIC FUNCTIONALISM[*]

Jan W. F. Mulder & Sándor G. J. Hervey (University of St. Andrews, UK)

Abstract. The so-called Postulates for Axiomatic Functionalism represent the theoretical basis of a semiotic/linguistic approach known as Axiomatic Functionalism developed by Jan W. F. Mulder and Sándor G. J. Hervey, also the authors of the Postulates. The present article is a new and complete edition of the Postulates prepared for publication, edited and annotated by Aleš Bičan. The text consists of six sections, each corresponding to a axiom, being one of the basic propositions of the theory. The axioms are interpreted step by step by a network of definitions. The axioms and the definitions are the *postulates* of the theory.

Introductory note *by Aleš Bičan*

The text below is a new edition of the Postulates for Axiomatic Functionalism. Previously published in *Foundations of Axiomatic Linguistics* (1989) and *The Strategy of Linguistics* (1980), they appear here for the first time in a complete form. With the consent of Jan W. F. Mulder and Diana Hervey, wife of late Sándor G. J. Hervey (to whom I sincerely thank), I have edited and annotated them. The Postulates were edited, corrected if necessary, and annotated. The process of how the new edition was produced alongside with a discussion of the nature of the Postulates, their textual history can be found in my introduction published as a separate article and accessible at the following address:

http://www.phil.muni.cz/linguistica/art/bican/bic-004.pdf

For other introductions to the Postulates let me refer to those by Paul Rastall (Rastall 1977 and 1980). The reader can also consult an introduction to so-called Postulates for Extended Axiomatic Functionalism written by James Dickins (Dickins 2009). See the References at the end of this article.

[*] Previously unpublished in this form. See the introduction. [Editor's note]

Axiom A. *All features in semiotic sets are functional.* [436][1]

Def. 1a. 'Functional' for 'separately relevant to the purport of the whole of which it is a part'. [436]

Def. 1b. 'System' for 'self-contained set of features with a common purport'. [436]

Def. 1b1. 'Self-contained' for 'representing all relative dependencies of its members (or constituents), as members (or constituents) of the set (or combination), in question'.[2] [436]

The notions 'functional' and 'self-contained' can, of course, be applied to 'combinations (of items)' as well as to 'sets'. In the case of 'combinations', the term 'members' has to be replaced by 'constituents'.

Def. 1c. 'Semiotic system' for 'system of conventions for communication'.[3] [436]

Axiom A states the point of view of the theory, i.e. 'the functional principle'. The above definitions give an interpretation to the axiom, and provide an ontological definition of 'semiotic system'. The reason why the term 'semiotic system' is not already used in the axiom is that otherwise the recognition of 'functionality' for features in sub-systems of semiotic systems (e.g. 'phonology', 'phonotactics', 'grammar', 'syntax', etc. in a natural language) would be precluded.

Def. 1c1. 'Features' for 'elements, analytical properties of elements or[4] relations between elements or analytical properties of elements'. [436]

Def. 1c2. 'Entity' for 'element, or discrete analytical property of element'. [436]

Def. 1c3. 'Semiotic entity' for 'entity in semiotic system'. [437]

Def. 1c1–1c3 provide instructions for the consistent usage of the terms 'feature', 'entity', and 'semiotic entity'. Such terms as 'element', and also 'item' remain undefined, i.e. they are to be regarded as 'primitive terms', to be used in their 'ordinary language' sense.

Def. 1d. 'Communication' for 'subjective (i.e. involving choice or optionality) conveyance of information'. [437]

This rules out 'labels', 'names', or 'designations', not to be confused with 'communicating' these or about these, from being 'communication' in our sense.

---

[1] The numbers in the square brackets have been editorially added; they refer to pages in *Foundations of Axiomatic Linguistics* for the Axioms A – E, and to *The Strategy of Linguistics* for the Axiom F. The first book will be referred to as *Foundations*, the second as *The Strategy*. In addition, *Sets* will stand for Mulder's book *Sets and Relations in Phonology*, and *Axiomatic Semantics* for Hervey's *Axiomatic Semantics: A Theory of Linguistic Semantics*, and *Theory* for Mulder and Hervey's *Theory of the Linguistic Sign* (1972). See References at the end of this article. – On Axiom A see *Foundations*, ch. III, 1. It has been called *axiom of scope* (Hervey 1996).

[2] See *Foundations*, ch. III, 2.

[3] Alternative definition to Def. 5. On semiotic systems see *Foundations*, ch. III, 3, 4, *Theory*, ch. I, and Mulder & Hervey 1975.

[4] In *The Strategy* a footnote was appended here saying: " 'or' in formal postulates has to be understood as 'and/or' ". It applies to all occurrences of 'or' in the Postulates. It was not included in the version in *Foundations*. Cf. the footnote 5 below.

Axiom B. *Semiotic systems contain simple, and may contain complex ordered, and/or*[5] *complex unordered signa and figurae.*[6] [437]

Def. 2. 'Index' for 'item or class of items with information-value'.[7] [437]

Def. 2a. 'Information-value' for 'specific set of potential interpretations'. [437]

Def. 2a1. 'Signum' for 'sign or symbol'.
Alternative definition: 'semiotic entity with both form and information-value'.[8] [437]

Def. 2a2. 'Sign' for 'signum with wholly fixed conventional information-value'.
Alternative definition: 'index possessing the property of denotation'. [437]

Def.2a2a. 'Denotation' for 'wholly fixed conventional information-value of index in semiotic system'.[9] [437]

Def. 2a3. 'Symbol' for 'signum with not wholly fixed conventional information-value, i.e. to which a temporary information-value can be attached by a definition'. [437]

Def. 2a3a. 'Proper symbol' for 'symbol with partially fixed conventional information-value'. [437]

Def. 2a3b. 'Nonce symbol' for 'symbol with wholly non-fixed conventional information-value, i.e. with no fixed information-value at all'. [437]

> Axiom B is the most powerful axiom of the whole theory. It harbours (after being given an interpretation by means of definitions that follow it) the theory of semiotic systems (which is one of the sub-theories), as well as almost the whole of the systemology of any semiotic system (i.e. for natural languages both phonology and grammar), with the exception of the para-tactic sub-systems. The latter are covered by Axioms C and D. The systemology is unfolded in definitions 2–16c, together with the basic methodology for both plerological (grammatical) and cenological (for spoken language: phonological) descriptions. Definitions 2–2a3b and 2b develop that part of the theory of indices which is relevant to semiotic systems.

Def. 2a4. 'Plerological entity' or 'grammatical entity' for 'entity in systemology corresponding to a signum'. [438]

Def. 2a4a. 'Plerematics' or 'morphology' for 'complex unordered plerological system'. [438]

Def. 2a4b. 'Plerotactics' or 'syntax' for 'complex ordered plerological system'.[10] [438]

Def. 2a4c. 'Plerological (grammatical) system' for 'system of plerological entities'.
Also simply called 'plerology'. [438]

Def. 2b. 'Figura' for 'semiotic entity which has only form'. [438]

Def. 2b1. 'Cenological entity' for 'entity in systemology, corresponding to a figura'. [438]

---

[5] Originally, i.e. in 1980, there was *or*. The change was introduced for *Foundations* because a footnote on the precise meaning of the conjunction *or* was removed from that version. See the footnote 4 above.

[6] The axiom has been called *axiom of 'systemology'* (Hervey 1996).

[7] See Mulder & Hervey 1971, and *Theory*, ch. II. On so-called theory of indices see *Foundations*, ch. IV, 2.

[8] Alternative definition to Def. 24.

[9] Alternative definition to Def. F5.

[10] On syntax in Axiomatic Functionalism see Mulder 1976 and *Foundations*, ch. VI, VII.

Def. 2b1a. ‘Cenematics’ for ‘complex unordered cenological system’. [438]

Def. 2b1b. ‘Cenotactics’ for ‘complex ordered cenological system’. [438]

Def. 2b1c. ‘Cenological system’ for ‘system of cenological entities’. Also simply called ‘cenology’.[11] [438]

Def. 2b1d. ‘Cenological form’ for ‘notion in signum-theory, corresponding to feature potentially belonging to cenological system’.[12] [438]

Def. 2b2. ‘Systemology’ for ‘cenological system and plerological (grammatical) system’ or for ‘the sub-theory dealing with the description of the systemology (in the above sense) of semiotic systems’ (the same goes for cenematics, cenotactics, etc., i.e. for the sub-systems of systemology).[13] [438]

Def. 3a. ‘Phonology, phonematics, phonotactics, phonological entity, phonological system, phonological form, etc.’ for ‘cenology, cenematics, cenotactics, etc. in natural language’. [438]

For other semiotic systems often convenient terms can be coined, e.g. ‘graphology’, etc., for ‘writing-conventions’, etc.

The terms ‘plerological’ and ‘grammatical’ are synonymous, and ‘plerematics’ and ‘plerotactics’ are synonymous with ‘morphology’ and ‘grammar’ respectively. The terms with ‘cene-’ and ‘ceno-’ apply to any semiotic system, the terms with ‘phone-’ and ‘phono-’ only to natural (spoken) languages.

Def. 3b. ‘Articulation’ for ‘cenotactics or plerotactics’. [439]

Def. 3c. ‘Double articulation’ for ‘cenotactics and plerotactics’. [439]

Def. 3c1. ‘Language’ for ‘semiotic system with double articulation’. [439]

Def. 3c2. ‘Proper language’ for ‘semiotic system with a cenology containing both a cenematics and a cenotactics, and a plerology (grammar) containing both a plerematics (morphology) and a plerotactics (syntax)’. [439]

All natural languages known to date are proper languages, but not necessarily vice versa. Natural languages, in addition, incorporate para-tactic systems, but so do all other semiotic systems, though for the latter this is often trivial. This is, because the same realizations may correspond to para-cenotactic entities from the one point of view, but to para-plerotactic entities from another. Also, especially in simple systems, tactic realizations may coincide with para-tactic ones, in which ‘tactic’ and ‘para-tactic’ are mere different aspects of the same thing. One needs, however, to recognize both aspects, as they account for different realizational features. That is, the tactic notions, e.g. ‘ceneme’, ‘plereme’, etc., as models, are not set up in a way which allows them to account for such contrastive (but nevertheless ‘functional’ from an overall point of view) features as ‘pause’, ‘juncture’, etc. In natural language, and many ‘language-connected’ semiotic systems, however, all this is far from trivial.

Def. 3c2a. ‘Interlocking’ for ‘in systemology the one sub-system providing the forms of the entities of the other sub-system’ (a cenological system and plerological system interlock in this way), or for ‘the one sub-system providing the basic entities of the other sub-system’ (an inventory of simple cenological entities and a cenematics, a cenematics and a cenotactics, as well as an in-

[11] On phonology in Axiomatic Functionalism see *Sets*, Mulder 1987, and *Foundations*, ch. V.

[12] Alternative definition to Def. 23.

[13] On the structure of systemology see *Foundations*, ch. III, 3, 4.

ventory of simple plerological entities and a plerematics, and a plerematics and a plerotactics interlock in this way). [439–40]

There is a kind of interlock between 'cenotactics' and 'para-cenotactics', and between 'plerotactics' (syntax) and 'para-plerotactics' (para-syntax, or the sentential level), but this is of a different kind. Cenotactics and plerotactics provide the entities that correspond to elements in the base of para-cenotactic and para-plerotactic entities respectively.

Def. 4a. 'Simple system' for 'system without combinations of entities'. [440]

Def. 4b. 'Complex system' for 'system with combinations of entities'. [440]

Def. 4b1. 'Unordered system' for 'complex system without ordering relations between entities'. [440]

Def. 4b2. 'Ordered system' for 'complex system with ordering relations between entities'. [440]

Def. 5. 'Semiotic system' for 'communication system with a systemology, i.e. with a cenological system interlocking with a plerological system'.[14] [440]

We can, therefore, have semiotic systems where either the cenological system, or the plerological system, or both, are simple, unordered, and/or ordered, which leads to various types.

Definitions 3b–5 are specially geared to clarifying the notion 'proper language'. All natural languages are proper languages, but there is at least a theoretical possibility that the reverse does not hold.

Def. 6a. 'Ordering relations' for 'asymmetrical relations between entities in combinations (constructions)'. [440]

Def. 6b. 'Relations of simultaneity' for 'symmetrical relations between entities in combinations (constructions)'.[15] [440]

By Axiom A, only functional criteria may be brought to bear in deciding whether a relation is symmetrical or asymmetrical.

Def. 6c. 'Construction' or 'combination' or 'complex' for 'self-contained complex of entities in cenological or plerological system'. [440]

The terms imply such notions as: 'complex ceneme', 'cenotagm', 'complex para-cenotactic entity', 'complex plereme', 'syntagm', or 'complex sentence' (i.e. consisting of more than one clause as its immediate constituents), and 'self-contained bundle of immediate constituents'.

Def. 7a. 'Paradigmatic' for 'the oppositional aspect of semiotic entities'. [441]

Def. 7a1. 'Paradigmatic relations' for 'relations of opposition between members of sets'. [441]

Def. 7a2. 'Commutation' for 'alternation (or: choice) between semiotic entities (or 'zero' and semiotic entities) in functional opposition as immediate constituents, in a given context'. [441]

Def. 7a3. 'Distinctive function' for 'the set of oppositions in which an entity may partake'. [441]

In symbols: $a \sim (b \cup c \cup d)$, 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. In fact, $a \sim (b \cup c \cup d) = a \sim b \cup a \sim c \cup a \sim d$.[16]

[14] Alternative definition to Def. 1c.

[15] See *Foundations*, ch. V, 9.

Def. 7a4. ‘Neutralization’ for ‘suspension of opposition between members of a correlation in given contexts, and governed by those contexts’.[17] [441]

Def. 7a4a. ‘Correlation’ for ‘set of tactic entities which have an immediate constituent in common’. [441]

Def. 7a4b. ‘Archiceneme (in natural language: archiphoneme)’ for ‘cenotactic entity resulting from neutralization’.
Alternative definition: ‘simultaneous bundle of distinctive features in particular contexts, common to two or more cenemes in other contexts, i.e. equalling the intersection of those cenemes’.[18] [441]

Def. 7b. ‘Syntagmatic’ for ‘the ordering aspect of semiotic entities’. [441]

Def. 7b1. ‘Syntagmatic relations’ for ‘ordering relations between semiotic entities in combinations (constructions)’. [441]

> Though the term ‘permutation’ may seem the syntagmatic equivalent of ‘commutation’, it is used in a realizational, rather than structural sense, though there may be structural implications.[19]

Def. 7b2. ‘Syntagmatic entity’ for ‘tactic entity’.[20] [441]

> This implies that it is orderable, and/or has constituents that commute with orderable entities, provided it is not intrinsically uncombinable at the tactic level (e.g. such as ‘yes’ in English), except in conjunctive constructions (e.g. ‘yes or no’). It will be clear, therefore, that ‘distinctive features’ and ‘monemes’ are not syntagmatic entities, but ‘phonemes’ and ‘pleremes’, and anything more complex (but below the para-tactic levels), are.

Def. 7c. ‘Tactic’ for ‘cenotactic’ or ‘plerotactic (syntactic)’. [442]

Def. 7c1. ‘Cenotactic entity’ for ‘syntagmatic entity in cenological systems’. [442]

Def. 7c2. ‘Tactic relations’ for ‘cenotactic relations or plerotactic relations’.
Alternative definition: ‘constructional relations (whether ordering or not) between syntagmatic entities, as immediate constituents in combinations (constructions)’.[21] [442]

> Note that tactic relations are not necessarily syntagmatic relations, though the reverse holds. ‘Tactic relations’ are relations between syntagmatic entities.

Def. 7d. ‘Plerotactic (syntactic) entity’ for ‘syntagmatic entity in plerological (grammatical) systems’.[22] [442]

Def. 7e. ‘Plerotactic (syntactic) relations’ for ‘tactic relations in plerological (grammatical) system’. [442]

Def. 7e1. ‘Cenotactic relations’ for ‘tactic relations in cenological system’. [442]

Def. 7f. ‘Constructional relations’ for ‘relations between immediate constituents’. [442]

---

[16] The symbols and calculus are discussed in *Sets*, ch. II.

[17] See *Foundations*, ch. V, 14 and *Sets*, ch. II, 6.

[18] See *Sets*, ch. II, 6 and VI, 5, and *Foundations*, ch. V, 14.

[19] On permutation and permutation test see *Foundations*, pp. 190–1. On grammatical relations in general see Rastall 1999.

[20] See “Introduction”, pp. 17–8.

[21] See *Foundations*, ch. VI, 2.

[22] Alternative definition to Def. 9b1. See “Introduction”, pp. 14–5.

Definitions 6a–7f lay the foundation for further terminological developments necessary for an effective description of semiotic systems.

Def. 7f1. 'Constituents' for 'entities (of the same kind, i.e. of the same level of abstraction) in self-contained combinations'. [442]

Def. 7f1a. 'Immediate constituents' for 'constituents that are not constituents of constituents within the combination in question'. [442]

Def. 7f1b. 'Ultimate constituents' for 'constituents that are minimum (i.e. simple) entities at the level in question'. [442]

Ultimate constituents may be immediate constituents. It is theorematic that in cenematics and plerematics (morphology), in contradistinction with cenotactics and plerotactics (syntax), immediate constituents are always at the same time ultimate constituents.

Def. 7g. 'Positions' for 'divisions within a tactic construction, such that in every such division an entity, as an immediate constituent of that construction, can stand and alternate, (i.e. commute) with other entities, or with ∅'.
Alternative definition: 'divisions within a construction corresponding to immediate constituents as relata in tactic relations'.[23] [443]

Def. 7h. 'Archi-position' for 'the intersection of two or more positions'. [443]

In phonotactics, intersection can only occur between adjacent positions. In syntax, intersection can occur between any two or more peripheral positions, but it can only occur in the case of parallel determination, not in the case of diverse determination.

Def. 8a. 'Ceneme (in language: phoneme)' for 'self-contained bundle of one or more distinctive features as its immediate, and at the same time ultimate, constituents'.
Alternative definitions: 'minimum syntagmatic entity in cenological system', 'minimum cenotactic entity'.[24] [443]

Def. 8a1. 'Cenematic complex' for 'complex ceneme'. [443]

A complex ceneme is a cenematic complex, as opposed to a cenotactic complex. A complex cenological entity is either cenematically or cenotactically complex. Or it may, of course, be para-cenotactically complex.

Def. 8a2. 'Distinctive feature' for 'minimum cenological entity'. [443]

Def. 8a3. 'Hyper-feature' for 'distinctive feature in a particular phonematic context, equivalent to two or more distinctive features in at least one other phonematic context'. [443]

Def. 8a4. 'Hyperphoneme' for 'phoneme consisting of, or containing, one or more hyper-features'.[25] [443]

Def. 8b. 'Plereme' for 'self-contained (by definition: simultaneous) bundle of one or more monemes as its immediate, and at the same time ultimate, constituents'.
Alternative definitions: 'minimum syntagmatic entity in plerological (grammatical) system', 'minimum plerotactic (syntactic) entity'. [443]

---

[23] On positions and archi-positions see *Sets*, ch. II, 5 and *Foundations*, ch. V, 13.

[24] See *Foundations*, ch. V, 10 and *Sets*, ch. III, 4.

[25] On hyper-features and hyperphonemes see Mulder 1978 and *Foundations*, ch. V, 11.

From the point of view of the set of allomorphs, one can distinguish within 'plereme' between 'word' and 'grammateme'. If we set up the set of allomorphs in such a way that all allomorphs are continuous, i.e. uninterrupted in realization, they are properly called 'words', otherwise it is better to refer to them as 'grammatemes'. The distinction has, however, only importance from the point of view of realization. It has no structural importance.[26]

Def. 8b1. 'Plerematic (morphological) complex' for 'complex plereme'. [444]

A complex plereme is a plerematic (morphological) complex as opposed to a plerotactic (syntactic) complex. A complex plerological entity is either plerematically (morphologically) complex or plerotactically (syntactically) complex. Or it may, of course, be complex at the sentential level, i.e. consist of more than one clause.

Def. 8b2. 'Moneme' for 'minimum plerological (grammatical) entity'. [444]

Monemes are the grammatical analogues of 'distinctive features'.[27]

Def. 9a. 'Distributional unit' or 'cenotagm (in natural language: phonotagm)' for 'self-contained bundle of positions in cenotactics', or for 'instance of a self-contained bundle of positions in cenotactics'.

Alternative definition for 'distributional unit' in the former, i.e. abstract, sense: 'minimum type of structure within which the distribution of cenotactic (natural language: phonotactic) entities can be described completely and exhaustively'.[28] [444]

This is to say that nothing outside such a structure can determine the distribution of immediate constituent entities within the structure. It is possible that we may in some cases have to describe further the distribution of types of distributional unit in respect of one another.

Def. 9a1. 'Distribution' for 'the set of occurrences of an entity in constructional relations with other entities as immediate constituents in the same construction'. [444]

Def. 9b. 'Syntagm (plerotagm)' for 'self-contained bundle of positions in plerological (grammatical) system' or for 'instance of a self-contained bundle of positions in plerological (grammatical) system'.

Alternative definition for 'syntagm' in the first sense: 'underlying structure of a self-contained bundle of plerotactic (syntactic) entities', and in the second sense: 'self-contained bundle of plerotactic (syntactic) entities, as immediate constituents', or 'plerotactic complex'.[29] [444–5]

Def. 9b1. 'Syntactic (plerotactic) entities' for 'pleremes or syntagms'.[30] [445]

Def. 10. 'Syntagmeme' for 'paradigmeme in a particular position, and in its capacity of standing in that particular position'. [445]

Def. 10a. 'Paradigmeme' for 'member of a self-contained set of entities in functional opposition in a given context'.

Alternatively: 'member of a paradigm'.[31] [445]

---

[26] See *Foundations*, ch. VI, 7. Cf. also Mulder 1971.

[27] See also *Sets*, ch. I, 12.

[28] See *Sets*, ch. V. See also "Introduction", pp. 15–6.

[29] See "Introduction", pp. 15–6.

[30] Alternative definition to Def. 7d.

Def. 10b. 'Paradigm' for 'set of entities in functional opposition in a given context'.[32] [445]

Definitions 7f–10b refer to general notions in the description of semiotic systems though definitions 8a, 8a1, 8a2, and 9e are more relevant to cenology (in natural language: phonology), whereas definitions 8b–8b2 are more relevant to plerology (grammar).

Def. 11a. 'Relation of sub-ordination (or: determination)' for 'direct tactic asymmetrical relation of functional dependency'.

Alternative definition: 'direct tactic relation of unilateral functional dependency'.[33] [445]

Its converse is super-ordination (or: government). If *a* and *b* are in direct tactic relation, and *a* is for its tactic function dependent on *b*, but not vice versa (in symbols: $a \rightarrow b$), *a* is said to be subordinate to *b*, and *b* super-ordinate to *a*. Furthermore, *a* is said to be standing in peripheral, and *b* in nuclear position in the construction in question.

'Super-ordination (or: government)' and the notions 'nuclear' and 'peripheral' are hereby defined as well.

Def. 11b. 'Relation of coordination' for 'direct tactic (by implication: symmetrical, and therefore simultaneous) relation of mutual functional independency'. [445]

Alternative definition: 'direct tactic relation of bilateral functional independency'. [446]

If *a* and *b* are in direct tactic relation, and *a* is for its tactic function independent of *b*, and vice versa, *a* and *b* are said to be coordinated (in symbols: $a \leftarrow/\rightarrow b$).

Def. 11c. 'Relation of interordination' for 'direct tactic (by implication: symmetrical, i.e. simultaneous) relation of mutual functional dependency'.

Alternative definition: 'direct tactic relation of bilateral functional dependency'. [446]

If *a* and *b* are in direct tactic relation, and *a* is for its tactic function dependent on *b*, as well as vice versa, *a* and *b* are said to be inter-ordinated (in symbols: '$a \leftrightarrow b$)'.

Note that Defs. 11b and 11c, unlike 11a, refer to non-syntagmatic relations between syntagmatic entities.

Def. 12a. 'Relation of unilateral occurrence dependency' for 'relation such that one of two entities in direct relation which are immediate constituents in a construction, can occur in the construction in question, whilst the other is ∅'. [446]

In symbols: [*a*]*b* or *a*[*b*], the square brackets indicating the occurrence dependent entity, i.e. in the above case it requires the other item, or an item in the same position, for its occurrence, but not vice versa. The dependent item is called an 'expansion'.

---

[31] On syntagmemes and paradigmemes see *Sets*, ch. III, 5.

[32] See *Sets*, ch. III, 8 and *Foundations*, ch. V and VI, 1–7.

[33] On functional and occurrence (see below) dependency see *Foundations*, ch. VI, 3, 4.

Def. 12b. ‘Bilateral occurrence independency’ for ‘relation such that either of two entities in direct relation which are immediate constituents in a construction can occur in the construction in question, whilst the other is ∅’. [446]

In symbols [*a*] [*b*]. Both items are ‘expansions’ in respect of one another.

Def. 12c. ‘Bilateral occurrence interdependency’ for ‘relation such that neither of two entities in direct relation which are immediate constituents in a construction can occur in the construction in question, whilst the other is ∅’. [446]

In symbols *ab*. Neither of the items are ‘expansions’ in respect of one another.

Def. 13a. ‘Nucleus’ or ‘governing entity’ for ‘in a relation of sub-ordination, the identity element for the tactic functions of the other elements’. [446]

In symbols: $b \rightarrow a$, $[b] \rightarrow a$, $a \leftarrow b$, or $a \leftarrow [b]$, in which *a* is the nucleus. That is, the tactic relations of the other immediate constituents depend for their tactic function on their relation with the nucleus.

Def. 13b. ‘Peripheral entity’ or ‘governed entity’ or ‘determinant entity’ for ‘in a relation of sub-ordination, a non-nuclear immediate constituent’. [447]

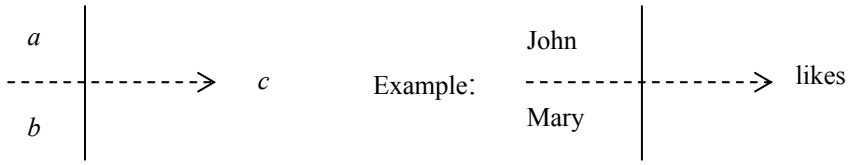
In symbols: *b*, in the above representations. See Def. 11a and 13a.

Def. 13c. ‘Expansion’ for ‘immediate constituent that commutes with ∅’. [447]

In symbols $[a] \rightarrow b$, in which *a* is an expansion; also $[a] \leftarrow/\rightarrow [b]$, i.e. coordination, in which both *a* and *b* are expansions. The term ‘expansion’ is always used with reference to another entity with which the other entity is in direct tactic relation. Complex expansions may contain entities that are themselves not expansions, e.g. $[[a] \rightarrow b] \rightarrow c$, or even $[a \rightarrow b] \rightarrow c$.

Def. 14a. ‘Diverse determination’ or ‘disjunctive determination’ for ‘self-contained complex of tactic relations, such that two or more peripheral immediate constituents are subordinated to a nucleus, but demonstrably in different ways’.[34] [447]

I.e. $a\mathrm{R}^{x}c$ and $b\mathrm{R}^{y}c$, where *a* and *b* are peripheral, *c* is nuclear, and R^{x} and R^{y} represent different tactic relations. In symbols:

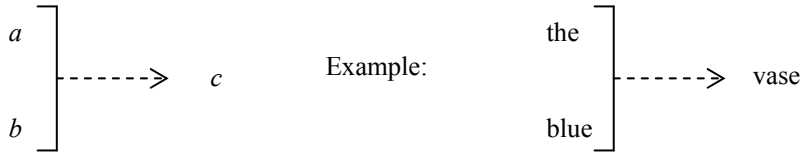


i.e. ‘John likes Mary’. A both sufficient and necessary condition is that at least two of the peripheral entities in question belong to the same distribution-class. Because in cenotactics all relations must involve time and space (on which all our sensory perceptions depend, and without which there could not be ‘form’ at all) in a functional capacity, in cenotactics there is in the above case diverse determination by logical necessity. There are other logical reasons, but this is for the present purpose sufficient.

Def. 14b. ‘Parallel determination’ or ‘disjunctive determination’ for ‘self-contained complex of tactic relations, such that no two immediate constituents can be demonstrated to determine the nucleus in different ways’. [447–8]

[34] On diverse and parallel determination see *Foundations*, ch. V, 5 and VI. Cf. also Heselwood 2008a, Rastall 2008 and Heselwood 2008b.

This implies that one has to assume parallel determination until this is refuted by the successful application of Def. 14a. In symbols:



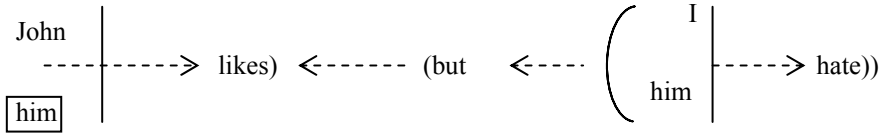
i.e. 'the blue vase'. Both sufficient and necessary condition: All peripheral entities, or their commutants, belong to different distribution classes.

Def. 14c. 'Underlying syntactic structure' for 'abstract representation of a syntactic complex in terms of positions, with or without indication of occurrence dependency'.[35] [448]

Def. 15. 'Direct relation' for 'relation between constituents (not necessarily immediate constituents) that is not a relation via other constituents'.[36] [448]

Def. 16a. 'Conflation' for 'a single realization corresponding to more than one constituent (not immediate constituents) having a similar tactic function, in a construction'.[37] [448]

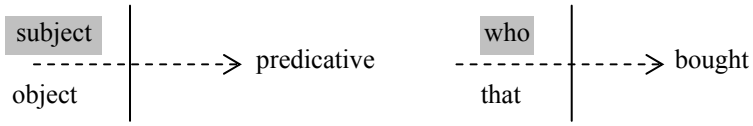
Example: 'John likes but I hate him', where 'him' functions in two different, but equivalent, positions. Representation: 'John likes him but I hate him', or, representing the syntactic structures in question:



The unshaded box around 'him' indicates that there is conflation at that point. In the older (1980) version of the postulates this was called 'ellipsis'[38].

Def. 16b. 'Functional amalgamation' for 'one single entity having different tactic functions (and therefore corresponding to more than one constituent) on different levels of the analysis'.[39] [448]

In phonology an example is a single phoneme standing in a 'final' position in one phonotagm, but at the same time in an 'initial' position in another (adjacent) phonotagm. In syntax an example is: 'the man who bought that'. Representation: 'the man who bought that'. In an analysis of English 'who bought that' is firstly a 'relative syntagm' with the structure 'who ← bought that', and on a subsequent level a so-called 'transitive predicative based syntagm', i.e.

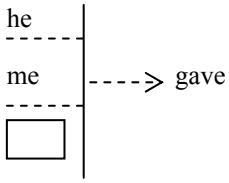


The shaded box indicates that there is functional amalgamation.

[35] See "Introduction", pp. 14–5.
[36] On direct and indirect relations see *Foundations*, ch. VI, 2.
[37] On conflation, functional amalgamation and antecedence see *Foundations*, ch. VI, 10, in particular p. 357.
[38] I.e. in the version published in *The Strategy*.
[39] See also *Sets*, ch. V, 4.

Def. 16c. ‘Antecedence’ or ‘post-cedence’ for ‘a case in which a syntagm from the structural (but not from the realizational) point of view is only partly well-formed, but the ‘missing’ entity is represented elsewhere’. [449]

E.g. ‘the book he give me’, in which ‘he gave me’ is represented



The ‘antecedent’ entity is here ‘the book’. The empty box indicates that the construction is a semi-*x* (where *x* stands for the type of construction in question, in this case an ‘indirect transitive predicative based syntagm’). Note that the non-well-formedness is merely a matter of structural analysis, not of actual deficiency. There may be cases in which the antecedent is merely ‘implied’.

Definitions 11a to 16c further develop the whole of syntax. All the relevant notions are presented, and the methodology is developed in fairly great detail.

Axiom C. *Cenological entities may have para-cenotactic features and plerological entities may have para-syntactic features.*[40] [449]

Def. 17. ‘Para-tactic features’ for ‘para-cenotactic or para-syntactic features’. [449]

In natural language these are usually, but (from a functional point of view) inappropriately, lumped together under the term ‘prosody’. This is because their phonetic substance is usually ‘pitch’ or ‘stress’, or a mixture of the two. But also ‘pause’ or ‘juncture’ plays a role in this respect. Another type of para-tactic feature, frequently encountered in natural language, is difference in sequential order, i.e. permutation of the tactic entities involved. E.g. ‘can he do it’ versus ‘he can do it’. This should not be confused with realizational permutation as a means of expressing syntactic relations, e.g. ‘John hit Mary’ versus ‘Mary hit John’. The latter have to do with the actual syntactic construction, and are therefore not para-tactic. The term para-tactic implies that the features involved are not inherent in the form of the tactic constituents and their arrangement, i.e. that they are not merely realizational on the tactic level. E.g. there is nothing in the phonemic constituence of the form of the word ‘blackbird’, nor in the fact that there are two phonotagms that can account for the fact that it represents a unit on a higher than tactic level with an accent (in neutral realization) on the first syllable, and nor is the fact that an entity represents, say, a clause, inherent in the conglomeration (which is not even ‘constituency’) of tactic entities that correspond to its base. Only in the most simple cases, as, for instance, the Morse code, could one claim that the pause before and after a cenotagm is purely realizational, by arbitrarily establishing nuclear and peripheral positions, but it would be extremely complicated to account for it in this way, rather than saying that ‘cenotagm’ and ‘sentence’ in the Morse code coincide. This also preserves the generality in that one would not have to say that either the notion ‘sentence’

[40] See *Foundations*, ch. III, 3, 4 and ch. V, 20. On para-syntax see Gardner [1984] 1985. The axiom has been called *axiom of para-tactics* (Hervey 1996).

or the notion 'cenotagm' in the Morse code are purely realizational. The latter would logically follow. This does not mean that I do not agree that for some semiotic systems recognizing para-tactic levels is trivial, but in principle they can be recognized for any semiotic system. Not all semiotic systems have, however, distinctive para-tactic features (see below).

Def. 18. 'Para-cenotactic features' for 'features corresponding to cenological form, accompanying, but not determining the identity of cenotactic entities'.[41] [451]

Of course, a cenotactic entity in combination with such features assumes an identity of its own on the para-cenotactic level. In cases where this is trivial, they are only different entities from different points of view, just as, for instance, a plereme is a maximum entity from the morphological, but a minimum entity from the syntactic point of view.

Def. 18a. 'Contrastive para-cenotactic features' for 'para-cenotactic features with the function of groupment over and above cenotactic groupment'.[42] [451]

Def. 18b. 'Distinctive para-cenotactic features' for 'para-cenotactic features that are in a relation of direct opposition with one or more other para-cenotactic features, or with ∅'. [451]

A typical example is distinctive 'tone', as, for instance, in Chinese. Trivially, unless there is no one-one correspondence (in which case it would not be trivial), also the phonological forms of distinctive intonations are distinctive para-cenotactic (para-phonotactic) features, whilst the intonations themselves are para-syntactic features. One should not be misled by the terminology in thinking that 'contrastive para-tactic' features are not functional. They are, as so many other things, e.g. syntactic relations, distinctive in a systemic, not in a directly oppositional, sense. 'Distinctive para-tactic features' are, however, distinctive in the latter sense.

Def. 19. 'Para-syntactic features' or 'para-plerotactic features' for 'features accompanying, but not determining the identity of, syntactic entities or conglomerations of syntactic entities'.[43] [451]

Syntactic entities or conglomerations of syntactic entities in combination with para-syntactic features assume an identity of their own on the sentential level, i.e. they become sentential entities (i.e. 'sentences' or 'clauses', see below, Def. 21, 21a).

Def. 19a. 'Contrastive para-syntactic features' for 'features with the function of groupment over and above syntactic groupment'. [451–2]

In language the suspensive, i.e. 'comma' or 'semi-colon' intonation type belong to this, but also the distinctive types such as 'finality' ('full stop type'), 'finality with emphasis' ('exclamation-type'), and 'question', though having a directly distinctive function, correspond, from another point of view, to contrastive features, as they too provide groupment.

Def. 19b. 'Distinctive para-syntactic features' for 'para-syntactic features that are in a direct relation of opposition with other para-syntactic features or with ∅'. [452]

[41] See "Introduction",

[42] See *Foundations*, ch. III, 3, 4 and *Sets*, ch. VII. Cf. also Bičan 2008.

[43] See "Introduction", pp. 16–7.

It is possible that the 'finality' (full stop type) could be regarded as ∅, but there seems little profit in doing this.

Def. 20. 'Para-tactic entities' for 'tactic entities or conglomerations of tactic entities, together with accompanying para-tactic features, such that the whole assumes an identity on a level different from the tactic level'.
Alternative definition: 'entity constituted by a base and para-tactic features'. [452]

Def. 20a. 'Base' for 'in a para-tactic entity, the total complex of those features that correspond (on another level) to tactic entities'. [452]

Def. 20b. 'Complex para-tactic entity' for 'self-contained entity constituted by two or more para-tactic entities, together with further accompanying para-tactic features'. [452]

Axiom C and related definitions deal with the para-cenotactic (in natural language: para-phonotactic) features and with the para-plerotactic (para-syntactic) features. To the former belong, in natural languages, such features as 'tone' (in so-called tone-languages), which is a distinctive para-phonotactic feature, and accent and juncture, which are contrastive para-phonotactic features. Para-plerotactic features, such as intonation in natural languages, are sentential features, i.e. they pertain to sentences and clauses (which are the sole two types of sentential entity), albeit that not all sentential features are para-plerotactic features. But, as the next axiom (Axiom D) states, para-plerotactic features are obligatory as far as sentences are concerned. Axioms B, C, and D together cover the whole of cenology (in natural language: phonology) and plerology (grammar), i.e. the whole of the systemology. One has to be careful to distinguish from the para-tactic (i.e. para-cenotactic and para-plerotactic) features such realizational features as I have called 'connotative stress', which is physically similar to realizations of 'accent', and 'connotative modulation', which is similar to realizations of 'intonation'. These affect 'connotation', not 'denotation', and could perhaps profitably be dealt with under the heading of 'pragmatics'. Without extending the theory by adding one or more axioms, together with definitions, this is outside our scope. It is doubtful whether the theory itself could be so extended without coming into conflict with the functional principle and its interpretations, but it would be worthwhile investigating this. For the time being, however, if we wish to indulge in matters of 'pragmatics' we should use or set up for it a separate and independent theory.

Because of physical similarities and physical simultaneity, even between the actual para-tactic features themselves, it is for this area of research clearer than ever that one cannot base one's description on matters of realization (the inductive approach). One might as well measure the weight or the commercial value of a load of books, and, solely on the basis of this, try to arrive at the weight or the price of every single book in the load. It is clear that only the inverse method may lead to exact results.

Axiom D. *All semiotic systems contain sentences, constituted by a base and para-syntactic features.*[44] [453]

Def. 21. 'Sentence' for 'plerological entity (by definition corresponding to a signum) with such features that it cannot be a feature (constituent, or other feature) of another plerological entity'.
Alternative definition: 'signum such that is a self-contained vehicle for conveying messages'.[45] [453]

Def. 21a. 'Clause' for 'immediate constituent (perhaps the only one) of a sentence'. [453]

A clause is therefore, by implication, also a para-syntactic entity, and as all para-syntactic entities are sentential entities, though not vice versa, a clause is a sentential entity.

Def. 21b. 'Sentential features or entities' for 'such features or entities as determine particular signa to be sentential entities'. [454]

These are not necessarily para-syntactic features, though the latter are necessarily sentential features.

Def. 21c. 'Sentential markers' for 'occurrence dependent sentential features or entities that are not para-syntactic features or entities, but correspond to syntactic features or entities'.[46] [454]

That is, such features or entities determine, just as para-syntactic features do, particular entities to be sentential entities. But there is no sentential entity without para-syntactic features. It is therefore the latter, rather than sentential markers, which are not compulsory, that are the actual features that make something to be sentential. I refrain from formally defining other types of sentential entity, as more research has to be done, and the adequacy of the ideas I have at present has to be tested over a wide range of languages. Note that neither the notions 'sentential feature' and 'para-syntactic feature', nor the notions 'sentential entity' and 'para-syntactic entity' are equivalent, but the notions 'sentential level' and 'para-syntactic level' are equivalent by mutual implication.

This concludes the systemology. It sets the sentential level apart from the rest of grammar, especially syntax. This separation is one of the more conspicuous features of axiomatic functionalism. It effectively removes the dilemma of well-formedness versus non-well-formedness in syntax and many another dilemma which tends to plague linguists of other persuasions.

[44] See *Foundations*, ch. VI. On sentential level see Gardner [1984] 1985. The axiom has been called *axiom of sentence-formation* (Hervey 1996).
[45] On sentences and sentence types see Gardner & Hervey 1983, and Hervey 1990.
[46] See *Foundations*, ch VI, 11.

Axiom E. *There may be a many-to-one relation between cenetic form and figura (allophony), and between cenological form and signum (allomorphy), and vice versa (homophony and homomorphy respectively).*[47] [454]

Def. 22. 'Image' for 'model for the unique form of a singular realization of a cenetic feature' (in natural language: speech-sound). [454–5]

Symbolized: i.

Def. 22a. 'Cenetic form (in natural language: phonetic form)' for 'class of impressionistically similar images'. [455]

Symbolized: f. Formal definition 'f = {i}', the braces indicating that it is a self-contained class (of i).

Def. 23. 'Cenological (phonological) form' (symbolized: p) for 'a particular self-contained class of one or more particular cenetic (phonetic) forms (i.e. {f}), each member f in its capacity of having a particular distinctive function d'.[48] [455]

Formal definition: $p^i = \{f^{i \cdots n} Rd^i\}$, where the superscripts i stands for any integer, and can be read as 'a particular' or 'a specific', and i … n indicates 'each one of a particular class'. As much of the following is in the first place relevant to natural language, I shall use further the appropriate terminology. It will be easy enough to translate this into more general semiotic terminology, or to coin new terms as required.

Def. 23a. 'Allophony' for 'one phonological form, the realization of which corresponding to two or more phonetic forms'. [455]

Formal definition: '$f^iRd^i \sim f^jRd^i$', where also j stands for an integer, signifying 'a particular', but $i \neq j$, and ~ can be read as 'compared with'.

Def. 23a1. 'Allophone' for 'one of the terms of 'allophony' as a comparison'. [455]

If there is no allophony a term of that kind is properly called a 'phone', i.e. 'f^iRd^i' is a 'phone', but often for this also the term 'allophone' is used.

Def. 24. 'Signum (symbolized: S)' for 'the conjunction of a particular expression and a particular content which mutually imply one another'.[49] [455]

Formal definitions: 'E & C' or $\{p^{i\cdots n}Rd^i\}$ & $\{d^i\check{R}p^{i\cdots n}\}$. As E implies C and vice versa, and either implies S and vice versa, any two of those are equivalent by mutual implication. It is therefore, in practice, admissible to use the formula for 'expression', i.e. $\{p^{i\cdots n}Rd^i\}$, instead of the more lengthy formula, for 'signum' itself. The same holds for when we are dealing with the notions 'allomorph' etc.

Def. 24a. 'Expression (symbolized: E)' for 'a particular self-contained class of one or more particular phonological forms (i.e. {p}) each member in its capacity of having a particular distinctive function d'. [455–6]

Formal definition $E^i = \{p^{i\cdots n}Rd^i\}$.

As p has already distinctive function incorporated, i.e. $p^i = \{f^{i\cdots n}Rd^i\}$, the distinctive function d in 'Expression' (or in 'Content', or in 'Signum') is by implication distinctive function at a further level, i.e. on the signum-level.[50]

---

[47] See *Foundations*, ch. IV, 2, Shimizu & Lamb 1985, cf. also *Theory*, ch. III. The axiom has been called *axiom of realization* (Hervey 1996).

[48] Alternative definition to Def. 2b1d.

[49] Alternative definition to Def. 2a1.

[50] See "Introduction", pp. 11–2.

Def. 24b. ‘Content (symbolized: C)’ for ‘a class of one particular distinctive function d being and in its capacity of being the particular distinctive function of each member of a particular self-contained class of phonological forms’. Alternative definition: ‘the converse of expression’. [456]
Formal definition: ‘$\{d^{i}Rp^{i\ldots n}\}$’.

Def. 24b1. ‘Allomorphy’ for ‘one signum, the realization of which corresponding to two or more phonological forms’. [456]
Formal definition: ‘$p^{i}Rd^{i} \sim p^{j}Rd^{i}$, $i \neq j$’.

Def. 24b1a. ‘Allomorph’ for ‘one of the terms of ‘allomorphy’ as a comparison’. [456]
If there is no allomorphy, a term of that kind is properly called a morph, i.e. ‘$p^{i}Rd^{i}$’ is a ‘morph’, but often for this also the term ‘allomorph’ is used instead.[51]

Def. 25. ‘Homophone’ for ‘allophone of one figura, the realization of which corresponding to that of an allophone of another figura’. [456]
Formal definition of ‘homophony’: ‘$f^{i}Rd^{i} \sim f^{i}Rd^{j}$, $i \neq j$’.

Def. 26. ‘Homomorph’ for ‘allomorph of one signum, the realization of which corresponding to that of an allomorph of another signum’. [456]
Formal definition of homomorphy: ‘$p^{i}Rd^{i} \sim p^{i}Rd^{j}$, $i \neq j$’.[52]

Def. 27. ‘Homonym’ for ‘total class of allomorphs of one signum, in comparison with, and the realizations of its members corresponding to, those of the total class of another signum’. [456]
Formal definition of homonymy: ‘$\{p^{i\ldots n}Rd^{i}\} \sim \{p^{i\ldots n}Rd^{j}\}$, $i \neq j$’.[53]

Def. 28. ‘Synonym’ for ‘signum, in comparison with and having the same intrinsic information-value (denotation) as another signum’.[54] [456]
Formal definition of synonymy: $\{p^{(i\ldots n)i}Rd^{i}\}RD^{i} \sim \{p^{(i\ldots n)j}Rd^{j}\}RD^{i}$, $i \neq j$, and where D stands for ‘denotation’.

Def. 29. ‘Utterance’ for ‘model for the unique form of a singular realization of a signum’.[55] [456–7]
Formal definition: ‘$(iRd^{i})Rd^{i}$’.

Axiom F. *Signa may be realized an unlimited number of times (in actual communication) each resulting utterance denoting a denotatum which may belong to potentially infinite denotation class.* [203][56]

Def. F1a. ‘Utterance’ for ‘member of a signum (as a class) such that it is a model for a single realization (in actual communication) of that signum’.[57] [203]

---

[51] For an alternative definition of morph see Def. F6.
[52] For an alternative definition of homomorphy see Def. F6a.
[53] For an alternative definition of homonymy to Def. F6b.
[54] Alternative definition to Def. F7b.
[55] Compare it with Defs. F1a and F1b. See “Introduction”, pp. 11–2.
[56] From now on the number in square brackets refer to *The Strategy*. Axiomatic Semantics is fully explained in Hervey’s *Axiomatic Semantics*. – On semantics in Axiomatic Functionalism see Hervey 1975, 1976, and Shimizu & Harries 1997, 2002. The axiom has been called *axiom of denotation* (Hervey 1996).
[57] Alternative definition to Def. F1b. See also Def. 29. On utterance, form and reference (see below) see *Axiomatic Semantics*, ch. II, and *Theory*, ch. IV.

This means that "utterance" is to be understood, not in the sense of a single communication-act as such, but as a construct or model accounting for and applying to a single communication-act. Furthermore, it is to be noted that this model applies only to communication-acts that are realizations of signa, i.e. realizations that convey information as determined by the conventions governing the appropriate signa. In actual fact only sentences are realized in communication, but since sentences may contain several signa, we may also say that each of these signa is, itself, 'separately' realized (within the sentence). Consequently, every signum, whether it is a sentence, or can correspond to, or be part of, a sentence-base (Def. 20a), can be said to be realized in actual communication. This gives us the right to account for individual realizations of any signum by setting up a unique model, i.e. "utterance", for each of these realizations. In this way we are entitled to regard every signum as a class of "utterances", each member of which class is a model for a single realization of the appropriate signum. The advantages of this view will become apparent when the link is made, via the notion "utterance", to the individual denotata referred to by utterances.

Def. F1b. 'Utterance' for 'conjunction of a unique form and a unique reference'.[58] [203]

Informally, we may say that the form of an utterance accounts for the necessary aspect of 'substance' without which a signum cannot be realized in actual communication. At the same time the form of an utterance is a 'token' of the expression (see Def. 24a) of the signum whose realization the given utterance is a model for. That is to say, a form is an intrinsic aspect of an utterance, in the same way that an expression is an intrinsic aspect of a signum. A reference accounts for the necessary information-bearing aspect without which no act could be construed as a communication act, let alone the realization of a signum. Form and reference are merely two equally relevant and equally important ways of looking at the same thing (i.e. utterance). Form and reference, as 'tokens' of expression and content respectively, may be conceived of as the converse of one another. This is analogous with the way expression and content, themselves, are each other's converse (see Def. 24). In intuitive terms this view of form and reference can be explained by pointing out that form accounts for *the fact that an utterance is not mere substance, but substance necessarily linked with information-content, whereas reference accounts for the fact that an utterance is not just an information-content, but an information-content necessarily linked to a substance*. In formulaic terms "utterance" can be expressed as i^x R s^x and s^x Ř i^x, where i stands for "image" and s for "distinctive function in grammar" (see Definitions 22 and 24a).[59]

Def. F1b1a 'Form' for 'image in its capacity of having the particular distinctive function appropriate to a particular signum'.[60] [204]

In formulaic terms i^x R s^x. Thus the form of an utterance accounts for the spatio-temporally unique nature of the realization for which the given utterance is a model, at the same time as incalculating the fact of that unique realization being

[58] Alternative definition to Def. F1a. See also Def. 29.

[59] On "distinctive function in grammar" see "Introduction", pp. 11–2.

[60] Alternative definition to Def. F1b1b.

the realization of a signum with a particular grammatically distinctive function.[61]

Def. F1b1b. 'Form' for 'member of an expression (as a class) such that it is a model for a single realization (in actual communication) of that expression'.[62] [204]

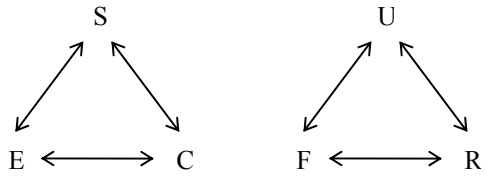
This means that we are entitled to conceive of an expression as a class of forms.

Def. F1b2a 'Reference' for 'grammatically distinctive function in its capacity of being the particular grammatically distinctive function of a particular image'.[63] [204]

In formulaic terms i^x Ř s^x. Since grammatically distinctive function is the property by virtue of which entities have an information-bearing potential in the first place (an entity can only be an index if it is, and by virtue of the fact that it is, opposed to at least one alternative index, or to its absence), we can say that reference looks upon the information-bearing aspect of utterances – though substance is, of course, necessarily implied.

Def. F1b2b. 'Reference' for 'member of a content (as a class) such that it is a model for a single realization (in actual communication) of that content'.[64] [204–5]

In formulaic terms i^x Ř s^x. We may say that looking at an utterance from the aspect of reference is looking at that aspect of the realization which links it to the actual piece of information conveyed by (i.e. the entity referred to by) that realization. As mentioned above, form and reference are the converse of one another, and, as such, mutually imply one another; their conjunction (i.e. utterance) is a one-to-one relation between a particular form and a particular reference. The analogy whereby an utterance is a 'token' (member) of a signum to the extent of reproducing its properties, as it were 'in miniature', can be represented in the diagram below (cf. Def. 24):



where U = utterance, F = form, R = reference, S = signum, E = expression and C = content and U ∈ S, F ∈ E, and R ∈ C. (The double-headed arrow stands for 'equivalence'.)

Def. F2. 'Class of equivalent utterances' for 'the set of all and only the utterances that are members of a given signum (as a class)'. [205]

A signum can now be treated either simply as an entity (in opposition to other entities), or as a class of allomorphs (see Def. 24), or *as a class of equivalent utterances*.

Def. F2a. 'Class of equivalent forms' for 'the set of all and only the forms that are members of a given expression'. [205]

That is to say, we may conceive of an expression as a class of equivalent forms.

[61] See the editorial commentary for the previous definition. Cf. also Dickins 1998: 50.
[62] Alternative definition to Def. F1b1a.
[63] Alternative definition to Def. F1b2b.
[64] Alternative definition to Def. F1b2a.

Def. F2b. 'Class of equivalent references' for 'the set of all and only the references that are members of a given content'. [205]

That is to say, we may conceive of a content as a class of equivalent references.

Def. F3a. 'Form class' for 'the set of all and only the utterances whose forms have *phonologically* equivalent images'. [205]

In formulaic terms $\{i\}^p$ R $\{s\}^x$, where $\{i\}^p$ is the set of images corresponding to a particular phonological form p, that is to say, of images having one and the same phonologically distinctive function d_p, and $\{s\}^x$ is a class of distinctive functions in grammar (cf. Mulder's Def. 24a). Alternatively, the notion "form class" can be expressed by the formula $(\{i\}\ R\ d_p)\ R\ (\{s\}^x)$. In informal terms, a form class is constituted by the whole1 set of utterances whose images correspond to the same phonological form – i.e. it is a class of utterances that are 'formally similar' with regard to phonological features. For instance, every utterance which has the phonological form /her/ (in English) belongs to the form class {"/her/"} – regardless of whether it accounts for a realization of the sign "hare" or of the sign "hair" (i.e. regardless of differences in grammatically distinctive function).

Def. F3b. 'Reference class' for 'the set of all and only the utterances whose respective references relate to the same denotatum'. [206]

Utterances denoting the (qua entity) same denotatum belong, regardless of their formal properties, to the same reference class.

Def. F3c. 'Form-reference class' for 'the set of all and only the utterances with phonologically equivalent images and with the same denotatum', i.e. 'the intersection of a given form class and a given reference class'. [206]

Def. F4. 'Denotatum' for 'denotable denoted by utterances'.[65] [206]

The entity which constitutes the actual piece of information to which an utterance refers is the denotatum of that utterance. Such entities may be objects, qualities, processes, relations, or complex circumstances. They may, furthermore, be 'real' entities, 'candidates for reality', or purely abstract or fictional.[66]

Def. F4a. 'Denote' for 'refer to by virtue of specific conventions'. [206]

Def. F4b. 'Denotable' for 'actually or potentially ostensible entity capable of being expressed by the realization of at least one index'. [206]

By "potentially ostensible entity" is meant an entity which, although its existence has not been instanced in a concrete sense (e.g. a fictional entity), would be ostensible in certain specifiable ways. For instance, an entity *unicorn*, would, if it 'existed', be ostensible via direct evidence of sight.

Def. F4b1. 'Ostensible' for 'distinct from at least one other entity, or from its own absence'. [206]

It will be noted that 'ostension' is interpreted here in terms of the functional principle, whereby any 'positive' term acquires its identity 'negatively', through opposition to other terms.

Def. F5. 'Denotation' for 'correspondence with a particular denotation class' (cf. Def. 28).[67] [206]

---

[65] See *Axiomatic Semantics*, ch. IV.

[66] In *The Strategy* Hervey refers here to Harré 1970a, 1970b and Hervey 1979.

[67] Alternative definition to Def. 2a2a. See Hervey 1980 and *Theory*, ch. V.

Def. F5a. ‘Denotation class’ for ‘the set of all and only the denotata denoted by respective members of one and the same class of equivalent utterances (signum)’.[68] [206]

Def. F5b. ‘Denotation class’ for ‘the set of all and only the denotata denoted by respective utterances belonging to the same signum’.[69] [206]

A denotation class may be an open set, which is not to say that such a set is not circumscribed. Conventions are, by definition, operative in setting a limit to the potential membership of any given denotation class, in the sense that certain entities may, and others definitely may not, belong to that class. Semantic description has as its task the determination and description of these conventional limitations such as they are, i.e. the faithful representation (as far as possible) of the conventionally governed denotation classes of signa.

Def. F6. ‘Morph’ for ‘the set of all and only the utterances belonging to the intersection of a particular form class and a particular class of equivalent utterances (signum)’.[70] [206–7]

In case a given class of equivalent utterances intersects with two or more form classes, each of the resulting (phonologically variant) morphs is an allomorph with respect to the signum in question.

Def. F6a. ‘Homomorphy’ for ‘the intersecting of a given form class with two or more classes of equivalent utterances (signa)’.[71] [207]

In the event of two or more signa having (as classes) members in common with a particular form class, the morphs constituted by the respective intersections of these signa with the given form class are homomorphs with respect to one another.

Def. F6b. ‘Homonymy’ for ‘the intersecting of two or more distinct classes of equivalent utterances (signa) with one and the same set of form classes’.[72] [207]

This means that every (allo)morph (possibly only one) of a given signum has, by requirement, a homomorph among the (allo)morphs (possibly only one) of any homonym of that signum, and vice versa.

Def. F7a1. ‘Hyperonym’ for ‘signum whose denotation class *properly includes* the denotation class of another signum’. [207]

In a case like the relation between the denotation classes of “flower” and “rose”, the former properly includes the latter. Thus “flower” can be said to be a hyperonym of “rose”.

Def. F7a2. ‘Hyponym’ for ‘signum whose denotation class is properly included in the denotation class of another signum’. [207]

In the example cited above, “rose” is a hyponym of “flower”.

Def. F7a1a. ‘Direct hyperonym’ for ‘signum whose denotation class properly includes that of a given signum without properly including the denotation class of any hyperonym of the given signum’; i.e. ‘hyperonym (of signum *x*) that is not a hyperonym of a hyperonym of signum *x*’. [207]

---

[68] Alternative definition to Def. F5b.

[69] Alternative definition to Def. F5a. On denotation classes see *Axiomatic Semantics*, ch. III.

[70] Compare it with Def. 24b1a.

[71] See Def. 26 for an alternative definition. See *Axiomatic Semantics*, ch. IX.

[72] See Def. 27 for an alternative definition. See *Axiomatic Semantics*, ch. IX.

This means, in fact, that, although in a given system a signum may have hierarchies of hyperonyms of increasing 'generality' (each with a denotation class properly including that of the one below it in the hierarchy, e.g. "horse", "equine", "mammal", "vertebrate", "animal", etc., only the 'lowest' hyperonym in the hierarchy is a direct hyperonym of a given signum (e.g. in the above example only "equine" is a direct hyperonym of "horse"). A given signum may have several independent hierarchies of hyperonyms, with a direct hyperonym at the 'base' of each of these hierarchies – that is to say, a signum may have several direct hyperonyms.

Def. F7a2a. 'Direct hyponym' for 'signum whose denotation class is properly included in that of a given signum without being properly included in the denotation class of any hyponym of the given signum'; i.e. 'hyponym (of a signum *x*) that is not a hyponym of a hyponym of signum *x*'. [207]

While a signum may have several hierarchies of hyponyms of increasing 'specificity' (each with a denotation class property including that of the next one below it in the hierarchy) only the 'highest' member of that hierarchy is a direct hyponym. For instance, given the signum "equine", its hyponyms "horse", "male horse", "colt" etc., form a hierarchy of increasing 'specificity'. Only the 'highest' of these, namely "horse", is a direct hyponym of "equine".

Def. F7a1b. 'Semantic feature' for 'the possession, by a given signum, of a particular direct hyperonym'.[73] [208]

Semantic features may be symbolized by placing the direct hyperonym in question – which is a signum in its own right – between asterisks (e.g. *equine* as a semantic feature of "horse", by virtue of the fact that "equine" is a direct hyperonym of "horse"). An adequate and economical way of characterizing the denotation class (i.e. the semantic purport) of a signum – *within, and relative to, a given system of signa* – is by specifying its direct hyperonyms (which by implication specify its total set of hyperonyms) in such a way that the set of direct hyperonyms is unique to the signum in question (and to its synonyms, if any). The set of semantic features *woman*, *unmarried person* describes the semantic purport of "spinster" by specifying its denotation class in an unambiguous way.

Def. F7b. 'Synonym' for 'signum whose denotation class totally overlaps with (is identical to) the denotation class of another signum'.[74] [208]

Such pairs of signa as "viper" and "adder" – whose respective denotation classes cannot, to my knowledge, be shown to be non-identical (i.e. any member of the one class is a member of the other, and vice versa) – are synonyms. It should be noted that synonymy does not preclude differences of – not wholly conventionally governed – meaning between realizations of these signa in actual communication. Such differences may be accounted for on other, non-denotational, levels of meaning (in terms of connotative or associative meaning), but do not affect the semantic properties of signa as such, these properties being, by definition, fully conventional properties of meaning.

[73] See *Axiomatic Semantics*, ch. V.

[74] Alternative definition to Def. 28. On synonymy see *Axiomatic Semantics*, ch. X.

Def. F7c. ‘Paronym’ for ‘one of two or more signa whose denotation classes do not include one another, but are properly included in the denotation class of a given signum’. [208]

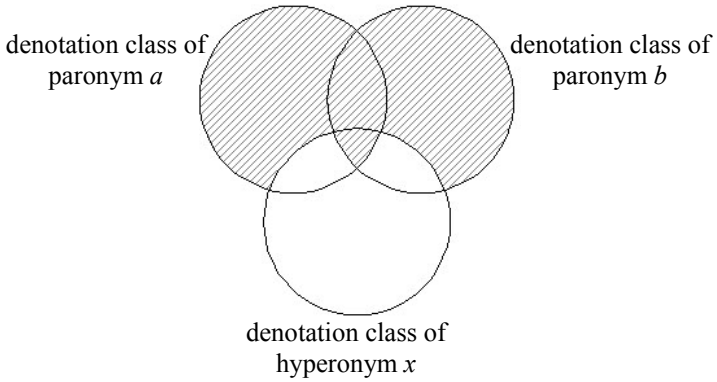
The signum “flower” has a denotation class that properly includes that of both “rose” and “tulip”. Thus the latter two, whose denotation classes do not include one another (in fact they do not intersect at all) are paronyms of each other with regard to their common hyperonym “flower”. Partial overlap may hold between the denotation classes of paronyms, as in the case, for instance, of “red” and “orange”.

Def. F7c1. ‘Paronymy set’ for ‘set of two or more paronyms the sum of whose denotation classes exhausts the denotation class of their common hyperonym’. [208]

For example, the signs “stallion”, “mare”, “filly” and “colt” – the sum of whose denotation classes exhausts that of their common hyperonym “horse” – constitute a *paronymy set*.

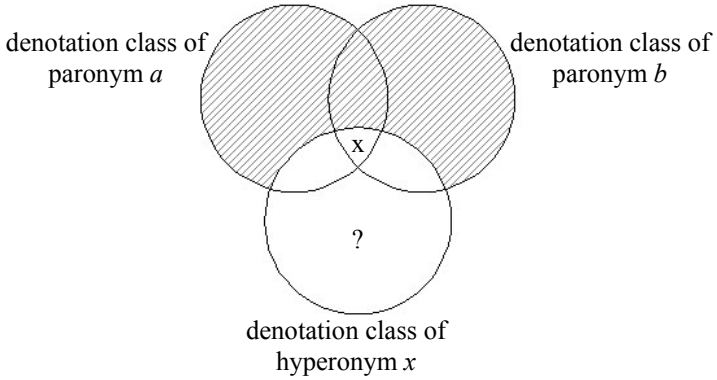
Def. F7c2. ‘Exclusive paronyms’ for ‘paronyms with non-intersecting denotation classes’. [209]

In the above example, the signs “stallion”, “mare”, “filly” and “colt” are all *exclusive* paronyms, since there is no overlap between any two of their respective denotation classes. *Exclusive paronymy* is diagrammatically represented as:



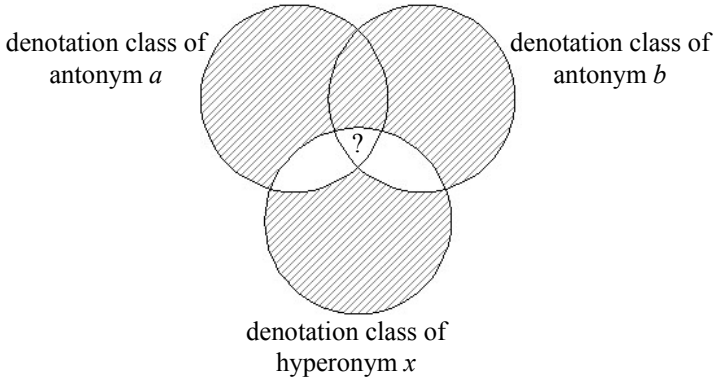
Def. F7c3. ‘Overlapping paronyms’ for ‘paronyms with overlapping denotation classes’. [209]

The colour terms “red” and “orange” illustrate the case of overlapping paronymy – while certain hues belong only to the denotation class of “red” and certain other hues only to the denotation class of “orange”, there are also certain intermediate hues that belong to an overlapping area. *Overlapping paronymy* is diagrammatically represented as:



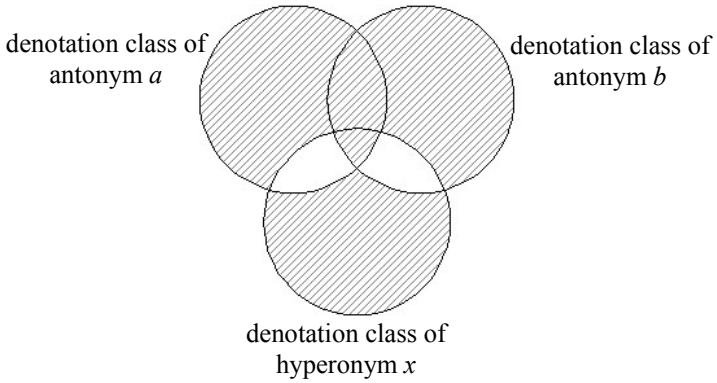
Def. F7c1a. ‘Antotym’ for ‘member of a set of paronyms containing only two terms’. [209]

The bipolar semantic contrast displayed by antonyms is the result of the fact that all the denotata belonging to a certain “field” (i.e. the denotation class of their common hyperonym) are members of either one or the other (or possibly both) of the denotation classes of the antonyms in question. *Antonymy* is diagrammatically represented as:



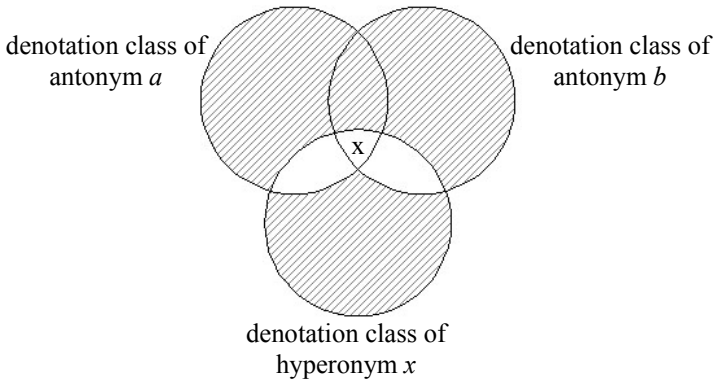
Def. F7c2a. ‘Exclusive antonyms’ for ‘antonyms with non-intersecting denotation classes’. [210]

The signs “bachelor” and “spinster” are exclusive antonyms with regard to their common hyperonym “unmarried adult human”. *Exclusive antonymy* is diagrammatically represented as:

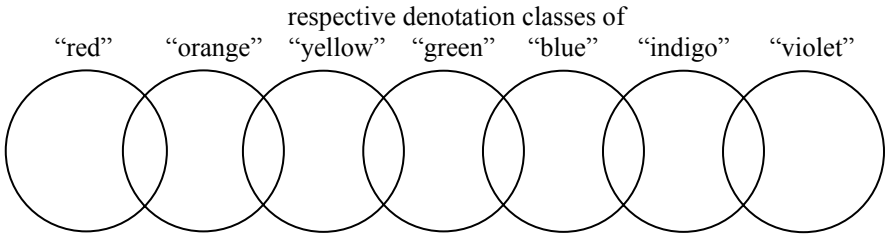


Def. 7c2b. ‘Overlapping antonyms’ for ‘antonyms with overlapping denotation classes’. [210]

The signs “woman” and “girl” display a bipolar semantic contrast within the field of their common hyperonym “human female”; however, as well as there being human females that are positively assignable only to the denotation class of “woman”, and human females assignable only to the denotation class of “girl”, there are also cases where both appellations are equally applicable (i.e. there is an area of overlap between the respective denotation classes). *Overlapping antonymy* is diagrammatically represented as:



Def. F7c1b. 'Paronymy series' for 'paronymy set with three or more members'. [211]
Sets of colour terms in various languages give a paradigm example of paronymy series. Because of the nature of the overlaps between denotation classes of the signs involved, the set "red", "orange", "yellow", "green", "blue", "indigo" and "violet" can be represented as:



References[75]

BIČAN, Aleš. 2008. "Accent and diaereme in Czech". *La Linguistique* 44:2.45–66.
—. 2009. "Mulder and Hervey's Postulates for Axiomatic Functionalism: An introduction to the new edition". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/bican/bic-004.pdf>.
DICKINS, James. 2009. "Extended Axiomatic Functionalism: Postulates". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/dickins/dic-001.pdf>.
HARRÉ, Rom. 1970a. *The Principles of Scientific Thinking*. London: Macmillan.
—. 1970b. "Powers". *The British Journal for the Philosophy of Science* 21.81–101.
HERVEY, Sándor G. J.. 1975. "Grammar and semantics in axiomatic functionalist linguistics". *Lingua* 36.47–67.
—. 1976. "Semantics in axiomatic functionalist linguistics". *Actes du 2e Colloque International de Linguistique Fonctionnelle* (Clermont-Ferrand, 22–25 July 1975), 145–52.
—. 1979. *Axiomatic Semantics – A Theory of Linguistic Semantics*. Edinburgh: Scottish Academic Press.
—. 1980a. "Les postulats de la sémantique fonctionnelle axiomatique". *La Linguistique* 16:1.119–44
—. 1980b. "Denotation and non-denotation". Mulder & Hervey 1980: 212–35.
—. 1990. "Sentences and linguistic data". *La Linguistique* 26:1.17–27.

[75] The references have been added by the editor. They list publications referred to in the footnotes.

—. 1996. "Functionalism, Axiomatic". *Concise Encyclopedia of Syntactic Theories* (eds. Keith Brown & Jim Miller), 110–3. Cambridge: Pergamon (Cambridge University Press).

HESELWOOD, Barry. 2008a. "A methodological argument against Mulder's parallel vs diverse determination distinction". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/heselwood/hes-002.pdf>. (Previously published in *La Linguistique* 31:1.35–44.)

—. 2008b. "Parallel and diverse determination revisited, A reply to Rastall". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/heselwood/hes-003.pdf >.

GARDNER, Sheena. 1985. *Parasyntax and the Sentential Level in Axiomatic Functionalism*. University of St. Andrews. Unpublished doctoral thesis submitted in 1984, available online via the EThOS service: <http://ethos.bl.uk>.

GARDNER, Sheena F. & Sándor G. J. HERVEY. 1983. "Structural sentence types". *La Linguistique* 19:2.3–19.

MULDER, Jan W. F.. 1968. *Sets and Relations in Phonology: An axiomatic approach to the description of speech*. Oxford: Clarendon Press.

—. 1971. "Linguistic sign, word, and grammateme". *La Linguistique* 7.93–101.

— 1976. "Syntax in axiomatic functionalist linguistics". *Actes du 2e Colloque international de Linguistique Fonctionnelle* (Clermont-Ferrand, 22–25 July 1975), 109–15. (Reprinted in Mulder & Hervey 1980: 145–51.)

—. 1977. "Les postulats de la linguistique fonctionnelle axiomatique". *La Linguistique* 13:1.15–46.

—. 1978. "Phoneme tables and the functional principle". *La Linguistique* 14:1.3–27. (Reprinted in Mulder & Hervey 1980: 104–21).

—. 1987. "Effective methodology and effective phonological description". *La Linguistique* 23:2.19–42.

—. 1989. *Foundations of Axiomatic Linguistics* (Trends in Linguistics: Studies and Monographs 40). Berlin – New York: Mouton de Gruyter.

MULDER, Jan W. F. & Sándor G. J. HERVEY. 1971. "Index and signum". *Semiotica* IV:4.324–38. (Reprinted in Mulder & Hervey 1980: 176–87.)

—. 1972. *Theory of the linguistic sign*. The Hague: Mouton.

—. 1975. "Language as a system of systems". *La Linguistique* 11.3–22. (Reprinted in Mulder & Hervey 1980: 73–87.)

—. 1980. *The Strategy of Linguistics*. Edinburgh: Scottish Academic Press.

RASTALL, Paul. Introduction to Mulder 1977. *La Linguistique* 13:1.15–23.

—. 1980. Introduction to Hervey 1980a. *La Linguistique* 16:1.15–46.

—. 1999. "Towards a logic of grammatical relations". *La Linguistique* 35:2.79–96.

—. 2008. "Mulder's parallel and diverse determination distinction, A Reply to Heselwood". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/rastall/ras-002.pdf>. (Previously published in *La Linguistique* 33:1.127–9.)

SHIMIZU, Shūyū & Michael A. L. LAMB. 1985. "Axiomatic functionalism: Mulder's theory of the linguistic sign". *Language, Culture and Communication* 1.101-22. Yokahama: Keio University.

SHIMIZU, Shūyū & Phillip T. HARRIES. 1997. "Axiomatic Functionalism: The Basic Notions of Hervey's Theory of Linguistic Semantics (I)". *Bulletin of Toyohashi Sozo College* 1.103–13. (Available online: <http://www2.sozo.ac.jp/pdf/kiyou1997/shuyu.pdf>.)

—. 2002. "Axiomatic Functionalism: The Basic Notions of Hervey's Theory of Linguistic Semantics (II)". *Bulletin of Toyohashi Sozo College* 5.1–10. (Available online: <http://www2.sozo.ac.jp/pdf/kiyou2002/syuyu.pdf>.)

Linguistica ONLINE. Published: July 10, 2009
http://www.phil.muni.cz/linguistica/art/dickins/dic-001.pdf
ISSN 1801-5336

EXTENDED AXIOMATIC FUNCTIONALISM: POSTULATES[*]

James Dickins (University of Salford, UK)

Abstract. These postulates, comprising six axioms plus ensuing definitions, provide a formal account of the semiotic (including linguistic) theory of extended axiomatic functionalism. They are organised to be maximally comparable with Mulder and Hervey's postulates for standard axiomatic functionalism. The axioms are the primitive statements of the theory, introducing new theoretical propositions. The definitions introduce technical terms by linking them to notions in the theory.

Axiom A and ensuing definitions detail the functional principle, dominating both components of the theory: the system ontology and the signum ontology. The system ontology deals with the abstract semiotic entities in cenology (linguistics, phonology), logology (linguistics, lexology), and delology (denotational semantics). The signum ontology provides a set-theoretically based account of the relationship between system-ontological entities and semiotic occurrences (utterances). Axiom B and ensuing definitions treat almost all aspects of the system ontology, except para-ontotactics, Axiom C and ensuing definitions treat para-ontotactics, and Axiom D and ensuing definitions detail the notion 'sentence' (the maximal unit covered by the theory). Axiom E and ensuing definitions principally treat the allontic level, while Axiom F and ensuing definitions treat remaining aspects of the signum ontology.

Figure 1 *Extended axiomatic functionalism: semiotics* and Figure 2 *Extended axiomatic functionalism: linguistics* (at the end of the postulates) represent visually the main entities and notions of the theory.

The scope of extended axiomatic functionalism compared to that of standard axiomatic functionalism

Extended axiomatic functionalism has its origins in early 1980s, when Michael Lamb became increasingly dissatisfied with aspects of the linguistic descriptions engendered by the standard version of axiomatic functionalism (henceforth standard axiomatic functionalism) developed by Mulder and Hervey since the 1960s (e.g. Mulder 1968; Mulder and Hervey 1972; Hervey 1979; Mulder and Hervey 1980; also Mulder 1989).

Lamb's initial concerns focused around Mulder and Hervey's rejection of free allomorphy, i.e. phonological variance which is not conditioned by phonological or grammatical context. At its simplest free allomorphy is a case in which a single word can be pronounced in two or more phonologically distinct ways. An example is English /aiðr/ (rhym-

[*] Previously unpublished. An earlier version can be found in James Dickins's book *Extended Axiomatic Linguistics* (1998). [Editor's note]

ing with ‘blither’) and /iRðr/ (rhyming with ‘breather’) as phonologically distinct pronunciations of the word ‘either’. On the basis that relatively dissimilar forms having identical denotations should be regarded as synonyms, i.e. different signa, Mulder and Hervey (1972: 29–30) argue that similar forms having identical denotations should be also regarded as synonyms, i.e. different signa (for the distinction between sign and signum, see Mulder 1989, 437, Def. 2a2; Dickins, below, Def. 2a2). Thus, for Mulder and Hervey not only are /felOu/ and /blOuk/ different but synonymous signa, so are /aiðr/ and /iRðr/. In justification of this position, they say:

> As just an example of what difficulties we would let ourselves in for if we used formal SIMILARITY (e.g. /aiðr/~/iRðr/) rather than formal IDENTITY as a criterion to distinguish between SYNONYMS and other types of free variants, we should like to say the following. If we cannot give a precise criterion for what is still similar and what is not, the whole procedure would remain an arbitrary one, and nothing would prevent us from regarding *fellow* and *bloke* as just free variants, but identical signs [signa], as they have the phonological feature /lOu/ in common (Mulder and Hervey 1972: 30–31).

In response to this, Lamb argues:

> Hypothesize i:ðə/aiðə [/aiðr/~/iRðr/] are one sign [signum]. Similarity of expression makes this a reasonable hypothesis. Hypothesis unrefuted, so these are free allomorphs. Even gross variance like *parallelepiped* and *veterinary* can be handled in this way [according to Webster’s New International Dictionary *parallelepiped* can be pronounced as [pærəlɛlɛpaɪpɛd], [pærəlɛlɛpɪpɛd], [pærəlɛlɛpəpɛd], and [pærələlɛpəpɛd]; *veterinary* similarly has a large number of alternative pronunciations].
>
> Mulder and Hervey’s counter-example is not analogous: to hypothesize *fellow*/*bloke* are one sign [signum] is procedurally bizarre in the first place given the lack of similarity of expression (intuition alone is good enough for this) [Actually, this is shorthand. Logically, the onus is always on demonstrating distinctive function – a minimum of two distinctive functions in the first place, to have a semiotic system at all, and then all additional distinctive functions as they prove necessary. In a lexicon one has as it were in pre-history hypothesized two signs [signa] with allomorphs from A–M and N–Z and proceeded from there. E.g. “cool” and “cold” might invite the hypothesis that they are one sign [signum], but this is refuted by “It’s cool, but not cold” – *Footnote in original*.] ... in any case the hypothesis [that fellow and bloke are one signum] would be refuted the moment someone said “I’m not a bloke. I may be a fellow, but I’m not a bloke”, which seems likely enough. So obviously one hypothesizes different grammatically distinctive function. The fact that the denotata can be the same is a matter of semantic realisation. They are parallel to homophones which have different phonological distinctive function but are impressionistically similar in terms of phonetic realisation. [Obviously real-life denotational circumstances are as crude with relation to contents as real-life phonetic noises are with relation to expressions – *Footnote in original*.]
>
> To hypothesize /aiðr/~/iRðr/ are different signs [signa] is invalid, however, as it is irrefutable. Different distinctive function will never be attested but, if intuition is disregarded, it is always possible to argue that some day it might be. Disproving the existence of the extra sign [signum] would be as impossible as disproving the existence of unicorns. However, to hypothesize the existence of even one unnecessary sign [signum] is disallowed by the canon of simplicity and the claim of synonymy for such cases is reduced ad absurdum by gross variance like that of *parallelipiped* and *veterinary* (Lamb [1983] 2009: 3).

Mulder and Hervey's prohibition of free allomorphy is not theorematic. There is nothing in the postulates of standard axiomatic functionalism which rules out free allomorphy in theory. Rather, Mulder and Hervey argue that if free allomorphy were allowed in practice, there would be no coherent means of controlling its application (a view contested by Lamb, as seen). However, standard axiomatic functionalism not only rules out such allomorphy ('polymorphy') – i.e. formal variance (of a specific kind) of a signum. It also rules out polysemy (allosemy) – i.e. semantic variance (of a specific kind) of a signum. This it does in an explicitly theoretical manner (as can be theorematically deduced from the postulates in Mulder 1989: 435–457; Mulder and Hervey 1980; 203–211: see, especially Def. 2a1, Def. 24, Def. 5, Def. 5a, Def. 6). Thus, for Mulder and Hervey, 'hand' in the sense 'prehensile part of the body' is a different signum from 'hand' in the sense 'pointer on a dial, indicator, or gauge, which is a different signum from 'hand' in the sense 'labourer or manual worker', and a fortiori a different signum from 'hand' in one of its verbal senses, e.g. 'transmit or offer by the hand', or 'hand' as part of a compound word such as 'hand-out' = 'clothing, food, money, etc. given to a needy person', or in a phrasal verb such as 'hand in' = 'submit', or in an idiom such as 'hand in glove' = 'in close association'. By the early 1980s, Lamb had come to the view that Mulder and Hervey's insistence on analysing all cases of the type 'hand' as different signa, rather than as polysemy (of various types) of a single signum was so contrary to common sense that it undermined the acceptability of the theory of standard axiomatic functionalism.

In *Extended axiomatic linguistics* (Dickins 1998: 351–417), I explored arguments in favour of polysemy in more detail, as well as providing a preliminary set of postulates for extended axiomatic functionalism which explicitly incorporated polysemy into the theory. The major arguments which I put forward in favour of polysemy in that book were:

1. As argued by Lamb (above), Mulder and Hervey's rejection of polysemy as a theoretical notion runs counter to common sense, and produces linguistic descriptions which are intuitively inadequate.
2. Our 'everyday metalanguage' (Lyons 1991: 32) – that is, the way we talk and write about language in a non-technical context – presupposes polysemy, as can be seen from a phrase such as 'funny in both senses', i.e. both amusing and odd. In order to describe such language uses involving everyday metalanguage, we need a theoretical-type apparatus which incorporates the notion of polysemy. We could either introduce this apparatus as an adjunct to our linguistic theory – as would have to be done in the case of standard axiomatic functionalism. Or we can fully incorporate it into our linguistic theory, as is done in extended axiomatic functionalism. All other things being equal, the strategy of full incorporation is preferable because it eliminates the ad-hoc element inherent in employing notions adjunct to the theory proper.
3. Like aspects of everyday metalanguage, figurative language – and most obviously metaphor – implies polysemy. This is obvious in the case of a dead metaphor (cf. Dickins 1998: 258), what I have elsewhere (Dickins 2005) termed a lexicalised metaphor, such as 'foot' as in 'foot of a mountain'. Common sense tells us that 'foot' here is the same word as 'foot' = 'the part of the vertebrate leg below the ankle joint'. The recognition that 'foot' as in 'foot of a mountain' is

> metaphorical also implies a relationship between the two meanings, such that 'foot' in 'foot of a mountain' is a non-basic sense, while 'foot' = 'the part of the vertebrate leg below the ankle joint' is the basic sense of the word. The same relationships hold also for original, non-lexicalised metaphors (Dickins 2005; termed 'live metaphors' in Dickins 1998: 260, 286), such as 'tree' as in 'Tom is a tree', for example. Here, we may not know how 'tree' is to be precisely interpreted. Are we claiming that Tom is a tree because much of his personality remains hidden, just as the extensive root system of a large tree remains hidden beneath the ground? Or, in another context, might we be claiming that Tom is a tree because he provides moral or psychological protection? (E.g. 'Tom is a tree whose leaves protect us all.') Regardless of the metaphorical interpretation of 'tree', the word here seems to involve a kind of polysemy: the metaphorical sense implies the basic non-metaphorical sense, and the existence of the two senses for the single word implies polysemy.

Mulder makes the telling point that in a well-organised theory:

> … there is usually one all-pervading principle that characterises the whole approach. All the other principles are subordinate to it, or, at least, they are interpreted in terms of it. For Functionalists this all-pervading principle, i.e. their primary point of view, is embodied in A. Martinet's dictum: "Function is the criterion of linguistic reality" (Mulder and Hervey 1980: 10).

In Dickins (1998), I argue that the manner in which additional notions, such as polysemy, are incorporated into extended axiomatic functionalism yields a theory in which the functional principle is applied in a more thorough-going manner than in standard axiomatic functionalism, such that the notion of distinctive function is generalised to provide analyses not only of phonology and grammar (as in standard axiomatic functionalism), but also of denotational semantics (more precisely termed *delology* in extended axiomatic functionalism). The resulting theory exhibits complete symmetry between the expression-side and content-sides of the signum (Dickins 1998: 249), and is thus significantly simpler than standard axiomatic functionalism, which is asymmetrical (Dickins 1998: 176). In addition, I argue that any standard axiomatic-functionalist description can be unambiguously recovered from an extended axiomatic-functionalist description; an extended axiomatic-functionalist description cannot, conversely however, be recovered at all from a standard axiomatic-functionalist description (Dickins 1998: 250–251). Extended axiomatic functionalism in this sense subsumes standard axiomatic functionalism. The greater scope, integration, symmetricality and inclusiveness of extended axiomatic functionalism are all features which I believe make it a superior theory to standard axiomatic functionalism.

The separate application of distinctive function to phonology, grammar and denotational semantics (delology) in extended axiomatic functionalism yields three distinct, but interlocking, areas of analysis (description). As in standard axiomatic functionalism, cenology (in linguistics, phonology) is the analysis of semiotic entities which have form but not content (i.e. they are 'empty' of all semantic considerations). Denotational semantics (delology) is the analysis of semiotic entities which have content but no form (i.e. they are entities of a purely semantic nature). Grammar – what is more precisely termed *logology*, and

with respect to linguistics *lexology*, in extended axiomatic functionalism – is the analysis of semiotic entities which have both form and content – i.e. their physical and their meaningful realisations are both relevant to their identity.

Phonology in extended axiomatic functionalism is virtually the same as in standard axiomatic functionalism. Delology is similar to the plerology (grammar) of standard axiomatic functionalism, stripped of the association which plerological entities have with formal considerations. Extended axiomatic-functionalist lexology, however, opens up new vistas for linguistic analysis, allowing for the incorporation of features such as non-denotative (connotative) word-sequencing (word order) into an axiomatic-functionalist approach.

Extended axiomatic-functionalist lexological analyses are still at a very early stage. Within lexology, I have done some work on the morphology (more technically known as *lexematics*) of Sudanese Arabic (Dickins 2006; Dickins *forthcoming*). The results are much more compatible with traditional Arabic morphological notions than are descriptions of Arabic produced using standard axiomatic functionalism.

Lexotactics (comparable to the traditional notion of syntax), and para-lexotactics (further grammatical organisation beyond the level of lexotactics/'syntax') present more challenging problems. The following are some preliminary ideas for English. Consider 'he jumped the gun' in various senses: 1. 'he jumped over the tubed weapon; 2. 'he acted prematurely'; and 3. 'he jumped over the gunman' ('gun' = 'gunman', as in 'he's a hired gun'). Under an extended axiomatic-functionalist analysis, these are all the same lexotactically (the same morphemes in the same combinations with the same 'subject-verb-object' lexotactic structure). The fact that 'jump the gun' in the sense 'act prematurely', for instance, is an idiom is irrelevant here (for a semantic analysis of idioms in terms of what I have called allosemic amalgamation, see Dickins 1998: 241–244).

More interesting is a form like 'The gun he jumped' (as in, for example, 'The gun he jumped, but the cannon was too big, so he had to go round it'). I believe that this should be regarded as lexotactically the same as 'He jumped the gun', albeit that 'He jumped the gun' can mean 1. 'he jumped over the tubed weapon'; 2. 'he acted prematurely'; and 3. 'he jumped over the gunman', while 'The gun he jumped' can only mean, out of the senses given above 1. 'he jumped over the tubed weapon'; and 3. 'he jumped over the gunman' (it cannot have the idiomatic sense 2. 'he acted prematurely'). If this proposal is reasonable, the analytical domain of lexotactics would correspond closely to that of traditional syntax – covering areas of traditional syntactic concern such as the analysis of subject, verb and object for English.

Para-lexotactics by definition deals with the organisation of grammatical entities beyond the lexotactic, and will certainly include intonation within its domain. It appears, however, that para-lexotactics also includes word order patterns which are functional, and which go beyond the analytical notions covered by lexotactics. Thus, 'He jumped the gun' and 'The gun he jumped' are, as argued, the same lexotactically. There is a grammatical difference between them: this, however, is para-lexotactic, rather than lexotactic.

That this kind of word order difference should be part of grammar seems clear in an extended axiomatic-functionalist approach. Signa (i.e. grammatical entities) have both a formal and a semantic aspect. The word order difference between 'He jumped the gun' and 'The gun he jumped' clearly involves a formal difference: in the first case 'the gun' is real-

ised as the end of the sentence, and in the second at the beginning. This word order difference also involves semantic difference: one obvious semantic difference is that in 'He jumped the gun', 'jump […] the gun' can be interpreted idiomatically, but in 'The gun he jumped' it cannot. Of more generalisable semantic importance however, is that the fact that in 'The gun he jumped', 'The gun' is an emphatic, contextually known, element. In functional-sentence perspective terms, 'The gun' might be described as an emphatic theme. While there is apparently no denotative meaning difference between 'He jumped the gun' and 'The gun he jumped' (at least if we ignore the idiomatic sense of the former), there is a connotative meaning difference. Mulder (e.g. 1989: 80, 148, 164, 195–196) specifically excludes connotative meaning, of which functional sentence perspective features are an aspect, from the scope of standard axiomatic functionalism. Inasmuch as these features belong to the system of conventions for communication, extended axiomatic functionalism, by contrast, recognises them as semiotic (cf. Def. 1c in both standard and extended axiomatic functionalism, 'Semiotic system' for 'system of conventions for communication', Mulder 1989: 436; also below).

The account which I have sketched out above of the distinction between aspects of lexotactics and para-lexotactics in English is somewhat hazy, and draws on traditional distinctions in English between subject, verb and object to identify a dividing line between lexotactics and para-lexotactics. This is properly speaking unsatisfactory. Functionalist linguistics (in the sense in which the term 'functionalist' is used in axiomatic functionalism) attempts to provide ex nihilo linguistic descriptions: its goal is not to explicate or develop more traditional accounts of languages.

There may, however, be a more coherent basis to the way in which lexotactics and para-lexotactics have been distinguished above in relation to English clausal grammar. There is a certain correlation (albeit imperfect) in the account which I have given between denotative meaning : lexotactics and connotative meaning : para-lexotactics. There is no theoretical bar to lexotactics conveying connotative meaning, or to para-lexotactics conveying denotative meaning. We cannnot, therefore, simply identify the two levels on these grounds. In this particular instance, however, the fact that there are two clearly distinct types of meaning involved (denotative meaning vs. connotative meaning – and specifically 'functional-sentence-perspective-type' meaning) combined with the fact that there are two fairly obvious ways of looking at the structuring of the material ('abstract structure'-oriented vs. word-order-oriented) suggests that the distinction between what is lexotactic and what is para-lexotactic has at least been drawn at an appropriate point.

The account of aspects of lexotactics and para-lexotactics which I have given in relation to English clause structure above is no more than an initial sketch. It also fails to take into account intonation. As a functional feature, intonation, as noted above, is certainly part of para-lexotactics (fairly obviously, it operates independently from any kind of structuring of words into phrases). However, there can be a very close relationship between the ordering of words and intonation structures. Thus, in 'The gun he jumped', 'The gun' and 'he jumped' must each constitute a separate intonation unit. For a proper extended axiomatic-functionalist account, it would be necessary to ascertain which intonation features are functional, that is 'separately relevant to the purport of which [they are] a part' (Def 1a; Mulder 1989: 436; Def. 1a below). That is to say, we would need to determine which intonation

features have a semiotic identity proper and are not simply additional realisational features of para-lexotactic structures which are more obviously realised by word order differences.

The difficulty of defining what belongs to lexotactics from what belongs to para-lexotactics reflects a more general issue of the scientificity of extended axiomatic-functionalist descriptions. Scientific theories yield descriptions which are in principle refutable: we could in principle find data which demonstrate that the proposed description is wrong (e.g. Popper 1973: 38). Mulder consistently intended axiomatic functionalism to be a scientific theory of semiotics and linguistics. Because of this, he excluded areas such as connotation which he regarded as unamenable to rigorous scientific enquiry. The analyses produced under an extended axiomatic-functionalist lexology (morphology/lexematics, lexotactics/'syntax', and para-lexotactics) are not rigorously scientific: in some case at least, they do not yield analyses (descriptions) which are unambiguously refutable. I have explored this with respect to the morphology/lexematics of Sudanese Arabic in Dickins (2006), and have discussed it from a more theoretical perspective with respect to both morphology/lexematics and lexotactics in Dickins (1998). The difficulties can in fact be seen in Lamb's counter-argument to Mulder and Hervey's 'fellow'/'bloke' and /aiðr/~/iRðr/ example above. Lamb is quite reasonable to argue that similarity of expression allows us to claim that /aiðr/~/iRðr/ are a single sign (signum), and that the lack of similarity of expression of 'fellow' and 'bloke' means that we have to regard these two words as two different signs (signa). This, however, begs the question of how dissimilar two synonymous forms would have to be for us to be forced to analyse them as different signs (signa). It seems to me clear that there can be no precise answer to this question: at the margins judgements of allomorphy vs. sign difference (homosemy; cf. Def. 26e below) have an irreducibly unscientific element. (For further discussion, see Dickins 1998: 169–178.)

More generally, I believe that Mulder's claim that semiotics, including linguistics, is a fully scientific discipline – or at least a potentially fully scientific discipline – is open to doubt. There are many aspects of linguistics, even within standard axiomatic functionalism, where I believe descriptive claims are not unambiguously refutable, e.g. phonematics (for discussion, see Dickins 2007: 109–111). In this regard, it is noteworthy that while Mulder and Hervey in principle seek to remove connotative meaning from the domain of standard axiomatic functionalism, they unambiguously incorporate intonation within the theory (treating it at the level of para-plerotactics and para-phonotactics; e.g. Mulder 1989: 388–389, Def. 18b; 390, Def. 19a; see also Def. 18b, Def. 19a below). Intonation patterns are generally, however, regarded as having connotative rather than denotative meanings. As such, intonation should be expected to fall outside the domain of standard axiomatic functionalism.

Extended axiomatic functionalism, I have argued, offers a broader-scope semiotic (including linguistic) analysis than standard axiomatic functionalism, based on a more symmetrical and therefore simpler overall theory. While extended axiomatic-functionalist analyses may in some instances be less scientific than those of standard axiomatic functionalism, this is justified by the greater common-sense adequacy and scope of the extended axiomatic-functionalist analyses.

Introduction to the postulates

The following postulates for extended axiomatic functionalism are based on the provisional postulates given in Dickins (1998: 355–417, and are intended to be maximally comparable with those for standard axiomatic functionalism in *The strategy of linguistics* (Mulder and Hervey 1980: 40–63) and in *Foundations of axiomatic linguistics* (Mulder 1989: 435–457) as well as Hervey's postulates for axiomatic-functionalist semantics in *The strategy of linguistics* (Mulder and Hervey 1980: 203–211).

Accordingly, I have done two things in drawing up these postulates. Firstly, I have largely confined the postulates to notions in extended axiomatic functionalism which correspond to those already found in standard axiomatic functionalism, only introducing novel notions where these are essential for an understanding of extended axiomatic functionalism. This means that a small number of notions which I have discussed elsewhere (e.g. protocolised allomorph in Dickins 1989: 51, 131) are not formally defined here. Secondly, I have tried as far as possible to maintain the order of the postulates found in Mulder and Hervey (1980) and Mulder (1989). Where there are differences between these two I have attempted to follow the order of Mulder (1989), rather than that of Mulder and Hervey (1980). Since Mulder (1989) does not include postulates for axiomatic-functionalist semantics, the postulates here which correspond to the postulates for axiomatic-functionalist semantics (i.e. Axiom F and associated Definitions) are to be related directly to Hervey's semantic postulates (Mulder and Hervey 1980).

In the case of those definitions ensuing from Axiom F, I have placed a letter F before the main definition "label". Thus Def. F1a provides a definition of utterance, corresponding to Hervey's Def. 1a for utterance (Mulder and Hervey 1980: 203). This preceding letter F makes it possible to distinguish definition labels linked to Hervey's semantic definitions (Mulder and Hervey 1980: 435–457) from definition labels linked to definitions in Mulder (1989; also Mulder and Hervey 1980: 40–63). Thus, in the current Postulates, Def. 1a, which provides a definition of 'functional' (corresponding to Def. 1a in Mulder 1989: 436, and Def. 1a in Mulder and Hervey 1980: 41), is distinguished, by virtue of being given a different label, from Def. F1a.

The attempt to make the order of the present postulates cohere with the orders in Mulder and Hervey (1980) and Mulder (1989) has the disadvantage that it yields a version of the postulates whose order is in some cases less than ideal for the theory which it presents. It is, however, more useful, I believe, to provide a formal presentation of extended axiomatic functionalism which is maximally comparable with standard axiomatic functionalism than one which displays maximum internal elegance.

The postulates for axiomatic functionalism provide a formal exposition of the theory, and comprise two types of statement: (i) a set of axioms, (ii) a set of definitions. The axioms are the "primitive statements" (Mulder and Hervey 1980: 33). Their function is to introduce new theoretical propositions (cf. Mulder and Hervey 1980: 33). Axioms may contain both primitive and non-primitive terms, a primitive term being "a term whose further definition, we are satisfied, would add nothing further to our understanding of that term" (Mulder and Hervey 1980: 25). Definitions, by contrast, "do not introduce new propositions, but merely introduce technical terms by linking them to notions in the theory" (Mulder and Hervey 1980: 33). The chains of definitions accompanying each axiom "ulti-

mately reduce the terms in these axioms to primitive terms" (Mulder and Hervey 1980: 33). That is to say, while definitions may contain terms which are further defined by other definitions, the defined terms ultimately lead to undefined, primitive terms in the axioms or other definitions. This is a necessary state of affairs; the alternative would be to have a theory of infinite length, in which at least some terms were defined and their definitions further defined ad infinitum.

On the basis of the postulates (axioms and definitions) it is also possible to deduce an unlimited number of theorematic notions (theorems), i.e. notions which follow logically from the axioms and definitions. Such theorematic notions can themselves be designated by technical terms. Any technical term, therefore, which does not appear in the postulates, but whose definition can be derived logically from notions in the postulates is a theorematic term. Those terms introduced in Dickins (1998; esp. Chapter Three), for example, which are properly defined via terms in the postulates, but which do not themselves appear as terms in the postulates are thus theorematic terms.

Within the postulates, the fact that a term is theoretically primitive (regardless of whether it is part of an axiom or a definition) does not preclude its further discussion and elucidation outside the formal framework of the theory. That is to say, in the above definition of a primitive term as "a term whose further definition, we are satisfied, would add nothing further to our understanding of that term", the phrase "whose further definition" is to be understood as meaning "whose further definition within the postulates". This is only common sense. The alternative would be to impose a ban on informal discussion of terms in the theory - something which would hardly aid the comprehensibility or scrutability of axiomatic functionalism. In the earlier version of the postulates in particular (Mulder and Hervey 1980: 41–63, 203–211), but also in the more recent version (Mulder 1989: 435–457), some postulates are accompanied by "explanations" (Mulder 1989: 435). In these postulates for extended axiomatic functionalism, I have retained such explanations, particularly for the axioms, since they provide useful guidance to the scope and direction of particular features of the theory. To make it clearer, however that these explanatory statements are not part of the postulates themselves, I have in all cases introduced them by the word *Comment*, and indented the explanatory material on both the left and right margins.

It should be noted that definitions may be applied at both the level of theory and that of description (cf. Dickins 1998: 35–39). They are, however, normally stated in terms of their applicability to the level of description. Thus, system ontology (Def. 3a1a), for example, is not only "logology (Def. 2a4a), cenology (Def. 2b1a), and delology (Def. 2c1a)", i.e. it is not only concerned with description at these levels. It can also be regarded as the name of the sub-theory in terms of which relevant descriptions are made. In a number of cases, however, it seemed more sensible to frame definitions in purely theory-oriented terms. Thus, allomorphics (Def. 24b1b), for example, is defined as "the sub-theory within the signum ontology (Def. F4.4) dealing with the description of allomorphs (second sense) (Def. 24b1a) and related notions".

The main body of the postulates is preceded by five preliminary definitions, for *lex* (Def. 0a), *phon* (Def. 0b), and *graph* (Def. 0c) (as stems), *linguistics* (Def. 0d), and *ont* (Def. 0e) (as a stem). The first three of these terms, *lex*, *phon*, and *graph* provide definitions which allow for the generation of set of terms for spoken natural language from general semiotic terms. The fourth, *linguistics*, defines the overall scope of extended axiomatic

functionalism in relation to natural language. This usage of 'linguistics' as a technical term within extended axiomatic functionalism corresponds roughly to what has elsewhere (e.g. Dickins 12; 310–315) been referred to as 'core-linguistics'. The technical use of the term 'linguistics' here does not imply a wish to replace more general usages of 'linguistics' (cf. definitions of 'linguistics' in Crystal 2003) – just as, for example, the use of a term such as 'theme' as a technical term in Functional Sentence Perspective does not replace more general usages of 'theme' (e.g. in "the theme of this book is as follows"). The fifth preliminary definition, for *ont*, provides a cover term for notions in the theory generally. The preliminary definitions do not form part of the postulates for standard axiomatic functionalism in any versions. They are included in these provisional postulates in order to simplify subsequent axioms and definitions, by removing specific reference from these axioms and definitions to natural language in all cases, and to generalising cover terms in most cases.

To make these postulates easier to relate to the postulates for standard axiomatic functionalism, I have included full references to both versions of the postulates for standard axiomatic functionalism (including Hervey's postulates for standard axiomatic-functionalist semantics). In order to make the current postulates easier to use, I have included full internal cross-references. The figures in the Appendix to the postulates, Figure 1 *Extended axiomatic functionalism: semiotics* and Figure 2 *Extended axiomatic functionalism: linguistics*, provide a visual representation of the main entities and notions of the theory, and are intended to make it easier for the reader to see how key aspects of it relate to one another.

Postulates for Extended Axiomatic Functionalism

Comment: The general organisation of the postulates is as follows: Axioms A–F (and ensuing Definitions for each Axiom) together cover the whole of the theory of extended axiomatic functionalism.

Axiom A states the all-pervading point of view of the theory.

Axioms B, C and D deal mainly with the system ontology (Def. 3a1a).

Axioms E and F deal with the signum ontology (Def. F4.4).

For a corresponding statement of the scope of each of the axioms in standard axiomatic functionalism, cf. Mulder (1989: 457).

Preliminary definitions

Def. 0a. '*lex*' (as stem) for '*log* (as stem) in natural language throughout'.

Def. 0b. '*phon*' (as stem) for '*cen* (as stem) in spoken natural language throughout'.

Comment: In accordance with the intention of the preliminary definitions, no terms involving *lex*, *phon* or *graph* are included in the definitions below. All terms for natural language can be generated by substituting *phon* for *cen*, and *lex* for *log* throughout the definitions. This allows a rather neater presentation of the postulates for extended axiomatic functionalism than was possible for the versions of standard axiomatic functionalism.

Def. 0c. '*graph*' (as stem) for '*cen* (as stem) in written natural language throughout'.

Comment: In accordance with the intention of the preliminary definitions, no terms involving *lex*, *phon* or *graph* are included in the definitions below. All terms for natural language can be generated by substituting *phon or graph* for *cen*, and *lex* for *log* throughout the definitions. This allows a rather neater presentation of the postulates for extended axiomatic functionalism than was possible for the versions of standard axiomatic functionalism.

Def. 0d. 'Linguistics' for 'semiotics (Def. F4.5) in natural language'.

Def. 0e. '*ont*' (as stem) for '*log*, *cen*, or *del* (as stems) throughout'.

Comment: In principle the preliminary definition of *ont* should allow for the elimination of terms involving *ont* throughout. In practice, a number of terms involving *ont* have been retained; e.g. allont (Def. 26o), onto (Def. 3a1), ontotactics (Def. 3b), etc. A more radical strategy would be to define *log*, *cen*, and *del* as varieties of *ont* here, and to eliminate the use of the terms *log*, *cen*, and *del* in the postulates wherever possible. I have not adopted this strategy, as it would have meant significantly altering the form of the postulates, and rendering them far less easily comparable with versions of the postulates for standard axiomatic functionalism.

Axiom A. All features (Def. 1c1) in semiotic sets are functional (Def. 1a) (cf. Mulder and Hervey 1980: 41, Axiom A; Mulder 1989: 436, Axiom A).

Comment: Axiom A states the point of view of the theory, i.e. the functional principle. The definitions under Axiom A give an interpretation to the axiom, and provide a system-ontological (cf. Def. 3a1a) definition of semiotic system

(Def. 1c, Def. 5). The reason why the term 'semiotic system' (Def. 1c, Def. 5) is not used in the axiom itself is that otherwise the recognition of functionality for features (Def. 1c1) in sub-systems (cf. Def. 1b) of semiotic systems (Def. 1c, Def. 5) (e.g. cenology (Def. 2b1a), cenotactics (Def. 2b1c), logology (Def. 2a4a), logotactics (Def. 2a4c), etc.) would be precluded (adapted from Mulder 1989: 436).

Def. 1a. 'Functional' for 'separately relevant to the purport of the whole to which it is a part' (cf. Mulder and Hervey 1980: 41, Def.1a; Mulder 1989: 436, Def. 1a).

Def. 1b. 'System' for 'self-contained (Def. 1b1) set of features (Def. 1c1) with a common purport' (cf. Mulder and Hervey 1980: 41, Def.1b; Mulder 1989: 436, Def. 1b).

Def. 1b1. 'Self-contained' for 'representing all relative dependencies (cf. Def. 6a, Def. 6b, Def. 11a, Def. 11b, Def. 11c) of its members as members of the set in question'.

Comment: The notions functional (Def. 1a.) and self-contained can be applied to combinations (Def. 6c) (of items) as well as to sets. In the case of combinations (Def. 6c) the term members has to be replaced by constituents (Def. 7f1) (adapted from Mulder and Hervey 1980: 41, Def. 1b1; Mulder 1989: 436, Def. 1b1).

Def. 1c. 'Semiotic system' for 'system (Def. 1b) of conventions for communication'.

Comment: Alternative definition to Def. 5 (cf. Mulder and Hervey 1980: 42, Def. 1c; Mulder 1989: 436, Def. 1c).

Def. 1c1. 'Features' for 'elements, analytical properties of elements, or relations between elements or properties of elements' (cf. Mulder and Hervey 1980: 42, Def. 1c1; Mulder 1989: 436, Def. 1c1).

Def. 1c2. 'Entity' for 'element or discrete disjunct analytical property of element' (cf. Mulder and Hervey 1980: 42, Def. 1c2; Mulder 1989: 436, Def. 1c2).

Def. 1c2a. 'Basic entity' or 'minimum entity' for 'entity in ontomics (Def. 3a1a1), ontidics (Def. 3a1a2), ontematics (Def. 3a1b), or ontotactics (Def. 3b) which is not further analysable at that level'.

Comment: Basic entity (or minimum entity) means essentially the same thing as ultimate constituent (Def. 7f1b). There is, however, a difference in point of view. Ultimate constituent (Def. 7f1b) implies a decompositional analysis, whereas basic entity implies a compositional analysis. It is theorematic that in ontomics (Def. 3a1a1) and ontidics (Def. 3a1a2), the basic entity is also the unit (Def. 9e). See also: base (Def. 20a).

Def. 1c3. 'Semiotic entity' for 'entity (Def. 1c2) in semiotic system (Def. 1c, Def. 5)' (cf. Mulder and Hervey 1980: 42, Def. 1c3; Mulder 1989: 437, Def. 1c3).

Comment: In *Foundations of axiomatic linguistics*, Mulder includes a Def. 1d. " 'Communication' for 'subjective (i.e. involving choice or optionality) conveyance of information'. This rules out 'labels', 'names' or 'designations', not to be confused with 'communicating' these or about these, from being 'communication' in our sense" (Mulder 1989: 437). For reasons why I have excluded this definition from this set of postulates, see Dickins 1998: 418; Note 1).

Axiom B. Semiotic systems (Def. 1c, Def. 5) contain simple (cf. Def. 4a), and may contain complex (cf. Def. 6c) ordered (cf. Def. 4b2), or complex (cf. Def. 6c) unordered (cf. Def. 4b1) logos (Def. 2a4), cenos (Def. 2b1), and delos (Def. 2c1) (cf. Mulder and Hervey 1980: 42, Axiom B; Mulder 1989: 437, Axiom B).

Comment: Axiom B is the most powerful axiom of the whole theory. It harbours (after being given an interpretation by means of definitions that follow it) the theory of semiotic systems (Def. 1c, Def. 5) (which is one of the sub-theories), as well as almost the whole of the system ontology (Def. 3a1a) of any semiotic system (Def. 1c, Def. 5) (i.e. cenology (Def. 2b1a), logology (Def. 2a4a) and delology (Def. 2c1a)) with the exception of the para-ontotactic (cf. Def. 19f) sub-systems (Def. 1b). The latter are covered by Axioms C and D. The system ontology (Def. 3a1a) is unfolded in Definitions 2–16c, together with the basic methodology for descriptions in logology (Def. 2a4a), cenology (Def. 2b1a), and delology (Def. 2c1a). Definitions 2–2a3b and 2b develop that part of the theory of indices which is relevant to semiotic systems (Def. 1c, Def. 5) (adapted from Mulder 1989: 437–8).

Def. 2. 'Index' for 'class of items with information-value (Def. 2a)' (cf. Mulder 1989: 437, Def. 2).

Comment: Index is here formally defined as a class. The term "index", however, can also be used for an item (i.e. member) of the class making up the index. See Dickins 1998: 418; Note 2; also Def. F4, below.

Def. 2a. 'Information-value' or 'specific set of potential interpretations' (cf. Mulder and Hervey 1980: 42, Def. 2; Mulder 1989: 436, Def. 2a).

Def. 2a1. 'Signum' (symbolised: 'S') for 'sign (Def. 2a2)' or 'symbol (Def. 2a3)'. Alternative definition: 'Semiotic entity (Def. 1c3) which has both morphontic (cf. Def. F3h) and semantic (cf. Def. F4.3) aspects'. Also: 'Entity in signum ontology (Def. F4.4) corresponding to logo (Def. 2a4) in system ontology (Def. 3a1a).

Comment: Alternative definition to Def. 24 (cf. Mulder and Hervey 1980: 42, Def. 2a; Mulder 1989: 437, Def. 2a1).

Def. 2a2. 'Sign' for 'signum (Def. 2a1, Def. 24) the information-value (Def. 2a) of all of whose allosemes (Def. 24c1a) is determined by wholly fixed conventions' (cf. Mulder and Hervey 1980: 42, Def. 2a1; Mulder 1989: 437, Def. 2a2).

Comment: Cf. extended axiomatic functionalism Def. 2c.

Def. 2a3. 'Symbol' for 'signum (Def. 2a1, Def. 24) the information-value (Def. 2a) of at least one of whose allosemes (Def. 24c1a) is not determined by wholly fixed conventions, i.e to which a temporary information-value (Def. 2a) can be attached by a definition' (cf. Mulder and Hervey 1980: 42, Def. 2a2; Mulder 1989: 437, Def. 2a3).

Def. 2a3a. ‘Proper symbol’ for ‘symbol (Def. 2a3) with partially fixed conventional information-value (Def. 2a)’ (cf. Mulder and Hervey 1980: 42, Def. 2a2a; Mulder 1989: 436, Def. 2a3a).

Def. 2a3b. ‘Nonce symbol’ for ‘symbol (Def. 2a3) with wholly non-fixed conventional information-value (Def. 2a), i.e. with no fixed information-value (Def. 2a) at all’ (cf. Mulder and Hervey 1980: 42, Def. 2a2b; Mulder 1989: 436, Def. 2a3b).

Comment: Definitions for both proper symbol (Def. 2a3a) and nonce symbol (Def. 2a3b) have been included here. However, it may be that the notion nonce symbol in particular should be excluded from the postulates. As Shimizu and Lamb note, “The subdivision of symbols into proper symbols and nonce symbols ... we both consider problematic” (Shimizu and Lamb 1985: 118; cf. Dickins 1998: 13–16).

Def. 2a4. ‘Logo’ for ‘entity (Def. 1c2) in system ontology (Def. 3a1a) corresponding to a signum (Def. 2a1, Def. 24) in system ontology (Def. F4.4)’ (cf. Mulder and Hervey 1980: 42, Def. 2a3; Mulder 1989: 436, Def. 2a4).

Def. 2a4a. ‘Logology’ for ‘system (Def. 1b) of logos (Def. 2a4)’. This may be either a simple (cf. Def. 4a) logology (logomics (Def. 2a4a1) or logidics (Def. 2a4a2)) or a complex (cf. Def. 6c) logology (cf. Mulder and Hervey 1980: 42, Def. 2a3a; Mulder 1989: 438, Def. 2a4c).

Comment: Logology is the level of description in the system ontology (Def. 3a1a) which corresponds to logologics (Def. F1b2a4) (also morphologics (Def. F1b1a3) and semologics (Def. F1b2a3)) in the system ontology (Def. F4.4).

Def. 2a4a1. ‘Logomics’ for ‘simple (cf. Def. 4a) logology (Def. 2a4a) which does not interlock (cf. Def. 3c2a) with a complex (cf. Def. 6c) logology (Def. 2a4a)’.

Comment: It follows that a logology (Def. 2a4a) which has a logomics will have only a logomics; i.e. the logology (Def. 2a4a) will consist entirely of an unordered set of logomes (Def. 8b5) in opposition to one another.

Def. 2a4a2. ‘Logidics’ for ‘simple (cf. Def. 4a) logology (Def. 2a4a) which interlocks (cf. Def. 3c2a) with a complex (cf. Def. 6c) logology (Def. 2a4a), i.e. which interlocks (cf. Def. 3c2a) with a logematics (Def. 2a4b) or with a logidotactics (Def. 2a4c1)’.

Def. 2a4b. ‘Logematics’ for ‘complex (cf. Def. 6c) unordered (cf. Def. 4b1) logology (Def. 2a4a)’ (cf. Mulder and Hervey 1980: 42, Def. 2a3b; Mulder 1989: 438, Def. 2a4a).

Comment: A logematics interlocks (cf. Def. 3c2a) with a logemotactics (Def. 2a4c2).

Def. 2a4c. ‘Logotactics’ for ‘complex (cf. Def. 6c) ordered (cf. Def. 4b2) logology (Def. 2a4a)’. Alternative definition: ‘logidotactics (Def. 2a4c1) or logemotactics (Def. 2a4c2)’ (cf. Mulder and Hervey 1980: 42, Def. 2a3c; Mulder 1989: 438, Def. 2a4b).

Comment: A logotactics interlocks (cf. Def. 3c2a) with a para-logotactics (Def. 19c).

Def. 2a4c1. ‘Logidotactics’ for ‘logotactics (Def. 2a4c) in a compound (cf. Def. 5a) logology (Def. 2a4a) which does not include a logematics (Def. 2a4b)’.

Def. 2a4c2. ‘Logemotactics’ for ‘logotactics (Def. 2a4c) in a compound (cf. Def. 5a) logology (Def. 2a4a) which includes a logematics (Def. 2a4b)’.

Def. 2b. ‘Figura’ for ‘semiotic entity (Def. 1c3) which has only a morphontic (cf. Def. F3h) aspect’. Alternative definition: ‘Entity in signum ontology (Def. F4.4) corresponding to a ceno (Def. 2b1) in system ontology (Def. 3a1a)’ (cf. Mulder and Hervey 1980: 43, Def. 2b; Mulder 1989: 438, Def. 2b).

Def. 2b1. ‘Ceno’ for ‘entity (Def. 1c2) in system ontology (Def. 3a1a) corresponding to a figura (Def. 2b) in signum ontology (Def. F4.4)’ (cf. Mulder and Hervey 1980: 43, Def. 2b1; Mulder 1989: 438, Def. 2b1).

Def. 2b1a. ‘Cenology’ for ‘system (Def. 1b) of cenos (Def. 2b1)’. This may be either a simple (cf. Def. 4a) cenology (cenomics (Def. 2b1a1) or cenidics (Def. 2b1a2)) or a complex (cf. Def. 6c) cenology (cf. Mulder and Hervey 1980: 43, Def. 2b1a; Mulder 1989: 438, Def. 2b1c).

Comment: Cenology is the level of description in the system ontology (Def. 3a1a) to which corresponds cenologics (Def. F3g) in the signum ontology (Def. F4.4).

Def. 2b1a1. ‘Cenomics’ for ‘simple (cf. Def. 4a) cenology (Def. 2b1a) which does not interlock (cf. Def. 3c2a) with a complex (cf. Def. 6c) cenology (Def. 2b1a)’.

Comment: It follows that a cenology (Def. 2b1a) which has a cenomics will have only a cenomics; i.e. the cenology (Def. 2b1a) will consist entirely of an unordered set of cenomes (Def. 8a5) in opposition to one another.

Def. 2b1a2. ‘Cenidics’ for ‘simple (cf. Def. 4a) cenology (Def. 2b1a) which interlocks (cf. Def. 3c2a) with a complex (cf. Def. 6c) cenology (Def. 2b1a), i.e. which interlocks (cf. Def. 3c2a) with a cenematics (Def. 2b1b) or with a cenidotactics (Def. 2b1c1)’.

Def. 2b1b. ‘Cenematics’ for ‘complex (cf. Def. 6c) unordered (cf. Def. 4b1) cenology (Def. 2b1a)’ (cf. Mulder and Hervey 1980: 43, Def. 2b1b; Mulder 1989: 438, Def. 2b1a).

Comment: A cenematics interlocks (cf. Def. 3c2a) with a cenemotactics (Def. 2b1c2).

Def. 2b1c. ‘Cenotactics’ for ‘complex (cf. Def. 6c) ordered (cf. Def. 4b2) cenology (Def. 2b1a)’. Alternative definition: ‘cenidotactics (Def. 2b1c1) or cenemotactics’ (Def. 2b1c2) (cf. Mulder and Hervey 1980: 43, Def. 2b1c; Mulder 1989: 438, Def. 2b1b).

Comment: A cenotactics interlocks (cf. Def. 3c2a) with a para-cenotactics (Def. 18c).

Def. 2b1c1. ‘Cenidotactics’ for ‘cenotactics (Def. 2b1c) in a compound (cf. Def. 5a) cenology (Def. 2b1a) which does not include a cenematics (Def. 2b1b)’.

Def. 2b1c2. ‘Cenemotactics’ for ‘cenotactics (Def. 2b1c) in a compound (cf. Def. 5a) cenology (Def. 2b1a) which includes a cenematics (Def. 2b1b)’.

Def. 2b1d. ‘Cenological form’ (symbolised: *p*) for ‘notion in signum ontology (Def. F4.4), corresponding to feature (Def. 1c1) potentially belonging to cenology (Def. 2b1a)’ (cf. Mulder and Hervey 1980: 43, Def. 3a4; Mulder 1989: 438, Def. 2b1d). Alternative definition to Def. 23. Formal definition: $p = \{f^{i\ldots n}\mathrm{Rd}\}$.

Def. 2c. ‘Denotation’ for ‘semiotic entity (Def. 1c3) which has only a semantic (cf. Def. F4.3) aspect’. Alternative definition ‘Entity in signum ontology (Def. F4.4) corresponding to delo (Def. 2c1) in system ontology (Def. 3a1a)’.

Comment: Cf. standard axiomatic functionalism Def. 2a2a.

Def. 2c1. ‘Delo’ for ‘entity (Def. 1c2) in system ontology (Def. 3a1a) corresponding to a denotation (Def. 2c) in signum ontology (Def. F4.4)’.

Def. 2c1a. ‘Delology’ for ‘system (Def. 1b) of delos (Def. 2c1)’. This may be either a simple (cf. Def. 4a) delology (delomics (Def. 2c1a1) or delidics (Def. 2c1a2)) or a complex (cf. Def. 6c) delology.

Comment: Delology is the level of description in the system ontology (Def. 3a1a) to which corresponds delologics (Def. F4.2) in the signum ontology (Def. F4.4).

Def. 2c1a1. ‘Delomics’ for ‘simple (cf. Def. 4a) delology (Def. 2c1a) which does not interlock (cf. Def. 3c2a) with a complex (cf. Def. 6c) delology (Def. 2c1a)’.

Comment: It follows that a delology (Def. 2c1a) which has a delomics will have only a delomics; i.e. the delology (Def. 2c1a) will consist entirely of an unordered set of delomes (Def. 8c5) in opposition to one another.

Def. 2c1a2. ‘Delidics’ for ‘simple (cf. Def. 4a) delology (Def. 2c1a) which interlocks (cf. Def. 3c2a) with a complex (cf. Def. 6c) delology (Def. 2c1a), i.e. with a delematics (Def. 2c1b) or with a delidotactics (Def. 2c1c1)’.

Def. 2c1b. ‘Delematics’ for ‘complex (cf. Def. 6c) unordered (cf. Def. 4b1) delology (Def. 2c1a)’.

Comment: A delematics interlocks (cf. Def. 3c2a) with a delemotactics (Def. 2c1c2).

Def. 2c1c. ‘Delotactics’ for ‘complex (cf. Def. 6c) ordered (cf. Def. 4b2) delology (Def. 2c1a)’. Alternative definition: ‘delidotactics (Def. 2c1c1) or delemotactics (Def. 2c1c2)’.

Comment: A delotactics interlocks (cf. Def. 3c2a) with a para-delotactics (Def. 18i).

Def. 2c1c1. ‘Delidotactics’ for ‘delotactics (Def. 2c1c) in a compound (cf. Def. 5a) delology (Def. 2c1a) which does not include a delematics (Def. 2c1b)’.

Def. 2c1c2. ‘Delemotactics’ for ‘delotactics (Def. 2c1c) in a compound (cf. Def. 5a) delology (Def. 2c1a) which includes a delematics (Def. 2c1b)’.

Def. 2c1d. ‘Delological form’ (symbolised: *q*) for ‘notion in signum ontology (Def. F4.4), corresponding to feature (Def. 1c1) potentially belonging to delology (Def. 2c1a)’. Formal definition: $q = \{gi^{\cdots n}\mathrm{Re}\}$. Alternative definition to Def. 23c.

Comment: Def. 3a in Mulder and Hervey (1980: 43) and Mulder (1989: 438), which provides a definition for phonology, and more generally for forms with *phon*, is rendered unnecesary in the extended version by the inclusion of Def. 0b.

Def. 3a1. ‘Onto’ for ‘logo (Def. 2a4), ceno (Def. 2b1), or delo (Def. 2c1)’.

Def. 3a1a. ‘System ontology’ for ‘logology (Def. 2a4a), cenology (Def. 2b1a), and delology (Def. 2c1a)’ (cf. Mulder 1989: 438, Def. 2b2).

Comment: Cf. extended axiomatic functionalism, Def. 0a, Def. 0b.

Def. 3a1a1. ‘Ontomics’ for ‘logomics (Def. 2a4a1), cenomics (Def. 2b1a1), or delomics (Def. 2c1a1)’.

Comment: It follows that a system ontology (Def. 3a1a) which has an ontomics will have only an ontomics; i.e. the system ontology (Def. 3a1a) will consist entirely of an unordered set of ontomes (Def. 8d5) in opposition to one another.

Def. 3a1a2. ‘Ontidics’ for ‘logidics (Def. 2a4a2), cenidics (Def. 2b1a2), or delidics (Def. 2c1a2)’.

Def. 3a1b. ‘Ontematics’ for ‘logematics (Def. 2a4b), cenematics (Def. 2b1b), or delematics (Def. 2c1b)’.

Comment: An ontematics interlocks (cf. Def. 3c2a) with an ontemotactics (Def. 3a1c2).

Def. 3a1c1. ‘Ontidotactics’ for ‘logidotactics (Def. 2a4c1), cenidotactics (Def. 2b1c1), or delidotactics (Def. 2c1c1)’.

Def. 3a1c2. ‘Ontemotactics’ for ‘logemotactics (Def. 2a4c2), cenemotactics (Def. 2b1c2) or delemotactics (Def. 2c1c2)’.

Def. 3a1d. ‘Ontological form’ for ‘cenological form (Def. 2b1d, Def. 23), or delological form (Def. 2c1d, Def. 23c)’.

Def. 3b. ‘Ontotactics’ or ‘articulation’ for ‘logotactics (Def. 2a4c), cenotactics (Def. 2b1c), or delotactics (Def. 2c1c)’ (cf. Mulder and Hervey 1980: 43, Def. 3b; Mulder 1989: 439, Def. 3b).

Comment: An ontotactics interlocks (Def. 3c2a) with a para-ontotactics (Def. 19f).

Def. 3c. ‘Double articulation (Def. 3b)’ for ‘both logotactics (Def. 2a4c) and cenotactics (Def. 2b1c), or both logotactics (Def. 2a4c) and delotactics (Def. 2c1c)’ (cf. Mulder and Hervey 1980: 43, Def. 3c; Mulder 1989: 439, Def. 3c).

Def. 3c1. ‘Language’ for ‘semiotic system (Def. 1c, Def. 5) with double articulation (Def. 3c) with respect to both morphontics (Def. 3h) and semantics (Def. F4.3)’ (cf. Mulder and Hervey 1980: 43, Def. 3c1; Mulder 1989: 439, Def. 3c1).

Comment: That is to say, a “language” in this technical sense has a cenotactics (Def. 2b1c), a logotactics (Def. 2a4c), and a delotactics (Def. 2c1c).

Def. 3c2. ‘Proper language (Def. 3c1)’ for ‘semiotic system (Def. 1c, Def. 5) with a cenology (Def. 2b1a) containing both a cenematics (Def. 2b1b) and a cenotactics (Def. 2b1c), a delology (Def. 2c1a) containing both a delematics (Def. 2c1b) and a delotactics (Def. 2c1c), and a logology (Def. 2a4a) containing both a logematics (Def. 2a4b) and a logotactics (Def. 2a4c)’ (cf. Mulder and Hervey 1980: 43, Def. 3c2; Mulder 1989: 439, Def. 3c2).

Comment: All natural languages known to date are proper languages, but not necessarily vice versa. Natural languages, in addition, incorporate para-ontotactics (Def. 19f), but so do some other semiotic systems (Def. 1c, Def. 5) (adapted from Mulder 1989: 439). In *Foundations of axiomatic linguistics* Mulder (1989: 439) implies that all semiotic systems (Def. 1c, Def. 5) by definition have para-tactic levels (cf. para-ontotactics: Def. 19f). This is not the position adopted in earlier versions of the theory (cf. Mulder and Hervey 1980: 43), nor is it the position adopted in the extended version.

Def. 3c2a. ‘Interlocking’ for ‘in system ontology (Def. 3a1a) the one system (Def. 1b) providing the forms of the realisations (Def. F4.7) of the entities (Def. 1c2) of the other system (Def. 1b), termed transformational interlock’, or for ‘the one sub-system (Def. 1b providing the basic entities (Def. 1c2a) – i.e. the ultimate constituents (Def. 7f1b) – of the other sub-system (Def. 1b), termed ontological interlock’.

Comment: A cenology (Def. 2b1a) and a logology (Def. 2a4a), also a delology (Def. 2c1a) and a logology (Def. 2a4a), interlock transformationally. A cenology (Def. 2b1a) provides the cenos (Def. 2b1) to which correspond the cenological forms (Def. 2b1d, Def. 23) of the allomorphs (Def. 24b1a) which are the morphontic (cf. Def. F3h) manifestations (Def. 26o) of expressions (Def. 24a), corresponding to logos (Def. 2a4). Similarly a delology (Def. 2c1a) provides the delos (Def. 2c1) to which correspond the delological forms (Def. 2c1d, Def. 23c) of the allosemes (Def. 24c1a) which are the semantic (cf. Def. F4.3) manifestations (Def. 26o) of contents (Def. 24b), corresponding to logos (Def. 2a4).

A logidics (Def. 2a4a2) and a logematics (Def. 2a4b), a cenidics (Def. 2b1a2) and cenematics (Def. 2b1b), a delidics (Def. 2c1a2) and a delematics (Def. 2c1b), a logematics (Def. 2a4b) and a logotactics (Def. 2a4c), a cenematics (Def. 2b1b) and a cenotactics (Def. 2b1c), a delematics (Def. 2c1b) and a delotactics (Def. 2c1c), also a logidics (Def. 2a4a2) and a logidotactics (Def. 2a4c1), a cenidics (Def. 2b1a2) and a cenidotactics (Def. 2b1c1), and a delidics (Def. 2c1a2) and a delidotactics (Def. 2c1c1) interlock ontologically.

There is also a kind of interlock, similar to ontological interlock, between cenotactics (Def. 2b1c) and para-cenotactics (Def. 18c), logotactics (Def. 2a4c) and para-logotactics (Def. 19c), and delotactics (Def. 2c1c) and para-delotactics (Def. 18i), but this is of a different kind. In these cases the ontotactics (Def. 3b) provide the entities (Def. 1c2) that correspond to the base (Def. 20a) of entities (Def. 1c2) in para-ontotactics (Def. 19f) (cf. Mulder 1989: 440).

Def. 4a. ‘Simple system (Def. 1b)’ for ‘system (Def. 1b) without combinations (Def. 6c) of entities (Def. 1c2)’ (cf. Mulder and Hervey 1980: 44, Def. 4a; Mulder 1989: 440, Def. 4a).

Def. 4b. ‘Complex system (Def. 1b)’ for ‘system (Def. 1b) with combinations (Def. 6c) of entities (Def. 1c2)’ (cf. Mulder and Hervey 1980: 44, Def. 4b; Mulder 1989: 440, Def.4b).

Def. 4b1. ‘Unordered system (Def. 1b)’ for ‘system (Def. 1b) without ordering relations (Def. 6a) between entities (Def. 1c2)’ (cf. Mulder and Hervey 1980: 44, Def. 4b1; Mulder 1989: 440, Def. 4b1).

Comment: This may be an ontomics (Def. 3a1a1), an ontidics (Def. 3a1a2), or an ontematics (Def. 3a1b).

Def. 4b2. ‘Ordered system (Def. 1b)’ for ‘system (Def. 1b) with ordering relations (Def. 6a) between entities (Def. 1c2)’ (cf. Mulder and Hervey 1980: 44, Def. 4b2; Mulder 1989: 440, Def.4b2).

Def. 5. ‘Semiotic system’ for ‘system (Def. 1b) constituted by the transformational interlock (Def. 3c2a) of one logology (Def. 2a4a) with one cenology (Def. 2b1a) and one delology (Def. 2c1a)’. Alternative definition to Def. 1c (cf. Mulder and Hervey 1980: 44, Def. 5; Mulder 1989: 440, Def. 5).

Comment: "Definitions 3b–5 are specially geared to clarifying the notion proper language. All natural languages are proper languages, but there is at least a theoretical possibility that the reverse does not hold" (Mulder 1989: 440).

Def. 5a. 'Compound semiotic system' for 'semiotic system (Def. 1c, Def. 5) that is itself a system (Def. 1b) of ontologically interlocking (Def. 3c2a) systems (Def. 1b)' (cf. Mulder and Hervey 1980: 83-84).

Comment: Compound semiotic systems (Def. 1c, Def. 5), as defined here, involve interlock (cf. Def. 3c2a) between different levels within the system ontology (Def. 3a1a). Thus a cenology (Def. 2b1a) is compound if there is at least either a cenematics (Def. 2b1b) or a cenidotactics (Def. 2b1c1) interlocking (Def. 3c2a) with the basic inventory of elements (this basic inventory being by definition in this case a cenidics (Def. 2b1a2), and not a cenomics (Def. 2b1a1)).

Def. 6a. 'Ordering relations' for 'asymmetrical (cf. Def. 11a) relations between entities (Def. 1c2) in combinations (constructions) (Def. 6c, Def. 7f)' (cf. Mulder and Hervey 1980: 44, Def. 6a; Mulder 1989: 440, Def. 6a).

Def. 6b. 'Relations of simultaneity' for 'symmetrical (cf. Def. 11b, Def. 11c) relations between entities (Def. 1c2) in combinations (constructions) (Def. 6c, cf. Def. 7f)' (cf. Mulder and Hervey 1980: 44, Def. 6b; Mulder 1989: 440, Def. 6b).

Comment: "By Axiom A, only functional criteria may be brought to bear in deciding whether a relation is symmetrical or not" (Mulder 1989: 440).

Def. 6c. 'Construction (cf. Def. 7f)' or 'combination' or 'complex' for 'self-contained (Def. 1b1) complex of entities (Def. 1c2) in cenology (Def. 2b1a), delology (Def. 2c1a) or logology (Def. 2a4a)' (cf. Mulder 1989: 440, Def. 6c).

Comment: The terms imply such notions as: complex ceneme (Def. 8a), cenotagm (Def. 9a), complex para-cenotagm (Def. 18e), complex deleme (Def. 8c), delotagm (Def. 9c), complex para-delotagm (Def. 18k), complex logeme (Def. 8b), logotagm (Def. 9b), complex para-logotagm (Def. 19e), complex sentence (Def. 21) (i.e. consisting of more than one clause (Def. 21a) as its immediate constituents (Def. 7f1a)), and self-contained (Def. 1b1) bundle of immediate constituents (Def. 7f1a) (cf. Mulder 1989: 440–441).

Def. 7a. 'Paradigmatic' for 'the oppositional aspect of semiotic entities (Def. 1c2)' (cf. Mulder and Hervey 1980: 44, Def. 7a; Mulder 1989: 441, Def. 7a).

Def. 7a1. 'Paradigmatic (Def. 7a) relations' for 'relations of opposition between members of sets' (cf. Mulder and Hervey 1980: 44, Def. 7a1; Mulder 1989: 441, Def. 7a1).

Def. 7a2. 'Commutation' for 'alternation (or: choice) between semiotic entities (Def. 1c3) (or 'zero' and semiotic entities (Def. 1c3)) in functional (Def. 1a) opposition as immediate constituents (Def. 7f1a), in a given context' (cf. Mulder and Hervey 1980: 44, Def. 7a2; Mulder 1989: 441, Def. 7a2).

Def. 7a3. 'Distinctive function' (symbolised: d, for distinctive function in cenology; s, for distinctive function in logology; and e, for distinctive function in delology) for 'the set of oppositions in which an entity (Def. 1c2) may par-

take' (cf. Mulder and Hervey 1980: 44, Def. 7a3; Mulder 1989: 441, Def. 7a3).

Comment: Distinctive function (d in cenology, s in logology, and e in logology) can be expressed symbolically: "In symbols a~(b∪c∪d), which states the distinctive function of a, in case the set of oppositions a enters into is (a~b, a~c, a~d), and no other. In fact, a~(b∪c∪d) = a~b∪a~c∪a~d" (Mulder 1989: 441).

Def. 7a4. 'Neutralization' for 'suspension of opposition between members of a correlation (Def. 7a4a) in given contexts, and governed by those contexts' (cf. Mulder and Hervey 1980: 44, Def. 7a3; Mulder 1989: 441, Def. 7a4).

Def. 7a4a. 'Correlation' for 'set of ontotactic (Def. 7c) entities (Def. 1c2, Def. 9d1) which have an immediate constituent (Def. 7f1a) in common' (cf. Mulder and Hervey 1980: 44, Def. 7a3; Mulder 1989: 441, Def. 7a4a).

Def. 7a4b. 'Archionteme' for 'ontotactic (Def. 7c) entity (Def. 1c2) resulting from neutralization (Def. 7a4)'. Alternative definition: 'Simultaneous (cf. Def. 6b) bundle of ontids (Def. 8d2) in particular contexts, common to two or more ontemes (Def. 8d) in other contexts, i.e. equalling the intersection of those ontemes (Def. 8d)' (cf. Mulder and Hervey 1980: 44, Def. 7a3; Mulder 1989: 441, Def. 7a4b).

Comment: As is predictable from Def. 0a, Def. 0b, and Def. 0c (preliminary definitions), the term archionteme allows for the generation of the following terms: archilogeme (also, archimoneme, archimorpheme, in natural language: archilexeme), archiceneme (in spoken natural language: archiphoneme; in written natural language archigrapheme), archideleme. Mulder's definition (Mulder 1989: 441, Def. 7a4b) of archi-features (Def. 1c1) in terms of intersection has been followed in definition 7a4b. here. However, there is reason to believe that a definition of archionteme (etc.) in terms of disjunction might be more globally coherent (cf. Dickins 1998: 427–428; Note 21).

Def. 7b. 'Syntagmatic' for 'the ordering (cf. Def. 6a) aspect of semiotic entities (Def. 1c3)' (cf. Mulder and Hervey 1980: 45, Def. 7b; Mulder 1989: 441, Def. 7b).

Def. 7b1. 'Syntagmatic (Def. 7b) relations' for 'ordering relations (Def. 6a) between semiotic entities (Def. 1c3) in combinations (constructions) (Def. 6c, Def. 7f)' (cf. Mulder and Hervey 1980: 45, Def. 7b1; Mulder 1989: 441, Def. 7b1).

Comment: "Though the term permutation may seem the syntagmatic equivalent of 'commutation' [Def. 7a2], it is used in a realizational, rather than structural sense, though there may be structural implications. I use it as a primitive term, i.e. I refrain from defining it" (Mulder 1989: 441).

Def. 7b2. 'Syntagmatic (Def. 7b) entity (Def. 1c2)' for 'ontotactic (Def. 7c) entity (Def. 9d1)' (cf. Mulder and Hervey 1980: 45, Def. 7b2; Mulder 1989: 441, Def. 7b2).

Comment: This implies that it is orderable, and/or has constituents (Def. 7f1) that commute (cf. Def. 7a2) with orderable entities (Def. 1c2), provided it is not intrinsically uncombinable at the level of ontotactics (Def. 3b), (such as 'yes' in English, except in conjunctive constructions (Def. 6c) such as 'yes or no') (adapted from Mulder 1989: 441-442).

Def. 7c. ‘Ontotactic’ for ‘logotactic (cf. Def. 2a4c), cenotactic (cf. Def. 2b1c) or delotactic (cf. Def. 2c1c)’ (cf. Mulder and Hervey 1980: 45, Def. 7c; Mulder 1989: 442, Def. 7c).

Def. 7c1. ‘Ontotactic (Def. 7c) relations’ for ‘logotactic relations (Def. 7d1), cenotactic relations (Def. 7e1) or delotactic relations (Def. 7e3)’. Alternative definition: ‘constructional relations (Def. 7f) (whether ordering (Def. 6a) or not) between syntagmatic (Def. 7b) entities (Def. 7b2), as immediate constituents (Def. 7f1a) in combinations (constructions) (Def. 6c, cf. Def. 7f)’ (cf. Mulder and Hervey 1980: 45, Def. 7c3; Mulder 1989: 442, Def. 7c2).

Comment: Note that ontotactic (Def. 7c) relations are not necessarily syntagmatic (Def. 7b) relations (Def. 7b1), although syntagmatic (Def. 7b) relations (Def. 7b1) are necessarily ontotactic (Def. 7c) relations. Ontotactic (Def. 7c) relations are relations between syntagmatic (Def. 7b) entities (Def. 7b2) (cf. Mulder 1989: 442, Def. 7c2).

Def. 7d. ‘Logotactic entity (Def. 1c2)’ for ‘ontotactic (Def. 7c) entity (Def. 1c2) in logology (Def. 2a4a)’ (cf. Mulder and Hervey 1980: Def. 7d); Mulder 1989: 442, Def. 7d).

Def. 7d1. ‘Logotactic relations’ for ‘ontotactic (Def. 7c) relations (Def. 7c1) in logology (Def. 2a4a)’ (cf. Mulder and Hervey 1980: Def. 7d1); Mulder 1989: 442, Def. 7e).

Def. 7e. ‘Cenotactic entity (Def. 1c2)’ for ‘ontotactic (Def. 7c) entity (Def. 1c2) in cenology (Def. 2b1a)’ (cf. Mulder and Hervey 1980: 45, Def. 7c1); Mulder 1989: 442, Def. 7e1). Alternative definition to Def. 9a2.

Def. 7e1. ‘Cenotactic relations’ for ‘ontotactic (Def. 7c) relations (Def. 7c1) in cenology (Def. 2b1a)’ (cf. Mulder and Hervey 1980: 45, Def. 7e); Mulder 1989: 442, Def. 7e1).

Def. 7e2. ‘Delotactic entity (Def. 1c2)’ for ‘ontotactic (Def. 7c) entity (Def. 1c2) in delology (Def. 2c1a)’. Alternative definition to Def. 9c1.

Def. 7e3. ‘Delotactic relations’ for ‘ontotactic (Def. 7c) relations (Def. 7c1) in delology (Def. 2c1a)’.

Def. 7f. ‘Constructional relations’ for ‘relations between immediate constituents (Def. 7f1a)’ (cf. Mulder and Hervey 1980: 45, Def. 7f; Mulder 1989: 442, Def. 7f).

Comment: “Definitions 6a–7f lay the foundations for further terminological developments necessary for an effective description of semiotic systems” (Mulder 1989: 442).

Def. 7f1. ‘Constituents’ for ‘entities (Def. 1c2) (of the same kind, i.e. of the same level of abstraction) in self-contained (Def. 1b1) combinations (Def. 6c)’ (cf. Mulder and Hervey 1980: 45, Def. 7f1; Mulder 1989: 442, Def. 7f1).

Def. 7f1a. ‘Immediate constituents’ for ‘constituents (Def. 7f1) that are not constituents (Def. 7f1) of constituents (Def. 7f1) within the combination (Def. 6c) in question’ (cf. Mulder and Hervey 1980: 45, Def. 7f1a; Mulder 1989: 442, Def. 7f1a).

Def. 7f1b. ‘Ultimate constituents’ for ‘constituents (Def. 7f1) that are basic (or: minimum) entities (Def. 1c2a) at the level in question’ (cf. Mulder and Hervey 1980: 45, Def. 7f1b; Mulder 1989: 442, Def. 7f1b).

Comment: It is theorematic that in cenematics (Def. 2b1b), logematics (Def. 2a4b) and delematics (Def. 2c1b), in contradistinction with cenotactics (Def. 2b1c), logotactics (Def. 2a4c) and delotactics (Def. 2c1c), immediate constituents (Def. 7f1a) are always at the same time ultimate constituents (adapted from Mulder 1989: 442–443). See also: basic entity (Def. 1c2a).

Def. 7g. ‘Positions’ for ‘divisions within an ontotactic (Def. 7c) construction (Def. 6c), such that in every such division an entity (Def. 1c2), as an immediate constituent (Def. 7f1a), can stand and alternate (i.e. commute: cf. Def. 7a2) with other entities (Def. 1c2), or with zero’. Alternative definition: ‘divisions within a construction (Def. 6c) corresponding to immediate constituents (Def. 7f1a) as relata of ontotactic (Def. 7c) relations (Def. 7c1)’ (cf. Mulder and Hervey 1980: 46, Def. 7g; Mulder 1989: 443, Def. 7g).

Def. 7h. ‘Archi-position’ for ‘the intersection of two or more positions (Def. 7g)’ (cf. Mulder 1989: 443, Def. 7h).

Comment: Mulder argues that in phonotactics (Def. Ob, Def. 2b1c), intersection can only occur between adjacent positions. In lexotactics (Def. 0a, Def. 2a4c) and delotactics (Def. 2c1c), intersection can occur between any two or more peripheral (cf. Def. 13b) positions (Def. 7g) (cf. Mulder 1989: 443). Mulder’s approach to the archi-position appears problematic. In order for there to be intersection, the sets involved need to have a member (or members) in common. Different positions considered as sets (of one member each) have no members in common with one another. Therefore, it is not possible for them to intersect. This has led Heselwood (1992: 110) to suggest that neutralization (cf. Def. 7a4) be treated not in terms of intersection, but in terms of disjunction (cf. Dickins 1998: 427–428; Note 21; also comment under Def. 7a4b, relating to the archionteme).

Def. 8a. ‘Ceneme’ for ‘self-contained (Def. 1b1) bundle of one or more cenids (distinctive features) (Def. 8a2) as its immediate (Def. 7f1a), and at the same time ultimate (Def. 7f1b), constituents (Def. 7f1)’. Alternative definitions: ‘basic (or: minimum) syntagmatic (Def. 7b) entity (Def. 1c2a, Def. 7b2) in cenology (Def. 2b1a)’, ‘basic (or: minimum) cenotactic (cf. Def. 2b1c) entity (Def. 1c2a, Def. 7e, Def. 9a2)’ (cf. Mulder and Hervey 1980: 46, Def. 8a; Mulder 1989: 443, Def. 8a).

Def. 8a1. ‘Cenematic (cf. Def. 2b1b) complex (cf.Def. 6c)’ for ‘complex (cf. Def. 6c) ceneme (Def. 8a)’ (cf. Mulder and Hervey 1980: 46, Def. 8a1; Mulder 1989: 443, Def. 8a1).

Comment: A complex (cf. Def. 6c) ceneme (Def. 8a) is a cenematic (cf. Def. 2b1b) complex (Def. 6c), as opposed to a cenotactic (cf. Def. 2b1c) complex (Def. 6c). A complex (cf. Def. 6c) ceno (Def. 2b1) is either cenematically (cf. Def. 2b1b) complex (Def. 6c) or cenotactically (cf. Def. 2b1c) complex (Def. 6c), or para-cenotactically (cf. Def. 18c) complex (Def. 6c) (adapted from Mulder 1989: 443).

Def. 8a2. ‘Cenid’ or ‘distinctive feature’ for ‘unit (Def. 9e) in cenidics (Def. 2b1a2)’ (cf. Mulder and Hervey 1980: 46, Def. 8a3; Mulder 1989: 443, Def.

8a2). Alternative definitions: 'Basic (or: minimum) entity (Def. 1c2a) in cenematics (Def. 2b1b)', 'basic (or: minimum) entity (Def. 1c2a) in cenidotactics (Def. 2b1c1)'.

Comment: Since cenidics (Def. 2b1a2) is a simple system (Def. 1b), the cenid (distinctive feature) is not only the unit (Def. 9e) in cenidics (Def. 2b1a2), but is also the basic (or: minimum) entity (Def. 1c2a) in cenidics (Def. 2b1a2). I have avoided using a definition of the cenid along these lines (although it accords with the form of the definitions given by Mulder (Mulder and Hervey 1980: 46, Def. 8a3; Mulder 1989: 443, Def. 8a2), since the presentation of the cenid as the basic (or: minimum) entity (Def. 1c2a) in both cenidics (Def. 2b1a2), cenematics (Def. 2b1b), and cenidotactics (Def. 2b1c1) suggests a greater similarity between these two levels than they in fact possess.

Def. 8a3. 'Hypercenid' or 'hyperfeature' for 'cenid (distinctive feature) (Def. 8a2) in a particular cenematic (cf. Def. 2b1b) context, equivalent to two or more cenids (distinctive features) (Def. 8a2) in at least one other cenematic (cf. Def. 2b1b) context' (cf. Mulder 1989: 443, Def. 8a3).

Def. 8a4. 'Hyperceneme' for 'ceneme (Def. 8a) consisting of, or containing, one or more hypercenids (hyper-features) (Def. 8a3)' (cf. Mulder 1989: 443, Def. 8a4).

Def. 8a5. 'Cenome' for 'unit (Def. 9e) in cenomics (Def. 2b1a1)'.

Comment: Since cenomics (Def. 2b1a1) is a simple system (Def. 4a) ontology (Def. 3a1a) the cenome is not only the unit (Def. 9e) in cenomics (Def. 2b1a1), it is also the basic (or: minimum) entity (Def. 1c2a).

Def. 8b. 'Logeme' for 'self-contained (Def. 1b1) (by definition: simultaneous; cf. Def. 6b) bundle of one or more logids (monemes) (Def. 8b2) as its immediate (Def. 7f1a), and at the same time ultimate (Def. 7f1b), constituents (Def. 7f1)'. Alternative definitions: 'basic (or: minimum) syntagmatic (Def. 7b) entity (Def. 1c2a, Def. 7b2) in logology (Def. 2a4a)', 'basic (or: minimum) entity (Def. 1c2a) in logotactics (Def. 2a4c)' (cf. Mulder and Hervey 1980: 47, Def. 8b; Mulder 1989: 443, Def. 8b).

Def. 8b1. 'Logematic (cf. Def. 2a4b) complex (Def. 6c)' for 'complex (cf. Def. 6c) logeme (Def. 8b)' (cf. Mulder and Hervey 1980: 47, Def. 8b2; Mulder 1989: 444, Def. 8b1).

Comment: A complex (cf. Def. 6c) logeme (Def. 8b) is a logematic (cf. Def. 2a4b) complex (Def. 6c), as opposed to a logotactic (cf. Def. 2a4c) complex (Def. 6c). A complex (cf. Def. 6c) logo (Def. 2a4) is either logematically (cf. Def. 2a4b) complex (Def. 6c) or logotactically (cf. Def. 2a4c) complex (Def. 6c), or para-logotactically (cf. Def. 19c) complex (Def. 6c), i.e. it consists of more than one clause (Def. 21a) (adapted from Mulder 1989: 444, Def. 8b1).

Def. 8b2. 'Logid' or 'moneme' or 'morpheme' for 'unit (Def. 9e) in logidics (Def. 2a4a2)' (cf. Mulder and Hervey 1980: 47, Def. 8b3; Mulder 1989: 444, Def. 8b2). Alternative definition: 'Basic (or: minimum) entity (Def. 1c2a) in logematics (Def. 2a4b)', 'basic (or: minimum) entity (Def. 1c2a) in logidotactics (Def. 2a4c1)'.

Comment: Since logidics (Def. 2a4a2) is a simple system (Def. 1b), the logid (moneme, morpheme) is not only the unit (Def. 9e) in logidics (Def. 2a4a2), but

is also the basic (or: minimum) entity (Def. 1c2a) in logidics (Def. 2a4a2). See comment under cenid (Def. 8b2).

Def. 8b3. 'Hyperlogid', or 'hyper-moneme', or 'hypermorpheme' for 'logid moneme, morpheme) (Def. 8b2) in a particular logematic (cf. Def. 2a4b) context, equivalent to two or more logids (monemes, morphemes) (Def. 8b2) in at least one other logematic (cf. Def. 2a4b) context'.

Def. 8b4. 'Hyperlogeme' for 'logeme (Def. 8b) consisting of, or containing, one or more hyperlogids (hyper-monemes) (Def. 8b3)'.

Def. 8b5. 'Logome' for 'unit (Def. 9e) in logomics (Def. 2a4a1)'.

Comment: Since logomics (Def. 2a4a1) is a simple system (Def. 4a) ontology (Def. 3a1a) the logome is not only the unit (Def. 9e) in logomics (Def. 2a4a1), it is also the basic (or: minimum) entity (Def. 1c2a).

Def. 8c. 'Deleme' for 'self-contained (Def. 1b1) (by definition: simultaneous; cf. Def. 6b) bundle of one or more delids (Def. 8c2) as its immediate (Def. 7f1a), and at the same time ultimate (Def. 7f1b), constituents (Def. 7f1)'. Alternative definitions: 'basic (or: minimum) syntagmatic (Def. 7b) entity (Def. 1c2a, Def. 7b2) in delology (Def. 2c1a)', 'basic (or: minimum) delotactic (cf. Def. 2c1c) entity (Def. 1c2a, Def. 7e, Def. 9c1)'.

Def. 8c1. 'Delematic (cf. Def. 2c1b) complex (Def. 6c)' for 'complex (cf. Def. 6c) deleme (Def. 8c)'.

Comment: A complex (cf. Def. 6c) deleme (Def. 8c) is a delematic (cf. Def. 2c1b) complex (Def. 6c), as opposed to a delotactic (cf. Def. 2c1c) complex (Def. 6c). A complex (cf. Def. 6c) delo (Def. 2c1) is either delematically (cf. Def. 2c1b) complex (Def. 6c) or delotactically (cf. Def. 2c1c) complex (Def. 6c), or para-delotactically (cf. Def. 18i) complex (Def. 6c).

Def. 8c2. 'Delid' for 'unit (Def. 9e) in delidics (Def. 2c1a2)'. Alternative definition: 'Basic (or: minimum) entity (Def. 1c2a) in delematics (Def. 2c1b)', 'basic (or: minimum) entity (Def. 1c2a) in delidotactics (Def. 2c1c1)'.

Comment: Since delidics (Def. 2c1a2) is a simple system (Def. 4a), the delid is not only the unit (Def. 9e) in delidics (Def. 2c1a2), but is also the basic (or: minimum) entity (Def. 1c2a) in delidics (Def. 2c1a2). See comment under 'cenid' (Def. 8b2).

Def. 8c3. 'Hyperdelid' for 'delid (Def. 8c2) in a particular delematic (cf. Def. 2c1b) context, equivalent to two or more delids (Def. 8c2) in at least one other delematic (cf. Def. 2c1b) context'.

Def. 8c4. 'Hyperdeleme' for 'deleme (Def. 8c) consisting of, or containing, one or more hyperdelids (Def. 8a3)'.

Def. 8c5. 'Delome' for 'unit (Def. 9e) in delomics (Def. 2c1a1)'.

Comment: Since delomics (Def. 2c1a1) is a simple system (Def. 4a) ontology (Def. 3a1a) the delome is not only the unit (Def. 9e) in delomics (Def. 2c1a1), it is also the basic (or: minimum) entity (Def. 1c2a).

Def. 8d. 'Onteme' for 'ceneme (Def. 8a), logeme (Def. 8b), or deleme (Def. 8c)'.

Def. 8d1. 'Ontematic (cf. Def. 3a1b) complex (Def. 6c)' for 'cenematic (cf. Def. 2b1b) complex (cf. Def. 8a1), logematic (cf. Def. 2a4b) complex (cf. Def. 8b1), or delematic (cf. Def. 2c1b) complex (Def. 8c1)'.

Def. 8d2. 'Ontid' for 'cenid (Def. 8a2), logid (Def. 8b2), or delid (Def. 8c2)'.

Def. 8d3. ‘Hyperontid’ for ‘hypercenid (Def. 8a3), hyperlogid (‘hypermoneme’, ‘hypermorpheme’ (Def. 8b3), or hyperdelid (Def. 8c3)’.

Def. 8d4. ‘Hyperonteme’ for ‘hyperceneme (Def. 8a4), hyperlogeme (Def. 8b4), or hyperdeleme (Def. 8c4)’.

Def. 8d5. ‘Ontome’ for ‘unit (Def. 9e) in ontomics (Def. 3a1a1)’.

Comment: Since ontomics (Def. 3a1a1) is a simple system (Def. 4a) ontology (Def. 3a1a1) the ontome is not only the unit (Def. 9e) in ontomics (Def. 3a1a1), it is also the basic (or: minimum) entity (Def. 1c2a).

Def. 9a. ‘Cenotagm’ or ‘distributional unit’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in cenotactics (Def. 2b1c)’, or for ‘instance of a self-contained bundle of positions (Def. 7g) in cenotactics (Def. 2b1c)’. Alternative definition for ‘distributional unit’ in the former, i.e. abstract, sense: ‘minimum type of structure within which the distribution (Def. 9a1) of cenotactic (cf. Def. 2b1c) entities (Def. 7e, Def. 9a2) can be described completely and exhaustively’. Alternative definition for cenotagm, in the second sense, ‘unit (Def. 9e) in cenotactics (Def. 2b1c)’. Alternative definition for cenotagm allied to the second sense, ‘base (Def. 20a) in para-cenotactics (Def. 18c)’ (cf. Mulder and Hervey 1980: 47, Def. 9, Def. 9a; Mulder 1989: 444, Def. 9a).

Comment: “That is to say that nothing outside such a structure can determine the distribution [Def. 9a1] of immediate constituent [Def. 7f1a] entities [Def. 1c2] within the structure. It is possible that we may in some cases have to describe further the distribution of types of distributional unit with respect to one another. In fact, I tend to use the term ‘distributional unit’ in the more abstract sense, and the term ‘cenotagm’ (phonotagm) or an instance of a distributional unit” (Mulder 1989: 444).

Def. 9a0a. ‘Cenidotagm’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in cenidotactics (Def. 2b1c1)’, or for ‘instance of self-contained (Def. 1b1) bundle of positions (Def. 7g) in cenidotactics (Def. 2b1c1)’. Alternative definition for cenidotagm, in the second sense, ‘unit (Def. 9e) in cenidotactics (Def. 2b1c1)’. Alternative definition allied to second sense, ‘base (Def. 20a) in para-cenotactics (Def. 18c) in the case of a compound (cf. Def. 5a) cenology (Def. 2b1a) which does not contain a cenematics (Def. 2b1b) but does contain a para-cenotactics (Def. 18c)’.

Def. 9a0b. ‘Cenemotagm’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in cenemotactics (Def. 2b1c2)’ or for ‘instance of self-contained (Def. 1b1) bundle of positions (Def. 7g) in cenemotactics (Def. 2b1c2)’. Alternative definition for cenemotagm, in the second sense, ‘unit (Def. 9e) in cenemotactics (Def. 2b1c2)’. Alternative definition allied to second sense, ‘base (Def. 20a) in para-cenotactics (Def. 18c) in the case of a compound (cf. Def. 5a) cenology (Def. 2b1a) which contains a cenematics (Def. 2b1b) and a para-cenotactics (Def. 18c)’.

Def. 9a0c. ‘Cenotheme’ for ‘in cenotactics (Def. 2b1c) self-contained (Def. 1b1) (by definition: simultaneous; cf. Def. 6b) bundle of two or more cenos (Def. 2b1) as its immediate constituents (Def. 7f1a)’.

Def. 9a1. ‘Distribution’ for ‘the set of occurrences of an entity (Def. 1c2) in constructional relations (Def. 7f) with other entities (Def. 1c2) as immediate constituents (Def. 7f1a) in the same construction (Def. 6c)’ (cf. Mulder and Hervey 1980: 47, Def. 9a1; Mulder 1989: 444, Def. 9a1).

Def. 9a2. ‘Cenotactic (cf. Def. 2b1c) entity (Def. 1c2)’ for ‘ceneme (Def. 8a) or cenotagm (Def. 9a)’ (cf. Mulder 1989: 445, Def. 9b1). Alternative definition to Def. 7e.

Def. 9b. ‘Logotagm’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in logotactics (Def. 2a4c)’, or for ‘instance of a self-contained bundle of positions (Def. 7g) in logotactics (Def. 2a4c). Alternative definition for ‘logotagm’ in the first sense ‘underlying structure (Def. 14c) of a self-contained (Def. 1b1) bundle of logotactic entities (Def. 7d, Def. 9b1)’. Alternative definitions for logotagm in the second sense ‘self-contained (Def. 1b1) bundle of logotactic entities (Def. 7d, Def. 9b1), as immediate constituents (Def. 7f1a)’, or ‘logotactic complex (Def. 6c)’. Alternative definition for logotagm, in the second sense, ‘unit (Def. 9e) in logotactics (Def. 2a4c)’. Alternative definition for logotagm allied to second sense, ‘base (Def. 20a) in para-logotactics (Def. 19c)’ (cf. Mulder and Hervey 1980: 47, Def. 9b; Mulder 1989: 444, Def. 9b).

Def. 9b0a. ‘Logidotagm’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in logidotactics (Def. 2a4c1)’, or for ‘instance of self-contained (Def. 1b1) bundle of positions (Def. 7g) in logidotactics (Def. 2a4c1)’. Alternative definition for logidotagm, in the second sense, ‘unit (Def. 9e) in logidotactics (Def. 2a4c1)’. Alternative definition allied to second sense, ‘base (Def. 20a) in para-logotactics (Def. 19c) in the case of a compound (cf. Def. 5a) logology (Def. 2a4a) which does not contain a logematics (Def. 2a4c2) but does contain a para-logotactics (Def. 19c)’.

Def. 9b0b. ‘Logemotagm’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in logemotactics (Def. 2a4c2)’, or for ‘instance of self-contained (Def. 1b1) bundle of positions (Def. 7g) in logemotactics (Def. 2a4c2)’. Alternative definition for logemotagm, in the second sense, ‘unit (Def. 9e) in logemotactics (Def. 2a4c2)’. Alternative definition allied to second sense, ‘base (Def. 20a) in para-logotactics (Def. 19c) in the case of a compound (cf. Def. 5a) logology (Def. 2a4a) which contains a logematics (Def. 2a4b) and a para-logotactics (Def. 19c)’.

Def. 9b0c. ‘Logotheme’ for ‘in logotactics (Def. 2a4c) self-contained (Def. 1b1) (by definition: simultaneous; cf. Def. 6b) bundle of two or more logos (Def. 2a4) as its immediate constituents (Def. 7f1a)’.

Def. 9b1. ‘Logotactic (cf. Def. 2a4c) entity (Def. 1c2)’ for ‘logeme (Def. 8b), or logotagm (Def. 9b)’ (cf. Mulder 1989: 445, Def. 9b1). Alternative definition to Def. 7d.

Def. 9c. ‘Delotagm’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in delotactics (Def. 2c1c)’, or for ‘instance of a self-contained bundle of positions (Def. 7g) in delotactics (Def. 2c1c)’. Alternative definition for delotagm, in the second sense, ‘unit (Def. 9e) in delotactics (Def. 2c1c)’. Alter-

native definition allied to second sense, ‘base (Def. 20a) in para-delotactics (Def. 18i)’.

Def. 9c0a. ‘Delidotagm’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in delidotactics (Def. 2c1c1)’, or for ‘instance of self-contained (Def. 1b1) bundle of positions (Def. 7g) in delidotactics (Def. 2c1c1)’. Alternative definition for delidotagm, in second sense, ‘unit (Def. 9e) in delidotactics (Def. 2c1c1)’. Alternative definition allied to second sense, ‘base (Def. 20a) in para-delotactics (Def. 18i) in the case of a compound (cf. Def. 5a) delology (Def. 2c1a) which does not contain a delematics (Def. 2c1b) but does contain a para-delotactics (Def. 18i)’.

Def. 9c0b. ‘Delemotagm’ for ‘self-contained (Def. 1b1) bundle of positions (Def. 7g) in delematics (Def. 2c1b)’, or for ‘instance of self-contained (Def. 1b1) bundle of positions (Def. 7g) in delemotactics (Def. 2c1c2)’. Alternative definition for delemotagm, in second sense, ‘unit (Def. 9e) in delemotactics (Def. 2c1c2)’. Alternative definition allied to second sense, ‘base (Def. 20a) in para-delotactics (Def. 18i) in the case of a compound (cf. Def. 5a) delology (Def. 2c1a) which contains a delematics (Def. 2c1b) and a para-delotactics (Def. 18i)’.

Def. 9c0c. ‘Delotheme’ for ‘in delotactics (Def. 2c1c) self-contained (Def. 1b1) (by definition: simultaneous; cf. Def. 6b) bundle of two or more delos (Def. 2c1) as its immediate constituents (Def. 7f1a)’.

Def. 9c1. ‘Delotactic (cf. Def. 2c1c) entity (Def. 1c2)’ for ‘deleme (Def. 8c) or delotagm (Def. 9c)’. Alternative definition to Def. 7e2.

Def. 9d. ‘Ontotagm’ for ‘cenotagm (Def. 9a), logotagm (Def. 9b), or delotagm (Def. 9c)’.

Def. 9d0a. ‘Ontidotagm’ for ‘cenidotagm (Def. 9a0a), logidotagm (Def. 9b0a), or delidotagm (Def. 9c0a)’.

Def. 9d0b. ‘Ontemotagm’ for ‘cenemotagm (Def. 9a0b), logemotagm (Def. 9b0b), or delemotagm (Def. 9c0b)’.

Def. 9d0c. ‘Ontotheme’ for ‘cenotheme (Def. 9a0c), logotheme (Def. 9b0c), or delotheme (Def. 9c0c).

Comment: cf. Dickins 1998: 138–150.

Def. 9d1. ‘Ontotactic (Def. 7c) entities (Def. 1c2)’ for ‘cenotactic entities (Def. 7e, Def. 9a2), logotactic entities (Def. 7d1, Def. 9b1), or delotactic entities (Def. 7e2, Def. 9c1)’ or for ‘ontemes (Def. 8d) or ontotagms (Def. 9d)’.

Def. 9e. ‘Unit’ for ‘onto (Def. 3a1) in a particular non-compound (cf. Def. 5a) semiotic system (Def. 1c, Def. 5) which constitutes a self-contained (Def. 1b1) set or combination (Def. 6c) in that semiotic system (Def. 1c, Def. 5)’.

Def. 10. ‘Syntagmeme’ for ‘paradigmeme (Def. 10a) in a particular position (Def. 7g) and in its capacity of standing in that position (Def. 7g)’ (cf. Mulder and Hervey 1980: 48, Def. 10; Mulder 1989: 445, Def. 10).

Def. 10a. ‘Paradigmeme’ for ‘member of a self-contained (Def. 1b1) set of entities (Def. 1c2) in functional (Def. 1a) opposition in a given context’. Alternative definition: ‘member of a paradigm (Def. 10b)’ (cf. Mulder and Hervey 1980: 48, Def. 10a; Mulder 1989: 445, Def. 10a).

Def. 10b. ‘Paradigm’ for ‘set of entities (Def. 1c2) in functional (Def. 1a) opposition in a given context’ (cf. Mulder and Hervey 1980: 46, Def. 7g1); Mulder 1989: 445, Def. 10b).

Comment: Definitions 7–10b refer to general notions in the description of semiotic systems (Def. 1c, Def. 5). Definitions 8a-8a4, 9a–9a0b, and 9b2 are specifically relevant to cenology (Def. 2b1a). Definitions 8b-8b4 and 9b–9b1 are specifically relevant to logology (Def. 2a4a). Definitions 8c–8c4 and 9c–9c1 are specifically relevant to delology (Def. 2c1a). Definitions 8d–8d4 and 9d–9e are general statements.

Def. 11a. ‘Relation of sub-ordination (or: determination)’ for ‘direct ontotactic (Def. 7c) asymmetrical (cf. Def. 6a) relation (Def. 15) of functional (Def. 1a) dependency’ (cf. Def. 1b1, Def. 6a, Def. 11b, Def. 11c). Alternative definition: ‘direct ontotactic (Def. 7c) relation (Def. 15) of unilateral functional (Def. 1a) dependency (cf. Def. 1b1, Def. 6a, Def. 11b, Def. 11c)’ (cf. Mulder and Hervey 1980: 48, Def. 11a); Mulder 1989: 445, Def. 11a).

Comment: The converse of sub-ordination is super-ordination (or: government). If *a* and *b* are in direct ontotactic (Def. 7c) relation (Def. 15), and *a* is for its function dependent on *b*, but not vice versa (in symbols *a*→*b*), a is said to be sub-ordinate to *b*, and *b* super-ordinate to *a*. Furthermore, *a* is said to be standing in peripheral (cf. Def. 13b) and *b* in nuclear (cf. Def. 13a) position (Def. 7g) in the construction (Def. 6c) in question. Super-ordination (or: government) and the notions nuclear (cf. Def. 13a) and peripheral (cf. Def. 13b) are hereby defined as well (adapted from Mulder 1989: 445).

Def. 11b. ‘Relation of coordination’ for ‘direct ontotactic (Def. 7c) (by implication: symmetrical (cf. Def. 6a, Def. 11c) relation (Def. 15) of mutual functional (Def. 1a) independency (cf. Def. 1b1, Def. 6a, Def. 11a, Def. 11c)’. Alternative definition: ‘direct ontotactic (Def. 7c) relation (Def.15) of bilateral functional (Def. 1a) independency (cf. Def. 1b1, Def. 6a, Def. 11a, Def. 11c)’ (cf. Mulder and Hervey 1980: 48, Def. 11b); Mulder 1989: 445, Def. 11b).

Comment: If *a* and *b* are in direct ontotactic (Def. 7c) relation (Def. 15), and *a* is for its ontotactic (Def. 7c) function independent of *b*, and vice versa, *a* and *b* are said to be coordinated (in symbols: *a*←/→*b*) (adapted from Mulder 1989: 445–446).

Def. 11c. ‘Relation of interordination’ for ‘direct ontotactic (Def. 7c) (by implication: symmetrical (cf. Def. 6a, Def. 11b) relation (Def. 15) of mutual functional (Def. 1a) dependency (cf. Def. 1b1, Def. 6a, Def. 11a, Def. 11b)’. Alternative definition: ‘direct ontotactic (Def. 7c) relation (Def. 15) of bilateral functional (Def. 1a) dependency (cf. Def. 1b1, Def. 6a, Def. 11a, Def. 11b)’ (cf. Mulder and Hervey 1980: 49, Def. 11c); Mulder 1989: 446, Def. 11c).

Comment: If *a* and *b* are in direct ontotactic (Def. 7c) relation (Def. 15), and *a* is for its ontotactic (Def. 7c) function dependent on *b*, as well as vice versa, *a* and *b* are said to be inter-ordinated (in symbols: *a*↔*b*) (adapted from Mulder 1989: 446).

Def. 12a. ‘Relation of unilateral occurrence dependency’ for ‘relation such that one of two entities (Def. 1c2) in direct relation (Def. 15) which are immediate con-

stituents (Def. 7f1a) in a construction (Def. 6c) can occur in the construction (Def. 6c) in question, whilst the other is zero' (cf. Mulder and Hervey 1980: 49, Def. 12b); Mulder 1989: 446, Def. 12a).

Comment: "In symbols [*a*]*b* or *a*[*b*], the square brackets indicating the occurrence-dependent entity [Def. 1c2], i.e. in the above case it requires the other item, or an item in the same position [Def. 7g], for its occurrence, but not vice versa. The dependent item is called an 'expansion' [Def. 13c]" (Mulder 1989: 446).

Def. 12b. 'Bilateral occurrence independency' for 'relation such that either of two entities (Def. 1c2) in direct relation (Def. 15) which are immediate constituents (Def. 7f1a) in a construction (Def. 6c) can occur in the construction (Def. 6c) while the other is zero' (cf. Mulder and Hervey 1980: 50, Def. 12c); Mulder 1989: 446, Def. 12b).

Comment: "In symbols [*a*][*b*]. Both items are 'expansions' [Def. 13c] in respect of one another" (Mulder 1989: 446).

Def. 12c. 'Bilateral occurrence interdependency' for 'relation such that neither of two entities (Def. 1c2) in direct relation (Def. 15) which are immediate constituents (Def. 7f1a) in a construction (Def. 6c) can occur in the construction (Def. 6c) in question, whilst the other is zero' (cf. Mulder and Hervey 1980: 49, Def. 12a); Mulder 1989: 446, Def. 12c).

Comment: "In symbols *ab*. Neither of the items are 'expansions' [Def. 13c] in respect of one another" (Mulder 1989: 446).

Def. 13a. 'Nucleus' or 'governing entity (Def. 1c2)' for 'in a relation of sub-ordination (Def. 11a) the identity element for the ontotactic (Def. 7c) functions of the elements' (cf. Mulder and Hervey 1980: 50, Def. 13a); Mulder 1989: 446, Def. 13a).

Comment: In symbols: *b*→*a*, [*b*]→*a*, *a*←*b*, or *a*←[*b*], in which *a* is the nucleus. That is, the ontotactic (Def. 7c) relations (Def. 7c1) of the other immediate constituents (Def. 7f1a) depend for their ontotactic (Def. 7c) function on their relation with the nucleus (adapted from Mulder 1989: 446).

Def. 13b. 'Peripheral entity (Def. 1c2)' or 'governed entity (Def. 1c2)' or 'determinant entity (Def. 1c2)' for 'in a relation of sub-ordination (Def. 11a), a non-nuclear (cf. Def. 13a) immediate constituent (Def. 7f1a)' (cf. Mulder and Hervey 1980: 50, Def. 13b); Mulder 1989: 447, Def. 13b).

Comment: In symbols: *b* in the representations for Def. 11a, and Def. 13a (adapted from Mulder 1989: 447).

Def. 13c. 'Expansion' for 'immediate constituent (Def. 7f1a) that commutes (cf. Def. 7a2) with zero' (cf. Mulder and Hervey 1980: 50, Def. 13c; Mulder 1989: 447, Def. 13c).

Comment: In symbols *a*→[*b*], i.e. sub-ordination (cf. Def. 11a, Def. 13a), in which *a* is an expansion; also [*a*]←/→[*b*], i.e. coordination (cf. Def. 11b), in which both *a* and *b* are expansions. The term 'expansion' is always used with reference to another entity (Def. 1c2) with which the other entity (Def. 1c2) is in direct ontotactic (Def. 7c) relation (Def. 15). Complex (cf. Def. 6c) expansions may contain entities (Def. 1c2) that are themselves not expansions, e.g. [[*a*]→*b*]→*c*, or even [*a*→*b*]→*c* (adapted from Mulder 1989: 447).

In both the earlier version of the postulates (Mulder and Hervey 1980: 50–51) and the revised version (Mulder 1989: 447-448) a distinction is made between diverse determination (Def. 14a; cf. also Def. 11a) and parallel determination (Def. 14b; cf. also Def. 11a). It seems that this distinction cannot be coherently applied (cf. Heselwood 1995; also Dickins 1998: 138–150). It is therefore excluded from these postulates for extended axiomatic functionalism along with the corresponding definition numbers.

Def. 14c. 'Underlying structure' for 'abstract representation of an ontotactic (Def. 7c) complex (Def. 6c) in terms of positions (Def. 7g), with or without indication of occurrence dependency (cf. Def. 12a, Def. 12b, Def. 12c)' (cf. Mulder and Hervey 1980: 51, Def. 14c); Mulder 1989: 448, Def. 14c).

Def. 15. 'Direct relation' for 'relation between constituents (Def. 7f1) (not necessarily immediate constituents (Def. 7f1a)) that is not a relation via other constituents (Def. 7f1)' (cf. Mulder and Hervey 1980: 51, Def. 15; Mulder 1989: 448, Def. 15).

Def. 16a. 'Conflation' for 'a single realisation (Def. F4.7) corresponding to more than one constituent (Def. 7f1) (not immediate constituents (Def. 7f1a)) having a similar ontotactic (Def. 7c) function, in a construction (Def. 6c)' (cf. Mulder 1989: 448, Def. 16a).

Comment: "Example: 'John likes but I hate him', where 'hate' functions in two different but equivalent positions [Def. 7g]. Representation: 'John likes ⎪him⎪ but I hate him'. ... The unshaded box around 'him' indicates that there is conflation at that point" (Mulder 1989: 448). As Mulder also notes (1989: 448), in the earlier version of the postulates, conflation was termed ellipsis (Mulder and Hervey 1980: 57, Def. 21). I suspect that the attempt to treat ellipsis, of any type, as a structural matter may be ill-conceived (cf. Dickins 1998: 343–348).

Def. 16b. 'Functional (Def. 1a) amalgamation' for 'one single entity (Def. 1c2) having different ontotactic (Def. 7c) functions (and therefore corresponding to more than one constituent (Def. 7f1)) on different level of the analysis' (cf. Mulder 1989: 448, Def. 16b).

Comment: "In phonology [Def. 0b, Def. 2b1a] an example is a single phoneme [Def. 8a] standing in a 'final' position [Def. 7g] in one phonotagm [Def. 9a], but in an initial position [Def. 7g] in another phonotagm [Def. 9a]" (Mulder 1989: 448).

Def. 16c. 'Antecedence' or 'post-cedence' for 'a case in which an ontotagm (Def. 9d) from the structural (but not the realisational (cf. Def. F4.7)) point of view is only partly well-formed, but the "missing" entity (Def. 1c2) is represented elsewhere' (cf. Mulder 1989: 448, Def. 16c).

Comment: Mulder (1989: 449) provides further discussion of the notions of antecedence and postcedence. It seems possible, that as with ellipsis, these notions will not be required in the extended version.

Definitions 11a to 16c in the standard version further develop the whole of syntax (plerotactics). The relevant notions are presented and the methodology is developed in some detail (cf. Mulder 1989: 449). As has been noted, the applicability of some of these notions to the extended version may be doubted. It also remains to be seen whether the notions presented in these definitions are equally applicable to logotactics (Def. 2a4c) and to delotactics (Def. 2c1c).

Axiom C. Ontos (Def. Def. 3a1) may have para-ontotactic features (Def. 17), i.e. cenos (Def. 2b1) may have para-cenotactic features (Def. 18), delos (Def. 2c1) may have para-delotactic features (Def. 18f), and logos (Def. 2a4) may have para-logotactic features (Def. 19) (cf. Mulder and Hervey 1980: 52, Axiom C; Mulder 1989: 449, Axiom C).

Comment: Axiom C and related definitions deal with the para-ontotactics (Def. 19f), i.e. principally with para-cenotactic features (Def. 18), para-logotactic features (Def. 19) and para-delotactic features (Def. 18f). To para-cenotactic features (Def. 18) in natural language (i.e. para-phonotactics features) belong features (Def. 1c1) such as tone (cf. Def. 18b), and accent and juncture. To para-logotactic features (Def. 19) in natural language (i.e. para-lexotactic features) belong features (Def. 1c1) such as intonation (cf. Def. 19a) (adapted from Mulder 1989: 452).

Def. 17. 'Para-ontotactic features' for 'para-cenotactic (cf. Def. 18c) features (Def. 18), para-logotactic (cf. Def. 19c) features (Def. 19), or para-delotactic (cf. Def. 18i) features (Def. 18f)' (cf. Mulder and Hervey 1980: 52, Def. 16; Mulder 1989: 449, Def. 17). Alternative definition: 'features (Def. 1c1) in para-ontotactics (Def. 19f)'.

Comment: cf. Mulder (1989: 450–451) on an extended discussion of corresponding notions in standard axiomatic functionalism.

Def. 18. 'Para-cenotactic features' for 'features (Def. 1c1) corresponding to cenological form (Def. 2b1d, Def. 23), accompanying, but not determining the identity of cenotactic entities (Def. 7e, Def. 9a2)' (cf. Mulder and Hervey 1980: 53, Def. 17; Mulder 1989: 451, Def. 18).

Comment: A cenotactic entity (Def. 7e, Def. 9a2) in combination (Def. 6c) with para-cenotactic features assumes an identity of its own at the level of para-cenotactics (Def. 18c) (adapted from Mulder 1989: 451).

Def. 18a. 'Contrastive para-cenotactic features' for 'para-cenotactic features (Def. 18) with the function of groupment over and above cenotactic (cf. Def. 2b1c) groupment' (cf. Mulder and Hervey 1980: 53, Def. 17a; Mulder 1989: 451, Def. 18a).

Comment: One should not be misled by the terminology into thinking that contrastive para-ontotactic features (Def. 17) are not functional (Def. 1a). They are, as so many other things, e.g. logotactic relations (Def. 7d1), distinctive (cf. Def. 7a3) in a systemic (cf. Def. 1b), not in a directly oppositional sense (adapted from Mulder 1989: 451).

Def. 18b. 'Distinctive (cf. Def. 7a3) para-cenotactic features' for 'para-cenotactic features (Def. 18) that are in a relation of direct opposition with one or more other para-cenotactic features (Def. 18), or with zero' (cf. Mulder and Hervey 1980: 53, Def. 17b; Mulder 1989: 451, Def. 18b). Alternative definition: 'features (Def. 1c1) in para-cenotactics (Def. 18c)'.

Comment: "A typical example is distinctive 'tone', as, for instance, in Chinese. Trivially, unless there is no one-one correspondence (in which case it would not be trivial), also the phonological [cf. Def. 0b] forms [Def. 2b1d, Def. 23] of dis-

tinctive intonations are distinctive para-cenotactic (para-phonotactic) features" (Mulder 1989: 451).

Def. 18c. 'Para-cenotactics' for 'system (Def. 1b) of para-cenotactic entities (Def. 18d)'.

Def. 18d. 'Para-cenotactic entity' for 'ceno (Def. 2b1) over and above the level of cenotactics (Def. 2b1c)'. Alternative definition, 'entity in para-cenotactics (Def. 18c).

Def. 18e. 'Para-cenotagm' for 'unit (Def. 9e) in para-cenotactics (Def. 18c)'.

Def. 18f. 'Para-delotactic features' for 'features (Def. 1c1) corresponding to delological form (Def. 2c1d, Def. 23c), accompanying, but not determining the identity of delotactic entities (Def. 7e2, Def. 9c1)'. Alternative definition: 'Features (Def. 1c1) in para-delotactics (Def. 18i)'.

Def. 18g. 'Contrastive para-delotactic features' for 'para-delotactic features (Def. 18f) with the function of groupment over and above delotactic (cf. Def. 2c1c) groupment'.

Def. 18h. 'Distinctive (cf. Def. 7a3) para-delotactic features' for 'para-delotactic features (Def. 18f) that are in a relation of direct opposition with one or more other para-delotactic features (Def. 18f), or with zero'.

Def. 18i. 'Para-delotactics' for 'system (Def. 1b) of para-delotactic entities (Def. 18j)'.

Def. 18j. 'Para-delotactic entity' for 'delo (Def. 2c1) over and above the level of delotactics (Def. 2c1c)'. Alternative definition: 'entity in a para-delotactics (Def. 18i)'.

Def. 18k. 'Para-delotagm' for 'unit (Def. 9e) in para-delotactics (Def. 18i)'.

Def. 19. 'Para-logotactic features' for 'features (Def. 1c1) accompanying, but not determining the identity of, logotactic entities (Def. 7d, Def. 9b1) or conglomerations of logotactic entities (Def. 7d, Def. 9b1; cf. Def. 21, Def. 21a)' (cf. Mulder and Hervey 1980: 54, Def. 18; Mulder 1989: 451, Def. 19).

Comment: Para-logotactic entities (Def. 1c2) or conglomerations of para-logotactic entities (Def. 1c2) in combination (Def. 6c) with para-logotactic features assume an identity of their own on the sentential level, i.e. they become sentential entities (Def. 21b), that is sentences (Def. 21) or clauses (Def. 21a) (adapted from Mulder 1989: 451).

Def. 19a. 'Contrastive para-logotactic (cf. Def. 19c) features (Def. 19)' for 'features (Def. 1c1) with the function of groupment over and above logotactic (cf. Def. 2a4c) groupment' (cf. Mulder and Hervey 1980: 54, Def. 18a; Mulder 1989: 451, Def. 19a).

Comment: "In language the suspensive, i.e. 'comma' or 'semi-colon' intonation type belong to this, but also the 'distinctive' types such as 'finality' ('full-stop type'), 'finality with emphasis' ('exclamation-type'), and 'question', though having a directly distinctive function [Def. 7a3], correspond, from another point of view, to contrastive features [Def. 1c1], as they too provide groupment" (Mulder 1989: 452).

Def. 19b. 'Distinctive (cf. Def. 7a3) para-logotactic (cf. Def. 19c) features (Def. 19)' for 'para-logotactic (cf. Def. 19c) features (Def. 19) that are in a direct rela-

tion of opposition with other para-logotactic features (Def. 19) or with zero' (cf. Mulder and Hervey 1980: 54, Def. 18b; Mulder 1989: 452, Def. 19b).

Def. 19c. 'Para-logotactics' for 'system (Def. 1b) of para-logotactic entities (Def. 19d)'.

Def. 19d. 'Para-logotactic entity (Def. 1c2)' for 'logo (Def. 2a4) over and above the level of logotactics (Def. 2a4c)'. Alternative definition, 'entity in para-logotactics (Def. 19c)'.

Def. 19e. 'Para-logotagm' for 'unit (Def. 9e) in para-logotactics (Def. 19c)'.

Def. 19f. 'Para-ontotactics' for 'para-logotactics (Def. 19c), para-cenotactics (Def. 18c), or para-delotactics (Def. 18i)'.

Def. 20. 'Para-ontotagm' for 'unit (Def. 9e) in para-ontotactics (Def. 19f)'. Alternative definition: 'ontotactic (Def. 7c) entities (Def. 1c2) or conglomeration of ontotactic (Def. 7c) entities (Def. 1c2), together with accompanying para-ontotactic features (Def. 17), such that the whole assumes an identity on a level different from the ontotactic (Def. 7c) level (i.e. the level of ontotactics (Def. 3b))' (cf. Mulder and Hervey 1980: 55, Def. 19; Mulder 1989: 452, Def. 20).

Def. 20a. 'Base' for 'in a para-ontotagm (Def. 20.), the total complex (Def. 6c) of those features (Def. 1c1) that correspond (on the level of para-ontotactics: Def. 19f) to the ontotactic (Def. 7c) entities (Def. 1c2)' (cf. Mulder – Hervey 1980: 56, Def. 20b; Mulder 1989: 452, Def. 20a).

Comment: See also "basic entity" (Def. 1c2a).

Def. 20b. 'Complex (cf. Def. 6c) para-ontotagm (Def. 20)' for 'self-contained (Def. 1b1) entity (Def. 1c2) constituted by two or more para-ontotagms (Def. 20), together with further accompanying para-ontotactic features (Def. 17)' (cf. Mulder and Hervey 1980: 56, Def. 19a; Mulder 1989: 452, Def. 20b).

Axiom D. All semiotic systems (Def. 1c, Def. 5) contain sentences (Def. 21) (cf. Mulder and Hervey 1980: 56, Axiom D; Mulder 1989: 453, Axiom D).

Comment: Axioms B, C and D together cover the whole of the cenology (Def. 2b1a), logology (Def. 2a4a) and delology (Def. 2c1a), i.e. the system ontology (Def. 3a1a) (cf. Mulder 1989: 452–453).

In Mulder's revised version of the postulates Axiom D reads, "All semiotic systems contain sentences, constituted by a base and para-syntactic features" (Mulder 1989: 453). This contrasts with Axiom D in the earlier version of the postulates, which reads, "All semiotic systems contain sentences" (Mulder and Hervey 1980: 56). I can see no need in specifying that all semiotic systems [Def. 1c, Def. 5] must have para-syntactic features [= para-logotactic features (Def. 19)], since in many cases these will merely be "zero" features (Def. 1c1). It seems more sensible to adopt the position indicated in the older version of the postulates that not all semiotic systems (Def. 1c, Def. 5) need have para-ontotactics (Def. 19f).

Axiom D sets the sentential level (as one aspect of the para-logotactics: Def. 19c) apart from the rest of the logology (Def. 2a4a), especially the logotactics

(Def. 2a4c). This separation is one of the more conspicuous features of axiomatic functionalism, and is designed to resolve some aspects of the dilemma of well-formedness vs. non-well-formedness (cf. Mulder 1989: 454).

In the following Definitions, I do not consider descriptive issues in paradelotactics (Def. 18i) paralleling those relating to sentence (Def. 21) and clause (Def. 21a). I have left these to be worked through in later and more developed versions of the postulates for extended axiomatic functionalism.

Def. 21. 'Sentence' for 'logo (Def. 2a4) (by definition corresponding to a signum (Def. 2a1, Def. 24)) with such features (Def. 1c1) that it cannot be a feature (Def. 1c1) (constituent (Def. 7f1) or other feature (Def. 1c1)) of another logo (Def. 2a4)'. Alternative definition: 'signum (Def. 2a1, Def. 24) such that it is a self-contained (Def. 1b1) vehicle for conveying messages' (cf. Mulder and Hervey 1980: 56, Def. 20; Mulder 1989: 453, Def. 21).

Def. 21a 'Clause' for 'immediate constituent (Def. 7f1a) (perhaps the only one) of a sentence (Def. 21)' (cf. Mulder and Hervey 1980: 56, Def. 20a; Mulder 1989: 453, Def. 21a).

Comment: A clause is therefore, by implication, also a para-logotactic entity (Def. 19d), and as all para-logotactic entities (Def. 19d) are sentential entities (Def. 21b), though not vice versa, a clause is a sentential entity (Def. 21b) (adapted from Mulder 1989: 453–454).

Def. 21b. 'Sentential features (Def. 1c1) or entities (Def. 1c2)' for 'such features (Def. 1c1) or entities (Def. 1c2) as determine particular signa (Def. 2a1, Def. 24) to be sentences (Def. 21)' (cf. Mulder and Hervey 1980: 56, Def. 20c; Mulder 1989: 454, Def. 21b).

Comment: These are not necessarily para-logotactic features (Def. 19), though the latter are necessarily sentential features (adapted from Mulder 1989: 454).

Def. 21c. 'Sentential markers' for 'occurrence dependent (cf. Def. 12a) sentential features or entities (Def. 21b) that are not para-logotactic features (Def. 19) or entities (Def. 19d), but correspond to logotactic (cf. Def. 2a4c) features (Def. 1c1) or entities (Def. 7d, Def. 9b1)' (cf. Mulder and Hervey 1980: 56, Def. 20c1; Mulder 1989: 454, Def. 21c).

Comment: cf. the long discussion of sentential markers in Mulder (1989: 454).

Axiom E. There may be a many-to-one relation between cenetic form (Def. 22a) and figura (Def. 2b) (alloceny (Def. 23a)), and between cenological form (Def. 2b1d, Def. 23) and expression (Def. 24a) (allomorphy (Def. 24b1)), and vice versa: homoceny (Def. 25a) and homomorphy (Def. 26a) respectively. There may also be a many-to-one relationship between semantic form (Def. 23b1) and denotation (Def. 2c) (allodely (Def. 23c1)), and between delological form (Def. 2c1d, Def. 23c) and content (Def. 24b) (allosemy (Def. 24c1)), and vice versa: homodely (Def. 26k) and homosemy (Def. 26f) respectively (cf. Mulder and Hervey 1980: 59, Axiom E; Mulder 1989: 454, Axiom E).

Comment: Axiom E and the ensuing Definitions deal with aspects of the signum ontology (Def. F4.4), principally at the allontic (cf. Def. 26o) level (i.e. the al-

lontics; cf. Dickins 1998: 137; also Mulder 1989: 457). They also deal with the protocolising levels of general cenetics (Def. 22d) and general semantics (Def. 23b4) allied to the signum ontology (Def. F4.4).

Def. 22. 'Cenetic image' (symbolised: *i*) for 'model for the unique form of a singular realisation (Def. F4.7), i.e. an instantiation (Def. F4.6), in morphontics (Def. F3h)' (cf. Mulder and Hervey 1980: 59, Def. 22; Mulder 1989: 454, Def. 22), or for 'model for the unique form of a single entity (Def. 1c2) which is capable of being the instantiation (Def. F4.6) of a figura (Def. 2b)'.

Def. 22a. 'Cenetic form' (symbolised: *f*) for 'class of impressionistically similar cenetic images (Def. 22)' (cf. Mulder and Hervey 1980: 56, Def. 22a; Mulder 1989: 453, Def. 22a). Formal definition $f=\{i\}$, the braces indicating that it is a self-contained (Def. 1b1) class of *i*. (cf. Mulder 1989: 445).

Def. 22b. 'Image cenetics' for 'the sub-theory dealing with the description of cenetic images (Def. 22)'.

Def. 22c. 'Form cenetics' for 'the sub-theory dealing with the description of cenetic forms (Def. 22a)'.

Def. 22d. 'General cenetics' for 'image cenetics (Def. 22b) and form cenetics (Def. 22c)'.

Def. 23. 'Cenological form (symbolised: *p*)' for 'a particular self-contained (Def. 1b1) class of one or more particular cenetic forms (Def. 22a) (i.e. {*f*}), each member *f* in its capacity of having a particular distinctive function (Def. 7a3) d in cenology (Def. 2b1a)' (cf. Mulder and Hervey 1980: 60, Def. 23; Mulder 1989: 455, Def. 23). Formal definition: $p = \{f^{i...n}\mathrm{Rd}\}$, where $^{i...n}$ indicates 'each one of a particular class' (cf. Mulder 1989: 455). Alternative definition to Def. 2b1d.

Def. 23a. 'Alloceny' for 'one cenological form (Def. 2b1d, Def. 23), the manifestations (Def. 26o) of which corresponding to two or more cenetic forms (Def. 22a)' (cf. Mulder and Hervey 1980: 60, Def. 23a; Mulder 1989: 455, Def. 23a). Formal definition: '$f^{i}Rd^{i} \sim f^{j}\ Rd^{i}$', where also ^{j} stands for an integer, signifying 'a particular' but $^{i \neq j}$, and ~ can be read as 'compared with'. (cf. Mulder 1989: 455).

Def. 23a1. 'Allocene' either for 'one of the terms of 'alloceny' (Def. 23a) as a comparison', or for 'an allocenic entity (Def. 1c2) where there is no comparison with another allocenic entity (Def. 1c2), i.e. {i}Rd *or* f^{i}Rd' (cf. Mulder and Hervey 1980: 60, Def. 23a; Mulder 1989: 455, Def. 23a1).

Def. 23a2. 'Allocenics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with the description of allocenes (second sense) (Def. 23a1) and related notions'.

Def. 23a3. 'Monoceny' for 'state of affairs in which a figura (Def. 2b) has only one allocene (second sense) (Def. 23a1)'.

Def. 23a4. 'Polyceny' for 'state of affairs in which a figura (Def. 2b) has more than one allocene (second sense) (Def. 23a1)'.

Def. 23b. 'Semantic image' (symbolised: *j*) for 'model for the unique form of a singular realisation (Def. F4.7), i.e. an instantiation (Def. F4.6), in semantics

(Def. F4.3)', or for 'model for the unique form of a single entity (Def. 1c2) which is capable of being the instantiation (Def. F4.6) of a denotation (Def. 2c)'. Alternative definition to Def. F4b.

Def. 23b1. 'Semantic form' (symbolised: *g*) for 'class of impressionistically similar semantic images (Def. 23b, Def. F4b)'. Formal definition: $g=\{j\}$, the braces indicating that it is a self-contained (Def. 1b1) class of *j* (cf. Mulder 1989: 445).

Def. 23b2. 'Image semantics' for 'the sub-theory dealing with the description of semantic images (Def. 23b, Def. F4b)'.

Def. 23b3. 'Form semantics' for 'the sub-theory dealing with the description of semantic forms (Def. 23b1)'.

Def. 23b4. 'General semantics' for 'image cenetics (Def. 23b2) and form semantics (Def. 23b3)'.

Def. 23c. 'Delological form (symbolised: *q*)' for 'a particular self-contained (Def. 1b1) class of one or particular semantic forms (Def. 23b1) (i.e. $\{q\}$), each member *q* in its capacity of having a particular distinctive function (Def. 7a3) e in delology (Def. 2c1a)'. Formal definition: $q= \{g^{i...n}\mathrm{Re}\}$, where $^{i...n}$ indicates 'each one of a particular class'. Alternative definition to Def. 2c1d.

Def. 23c1. 'Allodely' for 'one denotation (Def. 2c), the manifestations (Def. 26o) of which corresponding to two or more semantic forms (Def. 23b1)'. Formal definition: $g^{i}\mathrm{Re}^{i} \sim g^{j}\mathrm{Re}^{i}$, where also ^{j} stands for an integer, signifying 'a particular' but $^{i\neq j}$ and ~ can be read as 'compared with'.

Def. 23c2. 'Allodele' or 'denotatum-type' either for 'one of the terms of 'allodely' (Def. 23c1) as a comparison', or for 'an allodelic entity (Def. 1c2) where there is no comparison with another allodelic entity (Def. 1c2), i.e. $g\mathrm{Re}$ or $\{j\}\mathrm{Re}$'.

Def. 23c3. 'Allodelics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with the description of allodeles (second sense) (Def. 23c2) and related notions'.

Def. 23c4. 'Monodely' for 'state of affairs in which a denotation (Def. 2c) has only one allodele (second sense) (Def. 23c2)'.

Def. 23c5. 'Polydely' for 'state of affairs in which a denotation (Def. 2c) has more than one allodele (second sense) (Def. 23c2)'.

Def. 24. 'Signum' (symbolised: S) for 'the conjunction of a particular expression (Def. 24a) and a particular content (Def. 24b), which mutually imply one another'. Formal definition: S= E&C, or $S=\{p^{i...n}\mathrm{Rs}\}\&\{q^{i...n}\mathrm{Rs}\}$.

Comment: Alternative definition to Def. 2a1 (cf. Mulder and Hervey 1980: 60, Def. 24; Mulder 1989:455, Def. 24).

Def. 24a. 'Expression' (symbolised: E)) for 'a particular self-contained (Def. 1b1) class of one or more particular cenological forms (Def. 2b1d, Def. 23) (i.e. $\{p\}$) each member in its capacity of having a particular distinctive function (cf. Def. 7a3) s'. Formal definition: $E = \{p^{i...n}\mathrm{Rs}\}$ (cf. Mulder and Hervey 1980: 60, Def. 24a; Mulder 1989: 455, Def. 24a).

Comment: Mulder defines expression formally as: $E^{i} = \{f^{i...n}\mathrm{Rd}^{i}\}$, commenting, "As *p* has already distinctive function incorporated, i.e. $p^{i} = \{f^{i...n}\mathrm{Rd}^{i}\}$, the distinctive function d in 'Expression' (or in 'Content', or in 'Signum') is by impli-

cation distinctive function at a further level, i.e. on the signum-level" (Mulder 1989: 456). This elegant proposal seems to be ruled out in the extended version (and arguably also in the standard version) by virtue of the need to incorporate on a coherent basis a definition for both cenete (Def. F3d), i.e. *i*Rd, and morphete (or form in Hervey's sense) (Def. F1b1a0), i.e. *i*Rs (cf. Dickins 1998: 422–423; Note 9).

Def. 24b. 'Content' (symbolised: C)) for 'a particular self-contained (Def. 1b1) class of one or more particular delological forms (Def. 2c1d, Def. 23c) (i.e. {*q*}) each member in its capacity of having a particular distinctive function (Def. 7a3) s'. Formal definition: C = $\{q^{i...n}Rs\}$ (cf. Mulder and Hervey 1980: 61, Def. 24b; Mulder 1989: 456, Def. 24b).

Def. 24b1. 'Allomorphy' for 'one signum (Def. 2a1, Def. 24), the allomorphic (cf. Def. 24b1b) manifestations (Def. 26o) of which corresponding to two or more cenological forms (Def. 2b1d, Def. 23)'. Formal definition: $p^iRs^i \sim p^jRs^i$ (cf. Mulder and Hervey 1980: 61, Def. 24a1; Mulder 1989: 456, Def. 24b1).

Def. 24b1a. 'Allomorph' either for 'one of the terms of 'allomorphy' (Def. 24b1) as a comparison', or for 'an allomorphic entity (Def. 1c2) where there is no comparison with another allomorphic entity (Def. 1c2), i.e. $p^iRs^{i'}$ (cf. Mulder and Hervey 1980: 61, Def. 24a1; Mulder 1989: 456, Def. 24b1a).

Def. 24b1b. 'Allomorphics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with the description of allomorphs (second sense) (Def. 24b1a) and related notions'.

Def. 24b1c. 'Monomorphy' for 'state of affairs in which a signum (Def. 2a1, Def. 24) has only one allomorph (second sense) (Def. 24b1a)'.

Def. 24b1d. 'Polymorphy' for 'state of affairs in which a signum (Def. 2a1, Def. 24) has more than one allomorph (second sense) (Def. 24b1a)'.

Def. 24b1e. 'Allomorphon' for 'a particular cenetic form (Def. 22a) in its capacity of standing in relation to a particular distinctive function (Def. 7a3) in cenology (Def. 2b1a) in its capacity of standing in relation to a particular distinctive function (Def. 7a3) in logology (Def. 2a4a)'. Formal definition: (*f*Rd)Rs or {(*i*Rd)Rs}.

Def. 24b1f. 'Allomorphony' for 'one signum (Def. 2a1, Def. 24) the allomorphonic (cf. Def. 24b1h) manifestations (Def. 26o) of which corresponding to one cenological form (Def. 2b1d, Def. 23), but to more than one cenetic form (Def. 22a)'.

Def. 24b1g. 'Polymorphony' for 'state of affairs in which a signum (Def. 2a1, Def. 24) has more than one allomorphon (Def. 24b1e)'.

Def. 24b1h. 'Allomorphonics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with the description of allomorphons (Def. 24b1e)'.

Def. 24c1. 'Allosemy' for 'one signum (Def. 2a1, Def. 24), the allosemic (cf. Def. 24c1b) manifestations (Def. 26p) of which corresponding to two or more delological forms (Def. 2c1d, Def. 23c)'. Formal definition: $q^iRs^i \sim q^jRs^i$.

Def. 24c1a. 'Alloseme' either for 'one of the terms of 'allosemy' (Def. 24c1) as a comparison', or for 'an allosemic entity (Def. 1c2) where there is no comparison with another allosemic entity (Def. 1c2), i.e. $q^iRs^{i'}$.

Def. 24c1b. ‘Allosemics’ for ‘the sub-theory within the signum ontology (Def. F4.4) dealing with the description of allosemes (second sense) (Def. 24c1a) and related notions’.

Def. 24c1c. ‘Monosemy’ for ‘state of affairs in which a signum (Def. 2a1, Def. 24) has only one alloseme (second sense) (Def. 24c1a)’.

Def. 24c1d. ‘Polysemy’ for ‘state of affairs in which a signum (Def. 2a1, Def. 24) has more than one alloseme (second sense) (Def. 24c1a)’.

Def. 24c1e. ‘Allosemon’ or ‘reference-type’ for ‘a particular semantic form (Def. 23b1) in its capacity of standing in relation to a particular distinctive function (Def. 7a3) in delology (Def. 2c1a) in its capacity of standing in relation to a particular distinctive function (Def. 7a3) in logology (Def. 2a4a)’. Formal definition: (*g*Re)Rs *or* {(*j*Re)Rs}.

Def. 24c1f. ‘Allosemony’ for ‘one signum (Def. 2a1, Def. 24) the allosemonic (cf. Def. 24c1h) manifestation (Def. 26o) of which corresponding to one delological form (Def. 2c1d, Def. 23c), but to more than one semantic form (Def. 23b1)’.

Def. 24c1g. ‘Polysemony’ for ‘state of affairs in which one signum (Def. 2a1, Def. 24) has more than one allosemon (Def. 24c1e)’.

Def. 24c1h. ‘Allosemonics’ for ‘the sub-theory within the signum ontology (Def. F4.4) dealing with the description of allosemons (Def. 24c1e)’.

Def. 25. ‘Homocene’ for ‘allocene (second sense) (Def. 23a1) of one figura (Def. 2b) in comparison with and having the same cenetic form (Def. 22a) as allocene (second sense) (Def. 23a1) of another figura (Def. 2b)’ (cf. Mulder and Hervey 1980: 61, Def. 25; Mulder 1989: 456, Def. 25).

Def. 25a. ‘Homoceny’ for ‘relationship obtaining between homocenes (Def. 25). Formal definition of homoceny: $f^{i}\mathrm{Rd}^{i} \sim f^{j}\mathrm{Rd}^{j}, {}^{i\neq j}$.

Def. 25b. ‘Heterocene’ for ‘allocene (second sense) (Def. 23a1) of one figura (Def. 2b) in comparison with and having a different cenetic form (Def. 22a) from allocene (second sense) (Def. 23a1) of another figura (Def. 2b)’.

Def. 25c. ‘Heteroceny’ for ‘relationship between heterocenes (Def. 25b). Formal definition of heteroceny: $f^{i}\mathrm{Rd}^{i} \sim f^{j}\mathrm{Rd}^{j}, {}^{i\neq j}$.

Def. 25d. ‘Cene’ for ‘allocene (second sense) (Def. 23a1), homocene (Def. 25b), or heterocene (Def. 25c)’.

Comment: Since homocene (Def. 25b) and heterocene (Def. 25c), but not allocene (second sense) (Def. 23a1) imply more than one entity (Def. 1c2), where only a single cene is referred to, this is necessarily an allocene (second sense) (Def. 23a1).

Def. 26. ‘Homomorph’ for ‘allomorph (second sense) (Def. 24b1a) of one signum (Def. 2a1, Def. 24), in comparison with and having the same cenological form (Def. 2b1d, Def. 23) as allomorph (second sense) (Def. 24b1a) of another signum (Def. 2a1, Def. 24)’ (cf. Mulder and Hervey 1980: 61, Def. 26; Mulder 1989: 456, Def. 26).

Def. 26a. ‘Homomorphy’ for ‘relationship obtaining between homomorphs (Def. 26)’. Formal definition of homomorphy: $p^{i}\mathrm{Rs}^{i} \sim p^{i}\mathrm{Rs}^{j}, {}^{i\neq j}$.

Def. 26b. ‘Heteromorph’ for ‘allomorph (second sense) (Def. 24b1a)) of one signum (Def. 2a1, Def. 24), in comparison with and having a different cenological form (Def. 2b1d, Def. 23) from, allomorph (second sense) (Def. 24b1a) of another signum (Def. 2a1, Def. 24)’.

Def. 26c. ‘Heteromorphy’ for ‘relationship obtaining between heteromorphs (Def. 26b)’. Formal definition of heteromorphy: $p^{i}\mathrm{Rs}^{i} \sim p^{j}\ \mathrm{Rs}^{j},\ ^{i\neq j}$.

Def. 26d. ‘Morph’ for ‘allomorph (Def. 24b1a), homomorph (Def. 26), or heteromorph (Def. 26b)’.

Comment: Since homomorph (Def. 26) and heteromorph (Def. 26b), but not allomorph (second sense) (Def. 24b1a) imply more than one entity (Def. 1c2), where only a single morph is referred to, this is necessarily an allomorph (second sense) (Def. 24b1a). Cf. standard axiomatic functionalism, Def. F6.

Def. 26e. ‘Homoseme’ for ‘alloseme (second sense) (Def. 24c1a) of one signum (Def. 2a1, Def. 24), in comparison with and having the same delological form (Def. 2c1d, Def. 23c) as alloseme (second sense) (Def. 24c1a) of another signum (Def. 2a1, Def. 24)’.

Def. 26f. ‘Homosemy’ for ‘relationship obtaining between homosemes (Def. 26e)’. Formal definition of homosemy: $q^{i}\mathrm{Rs}^{i} \sim q^{\ i}\ \mathrm{Rs}^{j},\ ^{i\neq j}$.

Def. 26g. ‘Heteroseme’ for ‘alloseme (second sense) (Def. 24c1a) of one signum (Def. 2a1, Def. 24), in comparison with and having a different delological form (Def. 2c1d, Def. 23c) from alloseme (second sense) (Def. 24c1a) of another signum (Def. 2a1, Def. 24)’.

Def. 26h. ‘Heterosemy’ for ‘relationship obtaining between heterosemes (Def. 26g)’. Formal definition of heterosemy: $q^{i}\ \mathrm{Rs}^{i} \sim q^{j}\mathrm{Rs}^{j},\ ^{i\neq j}$.

Def. 26i. ‘Seme’ for ‘alloseme (Def. 24c1a), homoseme (Def. 26e), or heteroseme (Def. 26g)’.

Comment: Since homoseme (Def. 26e) and heteroseme (Def. 26g), but not alloseme (second sense) (Def. 24c1a) imply more than one entity (Def. 1c2), where only a single seme is referred to, this is necessarily an alloseme (second sense) (Def. 24c1a).

Def. 26j. ‘Homodele’ for ‘allodele (second sense) (Def. 23c2) of one denotation (Def. 2c) in comparison with and having the same semantic form (Def. 23b1) as allodele (second sense) (Def. 23c2) of another denotation (Def. 2c)’.

Def. 26k. ‘Homodely’ for ‘relationship obtaining between homodeles (Def. 26j)’. Formal definition of homodely: $g^{\ i}\ \mathrm{Re}^{i} \sim g^{\ i}\ \mathrm{Re}^{j},\ ^{i\neq j}$.

Def. 26l. ‘Heterodele’ for ‘allodele (second sense) (Def. 23c2) of one denotation (Def. 2c) in comparison with and having a different semantic form (Def. 23b1) from allodele (second sense) (Def. 23c2) of another denotation (Def. 2c)’.

Def. 26m. ‘Heterodely’ for ‘relationship obtaining betwen heterodeles (Def. 26m). Formal definition of heterodely: $g^{\ i}\ \mathrm{Re}^{i} \sim g^{j}\mathrm{Re}^{j},\ ^{i\neq j}$.

Def. 26n. ‘Dele’ for ‘allodele (Def. 23c2), homodele (Def. 26j), or heterodele (Def. 26l)’.

Comment: Since homodele (Def. 26j) and heterodele (Def. 26l), but not allodele (second sense) (Def. 23c2) imply more than one entity (Def. 1c2), where only a

single dele is referred to, this is necessarily an allodele (second sense) (Def. 23c2).

Def. 26o. ‘Allont’ or ‘manifestation’ for ‘allomorph (Def. 24b1a), allomorphon (Def. 24b1e), alloseme (Def. 24c1a), allosemon (Def. 24c1e), allocene (Def. 23a1), or allodele (Def. 23c2)’.

Comment: See also: instantiation (Def. F4.6), realisation (Def. F4.7).

Def. 27. ‘Homonym’ for ‘total homonym (Def. 27a) or partial homonym (Def. 27b)’ (cf. Mulder and Hervey 1980: 61, Def. 27; Mulder 1989: 456, Def. 27).

Def. 27a. ‘Total homonym’ for ‘total class of allomorphs (second sense) (Def. 24b1a) of one signum (Def. 2a1, Def. 24) in comparison with, and the cenological forms (Def. 2b1d, Def. 23) of its members being the same as, those of the total class of allomorphs (second sense) (Def. 24b1a) of another signum (Def. 2a1, Def. 24)’ (cf. Mulder and Hervey 1980: 61, Def. 27; Mulder 1989: 456, Def. 27).

Def. 27b. ‘Partial homonym’ for ‘at least one member of class of allomorphs (second sense) (Def. 24b1a) of one signum (Def. 2a1, Def. 24), in comparison with and having the same cenological form (Def. 2b1d, Def. 23) as at least one member of class of allomorphs (second sense) (Def. 24b1a) as another signum (Def. 2a1, Def. 24), but the two signa (Def. 2a1, Def. 24) not being totally homonymous (Def. 27a)’ (cf. Mulder and Hervey 1980: 61, Def. 27; Mulder 1989: 456, Def. 27).

Def. 27c. ‘Homonymy’ for ‘total homonymy (Def. 27d) or partial homonymy (Def. 27e)’.

Def. 27d. ‘Total homonymy’ for ‘state of affairs in which total class of allomorphs (second sense) (Def. 24b1a) of one signum (Def. 2a1, Def. 24) is compared with, and has the same cenological forms (Def. 2b1d, Def. 23) as, those of the total class of allomorphs (second sense) (Def. 24b1a) of another signum (Def. 2a1, Def. 24)’.

Def. 27e. ‘Partial homonymy’ for ‘state of affairs in which at least one member of class of allomorphs (second sense) (Def. 24b1a) of one signum (Def. 2a1, Def. 24), is compared with and has the same cenological form (Def. 2b1d, Def. 23) as at least one member of class of allomorphs (second sense) (Def. 24b1a) of another signum (Def. 2a1, Def. 24), but the two signa (Def. 2a1, Def. 24) are not totally homonymous (cf. Def. 27a)’.

Def. 28. ‘Synonym’ for ‘total synonym (Def. 28a) or partial synonym (Def. 28b)’ (cf. Mulder and Hervey 1980: 61, Def. 28; Mulder 1989: 456, Def. 28).

Def. 28a. ‘Total synonym’ for ‘total class of allosemes (second sense) (Def. 24c1a) of one signum (Def. 2a1, Def. 24) in comparison with, and the delological forms (Def. 2c1d, Def. 23c) of its members being the same as, those of the total class of allosemes (second sense) (Def. 24c1a) of another signum (Def. 2a1, Def. 24)’ (cf. Mulder and Hervey 1980: 61, Def. 28; Mulder 1989: 456, Def. 28).

Def. 28b. ‘Partial synonym’ for ‘at least one member of class of allosemes (second sense) (Def. 24c1a) of one signum (Def. 2a1, Def. 24), in comparison with and having the same delological form (Def. 2c1d, Def. 23c) as at least one member of class of allosemes (second sense) (Def. 24c1a) of another signum (Def. 2a1, Def. 24), but the two signa (Def. 2a1, Def. 24) not being totally synonymous (Def. 28a)’ (cf. Mulder and Hervey 1980: 61, Def. 28; Mulder 1989: 456, Def. 28).

Def. 28c. ‘Synonymy’ for ‘total synonymy (Def. 28d) or partial synonymy (Def. 28e)’.

Def. 28d. ‘Total synonymy’ for ‘state of affairs in which total class of allosemes (second sense) (Def. 24c1a) of one signum (Def. 2a1, Def. 24) is compared with, and has the same delological forms (Def. 2c1d, Def. 23c) as, those of the total class of allosemes (second sense) (Def. 24c1a) of another signum (Def. 2a1, Def. 24)’.

Def. 28e. ‘Partial synonymy’ for ‘state of affairs in which at least one member of class of allosemes (second sense) (Def. 24c1a) of one signum (Def. 2a1, Def. 24), is compared with and has the same delological form (Def. 2c1d, Def. 23c) as at least one member of class of allosemes (second sense) (Def. 24c1a) of another signum (Def. 2a1, Def. 24), but the two signa (Def. 2a1, Def. 24) are not totally synonymous (cf. Def. 28a)’.

Comment: In extended axiomatic functionalism a distinction is made between two senses of ‘utterance’: ‘logete’ (Def. F1b0a), and ‘logonete’ (Def. F1b0b).

Axiom F. Signa (Def. 2a1, Def. 24) may be instantiated (cf. Def. F4.6) an unlimited number of times each resulting utterance (Def. F1a, Def. F1b0a, Def. F1bab) being a member of a potentially infinite class of utterances (Def. F1a, Def. F1b0a, Def. F1bab).

Comment: Axiom F in the standard version deals with the semantics (cf. Mulder and Hervey 1980: 203–211; Mulder 1989: 457). In the extended version, some of what is covered by standard axiomatic-functionalist semantics is subsumed under the system ontology (Def. 3a1a), and as such is dealt with by Axioms B, C and D and ensuing Definitions. Other aspects of what is covered by the standard axiomatic-functionalist semantics are subsumed under the extended axiomatic-functionalist signum ontology (Def. F4.4), and as such are dealt with partially by Axiom E and ensuing Definitions.

In the extended version, Axiom F – though closely related in form to Axiom F in the standard version – deals not with semantics (cf. Def. F4.3 for a definition of semantics under the extended version), but with aspects of the signum ontology (Def. F4.4) not dealt with by Axiom E.

In the following Definitions I have attempted as far as possible to retain the numbers used by Hervey in his postulates for axiomatic-functionalist semantics (Mulder and Hervey 1980: 203–211). Hervey’s Definitions are numbered from 1a. As noted in the Introduction to these Postulates, I have prefixed “F” to each of the corresponding Definition numbers in this version of the postulates in order to specify that the following Definitions relate to Axiom F, and to differen-

tiate them from what would sometimes otherwise be identically labelled Definitions under Axioms A and B.

Def. F1a. 'Utterance (both senses: see Def. F1b0a, Def. F1b0b below)' for 'member of a signum (Def. 2a1, Def. 24) (as a class) such that it is a model for a single realisation (Def. F4.7), i.e. an instantiation (Def. F4.6), of that signum (Def. 2a1, Def. 24)' (cf. Mulder and Hervey 1980: 203, Def. 1a).

Comment: "This means that "utterance" is to be understood, not in the sense of single communication-act as such, but as a construct or model accounting for and applying to a single communication-act. Furthermore, it is to be noted that this model applies only to communication-acts that are realisations of signa, i.e. realisations that convey information as determined by the conventions governing the appropriate signa. In actual fact only sentences are realised in communications, but since sentences may contain several signa, we may also say that each of these signa is, itself 'separately' realised (within the sentence). Consequently, every signum, whether it is a sentence, or can correspond to, or be part of, a sentence-base (Mulder's Def. 20b), can be said to be realised in actual communication. This gives us the right to account or individual realisations of any signum by setting up a unique model, i.e. "utterance", for each of these realisations. In this way we are entitled to regard every signum as a class of "utterances", each member of which class is a model for a single realisation of the appropriate signum" (Hervey 1980: 203).

Def. F1b0a. 'Logete' or 'Utterance (1st sense; Def. F1a)' for 'a conjunction of a morphete (Def. F1b1a0) and a semete (Def. F1b2a0)' (cf. Mulder and Hervey 1980: 203, Def. 1b). Formal definition: *i*Rs & *j*Rs.

Comment: Cf. standard axiomatic functionalism Def. F1b.

Def. F1b0b. 'Logonete' or 'Utterance (2nd sense: Def. F1a)' (symbolised: U) for 'a conjunction of a morphonete (Def. F1b1a4) and a semonete (Def. F1b2a5)' (cf. Mulder and Hervey 1980: 203, Def. 1b). Formal definition: U = (*i*Rd)Rs & (*j*Re)Rs *or* U = F&R.

Comment: Cf. standard axiomatic functionalism Def. F1b.

Def. F1b0c. 'Logetics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with logetes (Def. F1b0a) or logonetes (F1b0b)'.

Def. F1b0d. 'Logotics' for 'morphotics' (Def. F1b1a2) and 'semotics' (Def. F1b2a2).

Def. F1b0e. 'Logonetics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with logonetes (F1b0b)'.

Def. F1b1a0. 'Morphete' or 'form (1st sense: cf. Def. F1b1b)' for 'cenetic image (Def. 22) in its capacity of having the particular distinctive function (cf. Def. 7a3) appropriate to a particular signum (Def. 2a1, Def. 24)'. Formal definition: *i*Rs (cf. Mulder and Hervey 1980: 204, Def. 11b1a).

Def. F1b1a1. 'Morphetics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with morphetes (Def. F1b1a0)'.

Def. F1b1a2. 'Morphotics' for 'morphologics (Def. F1b1a3), allomorphics (Def. 24b1b), morphonetics (Def. F1b1a5), and morphetics (Def. F1b1a1)'.

Def. F1b1a3. ‘Morphologics’ for ‘the sub-theory within the signum ontology (Def. F4.4) corresponding to logology (Def. 2a4a) in the system ontology (Def. 3a1a) and dealing with expressions (Def. 24a)’.

Def. F1b1a4. ‘Morphonete’ or ‘form (2nd sense: cf. Def. F1b1b)’ (symbolised: F) for ‘cenetic image (Def. 22) in its capacity of having the particular distinctive function (cf. Def. 7a3) appropriate to a particular figura (Def. 2b), in its capacity of having the distinctive function (cf. Def. 7a3) appropriate to a particular signum (Def. 2a1, Def. 24)’. Symbolised: F. Formal definition: F = (*i*Rd)Rs (cf. Mulder and Hervey 1980: 204, Def. 1b1a).

Def. F1b1a5. ‘Morphonetics’ for ‘the sub-theory within the signum ontology (Def. F4.4) dealing with morphonetes (Def. F1b1a4)’.

Def. F1b1b. ‘Form (both senses)’ for ‘member of an expression (Def. 24a) as a class, such that it is a model for a single realisation (Def. F4.7), i.e. an instantiation (Def. F4.6), of that expression (Def. 24a)’ (cf. Mulder and Hervey 1980: 204, Def. 1b1b).

> *Comment*: “Informally, we may say that the form of an utterance accounts for the necessary aspect of ‘substance’ without which a signum cannot be realised in actual communication. At the same time the form of an utterance is a ‘token’ of the expression (see Mulder’s Def. 24a) of the signum whose realisation the given utterance is a model for. That is to say, a form is an intrinsic aspect of an utterance, in the same way that an expression is an intrinsic aspect of a signum” (Hervey 1980: 203–204).
>
> “Thus the form of an utterance accounts for the spatio-temporally unique nature of the realisation for which the given utterance is a model, at the same time as incalculating the fact of that unique realisation being the realisation of a signum with a particular grammatically [cf. logologically (Def. 2a4a)] distinctive function” (Hervey 1980: 204).

Def. F1b2a0. ‘Semete’ or ‘reference (1st sense)’ for ‘semantic image (Def. 23b, Def. F4b) in its capacity of having the particular distinctive function (cf. Def. 7a3) appropriate to a particular signum (Def. 2a1, Def. 24)’. Formal definition: *j*Rs (cf. Mulder and Hervey 1980: 204, Def. 1b2a).

Def. F1b2a1. ‘Semetics’ for ‘the sub-theory within the signum ontology (Def. F4.4) dealing with semetes (Def. F1b2a0)’.

Def. F1b2a2. ‘Semotics’ for ‘semologics (Def. F1b2a3), allosemics (Def. 24c1b), semonetics (Def. F1b2a6), and semetics (Def. F1b2a1)’.

Def. F1b2a3. ‘Semologics’ for ‘the sub-theory within the signum ontology (Def. F4.4) corresponding to logology (Def. 2a4a) in the system ontology (Def. 3a1a) and dealing with contents (Def. 24b)’.

Def. F1b2a4. ‘Logologics’ for ‘the sub-theory within the signum ontology (Def. F4.4) corresponding to logology (Def. 2a4a) in the system ontology (Def. 3a1a) and dealing with signa (Def. 2a1, Def. 24)’.

Def. F1b2a5. ‘Semonete’ or ‘reference (2nd sense)’ (symbolised: R) for ‘semantic image (Def. 23b, Def. F4b) in its capacity of having the particular distinctive function (cf. Def. 7a3) appropriate to a particular denotation (Def. 2c), in its capacity of having the distinctive function (cf. Def. 7a3) appropriate to a par-

ticular signum (Def. 2a1, Def. 24)'. Formal definition: $\underline{R} = (j\text{Re})\text{Rs}$ (cf. Mulder and Hervey 1980: 204, Def. 1b2a).

Def. F1b2a6. 'Semonetics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with semonetes (Def. F1b2a5)'.

Def. F1b2b. 'Reference (both senses)' for 'member of a content (Def. 24b) as a class, such that it is a model for a single realisation (Def. F4.7), i.e. an instantiation (Def. F4.6), of that content (Def. 24b)' (cf. Mulder and Hervey 1980: 204, Def. 1b2b).

Comment: "A reference accounts for the necessary information-bearing aspect without which no act could be construed as a communication-act, let alone the realisation of a signum. Form and reference are merely two equally relevant and equally important ways of looking at the same thing (i.e. utterance). Form and reference as 'tokens' of expression and content respectively, may be conceived as the converse of one another. This is analogous with the way expression and content, themselves, are each other's converse (see Mulder's Def. 24). In intuitive terms this view of form and reference can be explained by pointing out that form accounts for the fact that an utterance is not mere substance, but substance necessarily linked with information-content, whereas reference accounts for the fact that an utterance is not just an information-content, but an information-content necessarily linked to a substance" (Hervey 1980: 204).

"We may say that looking at an utterance from the aspect of reference is looking at that aspect of the realisation which links it to the actual piece of information conveyed by ... that realisation" (Hervey 1980: 205).

Def. F2. 'Class of equivalent logetes (Def. F1b0a) (or: utterances: Def. F1a, first sense)' for 'the set of all and only the logetes (Def. F1b0a) (or: utterances: Def. F1a, first sense) which are members of a given signum (Def. 2a1, Def. 24) as a class' (cf. Mulder and Hervey 1980: 205, Def. 2).

Def. F2.1. 'Class of equivalent logonetes (Def. F1b0b) (or: utterances: Def. F1a, second sense)' for 'the set of all and only the logonetes (Def. F1b0b) (or: utterances: Def. F1a, second sense) which are members of a given signum (Def. 2a1, Def. 24) as a class' (cf. Mulder and Hervey 1980: 205, Def. 2).

Comment: "A signum can now be treated ... as a class of equivalent utterances" (Hervey 1980: 205).

Def. F2a. 'Class of equivalent morphetes (Def. F1b1a0) (or: forms: Def. F1b1b, first sense)' for 'the set of all and only the morphetes (or: forms, Def. F1b1b, first sense) which are members of a given signum (Def. 2a1, Def. 24) as a class' (cf. Mulder and Hervey 1980: 205, Def. 2a).

Def. F2a1. 'Class of equivalent morphonetes (Def. F1b1a4) (or: forms, Def. F1b1b, second sense)' for 'the set of all and only the morphonetes (or: forms, Def. F1b1a4, second sense) which are members of a given signum (Def. 2a1, Def. 24) as a class' (cf. Mulder and Hervey 1980: 205, Def. 2a).

Comment: "... we may conceive of an expression as a class of equivalent forms" (Hervey 1980: 205).

Def. F2b. 'Class of equivalent semetes (Def. F1b2a0) (or: references, Def. F1b2b, first sense)' for 'the set of all and only the semetes (Def. F1b2a0) (or: references,

Def. F1b2b, first sense) which are members of a given signum (Def. 2a1, Def. 24) as a class' (cf. Mulder and Hervey 1980: 205, Def. 2b).

Def. F2b1. 'Class of equivalent semonetes (Def. F1b2a5) (or: references, Def. F1b2b, second sense)' for 'the set of all and only the semonetes (Def. F1b2a5) (or: references, Def. F1b2b, second sense) which are members of a given signum (Def. 2a1, Def. 24) as a class' (cf. Mulder and Hervey 1980: 205, Def. 2b).

Comment: "... we may conceive of a content as a class of equivalent references" (Hervey 1980: 205).

Defs. 3a, 3b, and 3c in Hervey (1980: 205–206) provide definitions for form class, reference class, and form-reference class. These definitions are no longer needed in the extended version, since they are superseded by the notions morphonete (Def. F1b1a1) and semonete (Def. 1b2a1). They do not therefore appear in the Postulates for Extended Axiomatic Functionalism.

Def. F3d. 'Cenete' for 'member of a figura (Def. 2b) (as a class) such that it is a model for a single realisation (Def. F4.7), i.e. an instantiation (Def. F4.6), of that figura (Def. 2b)'. Formal definition: *i*Rd.

Def. F3e. 'Cenetics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with the description of cenetes (Def. F3d)'.

Def. F3f. 'Cenotics' for 'cenologics (Def. F3g), allocenics (Def. 23a2), and cenetics (Def. F3e)'.

Def. F3g. 'Cenologics' for 'the sub-theory within the signum ontology (Def. F4.4) corresponding to cenology (Def. 2b1a) in the system ontology (Def. 3a1a)'.

Def. F3h. 'Morphontics' for 'morphotics (Def.F1b1a2) and cenotics (Def. F3f)'.

Def. F4. 'Delete' or 'denotatum' for 'member of a denotation (Def. 2c) (as a class) such that it is a model for a single realisation (Def. F4.7), i.e. an instantiation (Def. F4.6), of that denotation (Def. 2c)'. Formal definition: *j*Re. Alternative definitions: 'model for an ostensible (Def. F4b1) entity denoted (cf. Def. 4a) by utterances (Def. F1a, Def. F1b0a, Def. 1b0b)'; 'model for an ostensible (Def. F4b1) entity expressed by an index (Def. 2) as an item (i.e. as a member of an index (Def. 2) as a class of items)' (cf. Mulder and Hervey 1980: 206, Def. 4).

Comment: In extended axiomatic functionalism, a delete (denotatum) is a model for a "piece of information". Entities which are such "pieces of information" "may be objects, qualities, processes, relations, or complex circumstances. They may, furthermore, be 'real' entities, 'candidates for reality', or purely abstract or fictional" (Hervey 1980: 206).

Def. F4.0. 'Deletics' for 'the sub-theory within the signum ontology (Def. F4.4) dealing with deletes (Def. F4)'.

Def. F4.1. 'Delotics' for 'delologics (Def. F4.2), allodelics (Def. 23c3), and deletics (Def. F4.0)'.

Def. F4.2. 'Delologics' for 'sub-theory within the signum ontology (Def. F4.4) corresponding to delology (Def. 2c1a) in the system ontology (Def. 3a1a)'.

Def. F4.3. 'Semantics' for 'semotics (Def. F1b2a2) and delotics (Def. F4.1)'.

Def. F4.4. 'Signum ontology' for 'morphontics (Def. F3h) and semantics (Def. F4.3)'.

Def. F4.5. ‘Semiotics’ for ‘system ontology’ (Def. 3a1a) and ‘signum ontology (Def. F4.4)’.

Def. F4.6. ‘Ontete’ or ‘instantiation’ for ‘cenete (Def. F3d), morphete (Def. F1b1a0), morphonete (Def. F1b1a4), logete (Def. F1b0a), logonete (Def. F1b0b), semete (Def. F1b2a0), semonete (Def. F1b2a5), or delete (Def. F4)’.

Comment: See also: manifestation (Def. 26o), realisation (Def. F4.7).

Def. F4.7. ‘Realisation’ for ‘allont (manifestation) (Def. 26o), or ontete (instantiation) (Def. F4.6)’.

Def. F4a. ‘Denote’ for ‘refer to by virtue of conventions relevant to semiotic systems (Def. 1c, Def. 5)’ (cf. Mulder and Hervey 1980: 206, Def. 4a).

Comment: See discussion in Dickins 1998: 117–125.

Def. F4b. ‘Semantic image’ for ‘model for the unique form of a single actually or potentially ostensible (Def. F4b1) entity which is capable of being expressed by the instantiation (Def. F4.6) of a least one denotation (Def. 2c)’ (cf. Mulder and Hervey 1980: 206, Def. 4b), or for ‘model for the unique form of a single entity which is capable of being the instantiation (Def. F4.6) of a denotation (Def. 2c)’; or for ‘model for an actually or potentially ostensible (Def. F4b1) entity capable of being expressed by an index (Def. 2) as an item (i.e. as a member of an index (Def. 2) as a class of items)’. Symbolised: *j*. Alternative definition to Def. 23b.

Comment: “By “potentially ostensible entity” is meant an entity which, although its existence has not been instanced in a concrete sense (e.g. a fictional entity), would be ostensible in certain specifiable ways. For instance, an entity unicorn, would if it ‘existed’, be ostensible via direct evidence of sight” (Hervey 1980: 206).

Def. F4b1. ‘Ostensible’ for ‘distinct from at least one other entity or from its own absence’ (cf. Mulder and Hervey 1980: 206, Def. 4b1).

Comment: “It will be noted that ‘ostension’ is interpreted here in terms of the functional principle, whereby any ‘positive’ term acquires its identity ‘negatively’, through opposition to other terms” (Hervey 1980: 206).

Hervey’s Def. 5 (Mulder and Hervey 1980: 206) provides a definition for denotation in standard axiomatic functionalism. The rather different notion of denotation in extended axiomatic functionalism is defined in these postulates by Def. 2c.

Hervey’s Defs. 5a and 5b (Mulder and Hervey 1980: 206) provide a definition for denotation class in standard axiomatic functionalism. Like the notions form class, reference class, and form-reference class (see comment above; Hervey’s definitions 3a, 3b and 3c), these notions are not required in the extended version.

Hervey’s Def. 6 (Mulder and Hervey 1980: 206–207) provides a definition of morph in terms of the intersection of a particular form class (Hervey’s Def. 3a: Mulder and Hervey 1980: 205) and a particular class of equivalent utterances (Hervey’s Def. 2: Mulder and Hervey 1980: 205). A similar definition would not hold for extended axiomatic functionalism. This numbered definition does not therefore appear in these postulates. The rather different notion of morph in extended axiomatic functionalism is defined in Def. 26d (cf. also Mulder and Hervey 1980: 61, Def. 24a1).

Hervey's Def. 6a (Mulder and Hervey 1980: 207) provides a definition for homomorphy in standard axiomatic functionalism. This is superseded in the current postulates by Def. 26a.

Def. F7a1. 'Hyperonym' or 'superordinate' for 'denotation (Def. 2c), the set of semantic forms (Def. 23b1) of whose allodeles (second sense) (Def. 23c2) considered in relation to, and properly including, the set of semantic forms (Def. 23b1) of allodeles (second sense) (Def. 23c2) of another denotation (Def. 2c)' (cf. Mulder and Hervey 1980: 207, Def. 7a1).

Comment: Def. F7a1 and all subsequent definitions are to be interpreted in the light of the proposed framework for semantic protocolisation presented in Dickins (1998: 103–117) and the additional comments related to this in Dickins (1998: 128–138). The provisional nature of the proposed framework for semantic protocolisation is also stressed, alongside the expectation that further development of this framework will entail changes to Def. F7a1 and all subsequent definitions.

In particular, it may be that forms of words such as "the set of semantic forms (Def. 23b1)" (in Def. F7a1, and other definitions), should be rephrased along the lines, "the set of (global) referential entities/situations of the semantic forms" (cf. Dickins 1998: 103–117 for a discussion of the notion referential entity and associated notions). This would make specific allowance for comparison of denotations (Def. 2c) corresponding to delos (Def. 2c1) of differing degrees of complexity (cf. Def. 6c); e.g. it would make it possible to describe forms such as "The adult horse ate the grass" as compared with "The grass was eaten by the stallion" in terms of a hyperonym (Def. F7a1)-hyponym (Def. F7a2) relationship (cf. Dickins 1998: 103–117).

Def. F7a2. 'Hyponym' for 'denotation (Def. 2c), the set of semantic forms (Def. 23b1) of whose allodeles (second sense) (Def. 23c2) considered in relation to, and properly included in, the set of semantic forms (Def. 23b1) of allodeles (second sense) (Def. 23c2) of another denotation (Def. 2c)' (cf. Mulder and Hervey 1980: 207, Def. 7a2).

Def. F7a1a. 'Direct hyperonym' or 'direct superordinate' for 'first denotation (Def. 2c) which is a hyperonym (Def. F7a1) of a second denotation (Def. 2c), without also being a hyperonym (Def. F7a1) of any third denotation (Def. 2c) which is itself a hyperonym (Def. F7a1) of the second denotation (Def. 2c)' (cf. Mulder and Hervey 1980: 207, Def. 7a1a).

Comment: If denotation (Def. 2c) A is a hyperonym (Def. F7a1) of denotation (Def. 2c) B, but there is no other denotation (Def. 2c) C which is also a hyperonym (Def. F7a1) of denotation (Def. 2c) B and a hyponym (Def. F7a2) of denotation (Def. 2c) A, denotation (Def. 2c) A is a direct hyperonym of denotation (Def. 2c) B.

Def. F7a2a. 'Direct hyponym' for 'first denotation (Def. 2c) which is a hyponym (Def. F7a2) of a second denotation (Def. 2c), without also being a hyponym (Def. F7a2) of any third denotation (Def. 2c) which is itself a hyponym (Def. F7a2) of the second denotation (Def. 2c)' (cf. Mulder and Hervey 1980: 207, Def. 7a2a).

Comment: If denotation (Def. 2c) A is a hyponym (Def. F7a2) of denotation (Def. 2c) B, but there is no other denotation (Def. 2c) C which is also a hypo-

nym (Def. F7a2) of denotation (Def. 2c) B and a hyperonym (Def. F7a1) of denotation (Def. 2c) A, denotation (Def. 2c) A is a direct hyponym of denotation B (Def. 2c).

Hervey includes a definition for the notion semantic feature (Mulder and Hervey 1980: 208, Def. 7a1b). This notion is not required in the extended version.

Hervey includes a definition for the notion of synonym (Mulder and Hervey 1980: 208, Def. 7b). This is not required in the extended version, since it is covered by Defs. 28, 28a, and 28b.

Def. F7c. 'Paronym' for 'first denotation (Def. 2c), the set of semantic forms (Def. 23b1) of whose allodeles (second sense) (Def. 23c2) considered in relation to the set of semantic forms (Def. 23b1) of allodeles (second sense) (Def. 23c2) of a second denotation (Def. 2c), and the sets of semantic forms (Def. 23b1) of allodeles (second sense) (Def. 23c2) of the first and second denotations (Def. 2c) not including one another, but these sets of semantic forms (Def. 23b1) of allodeles (second sense) (Def. 23c2) being properly included in the sets of semantic forms (Def. 23b1) of allodeles (second sense) (Def. 23c2) of a third denotation (Def. 2c)' (cf. Mulder and Hervey 1980: 208, Def. 7c).

Comment: The denotations (Def. 2c) *rose* and *tulip* are thus paronyms with respect to the denotation (Def. 2c) *flower*. In this case, the semantic forms (Def. 23b1) of the sets of allodeles (second sense) (Def. 23c2) of *rose* and *tulip* do not include one another; in fact they do not intersect at all. Partial overlap may also hold between the allodeles (second sense) (Def. 23c2) of paronyms, as in the case, for instance, of the denotations (Def. 2c) *red* and *orange* (adapted from Mulder and Hervey 1980: 208).

Def. F7c1. 'Paronymy set' for 'set of two or more paronyms (Def. 7c) the sum of the semantic forms (Def. 23b1) of whose allodeles (second sense) (Def. 23c2) exhausts the set of the semantic forms (Def. 23b1) of the allodeles (second sense) (Def. 23c2) of their common hyperonym (Def. F7a1)' (cf. Mulder and Hervey 1980: 208, Def. 7c1).

Def. F7c2. 'Exclusive paronyms' for 'paronyms (Def. 7c) the sets of the semantic forms (Def. 23b1) of whose allodeles (second sense) (Def. 23c2) do not intersect' (cf. Mulder and Hervey 1980: 208, Def. 7c2).

Comment: The denotations (Def. 2c) *stallion*, *mare*, *filly* and *colt* are all exclusive paronyms (Def. 7c), since there is no overlap between the members of the sets of the semantic forms (Def. 23b1) of their allodeles (second sense) (Def. 23c2) (adapted from Mulder and Hervey 1980: 209).

Def. F7c3. 'Overlapping paronyms' for 'paronyms (Def. 7c) the sets of the semantic forms (Def. 23b1) of whose allodeles (second sense) (Def. 23c2) do intersect' (cf. Mulder and Hervey 1980: 208, Def. 7c3).

Comment: The denotations (Def. 2c) *red* and *orange* illustrate the case of overlapping paronymy; whilst certain hues belong only to the set of the semantic forms (Def. 23b1) of allodeles (second sense) (Def. 23c2) of *red* and certain other hues only to the set of the semantic forms (Def. 23b1) of the allodeles (second sense) (Def. 23c2) of *orange*, there are also certain intermediate hues

that belong to an overlapping area (adapted from Mulder and Hervey 1980: 209).

Def. F7c1a. 'Antonym' for 'member of a set of paronyms (Def. 7c) containing only two terms' (cf. Mulder and Hervey 1980: 208, Def. 7c1a).

Comment: The bipolar semantic contrast displayed by antonyms is the result of the fact that all the members of the sets of the semantic forms (Def. 23b1) of the allodeles (second sense) (Def. 23c2) belonging to a certain "field" – i.e. the set of the semantic forms (Def. 23b1) of the allodeles (second sense) (Def. 23c2) of their common hyperonym (Def. F7a1) – are members of either one or the other, or possibly both, of the sets of the semantic forms (Def. 23b1) of the allodeles (second sense) (Def. 23c2) of the antonyms in question (adapted from Mulder and Hervey 1980: 209).

Def. F7c2a. 'Exclusive antonyms' for 'antonyms (Def. 7c2a) whose allodeles (second sense) (Def. 23c2) have non-intersecting sets of semantic forms (Def. 23b1)' (cf. Mulder and Hervey 1980: 210, Def. 7c2a).

Comment: The denotations (Def. 2c) *dog* and *cat* would appear to be exclusive antonyms with regard to their common hyperonym (Def. F7a1) *animal* (cf. Mulder and Hervey 1980: 210). Compare, however, the arguments presented regarding the semantic relationship between *cat* and *animal* in Cruse (1986: 141), and discussed in Dickins (1998: 225–226).

Def. F7c2b. 'Overlapping antonyms' for 'antonyms (Def. F7c1a) whose allodeles (second sense) (Def. 23c2) have overlapping sets of semantic forms (Def. 23b1)' (cf. Mulder and Hervey 1980: 210, Def. 7c2b).

Def. F7c1b. 'Paronymy series' for 'paronymy set (Def. F7c1) with three or more members' (cf. Mulder and Hervey 1980: 211, Def. 7c1b).

Comment: "Sets of colour terms in various languages give a paradigm example of paronymy series" (Mulder and Hervey 1980: 211).

References

CRUSE, D. Alan. 1986. *Lexical semantics*. Cambridge: Cambridge University Press.

CRYSTAL, David. 2003. *A dictionary of linguistics and phonetics* (5th edition). Oxford: Blackwell.

DICKINS, James. 1998. *Extended axiomatic linguistics*. Berlin & New York: Mouton de Gruyter.

—. 2005. 'Two models for metaphor translation'. *Target* 17:2.227–273.

—. 2006. 'The verb base in Central Urban Sudanese Arabic'. In *Arabic Grammar as a window on Arab humanism: essays in honour of Michael Carter*, 155–195. Wiesbaden: Otto Harrassowitz Verlag.

—. 2007. *Sudanese Arabic: phonematics and syllable structure*. Wiesbaden: Otto Harrassowitz.

—. *Forthcoming*. '*Fa*^{c}**l* forms in Sudanese Arabic: the reassertion of morphology'. To appear in *Zeitschrift für Arabische Linguistik* (*Journal of Arabic Linguistics*).

HERVEY, Sándor G. J. 1979. *Axiomatic semantics*. Edinburgh: Scottish Academic Press.

HESELWOOD, Barry. 1992. *Extended axiomatic-functionalist phonology: an exposition with application to Arabic*. University of Ulster, PhD.

—. 1995. "Against the parallel vs. diverse distinction in Mulder's axiomatic functionalism", *La Linguistique* 31:1.35–44. (Reprinted in a revised form in *Linguistica* ONLINE in 2008: <http://www.phil.muni.cz/linguistica/art/heselwood/hes-002.pdf>.)

LAMB, Michael A. L. 2009. "Free allmomorphy or synonymy?". Linguistica online, <http://www.phil.muni.cz/linguistica/art/lamb/lam-001.pdf>. (Originally presented at the International Colloquium of Functional Linguistics in Quebec in 1983.)

LYONS, John. 1981. *Semantics* (vol. 1). Cambridge: Cambridge University Press.

MULDER, Jan W. F. 1989. *Foundations of axiomatic linguistics*. Berlin: Mouton de Gruyter.

—. 1968. *Sets and relations in phonology*. Oxford: Clarendon Press.

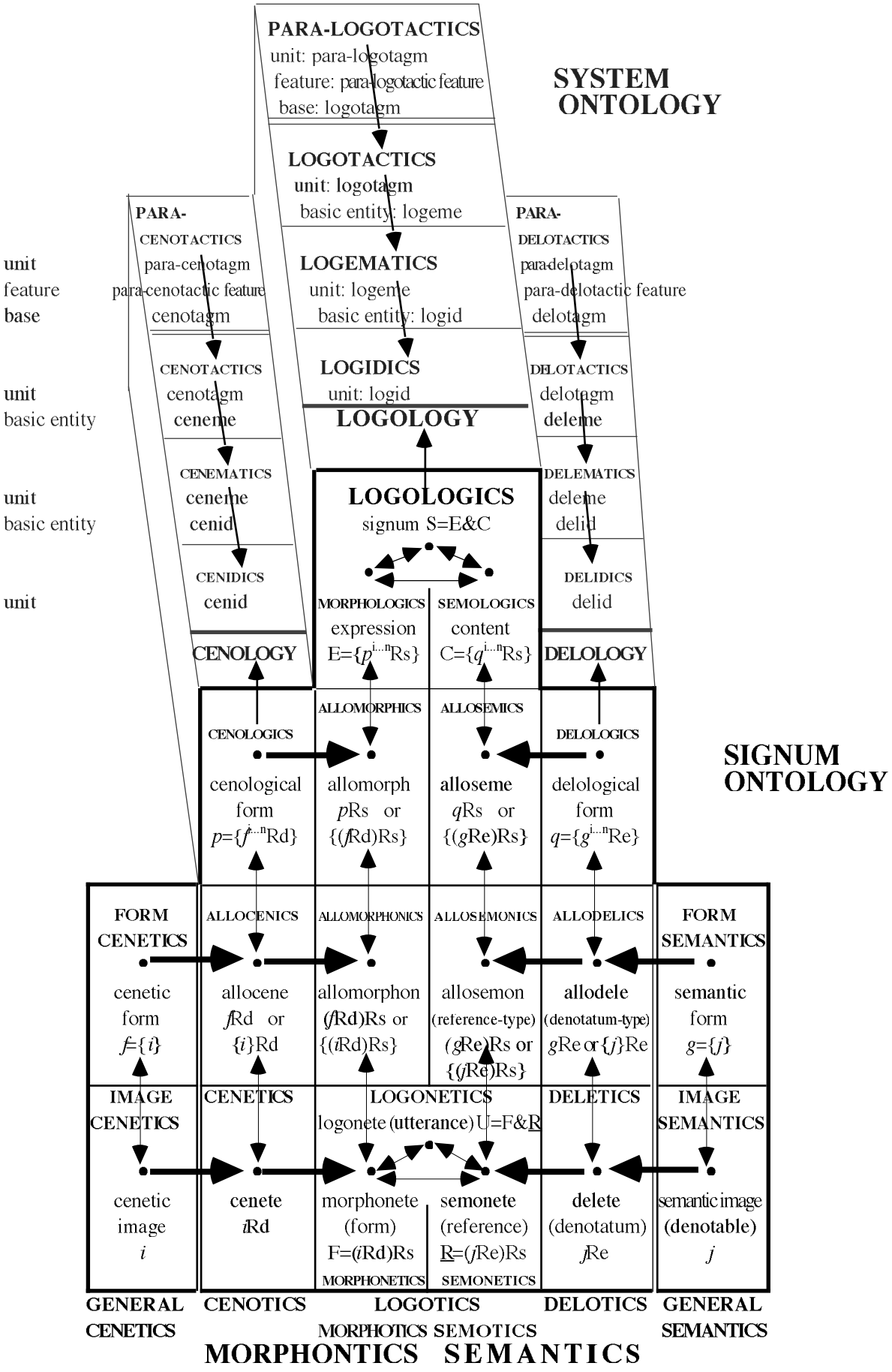
MULDER, Jan W. F. & HERVEY, Sándor G. J. 1972. *Theory of the linguistic sign*. The Hague: Mouton.

—. 1980. *The strategy of linguistics*. Edinburgh: Scottish Academic Press.

POPPER, Karl. 1973. *Objective Knowledge*. Oxford: Oxford University Press.

SHIMIZU, Shūyū & LAMB, Michael A. L. 1985. "Axiomatic functionalism: Mulder's theory of the linguistic sign". *Language, culture and communication* 1.101–122. Yokahama: Keio University.

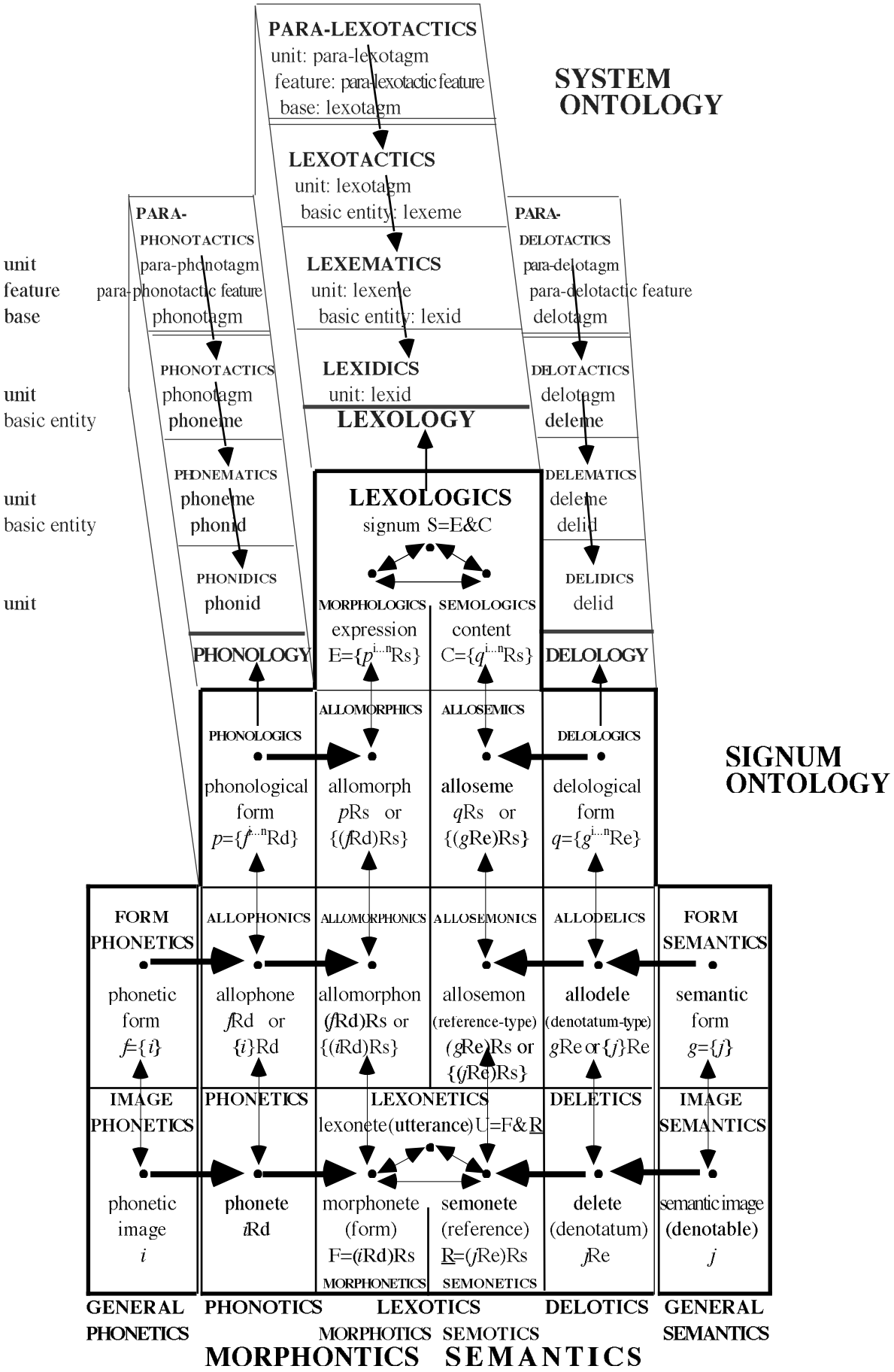
Appendix: Figure 1
EXTENDED AXIOMATIC FUNCTIONALISM: SEMIOTICS



Key to symbols

R	in relation to		relation of transformation
&	a conjunction of	d	distinctive function in cenology
{ }	a set of	s	distinctive function in logology
i...n	(a) certain (set of)	e	distinctive function in delology
⟶	relation of implication	UPPERCASE WORD	– system or area of analysis
⟷	relation of mutual implication	lowercase word	– entity

Appendix: Figure 2
EXTENDED AXIOMATIC FUNCTIONALISM: LINGUISTICS



Key to symbols

R	in relation to	→	relation of transformation
&	a conjunction of	d	distinctive function in phonology
$\{\ \}_{i...n}$	a set of (a) certain (set of)	s	distinctive function in lexology
		e	distinctive function in delology
→	relation of implication	UPPERCASE WORD	– system or area of analysis
↔	relation of mutual implication	lowercase word	– entity

Linguistica ONLINE. Published: July 10, 2009
http://www.phil.muni.cz/linguistica/art/lamb/lam-001.pdf
ISSN 1801-5336

FREE ALLOMORPHY OR SYNONYMY[*]

Michael A. L. Lamb
(edited and annotated by Aleš Bičan with James Dickins)

Abstract. Originally presented at the 10th International Conference of Functional Linguistics in 1983 in Quebec, the paper is published here for the first time. It discusses the notion *free allomorphy* which was rejected by Jan W. F. Mulder and Sándor G. J. Hervey in their works. Arguments are given to show the notion is viable and need not be abandoned. The text was prepared for publication and annotated by Aleš Bičan with the help of James Dickins.

Hypothesize i:ðə/aiðə[1] are one sign. Similarity of expression makes this a reasonable hypothesis. Hypothesis unrefuted, so these are free allomorphs. Even gross variance like 'parallelepiped' or 'veterinary' can be handled in this way.[2]

Mulder and Hervey's counter-example is not analogous: to hypothesize fellow/bloke are one sign is procedurally bizarre in the first place given the lack of similarity of expression (intuition alone is good enough for this)[1] but in any case the hypothesis would be refuted the moment someone said "I'm not a bloke. I may be a fellow, but I'm not a bloke" which seems likely enough. So obviously one hypothesizes different grammatically distinctive function. The fact that the denotata can be the same is a matter of semantic realization. They are parallel to homophones which have different phonologically distinctive function but are impressionistically similar in terms of phonetic realization.[2]

To hypothesize i:ðə/aiðə are different signs is invalid, however, as it is irrefutable. Different distinctive function will never be attested but, if intuition is disregarded, it is always possible to argue that some day, it might be. Disproving the existence of the extra sign would be as impossible as disproving the existence of unicorns. However to hypothesize the existence of even one unnecessary sign is disallowed by the canon of simplicity and the claim of synonymy for such cases is reduced ad absurdum by gross variance like that of 'parallelepiped' and 'veterinary'.

I would argue that Contents themselves *imply* connotations, attitudes etc. They wouldn't be doing their job if they didn't.[3]

---

[*] Previously unpublished. [Editor's note]

[1] Actually, this is shorthand. Logically, the onus is always on demonstrating distinctive function – a minimum of two distinctive functions in the first place, to have a semiotic system at all, and then all additional distinctive functions as they prove necessary. In a lexicon one has as it were in prehistory hypothesized two signs with allomorphs from A–M and N–Z and proceeded from there. E.g. "cool" and "cold" might invite the hypothesis that they are one sign, but this is refuted by "It's cool, but not cold".

[2] Obviously real-life denotational circumstances are as crude with relation to contents as real-life phonetic noises are with relation to expressions.

This is the only way to make sense of Mulder's dictum "the connotation changes but the denotation remains the same". However, if indeed two or more non-intersecting sets of obviously unrelated allomorphs[3] have the same content, this could be called true synonymy,[4] and by analogy with free allomorphy and homonymy, it should be possible to call it 'free allonymy'. However, whereas allomorphs and homomorphs are allo- and homo- in terms of their morphs in the first instance, but also in respect of their C's[4], 'allonyms', homonyms, but not necessarily synonyms (i.e. only 'true synonyms') would be allo- etc. in terms of their E's qua total form classes (or 'onymy') with respect to their C's, and the actualizing of the concept 'onymy' would preclude the use of 'hyperonymy', 'hyponymy' and 'paronymy' for what I would like to call 'hyperosemy', 'hyposemy' and 'parasemy', though by making clear the function of the element 'syn', it would give us 'symmorphy' for free allomorphy, 'symphony' for free allophony and 'synsemy' for free allosemy.[5] If, on the other hand, one leaves 'nym' undefined and discontinues the use of 'homonymy' because of its implications, replacing it with "total homomophy", as in the Definitions, true Synonymy could be defined as "total homosemy". However, the implication that 'homonymy' is identical with 'homosemy' would seem to be unavoidable in such a nomenclature. I doubt whether such a failure to square with common parlance would be acceptable but if it were, one might as well go the whole hog and introduce synsemy by analogy with synonymy. This would give 'symmorphy' for total homomorphy but would mean surrendering 'symphony' to the musicologists for want of a coherent use for it. But on the whole it really does look as though forms in -nym are unusable in any way consistent with common parlance. The element syn- however is useful for 'total homomorphy' and 'total homosemy' or 'true synonymy', so we could adopt the less cumbersome 'symmorphy' and 'synsemy'.[5]

All in all, the 'realizational' associations of allo-, homo- etc. make it ill-advised to use them with 'nym' or anything which might be construed as one aspect of the signum with respect to another. These relationships are *correspondence* on the same level, and any implication of ontological difference is misleading. Total homomorphy and total homosemy correctly describe correspondence on different levels. Symmorphy and synsemy can be assumed to do likewise. Total homophony or homoceny would of course be nonsense as phonemes or cenemes are purely formal entities. Signa on the other hand can exhibit total homosemy with respect to their E's and total homomorphy with respect to their C's.

All this is quite consistent with the Saussurian notion of the signum as a biunity of expression and content, but I would much prefer it if we could take it to its logical conclusion and recognise that signa, like figurae, do not *have* distinctive function – they *are* distinctive function. They are only secondarily (i.e. realizationally, or adequationally) sets of allos

[3] Total heteromorphy is a requirement of synonymy. If the sets of allomorphs intersect there is obviously only one signum-identity, and all members of those sets are merely allomorphs of one expression, which is to say one content and one signum, given the identical grammatically distinctive function.

[4] As opposed to what I call 'homosemy' or 'pseudo-synonymy', a phenomenon associated with polysemy or contextual semantic variance (of symbols). There is no reason why this should shock. The wonder is that contextual variance is as predictable as it is in semantics as compared with phonetics. It should by now be clear that I regard denotational reference as a realizational matter like phonetics. They belong to the adequational aspect.

[5] 'Allosemes' and 'homosemes' do correspond to allomorphs and homomorphs, since they are similarly allo- etc. in terms of their semes (or *subsets* of their total reference classes) in the first instance.

with distinctive function[6]. The allos themselves, of course, do have distinctive function, as do the signum and figura *utterances* of which they are merely impressionistically similar sets (or alternatively phonologically identical sets, in the case of allomorphs) – i.e. they have the capacity of representing the hypothesized models, while being themselves in the first instance sets of material entities. Thus the formula {({f} Rd) Rd} RD[7] is in fact a realizational one. It stands for the set of all material: Ro, a model for a signum utterance which implies a phonological analysis[8]. However, the theoretical separation between signum and figura entitles us to propose a model for a signum utterance without phonological analysis (mRs, where m is for morphete, and s is for semete, implying no denotational analysis either[9]), and this is more or less what Hjelmslev intended. It is not hard to understand why he was so cavalier about phonology, and indeed given the central rôle of the signum function, there is an important sense in which the first d of our formula is a function of the second. The establishment of purely cenologically distinctive function depends on whether a cenological difference is *ever* relevant in differentiating signa at the upper limit of distinctive realization, although once it has *been* established it operates purely cenologically.

It was perhaps an awareness of all this that prompted Mulder's use of s instead of the second d in earlier writings[10], but it is entirely proper that both should be recognized as the same differential function provided that the theoretical separation between signum and figura is scrupulously observed.[11]

Distinctive function – like love – is all you need. Any implication of semantic function as distinct from it would obscure the adequational character of denotational semantics which is such an invaluable feature of Axiomatic Functionalism. What I would like us to recognise is that the distinctive function proper to the signum can be a function of either the C *or* the E. This is after all only common sense – it is just as true of the C's of 'homonyms' that if the E's of 'synonyms' were not discrete there would only *be* one signum, with one distinctive function, which must therefore be that of the E itself, i.e. its identity. Moreover it would make it clear that the D's are redundant in the definitions and can instead be used for adequation. Thus 'homonymy' (or to avoid inconsistency 'total homomorphy'): $\{p\}^{x}Rd^{x} \sim \{p\}^{x}Rd^{y}$[12], where $x \neq y$, and 'synonymy' (or 'total homosemy'): $\{s\}^{x}Rd^{x} \sim \{s\}^{x}Rd^{y}$[13], where $x \neq y$, the d being a function of the {s} and the {p} respectively. A revised realizational formula for the signum taking account of all this would be ({f}Rd) Rd & dŘ({f}Rd) & ({o}Rd) Rd & dŘ ({o}Rd)[14]. The traditional tendency was to have the horse of the expression drawing the cart of the content. It may have seemed a necessary corrective to put the cart, with its indisputably functional load, before the horse. What is needed now is to put the horse-and-cart before either the horse or the cart. After all, whenever either changes, we have a different horse-and-cart.

* * *

Editorial notes

This article is a reproduction of a conference paper read by Michael A. L. Lamb in 1983 at the 10th International Colloquium of Functional Linguistics (*Colloque International de Linguistique Fonctionnelle*; 7–13 August 1983, Quebec), a regular meeting of *Société Internationale de Linguistique Fonctionnelle* (SILF). Not published in the proceedings of that conference, it has only circulated privately in manuscript form (actually, a typescript). However, the paper has had an undeniable value, if for nothing else, than for the fact that it was referred to in the works of several linguists. This is one of the reasons a decision has been made to publish it. Michael Lamb has agreed with this, though he has not seen the final form. The original manuscript contains five typewritten pages, four pages of the text plus a one-page handout. The latter is not included in this edition, because it presents a lot of obscure information which would confuse the matter more than it would enlighten it. I have otherwise left the text in its original form, correcting only a few typographical errors. I would like to thank to James Dickins for his help with preparing Lamb's paper. Some of the comments below are reproductions of his ideas.

In this paper Lamb discusses the problem of so-called *free allomorphy*. This notion was rejected by Jan W. F. Mulder and Sándor G. J. Hervey, the main proponents of an approach called Axiomatic Functionalism. Michael Lamb has also been an adherent of this approach (since the 1960s), but he became increasingly dissatisfied with aspects of the linguistic descriptions engendered by the standard version of Axiomatic Functionalism developed by Mulder and Hervey since the 1960s (cf. also Dickins 2009: 1). He not only recognizes free allomorphy as a viable notion in this paper but has eventually developed his own version of the approach which became known as Extended Axiomatic Functionalism (EAF). Lamb has published very little in his academic career, but this type of approach has been later developed by students of his—Barry Heselwood and James Dickins. The latter has subsequently published an extensive account of EAF (Dickins 1998). The readers are directed to the latter work where the problem of free allomorphy is discussed in detail (*op. cit.*, ch. 4.1).

[1] These are different realizations of *either* in English. Lamb refers here to an example used by Mulder and Hervey (1972: 30–1).

[2] The words *parallellipiped* and *veterinary* can have several phonologically variant pronunciations (realizations). For instance, according to Webster's New International Dictionary (1961) *parallelepiped* can be pronounced as [pærəlɛlɛpaɪpɛd], [pærəlɛlɛpɪpɛd], [pærəlɛlɛpəpɛd], and [pærələlɛpəpɛd]; *veterinary* similarly has a large number of alternative pronunciations.

[3] Page 1 of the typescript ends here.

[4] I.e. of Contents. In Axiomatic Functionalism, the sign (or signum) is defined as a conjunction of Expression and Content, sc. as E & C, see Mulder & Hervey 2009: 16.

[5] Page 2 of the typescript ends here.

[6] Lamb seems to be drawing a distinction between a signum and a figura considered intentionally, and a signum and figura considered extensionally. A signum considered intensionally is part of the lexology in EAF, i.e. it is a lexid, lexeme, lexotagm, or para-lexotagm, or some part of these (cf. Dickins 1998: 149, 2009, Appendices). The formula for lexid is s; that for lexeme {s}, that for lexotagm a set of ordered pairs of lexemes plus the position in which they stand (however this is actually notated). An 'intensional signum' in the lexology is thus a purely abstract entity, consisting only of the element on the extreme right of the extensional formulae which are used in what is termed in EAF the 'lexologics'. Notions in the signum ontology (corresponding Mulder and Hervey's signum-theory), such as 'morphonete', 'allomorphon', and 'allomorph' are clearly realisational in EAF: their left-hand element is either a phonetic image (the model for an instance of a speech sound) in the case of morphonete, a set of phonetic images (a phonetic form) in the case of allomorphon, and a set of sets of phonetic images (a set of phonetic forms) in the case of allomorph. However, an expression in the lexologics (morphologics) is itself a set ultimately deriving from the phonetic image (its left-hand element is a set of set of set of phonetic images; i.e. a set of set of phonetic forms). In this sense, an expression (also a signum; and a content) in the lexologics can be regarded as realizationally—albeit that it represents (as a set) all the actual and potential occurrences of the particular 'intensional signum' (i.e. lexo; i.e. lexid, lexeme, lexotagm, or para-lexotagm (or parts thereof?)) in the lexology. — Similarly, a phono, in phonology as understood in Extended Axiomatic Functionalism, is purely intensional: a phonid (distinctive feature) can be symbolized as d; a phoneme as {d}, etc. To these correspond phonological forms in phonologics: as an entity whose left-hand element is a set of a set of phonetic images (i.e. a set of phonetic forms) a phonological form is extensional, and thus realizational—albeit that it represents (as a set) all the actual and particular occurrences of the intensional entities of the phonology (phonid, phoneme, etc.).

[7] In their theory of sign (signum-theory) Mulder and Hervey use symbolization from set-theory and express notions of their theory in its terms. The symbolization has been revised through the years (see the editorial note 10), which makes the matter more confusing. Lamb also uses similar formulae but his formulae do not always correspond to any found in Mulder's or Hervey's writings (on the formalization of signum-theory see Mulder 1989, ch. IV, 2). — In the first formula '{({f} Rd) Rd} RD' Lamb seems to be describing Expression or Signum with additional reference to Denotation (= D). Let us look at the formula in steps. The symbol 'f' stands for "phonetic form"; '{f}' is a class of phonetic forms. The symbols 'Rd' may be read "each member in capacity of standing in a relation with distinctive function d" (cf. Mulder 1989: 156). The formula '{f} Rd' then symbolizes "phonological form" (cf. Mulder & Hervey 1980: 60). The second 'Rd', which is added to it, means again "each member in capacity of standing in a relation with distinctive function d", though this time the distinctive function must obtain for grammar, whereas the first obtained for phonology. It means that a certain phonological form has a distinctive function in grammar. If this is what Lamb meant, then the formula '({f} Rd) Rd' stands for "allomorph" (cf. Mulder & Hervey 1980: 61). Once again, the curly brackets '{}' indicate a set, hence '{({f} Rd) Rd}' is a class of allomorphs—or Expression (*ibid*.). Alternatively, this could stand for Signum, because, as Mulder has repeatedly noted, Expression, Content and

Signum mutually imply each other, and thus the formula for Expression can also express Signum. Finally, the symbols 'RD' most probably mean "having a certain denotation". In fact, the symbol 'D' may be a key to understanding Lamb's formula. Mulder (Mulder & Hervey 1980: 61) used this symbol in a formal definition of synonymy (which is one of topics of Lamb's paper): '($\{p\}^x$ R s^x) R D^x ~ ($\{p\}^y$ R s^y) R D^x'. This formula compares two different signa with the same denotation, i.e. synonyms. If we take only one signum and ignore the superscripts, we get '($\{p\}$ R s) R D'. In the next step we should replace the 's' with 'd' (see the note 10) and substitute 'p' (phonological form) with its formula '{f} Rd' (see above). After this we get '({{f} Rd} Rd) RD'. This formula is conspicuously similar to Lamb's one: '{({f} Rd) Rd} RD'! It may actually be that Lamb really meant this. Lamb's paper was typed and the curly brackets were later added by hand. We cannot thus rule out Lamb's hand slipped, and this, after all, holds for the whole paper, in particular for the formulae used there.

[8] By 'a model for a signum utterance which implies a phonological analysis' Lamb might mean what is termed a 'morphonete' in EAF: symbolized 'F', formula: 'F = (*i*Rd)Rs'. In this case, the 'o' in Lamb's formula would be equivalent to the elements 'd)Rs' in the formula '(*i*Rd)Rs'—although, admittedly, this seems very odd.

[9] These seem to be the same as 'morphete' and 'semete' in EAF, where semete is defined as '*i*Rs' and morphete is defined as '*j*Rs'. EAF distinguishes between 'morphonete' ('form', as used by Mulder) and morphete ('form', as used by Hervey) (cf. Dickins 1998: 422–3), also between 'semete' and 'semonete'. Lamb's notion of a conjunction of a morphete and a semete, which he defines as 'mRs', corresponds to logete (lexete) in EAF (see Dickins 2009, Def. F1b0a). Logete contrasts with a logonete (lexonete), which is the conjunction of a morphonete and a semonete (*ibid*., Def. F1b0b).

[10] Lamb alludes here to a revision of signum-theory which Mulder made in the years 1980–1989. Originally, he distinguished between *d* and *s*, the former standing for "phonologically distinctive function", the latter for "grammatically distinctive function"; later, however, he declared this distinction redundant and used *d* for distinctive function in phonology as well as for distinctive function in grammar (see Mulder 1989: 156–9; cf. also Bičan 2009: 11–3 and Dickins 1998: 422–3). Lamb apparently adopted this change here and used 'd' for distinctive function at both levels.

[11] Page 3 of the typescript ends here.

[12] The symbol '~' is to be read as "in comparison with". The formula '$\{p\}^x Rd^x \sim \{p\}^x Rd^y$' should thus apparently read as "state of affairs in which total class of allomorphs of one signum is compared with, and has the same phonological forms as, those of the total class of allomorphs of another signum" (cf. Dickins 1998: 402).

[13] Compare this with the definition of synonymy in EAF (see Dickins 1998: 403): "state of affairs in which total class of allosemes of one signum is compared with, and has the

same delological forms as, those of the total class of allosemes of another signum". In this paper Lamb does not use the notion *delological form* but *semete*.

[14] This formula can be interpreted against the formalization of signum-theory in EAF as reproduced in the following figure (see also Dickins 1998, ch. 3.1.1). The formula '({f}Rd)Rd' is the same as '{$p^{i...n}$Rs}': '$p^{i...n}$' is another way of saying {*f*} (or more fully '{*f*}$^{i...n}$'). It is not clear why Lamb follows this by a converse definition 'dŘ({f}Rd)' (where 'dŘ' is the converse of 'Rd'), but it may parallel the way Mulder and Hervey define the signum (i.e. as a conjunction of expression and content, see 1980: 60). The formula '({o}Rd) Rd' looks like the formula for Content in EAF (cf. Fig. 2), i.e: '{$q^{i...n}$}Rs' or '{*q*}Rs', i.e. a set of allosemes in relation to a specific distinctive function in grammar. The formula '{*q*}Rs' could also be rewritten as '{(*g*Re)}Rs'.

		signum **S = E&C**			
		expression **E = {$p^{i..n}$Rs}**	content **C = {$q^{i..n}$Rs}**		
	phonological form ***p* = {$f^{i..n}$Rd}**	allomorph ***p*Rs** or **{(*f*Rd)Rs}**	alloseme ***q*Rs** or **{(*g*Re)Rs}**	delological form ***q* = {$g^{i..n}$Re}**	
phonetic form ***f* = {*i*}**	allophone ***f*Rd** or **{*i*}Rd**	allomorphon **(*f*Rd)Rs** or **{(*i*Rd)Rs}**	allosemon (reference-type) **(*g*Re)Rs** or **{(*j*Re)Rs}**	allodele (denotatum-type) ***g*Re** or **{j}Re**	semantic form ***g* = {*j*}**
phonetic image ***i***	phonete ***i*Rd**	lexonete (utterance) **U = F&R**		delete (denotatum) ***j*Re**	semantic image (denotable) ***j***
		morphonete (form) **F = (*i*Rd)Rs**	semonete (reference) **R = (*j*Re)Rs**		

Key to symbols:

R	in relation to	d	distinctive function in phonology
&	conjunction of	s	distinctive function in lexology
{}	a set of	e	distinctive function in delology
i..n	[a] certain [set of]		

References

BIČAN, Aleš. 2009. "Mulder and Hervey's Postulates for Axiomatic Functionalism: An introduction to the new edition". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/bican/bic-004.pdf>.

DICKINS, James. 1998. *Extended Axiomatic Linguistics* (Trends in Linguistics: Studies and Monographs 111). Berlin – New York: Mouton de Gruyter.

—. 2009. "Extended Axiomatic Functionalism: Postulates". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/dickins/dic-001.pdf>.

MULDER, Jan W. F.. 1989. *Foundations of Axiomatic Linguistics* (Trends in Linguistics: Studies and Monographs 40). Berlin – New York: Mouton de Gruyter.

MULDER, Jan W. F. & Sándor, G. J. HERVEY. 1972. *Theory of the Linguistic Sign*. The Hague: Mouton.
—. 1980. *The Strategy of Linguistics*. Edinburgh: Scottish Academic Press.
—. 2009. "Postulates for Axiomatic Functionalism". *Linguistica* ONLINE, <http://www.phil.muni.cz/linguistica/art/mulderhervey/muh-001.pdf>.
Webster's Third New International Dictionary (1961). London: G. Brill & Sons.

Linguistica ONLINE. Published: July 10, 2009
http://www.phil.muni.cz/linguistica/art/mulder/mul-001.pdf
ISSN 1801-5336

PAUL RASTALL: *A LINGUISTIC PHILOSOPHY OF LANGUAGE*, LAMPETER – LEWISTON, 2000[*]

review article by Jan W. F. Mulder (University of St. Andrews, UK)

Introductory note *by Aleš Bičan*

In 2006 I happened to have a short e-mail conversation with Jan Mulder. I asked him for off-prints of his articles, as some of them were rather hard to find. He was so generous to send me, by regular post, a huge packet of them. It took me some time to realize that some of the included writings had never been published. One of them was a manuscript (typescript) of a discussion of a book by Paul Rastall, a former student of his, which was published in 2000 by The Edwin Press. I naturally contacted Paul Rastall and asked him about the article. He was not aware of it but supported my idea of having it published in *Linguistica* ONLINE. He consequently spoke to Mulder who welcomed the idea and granted the permission. The article below is thus published for the first time. It should be noted, however, that Jan Mulder has not seen its final form.

The text is reproduced here as it appears in the manuscript. I have only corrected a few typographical errors here and there. The only significant change is the inclusion of a list of references. Mulder refers to a number of works, but bibliographical information is not provided. I have tried to list all that are mentioned in the article.

Having read Mulder's review, Paul Rastall decided to clarify some points Mulder discussed. He took the opportunity and wrote a response which has also been published in *Linguistica* ONLINE:

http://www.phil.muni.cz/linguistica/art/rastall/ras-003.pdf

* * *

[*] Previously unpublished. [Editor's note]

The present publication is not a book on Linguistic Philosophy, but rather one presenting a brand-new Philosophy of Language. The emphasis is not exclusively on epistemology, but has a much wider range. It even deals with some relevant matters concerning the neurophysiology of the brain. Linguistic Philosophy, on the other hand, is a type of logical analysis based on so-called Ordinary Language, popular in the nineteen fifties, and still to some extent in the early nineteen sixties, especially in Oxford. The Oxford philosopher Gilbert Ryle (1900–1976) more or less adhered to that school as is very noticeable in his for this review important book *The Concept of Mind* (1949). But when I had the pleasure of attending some of his lectures and evening talks during the nineteen sixties he seemed already to have taken some distance, not from his book, but from the school. I remember him most as a sympathetic person and as a critic of category mistakes, which he was already when he wrote the above mentioned work. Unfortunately the "ordinary language" movement dealt in its heydays almost exclusively with English, the language, which made it of course *a priori* invalid as a *universal* method of logical analysis, as Rastall has pointed out (p. 1 and 65).

Rastall's Philosophy of Language is nevertheless not a Philosophy of Science of the ordinary kind, which latter tends to have only one level of construct, i.e. a level of *description* in which some *theory* is mixed in, a sort of a hybrid. There is, of course, in the ordinary type also an applicational level, i.e. a level of phenomena, which belongs exclusively to "the real world". For linguistics one needs, however, two levels of construct (pp. 196–197), i.e. a level of *theory* and a separate level of *description*. In addition there is here too an applicational level, mutatis mutandis comparable to the level of phenomena in the natural sciences. The two levels of construct are necessary because linguistic description deals with an indefinite number of parallel Universes, all of them of the same nature, e.g. English, Hottentot, Dutch, etc., and each of which being a possible candidate for description. Most major Continental European Linguistic theories are of this kind[1]. In the Sciences the situation is, however, different. There is only one physical universe. Sciences such as Physics, therefore, can afford to mix description and theory into one system, although personally I believe that this is also in Science for ontological reasons not a healthy situation. Another feature in which linguistics seems, in this case by material necessity, to differ from the natural sciences is the latter's emphasis on "cause and effect" situations (pp. 195-198), and also the fact that scientific phenomena tend to be directly accessible, or at least measurable. They are so-called "sense data". As the type of "linguistics" Paul Rastall describes in his book is based on arriving at descriptions of speech phenomena as *communicational* strategies, and because, in his opinion, theories which are explicitly geared to this are mainly of the Saussure/Hjelmslev/Martinet/Mulder type, the phenomena to be described are purely functional in the Troubetzkoy Prague School sense, as continued by

[1] Rastall refers to "the early Mulder", who in the beginning had, according to him, a one level approach. I have indeed given that false impression on page 5 of *Sets and Relations in Phonology* (1968). The scheme there, or at least its interpretation, is however incorrect, though I was, probably just as Saussure and Martinet before me, not aware that typical for Continental European Linguistics was that implicitly we had a two levels of construct approach. My mistake was refuted by myself already on page 10, where the set-up of the theory was clearly "axiomatic", i.e. *a priori*. In December 1968, just before the book came out I gave a talk to the St Andrews linguistics society, which was published in 1975 in *La Linguistique* under the title "Linguistic theory, linguistic descriptions and the speech-phenomena". It was reprinted in 1980 in *The Strategy of Linguistics*.

Martinet. But the phenomena in that sense do not possess *reality* in the way inductivists understand this term. They are only indirectly accessible, i.e. via an arbitrary, albeit descriptively appropriate, theory (p. 25). They cannot be "seen" or "heard" but only actually been perceived by "logical thinking", without *direct* interference of the senses as such. Therefore they cannot be subjects of "realist" type theories. The way in which we may perceive our descriptive data is by hypothesis and then looking if they are commensurate with their definitions in the theory. All this and much more is meticulously explained in the present work, especially in Chapters 2, 5, and 8. Rastall, of course, just as nowadays also most philosophers of science, accepts that even for inductivists and other types of realist there cannot exist any unbiased "observation". There are always "thought processes" and "expectations" involved, which contribute to the perception.

The fact that there is such a great distinction between theoretically based linguistics and linguistics ostensibly based on "sense" data, rather than on logical reasoning in the first place, is rather unfortunate, because even the purely linguistic part of Rastall's book may be difficult to understand by those who are, descriptively speaking, dogmatically realist, not to mention transformationalist. It is, therefore, a good thing that he has published this work as a book, not as a set of articles. This anchors the publication firmly in Poppers "World 3" (see my comments below, and the indexed pages of Rastall's book). As Rastall says: "The dominating publishing force of linguistics in English in the last forty years has undoubtedly been that of transformational and universal grammar of a broadly Chomskyan sort" (p. 48). I should like to add, however, that in my experience inductivism or dogmatic realism is also still a force to be reckoned with. In judging articles for publication, also *their* verdicts are often based upon whether they do, or do not agree with what has been written. This is extremely unfortunate, as the scientific value of a publication, provided it is both relevant and logically consistent, stands in inverse ratio to its present day popularity. To sabotage this may cause severe arrest or damage to scientific progress. And besides, why should one waste one's time on writing something with which most people agree already? Rastall's strength is his originality.

Much of all the above implicitly or explicitly is part and parcel of the mental outfit of philosophically minded functionalists, but it has never been presented as completely and well organized as in this book. This alone makes it almost a major handbook of functionalism, together with its underlying philosophy. The philosophical thoughts rest largely, but not completely so, on Popper's "Three Worlds" approach, and on his theory of "Conjecture and Refutation", the so-called hypothetical deductive method. I come to Popper's "three worlds" later. The choice of Popper, especially his Conjecture and Refutation" approach, is generally speaking in my opinion a good one, but I have some criticisms with regard to his handling the three worlds. This is especially relevant here.

Because of the difficulty of the "neuro-physiological" parts, when Rastall, quoting Eccles, deals with functions of the mind, some readers may wish to take some books by Popper and Eccles out of the library to have a look themselves. I should therefore like to make some critical comments with regard to these authors. I have to say in advance, however, that Rastall seems only on one or two points to have become aversely influenced by Eccles in conjunction with Popper. Rastall may, of course, disagree with me on this. A majority of functionalists may even agree with his more Cartesian dualistic point of view, than with my stricter adherence to Ryle's view on category mistakes. First I like to say something

about Popper's notion *conjecture*. For Popper it is actually the definition of "hypothesis". But it is at the same time a euphemism for "speculation". Now, most sciences are in their early stages almost always speculative. There is nothing wrong with this. It is rather a practical necessity. It means, or at least it should mean, however, that it is in that case based on strong *plausibility*. This is the least one should accept from a primitive statement in a scientific context. That is, the lowest level of acceptable statement in science is that it be plausible, which in its turn implies that no "hocus pocus" should be involved. Popper states as a requirement for hypotheses, i.e. scientific conjectures, that those in principle should be open to refutation. If attempted refutation is unsuccessful, the hypothesis is said to be corroborated, and it is thereby for the time being accepted. But he further admits that the accepted statement is in its turn hypothetical again. It is again refutable, and this process goes on, probably at infinitum, with infinite regress. This actually makes it a tautology, but he softens this by declaring that every new hypothesis in these respects achieves greater *verisimilitude*, i.e. it gets nearer to the truth. Quite apart from that this is overoptimistic (not all changes that have been made in linguistic (or any other) theories have brought us nearer to the truth), the whole procedure is tangled up by the fact that he constantly speaks about "the *truth* of *theories*". The latter is, of course, anathema for functionalists, who, at least implicitly, recognize two levels of construct, rather than one. Only *descriptive* statements can be true, but even this is relative to a particular theory.

Because this situation, which has its origin in Popper, who just as other philosophers of science does not distinguish between *theory* and *description*, can easily be saved on the basis of our two level approach, I wrote in October 1984, on invitation, for a book by Rom Harre & Roy Harris (eds.), which was published nine years later in 1993 as *Linguistics and Philosophy, The controversial interface* (Oxford, Pergamon Press), an article called "Negativism as an effective methodology in linguistic description". Of other articles I wrote on the topic, the most comprehensive was "Methodology and description" (1996), published in *La Linguistique*.[2] This is the method Rastall refers to as leading to such assertions as "*x* is a phoneme of English", or more generally "…is an *x*" (p. 226). Such assertions are always based on definitions in the theory, in this case the definitions of "phoneme" which are 1) "Self-contained bundle of one or more distinctive features as its immediate, and at the same time ultimate, constituents", and 2) "Minimum syntagmatic entity in phonology". Definitions of that kind are constructed in such a way that they are indirectly equivalent. If the one is appropriate, the other is appropriate as well. The hypotheses based on these definitions must, in my view always be stated in the negative, e.g. "*x* is *not* a phoneme". This is presented for possible *refutation*. If, and only if, refuted, it is automatically asserted that *x is actually* a phoneme and, if we try it on English, it is actually a phoneme of English, etc. As one sees, one does not need here *verisimilitude*. One can preserve the latter mainly for hypotheses which are exclusively based on considerations of *plausibility*.

The "*x* is not…" procedure is the first stage of the descriptive process. It allows us to make inventories and classifications on the basis of which things are the same or different, and in which way they are the same or different. It should be understood that at this point we have arrived at stage two, i.e. at the description of a *particular* language, and we have to say farewell to the *direct* application of the theory. The theory does not have definitions

[2] This article was submitted for the first time on 27-9-1989, but the manuscript got lost on two occasions and was refused by another journal on another occasion.

for items that only occur in *specific* languages. The rest is rather based on logical thinking and on the skill to present everything as much as possible in complete balance between economy and exhaustiveness of presentation. An example is the 25, or if Scottish and Irish variants are included, 26 phonemes of English, which under an axiomatic functionalist point of view account for *all* oppositions between those phonemes. Another of the many other examples is the description of the English verbal system as portrayed in Mulder, *La Linguistique*, 2/1996, "An unorthodox view of the English verbal system". See also Rastall's *A Functional View of English Grammar* (1995), in which there are plenty of further examples.

In the following I should like to refer to the cooperation between Popper and the neurophysiologist Sir John C. Eccles. As the basis of his discussion of relevant things that go on in the human mind Rastall has chosen Eccles's book *The Human Mystery* (1979). Of course much of the understanding of this topic remains conjectural, but most of it has a high degree of plausibility and even certainty. Unfortunately, certainty itself has in most cases been achieved by callous vivisection, and an ingenious cruelty in experiments, especially on such "inferior" creatures as primates and cats who had to lend and sacrifice their brains for this. Eccles refers to such "wonderful" (his words) experiments in some detail, but uses also clinical reports on human patients. Before writing this book, which contains for Rastall's requirements more than enough of real *scientific* value, and apart from that there are some remarks on evolution theory, Popper and Eccles have together produced another, in my opinion generally more instructive, book, not referred to by Rastall, i.e. *The Self and Its Brain*. This work consists of three parts, i.e. 1) A part written by Popper, 2) A part written by Eccles, and 3) A discussion between the two authors. Popper can be described as an agnostic, Eccles as a believer in God and the supernatural. Though they are remarkably in agreement on most points and settle for a kind of Cartesian dualism, which they have called "Interactionist Dualism", they came, of course, at the end at slightly different conclusions. That of Eccles was understandably a belief in "a supernatural origin" of his "unique self-conscious mind and selfhood", whereas for Popper his "self-conscious mind" was to be regarded as "his way of thinking in a position of superiority over the brain in World I" (more or less the intersubjective "real world", but in this case, of course, his own brain). Eccles's book "*The Human Mystery*" can be seen as a synthesis of the above joint publication. It is a very scholarly work and full of fine descriptions of the brain and its supposed workings. It is, however, as it clearly states, not meant to be a scientific work in the first place, but a treatise on *Natural Theology*. Natural theology is a pseudo-science which tries to make theological truths derivable from scientific truths. Nevertheless, as I said, the work also contains a great deal of real science. The word "pseudo-science" is here not used in its usual pejorative sense, but rather as "*near*-science". It is almost scientific, except for the conclusions. *The Human Mystery* admits, especially towards the end, modes of reasoning which are appropriate for theology, but not for science, even under Popper's weaker (than my own) requirement that "nothing belongs to *Science* if it is not in principle refutable". A hypothesis about the "interfering existence of a Divine Providence", or the existence of "a soul which is largely independent from the human body" can neither be refuted in principle, and nor can the *negation* of such a hypothesis be refuted. The latter includes the extra requirement as stated in my ideas called "negativism" (see above). I have to add here again that Rastall has used as his scientific arguments mainly the scientifically

relevant parts of this book, though he also seems to show some sympathy for Eccles's stance.

Popper, in an earlier book *Objective Knowledge* (1972: 154), says that in his pluralistic philosophy the world consists of at least three ontologically different sub-worlds: 1) The physical world or the world of physical states; 2) The mental world or the world of mental states; and 3) The world of intelligibles, or of *ideas in the objective sense* (his italics). This latter is the world of possible objects of thought, i.e. the world of theories in themselves, and their logical relations; of arguments in themselves; or of problem situations in themselves. Simplifying one might say that the three worlds of Popper are 1) the physical world, 2) the world of the mind, and 3) the objective, *autonomous* World 3, containing cultural goods such as scientific publications and collections, but also, I think it should include the separate languages as cultural institutions, or anything else for which one must have a genetically determined *adaptability*, but which have to be *learned* from others.[3] The above may seem an interesting collection, and it is convenient if one uses it informally, with the objective of merely ordering one's thoughts. Clearly, in ordinary life one does behave in respect of things that occupy space, and something that is seemingly only in the mind (World 1 and World 2) differently, and one does have a different attitude yet to libraries, museums, or other institutions that are typical exponents of World 3), to which some people may even have no attitude at all, and more homely environmental things about which one is bound to talk or think (World 1 and World 2). As long as one regards the above, as I said, as an informal classification, rather than as things to actually philosophize about, there is no danger, not even perhaps of committing grave category mistakes. Even to remain constantly aware of the above as noticeable categories may be very useful. But let us look as to how loose a collection this **actually** is! I shall try to simplify everything to the extreme.

To begin with we can regard the three worlds together as the whole of *the real world* in an objective sense. In that sense we look at it as an outsider, as an onlooker. Then we can distinguish between Worlds 1 and 2 on the one hand and World 3 on the other. Worlds 1 and 2 are inseparably linked together. World 1 is potentially an active world, but World 2 is an activity, i.e. not a world of entities at all[4]. It is not independently active. World 3 is even, in spite of what Popper says, completely passive. Individuals and groups of individuals can be active in that world, i.e. part of that world can become activated within their own minds, but it cannot act by itself. Popper maintains on page 155: "The three worlds are so related that the first two can *inter*act (my italics), and that the last two can *inter*act" In *The Self and Its Brain* (p. 563) he says about World 3: "It really exists; and not only does it exist, but it is active; it acts upon us (only, of course, by *inter*action)". In many places he even comes very close to regarding it as part of the mind. But interaction implies that both sides are capable of acting. That what Popper here says amounts to making category mistakes. As to the distinction between Worlds 1 and 2, this can only be a completely artificial distinction. Or rather one should say that, as to World 1 in relation to World 2, there are a number of overlapping classes involved. First there is the class of purely material objects which roughly can be contrasted with that of life entities. One could say that it ultimately

[3] Popper and Eccles have probably not noticed that also for chimpanzees, and some other animals there exists a World III, albeit a rudimentary one.

[4] For Popper and Eccles World 2 is, however, also a world of entities.

merely consists of atoms or molecules and (skipping the details) we can contrast it with the class of entities that ultimately consist of *life* cells. These are *biological* entities rather than ordinary material entities. The little trick of creating a distinction of this kind, thereby ignoring some in-between stages, such as *carbon* chemistry and *bio*chemistry, saves us from having to call *monists* "materialists", as *dualists*, including Popper, tend to do. The next step would have to be a distinction between human beings and others, as only in respect of human beings one can distinguish between Worlds 1 and 2, or can one? *Monists* such as Ryle would say one cannot. The opposition between *body* and *mind* is not one between components, let alone between independent entities, which are then usually called "body and "soul", but at best one between two aspects of one and the same entity, something like "expression" and "content" being aspects, not "parts", of the linguistic sign. We have also to realize that Worlds 2, of which there are exactly as many as there are thinking members of World 1, only exist as a knowable entity for only one human member of World 1. Nobody knows another person's thought processes and therefore their minds, though we *believe* (no more than that) that everybody else has also a to others unknowable mind. Of course, Popper and Eccles do not have the above difficulties, but this is because they do not seem to be aware of the fact that making category mistakes amounts to invalid reasoning. Ryle has called the belief in a separate mind and body "Descartes's Myth", or "the Doctrine of the Ghost in the Machine". Though Popper and especially Eccles's, as well as Descartes's approach can easily be shown to be non-scientific – i.e. it can neither be refuted, nor can its negation – Ryle has chosen to expose its acceptance not as non-scientific, but rather as a category mistake. Ryle's book *The Concept of Mind* can be regarded as an *antipole* of Eccles's and Popper's publications, although it was written in the first place as a critique of Descartes's stand. Ryle's main point is that there is a polar opposition between matter and mind, the first occupying space, the latter essentially being void. "What happens to one body in one part of space is mechanically connected with what happens to other bodies in other parts of space. But mental happenings occur in insulated fields, known as 'minds', and there is, apart maybe from telepathy, no direct causal connection between what happens in one mind and what happens in another. Only through the medium of the public physical world can the mind of one person make a difference to the mind of another" (Ryle: p. 13). To this we can add that what Dobzhansky (*The Biology of Ultimate Concern*, 1967: 26), has said: "Unless one chooses to believe in some peculiar form of Leibnizian phychophysical parallelism, the immaterial must sooner or later be brought down to the physiological and hence the material level." I do not like Dobzhansky's term "material" here. One should distinguish between "material" and "biological" or "physiological", even though "material" is a *hyperonym* of the latter two. In ordinary language it is, however, not used in that way. In my opinion, thinking, i.e. any thought, let alone pain, or feeling oneself under the weather, is not disconnected from biological activity inside the brain and/or some other part of the body. In fact, "thinking" is an aspect of "life" itself. It presupposes life. "Sensing" is another. On page 12, in the same chapter, called "On Gods of the gaps", Dobzhansky says: "Probably most teachers of biology have found a minority of their students perplexed by having what they believe to be "mysteries" of nature explained and clarified… To them, there must be gaps between natural events to accommodate God's interventions." However, he says a bit further down: "The historical odds are all against "the God of the gaps" being able to retain these shelters

in perpetuity". He means that "scientific explanations" in the course of history have already closed one gap after another. On page 66, Dobzhansky expresses himself very clearly: "The body makes the mind, but the mind is not a product made by the body as gastric juice is made by the stomach. It is body in action, a peculiar pattern of action of a special kind of bodily apparatus, just as walking is another pattern of action of a different kind of apparatus." The anthropologist Dürkheim (1915, p. 52), in a book called *The Elementary Forms of Religious Life*, said already: "All known religious beliefs, whether simple or complex, present one common characteristic: They presuppose a classification of all things, real and ideal, of which men think, into two classes or opposed groups… profane and sacred.". It is the function of the "sacred" ones to fill-in the gaps. Malinowsky (1931) has pointed out that "as soon as man developed the mastery of environment by the use of implements, as soon as language came into being, there must also have existed primitive knowledge of an essentially scientific character. No culture could survive if its arts and crafts, its weapons and economic pursuits, were based on mystical, non-empirical conceptions and doctrines."

If we look at the history of the Universe there are still enough things to be amazed about, things that leave perhaps big questions also to scientists. To begin with *The big bang*, if there was an explosion there must have been something that did explode, some matter, but what caused the explosion of this highly compressed matter is still a mystery. No scientific hypothesis about it that does not lead to infinite regress has been made. All this happened five to ten billion years ago. The earth is probably about four and a half billion years old. Life on earth is probably about two billion years old. Ideas about what happened in the mean time are laid down in hypotheses which have a great deal of plausibility. Also the time span of the three to five billion years enhances the general plausibility. That is, in a long time almost anything can happen. The hypotheses about the creation of the different chemical types of matter have even been made more plausible by experiments. But life itself is an absolute wonder to say the least. Theologians are not to be blamed if they called this an act of God – that is what they are theologians for – but as a conjecture, saying such a thing is unscientific. It can *a priori* not be refuted, and nor can the existence of God. There is a logical reason why an irrefutable hypothesis is unacceptable in science. This is because it means the same as its contrary or any other irrefutable hypothesis that could be launched in its place, and therefore it means exactly nothing. Dobzhansky called the emergence of life a *Transcendence*. "The universe transcended itself'. The next transcendence was perhaps about two million years ago. This was when *Man* appeared. We may as well say that this transcendence was when *Language* appeared, as without language man would be no more than a very intelligent animal, i.e. an animal with qua intelligence an aptitude for developing a jargon, and learning to speak it – a jargon which ultimately could come to possess a double articulation – but who had not started to do something about it yet, or who was perhaps merely enlarging his vocabulary a bit. How long it has taken fully to develop this jargon, or these jargons, and how it, or they, developed we do not know. It even seems that we do not have any plausible hypothesis about it. It is still "a gap" in our knowledge. One could actually define "humanity" as "linguistic animality".

As I have said, this development has marked another "transcendence". With this began in fact a new development of "man" as a species, rather than as a bunch of individuals. It was from then onward no longer a mere biological evolution, but also a cultural one. This

was centuries later further enhanced when writing systems evolved, and more evolved in their tail, and things accelerated again when means of large scale reproduction, such as printing, evolved, and with it a distinction between spoken and written language, not always understood by linguists. I shall leave the evolvement of wireless, television and computer out of consideration. The latter may bring cultural developments, the greatness of which cannot yet be foreseen. But it may also bring destruction or set-backs like Chomskyanism and Universalism have brought to the linguistic world.

The development of language must have meant an enormous acceleration of almost anything social. One thing which it has also brought us was probably "self-awareness" and its bitter fruit "death awareness". The latter brought "religion" in many forms, usually ultimately comforting, but also conservative and quarrelsome, in Western societies frequently the temporary enemy of proper science. Popper and Eccles do not seem to have contemplated that "death awareness was merely a logical consequence of acquiring "language". This enabled people to speak about things that had not happened yet, and other things outside their direct environment. It also brought the curious notion of the self-conscious mind on which Eccles and Popper put great emphasis when they want to stress the superiority of men over animals. This self-conscious mind is according to Popper independent of the brain in World 2.[5] Saying this is unscientific under Popper's own requirement, because it is *a priori* irrefutable. The acquisition of language is not so much a biological development, but the aptitude for using symbols was a particular evolutionary development in some primates. Also in some primates, including pro-consul and early man, the absence of the so-called "simian shelf" and the outward sloping of the "symphysial region", both in the jaw, gave greater freedom to the movement of the tongue, and there were other biological advantages in man's erect posture and other features which made it easier to use his eating-and-drinking and respiratory organs for speaking as well.. There is no reason here for recognizing "gaps". There is, however, at last a good reason for granting Popper's World 3 the great status it really deserves in the cultural evolution of man, not in his mental evolution, which can in my opinion not be separated from his biological evolution, just as it cannot be separated from the evolutions of animals in general. Popper's in discussion switching to-and-fro from third world to second, and from second to first, and from the evolution of individuals to that of the species, and most of all his not distinguishing between cultural and biological evolution has perhaps created the greatest string of category-mistakes ever produced by a great philosopher.

As to Eccles, who is not a philosopher of science, it is quite understandable that he accepted Popper's World 3 as the basis of his "self-conscious mind", though Popper already earlier did believe in "self-consciousness", a from the brain independent property of the human mind (*The Self and Its Brain*, p. 15). Popper has linked also this to World 3.

Looking past the most monumental marvels of evolution itself, Eccles has found a set of "gaps" to be filled. He deals with it under the heading "The mind-brain problem. Experimental evidence and hypothesis." The latter is his, or Popper's and his, *Dualist-*

[5] Another curious notion is their notion "liason brain". It denotes all those areas of cerebral cortex that potentially are capable of being in direct liaison with the self-conscious mind, which, one should remember this, is independent of the brain. The question to ask here is then: are these areas of cerebral cortex then also independent of the brain? The notion "independent self-conscious mind" is reminiscent of the smile of the Cheshire cat, which was independent of the cat itself and perhaps also self-conscious.

interactionist hypothesis. This depends on his "self-conscious mind hypothesis", which is, as I have said, also by hypothesis, "independent" of the brain. Also the hypothetical "liaison brain" plays here an important role. The reasoning is all beautifully teleological, as is to be expected within Natural Theology. It is all hypotheses built upon other hypotheses, and so reading it becomes for a scientific traveler an Alice in Wonderland journey, with Cheshire cat and all, through a field of hypotheses to the umteenth power. This still does not, however, lead to an acceptable conclusion. There still remain gaps that have to be closed. They are gaps in "Visual, Auditory and Olfactory *perception*". He also briefly mentions "pain", of which he says that it has no material counterpart. In that case there is nothing to say about it, is there? I shall leave olfactory perception out, but not because I think it has no "material" (but I rather call it "biological") counterpart.

That what Rastall says about it on page 93 and 94 on this matter is interesting and perhaps to the point. He uses as his example the act of seeing, and he says similar things, *mutatis mutandis*, as I had learned as a student in phonetics classes with regard to the act of hearing, where everything that takes place, up to and including the cochlea, seemed quite normal, but there did not seem to be much relation between what probably happened in the brain, and the unified sound-picture one observed. Strangely enough (this was at least 48 years ago when television had just arrived), I also found, like Rastall, a possible comparison in television. But my guess was that the traces and flashes on the screen, just as the synaptic connections in the brain, were so fast that they had to come over in a sort of holistic, and therefore unified fashion. Rastall deals with it in a different manner. He says: "The mental image is greater than the physical data or processes. A television picture similarly is greater than the physical data or processes. (A picture on the screen is more than the sum of the particles striking the screen and reacting with it. It has order and spatial relations, contrasts and forms, which are interpreted as representing some scene. The purpose of the apparatus is, of course, to create the image on the screen)". He regards our ability to arrive at a unified picture as a product of *conscious experience*. If I may, I hope correctly, paraphrase his long explanations, I would say that he sees it as being based upon knowledge and expectation, and perhaps even on the experience of a life time, as to what we should observe. With putting it this way, I not only can go along, but it is also in accord with the sophisticated functionalist's stance that we cannot directly observe the phenomena, but have to approach them indirectly via a sort of theory. Furthermore, what he says is also the basis of a proper hypothesis. To start off one's guess with "supernatural intervention", as Eccles does (see below), is, however, irrefutable and therefore not permissible.

Eccles, who, even in his multiple-hypothetical fashion, did, as I said, not reach a satisfactory outcome, has in his book *The Human Mystery* made the supernatural filling in of these gaps the final conclusion of his work on Natural Theology. He says, pointing to the seeming discrepancy between what we know of what seems to go on in the brain and the unified picture we actually receive (p. 228): "As an answer to this question it is proposed (sic) that the self-conscious mind plays through the whole liaison brain in a selective and unifying manner. An analogy is provided by a searchlight. Perhaps a better analogy would be some multiple scanning and probing device that reads out from and selects from the immense and diverse patterns of activity in the cerebral cortex and integrates these selected

components, so organizing them into the unity of conscious experience."[6]. On page 234 (Conclusions) he writes: "It is a measure of our ignorance that in the neo-cortex no special structural and neo-physical properties have been identified that distinguish sharply a human brain from the brain of an anthropoid ape. The tremendous difference in performance can hardly be attributable to a mere threefold increase in modules. We have no knowledge of any qualitative development that would account for the supreme performance of the human brain.".

In my opinion, if this is correct, it must be the availability of *language*, not some imagined spirit, such as, for instance an "independent self-conscious mind", that could plausibly make the difference."[7]

The *term conscious experience* Rastall uses is the term that also Eccles has used in another much smaller book, and he also portrays a similar picture as Rastall does about what may actually go on in the brain, except that he does this in greater detail. Many of those details are, however, of a hypothetical nature and mixed with quotations from authors of a similar persuasion as Eccles himself. In this booklet, called: *The Brain and the Unity of Conscious Experience* (1965) Eccles comes to very different conclusions from Rastall's. Hiding himself somewhat behind others, he first quotes Jennings (p. 40) who says: "To work this" (i.e. "conscious experience" and "the uniqueness of self") "out in detail, one would apparently have to hold that the human self is an entity existing independently of genes and gene combinations…" Via a reasoning by Jennings which is peculiar, to say the least, Eccles comes to the conclusion that Jennings must have appreciated "the fallacy (p. 40) of attempting to derive the uniqueness of the self from the experiential history of an individual,…" Continuing his peculiar mode of reasoning, Jennings finds (this I have all from quotations in The Brain and the unity of conscious experience) that biology itself furnishes no positive doctrine of the relation of selves to gene combinations, and he finds that it is therefore fair to ask: "Does biological science make the holding of that doctrine impossible"? (p. 41). I do not understand what kind of reasoning this is, i.e. what conclusion could be drawn from it. It sounds a bit like the fallacy *of affirming the consequent*. Eccles says, taking note of Jennings's arguments (p. 42): If we follow Jennings, as I do, in his arguments and inferences, we come to the religious concept of the soul and its special creation by God. "I believe that there is a fundamental mystery in my existence, transcending any biological account of the development of my body (including my brain with its genetic inheritance and its evolutionary origin;…)" For a final statement of his belief Eccles quotes (p. 43) from an earlier Eddington lecture[8] by Thorpe (1961): "I see science as a supremely religious activity, but clearly incomplete in itself. I see also the absolute necessity for belief in a spiritual world which is interpenetrating with and yet transcending what we see as the material world. Similarly I believe that anyone who denies the validity of the scientific approach within its sphere is denying the great revelation of God to this day and age. To my

[6] And all this is done completely automatically, it seems, by the self-conscious mind without any help from the brain.

[7] Eccles has perhaps not realized that also animals have unified perception of a kind, otherwise they would not be able to function It is not only humans who are thus favoured.

[8] The booklet by Eccles I am quoting from is also a series of Eddigton Memorial Lectures. Their aim of these lectures is to further Sir Arthur Eddington's concern for relating the scientific, philosophical and religious methods of seeking truth.

mind, then, any rational system of believe involves the conviction that the creative and sustaining spirit of God may be everywhere present and active; indeed I believe that all aspects of the universe, all kinds of experience, may be sacramental in the true meaning of the term.".

But Eccles, before he could go along with the present conclusion, had still to clear one outstanding problem, lest one might think that God favours animals as much as He favours men. For this Eccles had to put the procedure of logical inference upside down. The problem is that of trying to discover if an animal's cerebral activity gives rise to conscious experiences. He points to Sperry (1965), who has argued (p. 32) that the presence of conscienceness in a hemisphere would not be demonstrable in the absence of some appropriate linguistic mode of expression and therefore that the minor hemisphere may be in fact responsible for conscious states which cannot be indicated to the observer because of failure of symbolic communication in language. "In the absence of present report", he says, "*it might be concluded* that there were not such experiences!". This, of course leaves one big unanswered question, i.e.: How is it then that animals can function at all, if they were not to have *unified perception*. As Rastall does not refer to the above work by Eccles, he probably did not know of its existence. At any rate he does not refer to it. I have, however, dealt with parts of it, because it may clarify certain things Eccles has said in his book *The human mystery*, which Rastall did use.

In Chapter 5, Rastall deals with the different types of linguistic entity. There are entities which from the philosopher's, and Popper says (p. 81) also from the commonsense empiricist's, point of view might well be rejected as fictions. Popper must have meant non-linguist empiricists, because practically no linguists, empiricists or not, would to my knowledge maintain that fictions cannot be denoted. When empiricists, i.e. inductivist realists, talk in a pejorative manner about "fictions", they do not mean these, but they mean notions set up in the theory by theory-based linguists, such as the notion "phoneme" of functionalists. "Real" from a linguistic point of view does not generally mean the same as, to use Popper's classification, "real" from regarding it as a "belonging to World F' point of view. Everything that can be denoted, i.e. all *denotables* are real from a linguistic point of view. Confusing the two points of view is also a category mistake. On the same page (p. 81) Husserl, the well-known phenomenologist, here quoted by Rastall, says it all: "Therefore this world is not there for me as a mere *world of facts and affairs*, but, with the same immediacy, as a *world of values*, a *world of goods*, a *practical world*".

In the same chapter, and also in Chapters 6 and 7, Rastall deals extensively with *messages*. As he has not given a definition, I shall take it in the sense of its dictionary meaning, which seems to come close to what he probably means, i.e. (Collins English Dictionary): "A communication, usually brief, from one person or group to another.". What Rastall has to say about messages is very interesting, but I have to disagree on one point. On page 120 he has written: "All messages are intangible, they belong to the mind, not the brain". The *content* of messages is indeed intangible. But are messages, i.e. expression **and** content, themselves intangible? It depends on what we precisely understand by what is "the message", the whole thing or only the content. If it is only the content, then the message is not a thing, only an aspect, a function. But a function of what? A function of the message, i.e. of itself? This would be absurd. The same goes for speech and a lot of other denotables. After all, most messages are materially a kind of speech, in which I include here for rea-

sons of simplicity also writing. An exception is "phatic communion" which is not a message, and nor is talk between, rather than directed at, others. Other exceptions are making notes, or writing an article, though the latter may be of such a kind that it could be called a message. One can have messages merely consisting of photographs, drawings or silent films, and other non-linguistic things. These we may ignore. If we look at types of language, one can have spoken language, written language, and mental (i.e. "thought") language. Within messages one does not have the latter, unless one believes in telepathy, which is, however, not a scientific notion. For the rest everything one can say about speech applies to messages as well. The reverse is, however, not true, and what Rastall has written in these chapters is important food for thought. Many sentences he has written in these chapters are themselves messages.

Coming back to Rastall's statement about the mind, however, I have to maintain that the mind is not an entity - we are here not talking of the mind as a denotable, but rather as a type of abstraction, as a mere notion. It stands for "activities", mainly "thought activities" originating and taking place in thinking subjects. This holds as much for ordinary speech, as for speech that consists of messages. Besides, how could messages belong to the mind, as there can be more than one person involved in a message. Messages can even be rather impersonal, e.g. Rastall's example of an announcement at the airport (p. 136). Every person is for ever linked to his own mind. This mind is not a component of that person – it would be committing a category mistake to say this – but it can be called one of its *aspects*, one of its *properties*. But aspects are not things, not even virtual things, in spite of informally being referred to by using a rather ordinary "noun" i.e. "mind". But the only thing the latter usage implies is that "mind" in that sense is considered as a denotable. As I have said, activities can at best be aspects, or properties of things. Materially speaking they are void. They cannot be in combination with a thing and thus constitute a more *complex* thing. But even less can they stand on their own. Any hypothesis about the existence or non-existence of an independent mind remains irrefutable. It would be correct to say that "mind" is an *aspect* of a particular brain. A brain is a component, a *part* of a particular head, and a particular head is a part of a particular body. The intersection of all these particulars is "being a particular thinking person". A message, being, according to Rastall a virtual entity, could in that case only be part of another *virtual* entity. But the mind is not even a virtual entity. It is not an entity at all. It is, as I have said, ultimately an aspect of a person. As the mind cannot be a component or part of anything, it cannot (category-wise) have components or parts itself, not even messages.

Let us now look at what people on the whole mean by "a message". We can here stick close to the dictionary meaning. Under that simple viewpoint messages can come in great varieties and shapes. They have, however, one thing in common. They presuppose at least one sender and at least one potential receiver. I shall call them *A* and *B*, and I shall talk about them in the singular. *A* has a thought, and this thought includes that he wishes *B* to share in this thought. People who believe in the independence of mind may think here that there may be direct contact between the minds of *A* and *B*. But this would be telepathy. Whether this exists or not is here irrelevant, as with "messages" we do not mean "telepathy", not even as a possibility. But do we regard the thoughts of *A* and *B* as being part of the message? I do not think so. Even if we did, it would not affect the final outcome of the discussion. It would only make it unnecessarily more complex. But there is something *be-*

tween A and *B*. Something that we can call "*linguistic activity*". Perhaps we might be inclined to define "a message" as a "unidirectional linguistic activity from *A* to *B*", but this would also make swearing at someone sending a message. The latter can, of course be an indirect message, though it need not be. The question is now: is this "linguistic activity" by itself the message, or does the latter include *A* and B, or perhaps *A* alone, or *B* alone, or none of them? We can easily see that the thoughts of *A*, even his intention to send the message, is independent of whether the message is actually sent. Strangely enough, the thoughts of *B* are partly affected by the message as sent. But this can easily be seen as a mere potential effect of the message. It could even have been that he had had these thoughts even if he had not received this message, or the message might not have changed his thoughts at all. Therefore the thoughts of *B* too have to be regarded as being independent of the message itself.

Still sending a message by *A* normally aims at changing or influencing the thoughts[9] of *B*. What is left then is to regard the message only as that what is *between A* and *B*. And we now have to analyze different types of message qua substance and form on the one hand and qua content on the other. Messages have then become entities like linguistic signs. In fact, those that correspond to sentences, *are* linguistic signs. But messages are in the first place entities (they are "entities", not "intangibles", as they have both "expression" **and** "content"). Take, for instance, an ordinary, verbal message, such as "I see you to-morrow at nine in Amsterdam". The form of its expression can be described as "a disturbance in air-pressure (caused by *A*, but this is irrelevant), potentially arriving at the cochlea of someone (preferentially *B*, but also this is irrelevant), and carrying a particular meaning. Once the message is enacted it is independent of both *A* and *B*. The content can be more or less described as "the denotative function" that this form has. Of course the expression does not have to include sound. The form of the expression may be letters painted on a roof, or it may have been sent by telephone, by letter, or by telegram, or by anything else one can think of. All these are *a priori* different *indices*, different signs, i.e. different messages.

Simple as all this may seem it is very important. It is therefore imperative to read what Rastall has to say about all this. It deals with the essence and the very importance of language. My only disagreement with Rastall on these points is the status of the mind and of the message itself, and his dualist conceptions in general.. For the rest this chapter, and also the previous one give us an insight not just in the function, but especially in the function***ing*** of language that I have nowhere seen better described.

Many people have difficulty in recognizing the difference between an aspect of something or a component of something. I thought, when I saw a footnote on page 156 (fn. l), for a moment that Rastall dealt here in this confusion as well. The footnote reads: "On the other hand, the combination of a content and an expression is necessary in the definition of signum as a theoretical construct. Nothing is a signum which does not have both expression and content." But then I thought that his use of the term "combination" must have been a mere slip of the pen, which was confirmed when I read on page 243: "The sign is *une entité à deux faces*, as Saussure puts it, and the two aspects of the sign cannot be dissociated without arriving at entities which are not signs, expressions or contents." There is

[9] I regard it as dangerous to write here "mind" rather than "thought", though this would be equally correct. It may, however, be difficult for some to see "mind" as an "activity", rather than as an "entity".

here, however, another, albeit very minor slip of the pen. *Expressions and contents are not **entities***. Rastall knows this, of course, very well, but because some readers may still become confused, I shall try to clarify some points. Better would it perhaps be to say: "A linguistic sign ***is*** both expression and content". Expression and content are not in *combination*, but only in *relation* as aspects. They are not entities of any kind. Their very identities depend on each other. There is no "expression" without a "content", and *vice versa*. We can even say that any particular expression implies a *particular* content, because an expression is not a mere phonological form, but a phonological form in *its capacity of* being the phonological form of a particular content, and vice versa. The part "in its capacity of" belongs to the definitions mentioning their identity.

Understanding the difference between aspect and component could also solve the dispute between dualism and monism. It is a pity that Ryle did not seem to have realized this. It would, however, not help in the dispute whether a soul or mind could exist *independently* of a human body. Another problem is that also animals seem to have a soul or mind. I have noticed my cats doing good thinking on many occasions, albeit not thinking in language. It is unlikely that animals can think otherwise than by imagination and memory, something that humans can also do. There is, however, no unbiased reason to think that they cannot think at all. But to say that animals cannot have conscious experience, and therefore presumably no pain, is dangerous nonsense.

Two of the most interesting chapters, apart from the already mentioned Chapters 6 and 7 of the book, are in my opinion Chapters 9 and 10, "Linguistics and the Philosophy of Science", and "The loop of language". As these are clearly written, there is not much to say about them, except that they summarize in a somewhat different way many of the ideas already dealt with throughout the work.

Of course there are, as is always the case, things written by the author with which a reviewer disagrees in practice. I shall mention here one. Actually, I do perhaps not so much disagree, as that I have a different solution. In 1971 I have published an article in *La Linguistique*, 7, called: "Linguistic sign, word and grammateme" in which it was argued that presenting "linguistic signs" in a spread-out fashion, e.g. "is working" as "is…ing → work", or in "concord" fashion, e.g. "is → working" are equivalent. I have called representations such as "is…ing" *grammatemes*. This type of presentation I hardly use anymore. Secondly, I always stick to a rule that in analysis one should work with *immediate* constituents. They are the only entities between which there can, logically speaking, be *direct* syntactic relations. This is for me, but perhaps not for Rastall, an *obligatory* rule. Another thing is that I distinguish between "grammatical entities" and "linguistic signs", a distinction which Rastall does not seem to make either. Grammatical entities are only "moneme, plereme, syntagm, and sentence". Only the latter are formally defined. "Grammatical entities" is a mere cover term for these four. Syntagms can be simple, or they can be complex. Grammatical entities usually, but not always, coincide with linguistic signs, but their contextual meaning is in addition tainted by their grammatical function, and by the grammatical function of their immediate constituents. Linguistic signs are for me rather lexical than grammatical items. Signs are relations between an expression and a content. "Sign" is defined as "signum with wholly fixed conventional information value". An alternative, but equivalent, definition is: "index possessing the property of denotation". Now Rastall usually works exclusively with linguistic signs, and he likes to represent these as grammate-

mes rather than as ordinary words, for instance "greater…than" (e.g. p. 199), and he claims that it is "wrong" to regard "than" as functional. Now I would not immediately say that the contrary is wrong, but I nevertheless prefer to write it as (more → fortunate) ← (than ← Fred). On the other hand, "more....than" can easily be regarded as an item of the lexicon, though it is difficult to stick a denotation onto it. But as syntactic entities these are two. I also believe that they both coincide with linguistic signs. I do not say that the form "more than" cannot also occur as an unanalyzable linguistic sign. It is the latter probably in "more than big". The main reason why I differ in opinion from Rastall is that I have difficulty not to see both "than Fred" and "more fortunate" rather than "more than" and "fortunate" as the syntactic entities. And where does in that case "Fred" go to? Would it be "((More… than) → fortunate) → Fred"? For me it means, "compared to Fred, more fortunate", i.e. (than ←Fred) → (more → fortunate), which is the same as (more → fortunate) ← (than ← Fred). And besides one can, for instance, also have "I hate him more than ever". Would this then be ((More…than) → ever) → (I → hate ← him), or rather my preferred ((than ← ever) → more) → (I → hate ← him)?

I did find, however, also what looked at first sight a definite mistake in the book. But perhaps this too may have been an oversight or a slip of the pen, or perhaps it is just misleading. I have settled for the latter, because of his mentioning "*past*, *non-past*, *present perfect*, etc.", which seems to me a rather heterogeneous bunch. Rastall writes on page 79: "Similarly, the main verb in English must be in construction with some tense – *past*, *non-past*, *present perfect*, etc.". As I said, I first took it to be a mistake. I thought that he really meant that the main verb (rather than by preference one of the auxiliaries in the preferred order: "modal", "tense auxiliary "to have"", "aspect auxiliary", and only after that "the main verb") is marked for tense. It seems to me that in "he might have been working" the modal "might" is marked for "simple past" (which I regard as the only real tense, though it could be in other cases a "subjunctive"), the "present perfect" (not a real tense, but like the by others so-called "future tense", it can be said to be a function of an "auxiliary") marks "to be", and the aspectual "to be" (also an auxiliary, the so-called "progressive"), marks the main verb. I am certain that Rastall does not regard *non-past*, i.e. the so-called "present", also as a tense. This is rather "zero" tense. It is possible that he means that anything that happens to the auxiliaries ultimately affects the meaning (qua time of action, etc.) of the entity which is directly determined by them, i.e. the main verb, but it is certainly misleading. It would make *tense* something **semantic**, rather than grammatical, which is perhaps more consistent with working with signs than with grammatical entities. In English, and also in German and Dutch grammar the so-called "finite verb form" (German: "finite Form", "verbum finitum", or "Personalform"; Dutch: "persoonsvorm") is the form marked for person, number, **and tense**. This is usually one of the auxiliaries, if any, in the order of preference as stated.

There is one more thing that I should like to mention. This is not, strictly speaking, a criticism of Rastall, but of the philosopher (Popper) who has given Rastall those ideas. One should here not be too harsh on Rastall, because he is, at least if one looks at the different views on this matter listed in *The Oxford Companion to the Mind* (1987: pp. 490–491), R. L. Gregory (ed.)[10], in good company. *Moreover*, his view is, one of the first things that come to an unbiased mind if one thinks about it. It is a standard common-sense view. As,

[10] See also ibid. pp. 487–489 "Mind and Body".

however, I have very strong feelings about this matter, I shall try to influence Rastall's views, and even try to change his mind. As I have argued before, I am of the opinion that Popper's views are based on a number of significant category mistakes. My own views should be clear by now. They come closest to what in the above publication is called "*attribute* or *dual attribute* theories of the mind-body relationship". This type of theories is one of the twenty or so types mentioned, and probably the only one that, apart from Ryle's, can be kept free of category mistakes They can also be, like my own views, free from "materialism" in the coarse sense of the term, but rather "life" orientated. That is, such a theory can refer to natural attributes of animal bodies, the latter considered as *life* organisms.

Rastall says on page 257: "Such speculation (he refers to Carrol 1986, but this is here not important) fails to account for the change from non-material thought to physical speech activity, and *vice versa*, and fails to explain, in particular, how a non-material idea or thought can "cause" the physical activities of speech execution, or how physical activities in the brain can lead to a non-material world of thought. In fact, non-material entities, "thoughts" or "ideas" are treated as if they were purely material entities.". I do not know if Carroll really meant to say that those thoughts are purely material entities. There is no evidence of it in the quotation. It is clear, however, that Rastall more or less accepts Popper and Eccles's "interactionist dualism". As most dualists, P & E seem to think, and often P says so, that monists are materialists. I am a monist on the basis of Ryle's argument that "dualism" in which body and mind are two entities (whether one believes that the mind is, or can become, independent of the body, or not) amounts to a category mistake. If a monist really calls himself, or rather if he really is, a materialist, P & E have perhaps a point. Even here one has, however, to be careful with a judgement, as "material" and especially "physical" can easily be a slip of the tongue, especially because there is such a thing as biochemistry, and this may play a role in biological processes. Even in the act of "thinking" it may occur. It has been said that, especially in some types of short memory, chemical processes, rather than a kind of electrical transmission takes place. Still in any mental processes it is always in the first place biological, i.e. a property of "life", which may, as I have said, involve certain chemical processes. The latter stands, however, in living animals or persons never on its own. As I have said, I am a monist, but my type of monism should be called "biological monism", or perhaps even better "biological unitarism", to avoid misunderstanding. There is basically nothing more mysterious in "being able to think" than there is in "being alive".

If one adheres to a form of "dualism" as the above, e.g. "interactionist dualism", one **has** almost to appoint a "god of the gaps", this time carrying the name "independent self-conscious mind". It is extraordinary that so many people seem to be reluctant to accept that it is evolution which could have led to the possibility of conscious thinking, and look for something that is much more implausible. That Man probably can think better than an ape should not be too difficult to understand, if one realizes the potentialities of him, or rather his species, to use "language". Which is not to say that language belongs to the mind. It rather belongs with all other forms of languages to World 3. Rather than picking one's mind, one's mind picks World 3, and then probably also "memory" becomes involved. Further we may consider that most apes are better thinkers than cats, or if one (arrogantly) objects to using the term thinking, apes are more intelligent. Could it not be that cats are qua intelligence closer to apes than they are to fishes or to slugs, which latter are perhaps

even worse thinkers? And perhaps cats and apes are qua intelligence, and also in other respects, nearer to humans than to slugs. Let us start our discussion then at the emergence of life. The emergence of life is perhaps the most unlikely event that one can imagine. It was, of course not an "event", but the process may have taken millions, or even a billion of years. What an event it was, when ultimately the first cell that divided appeared in an unfriendly world of volcanic gasses and hard crystalline stone formations. The appearance of life cells in such an environment is in many respects more unbelievable than the following "evolution", with after a very long time the emergence of dinosaurs and still later, independently of those dinosaurs, man. After life had occurred, almost by spontaneous generation, a happening in which time and chaos probably have been the most important actors, anything did become possible, and we should not need any "god of the gaps" anymore.

Most of the critical remarks in this review have been directed at Popper and Eccles, but this was necessary, because these authors play an important background role in some of Rastall's discussions, which does, however, not mean that Rastall always agreed with them. I too, have ever since I read Popper's (1959, 1965) *The Logic of Scientific Discovery* and his (1963, 1965) *Conjectures and Refutations* regarded myself as a Popperian. Writing this review, however, I have learned that Popper, whose accounts on "the three worlds" in his 1972, 1979, *Objective Knowledge – An Evolutionary Approach*, and his (1974, 1976) *Unended Quest – An Intellectual Autobiography* had still impressed me, got carried away with this at first sight splendid idea, when in his and Eccles's 1977, *The Self and Its Brain*, he committed, in complete agreement with Eccles, category mistake after category mistake.

The few criticisms I had in my pen for Paul Rastall himself are, however, nothing compared with the praise this work deserves. He has, if people only want to read it, and understand it, put functionalism, and hopefully the rest of sophisticated linguistics, on a new foundation. There is enough in the book that should be of interest also to non-functionalist linguists and indeed to philosophers of science. The work is seminal to the extreme. Especially the philosophical part, with its neuro-physiological connections, in which there is obviously still a lot of groping and even speculation, is daring, and invites debate, a strong debate which in linguistics has hardly taken place in any conspicuous form since the first half of the last century. There was, of course, transformationalism and other types of universalism, but those have only brought decline in scientifically based "descriptive linguistics".

References

DOBZHANSKY, Theodosius. 1967. *The Biology of Ultimate Concern*. New York: New American Library.

DÜRKHEIM, Emile. 1915. *The Elementary Forms of Religious Life*. New York: Free Press.

ECCLES, John. 1965. *The Brain and the Unity of Conscious Experience*. Cambridge: Cambridge University Press.

—. 1979. *The Human Mystery*. Berlin – Heidelberg – New York: Springer.

GREGORY, Richard (ed.). 1987. *The Oxford Companion to the Mind*. Oxford: Oxford University Press.

JENNINGS, Herbert. 1930. *The Biological Basis of Human Nature*. New York: Norton.
MALINOWSKI, Bronislaw. 1931. s.v. "Culture". *Encyclopedia of Social Sciences* 4, 634–42.
MULDER, Jan G. J.. 1968. *Sets and Relations in Phonology*. Oxford: Clarendon Press.
—. 1971. "Linguistic sign, word, and grammateme". *La Linguistique* 7.93–101.
—. 1975. "Linguistic theory, linguistic descriptions and the speech-phenomena". *La Linguistique* 11:1.87–104. (Reprinted in Mulder & Hervey 1980: 15–28)
—. 1993. "Negativism as an effective methodology in linguistic description". *Linguistics and philosophy. The controversial interface* (eds. Rom Harré & Roy Harris), 179–97. Oxford – New York – Seoul – Tokyo: Pergamon Press.
—. 1996. "Methodology and description". *La Linguistique* 32:1.17–34.
—. 1996. "An unorthodox view of the English verbal system". *La Linguistique* 32:2.81–103.
MULDER Jan W. F. & Sándor G. J. HERVEY. 1980. *The Strategy of Linguistics*. Edinburgh: Scottish Academic Press.
POPPER, Karl. 1959. *The Logic of Scientific Discovery*. London: Hutchinson.
—. 1963. *Conjectures and Refutations*. London: Routledge.
—. 1972. *Objective Knowledge*. Oxford: Oxford University Press.
—. 1976. *Unended Quest: An Intellectual Autobiography*. London: Fontana.
POPPER, Karl & John ECCLES. 1977. *The Self and Its Brain*. Berlin: Springer International.
RASTALL, Paul. 1995. *A Functional View of English Grammar*. Lampeter – Lewiston: Mellen.
—. 2000. *A Linguistic Philosophy of Language*. Lampeter – Lewiston: Mellen.
RYLE, Gilbert. 1949. *The Concept of Mind*. New York: Barnes & Noble.
THORPE, William. 1961. *Biology, Psychology and Belief: The Fourteenth Arthur Stanley Eddington Memorial Lecture, 3 Nov. 1960*. Cambridge: Cambridge University Press.

Linguistica ONLINE. Published: July 10, 2009
http://www.phil.muni.cz/linguistica/art/rastall/ras-003.pdf
ISSN 1801-5336

MESSAGES, MIND AND BRAIN – A RESPONSE TO MULDER'S REVIEW OF *A LINGUISTIC PHILOSOPHY OF LANGUAGE* (EDWIN MELLEN PRESS, LEWISTON – LAMPETER, 2000)[*]

Paul Rastall (City University of Hong Kong, China)

I wish to start by thanking Jan Mulder for taking such trouble to review my book. Naturally, I am pleased by his generally supportive comments. Nevertheless, Mulder has a few criticisms to which I would like to respond.

Mulder's remarks are concerned with a small, but relatively important, part of the book. Like all those influenced by Mulder's axiomatic functionalism, I take the view that linguistic statements, descriptions and explanations are accounts of linguistic phenomena. The constructs they contain are not assumed to be isomorphic with supposed unobservable entities in the mind or anywhere else. They are ways of understanding communication events. However, part of that understanding involves the meanings we create from linguistic and other information and this implies taking a position on the relation of language and mind. For me, it is important in this context to arrive at accounts of how language – or, better, the contents of verbal signals – messages – contribute to overall meanings in our world of understanding. We can take our accounts of linguistic phenomena and see how they help us to understand aspects of our rational, conscious world.

Most of Mulder's criticisms relate to my supposedly "dualist" approach to brain and mind. By contrast, he advocates a "monist" view in which "mind" is not separate but a function of brain activity. He also has one more technical comment on a syntactic issue. In general, I think Mulder's views and mine are much closer than the review might suggest, although there are key differences. I will reply mainly on the "mind/brain" issue and briefly on the syntactic one. It is always worth paying attention to the comments of such an original and outstanding thinker as Jan Mulder, to whom I am greatly indebted.

Mulder states that I do not define the term "message" and that my stated view that messages are intangible, and belong to the mind, and not the brain represents a "dualist" position which distinguishes mind from brain. This "dualism" is also related to my general acceptance of a Popperian "3rd world" of intersubjectively and rationally debatable ideas (Popper, 1972, pp. 35-152), which implies the existence of mind, or at least high-level and very complex consciousness, and (for Popper and his follower, Eccles) the bi-lateral interaction of the world of ideas with physical states. Popper (1972a, p. 154) says

[*] Previously unpublished. Mulder's review article to which this paper is a response was published in *Linguistica* ONLINE: <http://www.phil.muni.cz/linguistica/art/mulder/mul-001.pdf>. [Editor's note]

> "the third [world] is the world of intelligibles, or of ideas in the objective sense; it is the world of possible objects of thought: the world of theories in themselves, and their logical relations: of arguments in themselves: and of problem situations in themselves."

(I think Popper underestimates the effect of non-rational, emotive and aesthetic issues in the 3rd World of ideas. Our emotional and aesthetic responses are also matters of understanding and debate (see Rastall 2006, 2008).)

Mulder takes the view that "mind" cannot be located in space and time and it is not a distinct entity. For Mulder, the "mind" is just the brain's way of achieving conscious awareness and, thus, any "mind" is entirely a function of brain activity. Mulder's position implies that any apparent interaction of the "mind" with the brain is illusory. The "will" is, on this view, also just part of the brain's creation of consciousness – in this case relating to needs and actions for their fulfilment. On this view, there is a unilateral physical effect of brain activity on the creation of consciousness (that we associate with mind). Consciousness would then be an evolutionary strategy in which the illusion of mind is created. Mulder's position is consistent with that of many neuroscientists such as Dennett (1991), Dawkins (1986), and physicalist philosophers such as Quine (1960). Part of the evidence for the position Mulder describes comes from the well-known fact that brain processing activity precedes conscious awareness and speech processing precedes speech activity. The brain is clearly acting prior to conscious awareness and conscious awareness rests on the activity of the brain in making the subject aware of its processing. This suggests that our "mind" is a function of complex brain activities and not a separate entity. A similar conclusion could come from the deterioration in mental ability associated with brain impairment or disease or from the common experience of waking up to the solution of problems after a night's sleep "on them". Mulder also refers to Ryle's contention in the *Concept of Mind* (1949) that the identification of a world of mind is a category mistake.

Kirk (1993) in a perceptive review of Dennett's work expresses the neuroscientist's position well. He says (p. 340):

> "[there is] a growing consensus of scientific theorizing. Mental activity in general consists of vast numbers of parallel processes; perception, in particular, involves sensory inputs being elaborated, modified, and "interpreted" simultaneously, by specialized subsystems, along many parallel tracks in various parts of the brain. There is no headquarters or "inner sanctum" within the brain, arrival at which is the necessary or sufficient condition for conscious experience."

The two issues Mulder raises are connected in that (verbal) messages are a part of our consciousness. Mulder's saussurean position that physical signals and their correlated messages are merely aspects of the same thing viewed from different angles is entirely consistent with the view that the brain creates conscious awareness. Messages, for Mulder, are just signals viewed from the angle of consciousness. A signal of a message and a message of a signal are different ways of looking at the same thing. The notion of a conventional linguistic mediation or, as Martinet (1960) called it "l'analyse linguistique de l'expérience" is important here since any message-signal has gone through that unconscious mediation and reflects its properties. Actual "meanings" are partly linguistically formed – as my book discusses in some detail. Viewed as a signal, an instance or actual realisation of a verbal

sign in speech acts has the physical properties needed for transmission, but viewed as a message, it has a significance in relation to the social world and generally the world of experience and understanding which is partly determined by the conventions of the linguistic system being used. (Of course, the actual reference to aspects of the world of experience – the referent or *communicandum* – depends on the practical circumstances of speaking and many other factors.) Although verbal signals provide the vehicles for messages, it is clear that messages are matters of the understanding. They are intangible as part of our conscious awareness, but they are analysable in virtue of the signals that are their other aspect.

Now, I do not wish to deny any of Mulder's points, but I do continue to agree with Popper on the importance of a 3rd World of rationally debatable ideas. On the contrary, a close reading of my text shows that my position is very close to Mulder's, although it could be said in reasonable criticism that some of my points are not prominent enough or detailed enough. In retrospect, I could have distanced myself more from some of Popper's assertions about the (actual) existence of the 3rd World as opposed to its reality as a part of experience. On the other hand, the communicational purpose of messages is very largely to orientate and manipulate our conscious world of understanding. Popper's point is that this world is inter-subjectively shared as we communicate to be understood, to discuss, and to test ideas of all sorts. While I think Popper underestimated the role of linguistic convention, I think the reality of a world of ideas and social understanding is a phenomenon we have to account for. It is unclear where theories or empirical claims would be in a monist approach unless the theory of brain activity is just a brain activity – but that would not account for inter-subjective understanding and debate or for the theory or idea as a common property of two or more brain activities. Of course, the concentration on "mind" may make the text look more "dualist" than it is. Before going on, it is important to note the *caveat* that, in the absence of detailed and small-scale knowledge of the mechanisms of consciousness, all linguists' remarks are speculative.

In fact, I make clear (e.g. p. 89) that I think "mind" arises from the cellular activity of the brain but go on to take the view that the mind is more than the sum of the physical mechanisms involved – this is because of the organisational features of linguistic systems and the integration of information of all sorts – perceptions, non-verbal communication, memories, logical and emotive processing, for example (even if they too have a physical basis). One does not have to accept the existence of a separate mind as part of an acceptance of a 3rd World of ideas. As my text makes clear on pages 106–8, for example, and Mulder mentions, I do not allow for any direct causal interaction of immaterial mind and physical processes in the brain or neural impulses. I do allow for conscious rational activity and the awareness of needs which may be satisfied by actions[1]. Of course, it is possible to accept that such rational activity is itself an awareness of unconscious brain processes. This is a kind of default position in which any mental event of any sort can be seen as physically produced. However our 3rd World (and hence "mind") may arise, it is a *reality* of our experience – perhaps *the* reality of our experience – and it can be changed *by* experience. A large part of that experience is the content of messages. Mulder prefers to see this as the world of "thoughts" in order to avoid the term "mind". I have no objection to that but, as far as I can see, we are speaking of the same lived experience. That lived experience is a

[1] Of course, one might speculate, perhaps a little impishly, that if the "mind" is physically created by the action of the brain then the reverse connections may allow a conscious state to affect neural activity.

world in which we find humorous remarks, fantasies, imaginary characters, emotional outpourings, as well as Popper's theories and rationally debatable ideas. This lived, conscious experience, as suggested above, is also in need of explanation and, for linguists, the most important part is the role of language in it.

To some extent, *for a linguist*, the mechanism of verbal production and reception as well as their processing are not the issue. The linguist operates with a world of linguistic means and their significance. Linguistic means and significance are part of our rational, conscious world. We do not have to see high-level rational consciousness (Beshkar, 2008) as a separate mind, unconnected with brain activity, any more than we have to see high-level consciousness as identical with the 3rd World of ideas or contents of theories. However, that linguistically mediated and created world is our representation or understanding of, and orientation in, experienced reality. However rational processes arise, the world of messages in consciousness is the reality that we have access to and can discuss. In fact, my book is a set of messages, which Mulder and I are debating: readers can assess this debate for themselves through the messages Mulder and I are exchanging.

There are different forms of dualism. I do not wish to assert that mind has a separate existence from the brain, but I do associate mind with the sum of the "awarenesses" that are created by the brain and which are for us our construction of reality. We have simultaneous and ever-changing and coordinated awareness of our physical state, environment, our orientation in that environment, communicative activity of many kinds, memories, priorities, and rationalisation of all of the afore-mentioned. This I take to be Popper's *World 3* (Popper, 1972, p. 35 ff.). We might not be able to locate this world in space and time and we can never escape from the fact that it is created by the brain, but we can reach "intersubjective agreement" on at least some of its contents (as Popper notes, 1972, p. 27) and it has importance as our means to accessing, or better constructing, our reality. That messages and their reflections of linguistic mediation are such an important part of that reality is what leads me to focus on messages as central to mind in the sense described. Thus, I think understanding the virtual world of linguistically mediated messages is of central importance.

My difference from Mulder is perhaps only a difference of emphasis. My emphasis is on messages (verbal or otherwise) as major parts of our lived experience, part of which is our rational manipulation of ideas (Popper's emphasis) but part of which is also our complex awareness of varying social, interpersonal, and aesthetic values in messages. I have called this verbal world "language as information" (Rastall, 2006), but of course non-verbal communication is also part of the totality of construction. The picture of multiple coordinated and integrated mental activities has some similarities with Dennett's theory of "multiple drafts" (Dennett, 1991, p. 106), but I am more concerned with coordination of mental activity than with the competition of brain centres for prominence, which may explain our constantly changing perspectives, interests, and priorities. While I do not wish to go against scientific opinion and suggest the existence of an "inner sanctum", I do think the coherence of our mental activity and the sheer complexity of its organisation at each point in consciousness need to be accounted for as well as the processes of prioritisation and perspective on events which are part of our lived experience. This is related to the clear experience of organising and manipulating our thoughts. In a recent work (Rastall 2006a), I have tried to take a process view of linguistic phenomena as events with "powers", or ef-

fects, to influence the conscious world. I have tried to avoid the usual hypostatisation of linguistic entities. I think the view of speech phenomena as "powers" is consistent with the creation of conscious awareness through (communicational) brain activity. A simple reductionism seems incapable of accounting for the complexity of organisation in linguistic and other processing and conscious awareness of the *significance* of verbal signals. We do not have to accept all of Popper's views, but it is his merit to have drawn attention to our conscious conceptual world and to have raised the question of the role of language in it.

A very puzzling aspect of our varied reality for the physicalist is the verbal creation of fantasy or imaginary worlds by linguistic means. This includes our extensive use of metaphor. Even if imagination and metaphorical understanding/expression have a physical basis in brain activity, we need to find out why imaginary or metaphorical modelling of our world of experience (and adding to it in those ways) is so important and frequently preferred to a direct representation of states of affairs. (My guess is that imaginary worlds and metaphor overcome deficiencies in direct representation through exploiting indefinitely large verbal resources as a problem-solving device for issues not directly related to the understanding of the physical world or immediate survival. They are useful for exploring and understanding our social worlds and the worlds of personal interest, but that is only a beginning.) Reductionism must account, not just for the physical mechanism of the creation of consciousness but also for the social, moral, intellectual, and aesthetic qualities, needs, and "awarenesses" in it, including our creativity in metaphors, fairy tales, parables, theory-building, and imaginary events.

In my view, this difference in emphasis is inevitable when we come to consider issues of "meaning". "Meanings", i.e. actual messages derived from semiotic activity, are partly due to the communicative properties of systems, but they also arise from the coordination and interaction of multiple logical processes and value systems. The "intangibility" of messages is just a consequence of looking at semiotic activity from the "meaning perspective". This is why I assign messages "to the mind" and not to the brain (p. 120). I agree this may be misleading if taken out of context.

It is important to note that I do not envisage a direct interaction of mind and brain, but an indirect linkage though the awareness of need and monitoring of the fulfilment of needs through actions, although I would now give greater prominence to this point. This I take to be what is called "will" or at least some part of it. There must be processes for choosing between action and inaction in communication as in all other activities leading to neurological impulses to the muscles, even if our apparent will (like decision-making) is just our awareness of the said processes in consciousness. "Will" does not have to be a product of a separate mind entity, but we do have to take will into consideration for any form of voluntary activity.

As far as messages are concerned, one should note that I define them as the content of signals (p. 113). Possibly, this definition is insufficiently prominent and it should be linked to further explanation. However, from the clear saussurean orientation of the book, my acceptance of (a modified form of) Saussure's view of the sign, and the very extensive discussions of linguistic mediation, it should be clear that my position is the same as that of Mulder (above) on the indivisibility of signifier and signified in the sign and of signals and messages in instances of signs: but the signified cannot be taken to be identical with the

signal. Messages, as the content or signified of signals, arise from a complex set of linguistic relations and external reference to the world of experience.

To sum up, Mulder and I can agree on the following with differences of emphasis.

1) Our world of messages arises from the physical activity of the brain and is part of our conscious awareness of brain processes.
2) The "mind" is the product of brain activity. It is our awareness or that activity. It is not a separate entity, but it is our lived experience of the world around us and communication as part of that world (so to speak, an "aspect" of the brain).
3) Different sources of messages (verbal and non-verbal, conventional signs and natural indices) are coordinated and integrated with our perceptual experience of our selves, our memories, and our environment.
4) This totality is manipulated with rational processes and various value systems to produce total complex meanings. (These can of course be seen as our awareness of all these activities.)
5) Actual meanings depend in part on linguistic mediation; i.e. a set of conventional analyses of experience.
6) When we concentrate on the world of messages and their role in the world of constructed meanings, we inevitably focus on something intangible and we must find ways of establishing inter-subjective agreement (of course this too relies on communicative activity but we do not wish to fall into a form of solipsism here – although the impossibility of escaping the "loop of language" is discussed at length in the *Linguistic Philosophy of Language* (pp. 215–236).)
7) What we say about the above issues is somewhat speculative, although alternative views can be excluded, – e.g. that signals do not have signifieds but are purely physical forms or that meanings exist separately from linguistic or other communicational mediation.
8) Linguistic analyses are ways of understanding verbal communication which are arbitrary, but which can be argued to be appropriate. We cannot claim direct correspondence of proposed linguistic entities with brain entities or structures and we could not test such claims if we did.

The views of linguists in these matters are speculative (even a little impertinent), although – as Mulder has often said – sometimes speculation is the only way forward, but that speculation must be consistent with the known facts of neuro-science in much the same way as phonology must be consistent with the known facts of phonetics.

* * *

As far as the syntactic issue is concerned, Mulder strongly supports the view that commutation must take into consideration the strict context and criticises me for not doing so in the identification of (what I call) pseudo-prepositions in expressions such as *dote on*, *believe in*, *(in) consideration of*, *respect for*, etc. All of these I regard as simple signs with only apparent complexity. Similarly, I regard *than* in *more important than Fred* as a redundant discontinuous element of *more*. I take *more…than* to be the positive comparative (and *less…than* the negative comparative; the comparative of equality is *as…as*).The ab-

sence of commutation in the prepositions and *than* (or the second *as*) in such cases I take to be an indication of redundancy (100% predictability) and to correspond to the lack of an identifiable signified. As a result I arrive at syntactic analyses such as:

he → (doted ***on****) ← his daughter*
he → (believed ***in****) ← the theory*
in ← (consideration ***of****) ← the circumstances*
he → had ← ((respect ***for****) ← Fred)*
((more ***… than*** *← Fred) → important)*

where the items in bold are not separate signs, but only pseudo-signs. Clearly, this means that the syntactic analyses here differ from conventional ones. Semantically, in the last example, we assert that the degree of importance of *John* in John *is more important than Fred* is "more than Fred".

Mulder makes the point that we can always (or very often) find some context in which a sign may not commute and hence appear redundant. He takes the strict context into account and arrives at structures such as:

*he → doted ← (***on** *←his daughter)*
*he → believed ← (***in** *← the theory)*
*(in ← (consideration ← (***of** *← the circumstances))*
*he → had ← (respect ← (***for** *←Fred))*
*((more → important) ← (***than** *← Fred))*

While I take Mulder's point about being careful over the context of commutation, I think his solution involves presupposing the complexity of the expressions in question and fitting them to a preconceived syntactic framework. The bolded items, on Mulder's account are given a false status. His view looks rather like "once a preposition, always a preposition" to adapt a phrase. It is unclear, on Mulder's account, how we could distinguish a clearly meaningful (and commutable) preposition expressing location as in:

she played in the garden

from a non-meaningful and non-commutable one as in

she delighted in the garden.

However we look at the matter the "prepositions" in bold do not have any commutants and thus have no information value. The same is true of *than*. It would be inconsistent to assign a *signifié* to such units. Furthermore, it would invite the establishment of other meaningless units (such as the so-called "third person 's") as grammatical functives, and call into question the distinction between the first and second articulations. It is hard to see how *than Fred* could be assigned an interpretation if *than* is not a sign.

The positive (and negative) comparison (*more* or *... er / less ... than*…) is interesting as a structure because it commutes with (actually, is mutually exclusive) with other adverbs,

such as *very, surprisingly*, as well as the positive and negative superlatives (*most / ... est* or *least*). The same is true of the comparison of equality, *as ... as*. *Very* does not commute with *more* alone. We cannot have **very important than Fred*. This also suggests that *more ... than Fred* has integrity as a grammatical and semantic unit commuting with *very,* and *more ... than ...* should not be distributed over two structures, as Mulder's solution has it. Furthermore, if we accepted Mulder's solution, we should have to say that the occurrence of *than Fred* depended on the occurrence of the dependent *more* in *more important*, because we cannot have **important than Fred* without *more*, but in Mulder's solution *more* and *than Fred* would not even contract a direct constructional relation. That would conflict with definition 12a of Mulder's Postulates for Axiomatic Functionalism (Mulder, 1989).

For all those reasons, Mulder's solution seems to me to be grammatically and semantically implausible.

It is possible that our disagreement on this point stems from what we are prepared to allow as "grammatical entities", but I take the view that grammar is concerned with the constructional, dependency, and realisational relations of meaningful entities (of whatever sort – verbal or non-verbal signs or symbols) but not of non-meaningful ones (Rastall, 1995, 1999, 2004). However, Mulder's definition (2a4) of 'plerological or 'grammatical entity' as "entity in systemology corresponding to a signum" (Mulder and Hervey, 2009) seems also to preclude non-meaningful units in grammar (plerotactics), so we appear to take the same view, although the expression "corresponding to" is rather unclear.

References

BESHKAR, Majid. 2008. "Animal consciousness". *Journal of Consciousness Studies* 15/3.

DAWKINS, Richard. 1986. *The Blind Watchmaker*. New York – London: Norton.

DENNETT, Daniel. 1991. *Consciousness Explained*. Boston – Toronto – London: Little, Brown.

KIRK, Robert. 1993. "The 'best set of tools': Dennett's metaphors and the mind-body problem". *Philosophical Quarterly*, 43, no. 172.

MARTINET, André. 1960. *Éléments de linguistique générale*. Paris: Colin.

MULDER, Jan W. F. 1989. *Foundations of Axiomatic Linguistics*. Berlin – New York: Mouton de Gruyter.

POPPER, Karl. R. 1972 (6th edt). *The Logic of Scientific Discovery*. Hutchinson: London.

—. 1972a. *Objective Knowledge*. Oxford: OUP.

QUINE, Willard V. O. 1960. *Word and Object*. Cambridge, Mass.: MIT Press.

RASTALL, Paul. 1995. *A Functional View of English Grammar*. Lampeter – Lewiston: Mellen.

—. 1999. "Towards a logic of grammatical relations", *La Linguistique* 35/2.

—. 2000. *A Linguistic Philosophy of Language*. Lampeter – Lewiston: Edwin Mellen.

—. 2004. "Realisational sequences", *La Linguistique* 40/2.

—. 2006. "Language as communication, pattern, and information". *La Linguistique* 42/1.

—. 2006a. *The Power of Speech*. Münich: Lincom Europa.

—. 2008. "Aesthetic responses and the cloudiness of language". *La Linguistique* 44/1.

RYLE, Gilbert. 1963. *The Concept of Mind*. Harmondsworth: Penguin.