

POSTULATES FOR AXIOMATIC FUNCTIONALISM^[*]

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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^[*] Previously unpublished in this form.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 or⁴ 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/or⁵ 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 \emptyset ’.
 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 \emptyset ’.
[446]

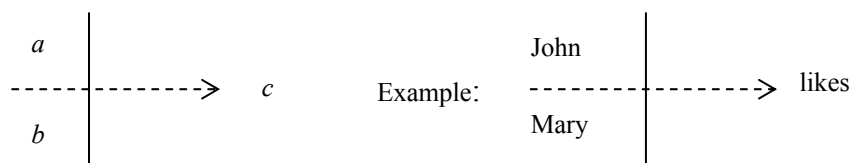
In symbols: $[a]b$ or $a[b]$, the square brackets indicating the occurrence dependent entity, i.e. in the above case it requires the other item, or an item in the same position, for its occurrence, but not vice versa. The dependent item is called an ‘expansion’.

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 \emptyset ’. [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 \emptyset ’. [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 \emptyset ’. [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. $aR^x c$ and $bR^y c$, where a and b are peripheral, c is nuclear, and R^x and R^y represent different tactic relations. In symbols:

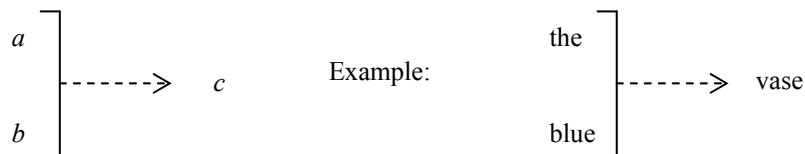


i.e. ‘John likes Mary’. A both sufficient and necessary condition is that at least two of the peripheral entities in question belong to the same distribution-class. Because in cenotactics all relations must involve time and space (on which all our sensory perceptions depend, and without which there could 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:



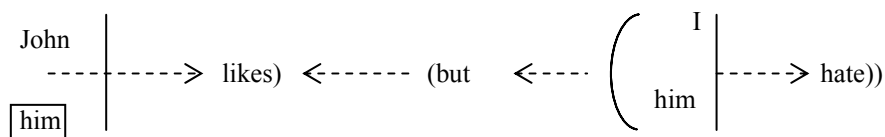
i.e. ‘the blue vase’. Both sufficient and necessary condition: All peripheral entities, or their commutants, belong to different distribution classes.

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]

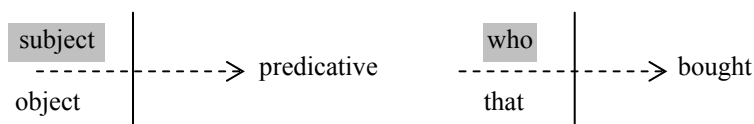
Example: ‘John likes but I hate him’, where ‘him’ functions in two different, but equivalent, positions. Representation: ‘John likes him but I hate him’, or, representing the syntactic structures in question:



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.

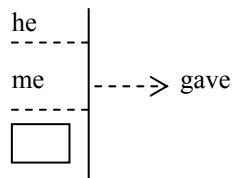
³⁷ On conflation, functional amalgamation and antecedence see *Foundations*, ch. VI, 10, in particular p. 357.

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 constituency 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 \emptyset ’. [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 \emptyset ’. [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 \emptyset , 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: $p^i = \{f^{i \dots n} Rd^i\}$, 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: ‘ $f^i Rd^i \sim f^j Rd^j$ ’, where also j stands for an integer, signifying ‘a particular’, but $i \neq j$, and \sim 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. ‘ $f^i Rd^i$ ’ 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 $\{p^{i \dots n} Rd^i\}$ & $\{d^i R p^{i \dots n}\}$. 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. $\{p^{i \dots n} Rd^i\}$, 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 $E^i = \{p^{i \dots n} Rd^i\}$.

As p has already distinctive function incorporated, i.e. $p^i = \{f^{i \dots n} Rd^i\}$, 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: ‘ $\{d^i R p^{i \dots n}\}$ ’.
- Def. 24b1. ‘Allomorphy’ for ‘one signum, the realization of which corresponding to two or more phonological forms’. [456]
Formal definition: ‘ $p^i R d^i \sim p^j R d^i, i \neq j$ ’.
- 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. ‘ $p^i R d^i$ ’ 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’: ‘ $f^i R d^i \sim f^j R d^i, i \neq j$ ’.
- 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: ‘ $p^i R d^i \sim p^j R d^i, i \neq j$ ’.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: ‘ $\{p^{i \dots n} R d^i\} \sim \{p^{i \dots n} R d^j\}, i \neq j$ ’.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: ‘ $\{p^{(i \dots n)} R d^i\} R D^i \sim \{p^{(i \dots n)} R d^j\} R D^i, i \neq j$, 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: ‘ $(i R d^i) R d^i$ ’.

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 $s^x \check{R} i^x$, 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]

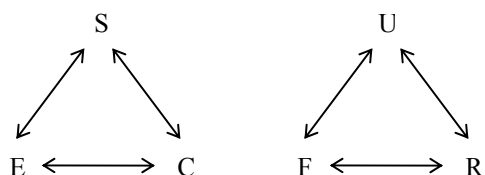
This means that we are entitled to conceive of an expression as a class of forms.

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 $i^x \check{R} s^x$. 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 $i^x \check{R} s^x$. 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 $U \in S$, $F \in E$, and $R \in C$. (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)’.⁶⁵ [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’.⁶⁶ [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]

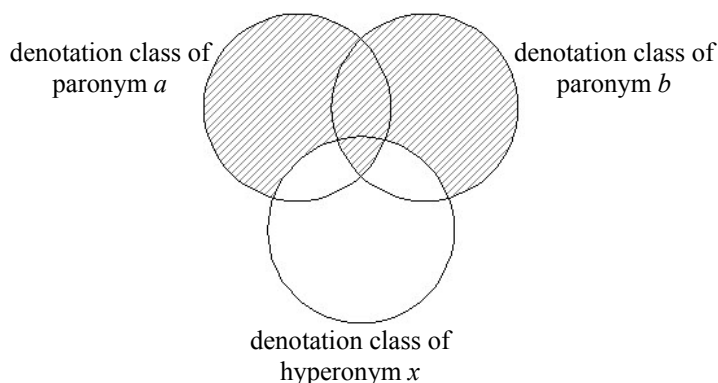
The signum “flower” has a denotation class that properly includes that of both “rose” and “tulip”. Thus the latter two, whose denotation classes do not include one another (in fact they do not intersect at all) are paronyms of each other with regard to their common hyperonym “flower”. Partial overlap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

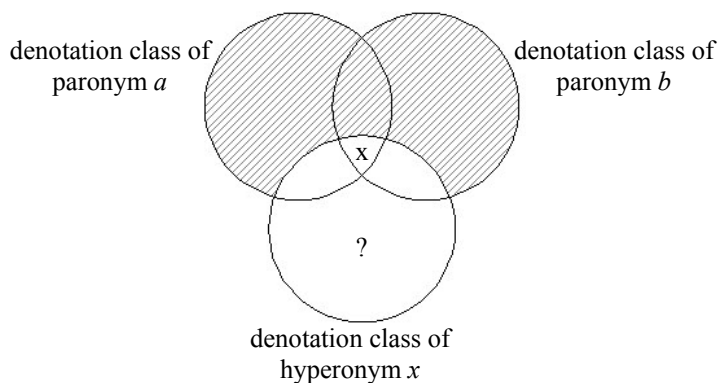
Def. F7c2. ‘Exclusive paronyms’ for ‘paronyms with non-intersecting denotation classes’. [209]

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:



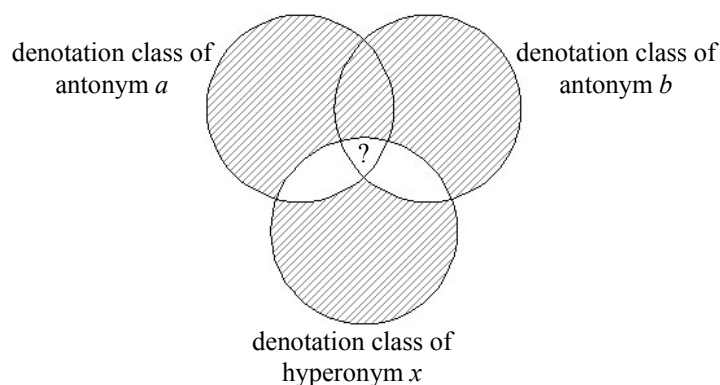
Def. F7c3. ‘Overlapping paronyms’ for ‘paronyms with overlapping denotation classes’. [209]

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:



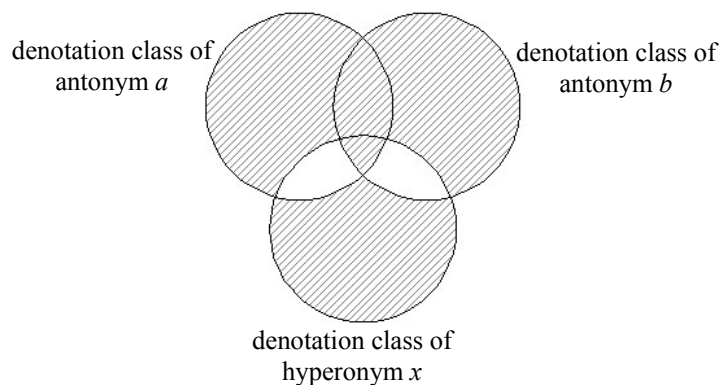
Def. F7c1a. ‘Antonym’ for ‘member of a set of paronyms containing only two terms’.
[209]

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:



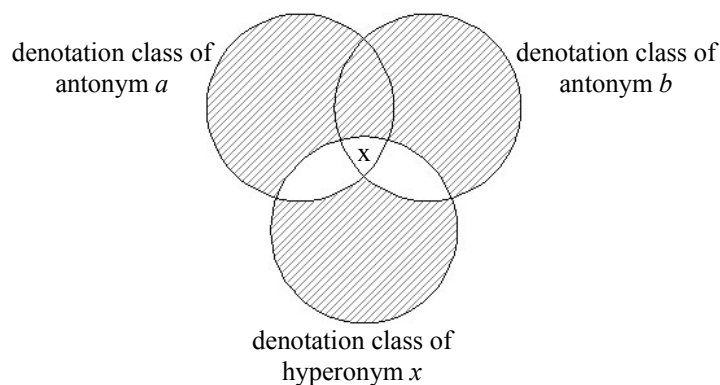
Def. F7c2a. ‘Exclusive antonyms’ for ‘antonyms with non-intersecting denotation classes’.
[210]

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

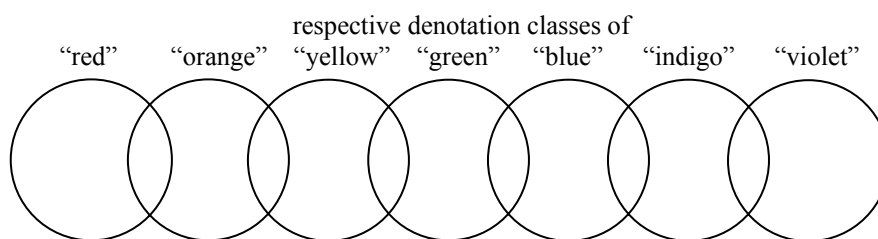


Def. 7c2b. ‘Overlapping antonyms’ for ‘antonyms with overlapping denotation classes’.
[210]

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:



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