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ASSOCIATIVE MEANING AND SCALAR IMPLICATURE: A LINGUISTIC-SEMIOTIC ACCOUNT^[*]

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Abstract. This paper shows that three kinds of phenomena typically subject to disparate analyses are all forms of ‘associative meaning’: (i) extralinguistic-based, (ii) linguistic-based, and (iii) scalar implicature-based. It argues that scalar implicature in particular may be of three types: hyponymous, quasi-hyponymous, and pseudo-hyponymous. The paper begins with a basic definition of denotative and connotative meaning, and within connotative meaning of associative meaning. A formal model is provided for utterance-meaning, based around the notions of referent and ascription. This allows for a detailed formal analysis of extralinguistic- and linguistic-based associative meaning. The model is refined to address scalar implicature-based associative meaning, through a theory-based account of the distinction between ambiguity and indeterminacy, allowing for a formal analysis of ‘some’ and cardinal numbers. I also briefly consider a fourth type of associative meaning – contextually determined associative meaning – using Arabic examples, to illustrate the profound conventionality and language-specificity of the relevant aspects of meaning. Rather than providing a new account of how we understand the meaning of scalar implicatures, or other aspects of utterance-meaning, this paper adopts the standpoint that in order to understand *how* a hearer understands what an utterance means, we need to know first *what* it means; i.e. a coherent model of utterance-meaning is a sine qua non for the investigation of utterance cognition.

Key words: associative meaning; scalar implicature; semiotics; pragmatics; denotative meaning (denotation); connotative meaning (connotation); some; all; cardinal numbers

1. Introduction

This paper shows that three kinds of phenomena typically subject to disparate analyses are all forms of ‘associative meaning’: (i) extralinguistic-based (e.g. the meaning associations of ‘nurse’ in English with ‘female nurse’ rather than ‘male nurse’), (ii) linguistic-based (e.g. the differing meaning tendencies of the synonyms *vernietigen* and *vernien* ‘to destroy’ in nineteenth-century written Dutch, to be used to refer to different kinds of destruction); and (iii) scalar implicature-based (e.g. the tendency for ‘some’ to be interpreted as meaning ‘not all’). It also argues that scalar implicature in particular may be of three types: hyponymous, quasi-hyponymous, and pseudo-hyponymous.

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Drawing on ideas developed within the semiotic and linguistic theory of axiomatic functionalism (e.g. Mulder 1989; Dickins 1998; and Dickins 2009, which includes formal definitions of the theoretical terms discussed here), this paper begins with a basic definition of denotative and connotative meaning (Section 2), and within connotative meaning of associative meaning (Section 2.1). It considers three types of associative meaning: extralinguistic-based, linguistic-based, and scalar implicature-based (Sections 3–3.3). A formal model is provided for utterance-meaning, based around the notions of referent and ascription (Section 4). This allows for a detailed formal analysis of extralinguistic- and linguistic-based associative meaning (Section 4.1). The model is refined to address scalar implicature-based associative meaning (Section 5), through a theory-based account of the distinction between ambiguity and indeterminacy (Section 5.1), allowing for a formal analysis of ‘some’ (Section 5.3.1) and cardinal numbers (Section 5.3.2). I briefly consider a fourth type of associative meaning – contextually determined associative meaning – using Arabic examples, to illustrate the profound conventionality and language-specificity of the relevant aspects of meaning (Section 6).

This paper does not attempt to provide a new account of how we understand the meaning of scalar implicatures, or other aspects of utterance-meaning, or consider in detail existing ‘cognitive pragmatic’ accounts of this nature. Rather, it adopts the standpoint that in order to understand *how* a hearer understands what an utterance means, we need to know first *what* it means; i.e. a coherent model of utterance-meaning is a *sine qua non* for the investigation of utterance cognition. This point is argued at various places in the paper, particularly in the conclusion (Section 7).

2. Denotative vs. connotative meaning

This paper operates with a basic distinction between denotative meaning and connotative meaning. Denotative meaning can be understood for current purposes as involving the overall range of a word¹ or multi-word unit or, by extension syntactic structure (including the words involved in that structure), in a particular sense: two words/multi-word units/syntactic structures in a particular sense which ‘pick out’ the same extensional range of entities in the world – or better, in all possible worlds, real and imaginable – have the same denotative meaning. The term ‘entity’ is used here in the broadest possible sense, to cover not only objects – physical and abstract – but also all sorts of other notions: e.g. qualities (as denoted by adjectives), processes (as denoted by verbs), relations (as denoted by prepositions), etc. (cf. also Mulder and Rastall 2005). This initial definition will be refined later in this paper (Sections 5–5.3.2). Denotative meaning is also known by other terms, e.g. denotational meaning, denotation, propositional meaning and cognitive meaning (e.g. Cruse 1986: 45, 271–277). Connotative meaning, or connotation, is defined here negatively as all kinds of meaning which are not denotative meaning.

Connotative meaning, as noted, is all kinds of meaning which are not denotative meaning, i.e. connotative meanings are those kinds of meanings which do not involve the exten-

¹ ‘Word’ is not, in fact, a technical term in extended axiomatic functionalism. I will, however, use the term ‘word’ in this paper as a synonym for a certain, albeit ill-defined, kind of grammatical entity / signum (for these terms, see Section 4).

sional range of a word/multi-word unit/syntactic structure. Connotative meaning is thus meaning minus denotative meaning. There are many kinds of connotative meaning (perhaps an endless number). For various lists of a type which are relatively consonant with the current approach, see Leech (1981), Hervey and Higgins (2002; also Dickins, Hervey and Higgins 2002), and Baker (1992; following Lyons 1977). In this paper, I will deal with only one kind of connotative meaning: what Hervey and Higgins (2002) call ‘associative meaning’.

2.1 Associative meaning

Hervey and Higgins define associative meaning as “that part of the overall meaning of an expression which consists of expectations that are – rightly or wrongly – *associated with the referent* of the expression” (Hervey and Higgins 2002: 149–150). For reasons which will become apparent later in this paper (especially Section 4 onwards), we can rephrase this as “that part of the overall meaning of an expression which involves features typically ascribed *to the referent* of the expression”. The word ‘nurse’ is a good example. Most people automatically associate ‘nurse’ with the idea of female gender, as if ‘nurse’ were synonymous with ‘female who looks after the sick’ – on the basis that in the real world (at least in Britain and other English-speaking countries at the start of the twenty-first century) nurses are typically female. “This unconscious association is so widespread that the term ‘male nurse’ has had to be coined to counteract its effect: ‘he is a nurse’ sounds semantically odd, even today” (Hervey and Higgins 2002: 150).

It is important to stress here that the oddity of ‘he is a nurse’ is not a matter of semantic contradiction – as would be ‘he is an actress’ (where ‘he’ and ‘actress’ involve semantic disjunction) – but merely of unusualness. A Google search for the string “he’s a nurse” (29.5.2014) yielded 96,800 hits, while a search for “she’s a nurse” yielded 922,000 hits (an example of ‘he’s a nurse’ brought up by the Google search being “He’s not a performer by profession, he’s a nurse at Valley Hospital”). Associative meaning specifies a narrower typical ‘denotative range’ than that of the (full) denotative meaning of a word/multi-word unit/syntactic structure (in the relevant sense). The (full) denotative meaning of ‘nurse’ (in the relevant sense) thus encompasses both ‘male nurse’ and ‘female nurse’, the associative meaning ‘female nurse’ having a narrower ‘denotative range’ than the full denotative range of ‘nurse’.

3. Three types of associative meaning

In this paper I will consider in detail three types of associative meaning: extralinguistic-based, of which ‘nurse’ is an example (Section 3.1), linguistic-based (Section 3.2) and scalar implicature-based (Section 3.3).

3.1 Extralinguistic-based associative meaning

Extralinguistic associative meanings are those associative meanings which are determined – or perhaps better, motivated – by the facts of the extralinguistic world. An example is the

fact that ‘nurse’ has associations of femaleness (Section 2). In Britain (and the West generally), the great majority of nurses are female. Accordingly, the word ‘nurse’ tends to be associated with females. The great majority of engineers, by contrast, are males. Accordingly, the word ‘engineer’ tends to be associated with males: it has the associative meaning ‘male’.

3.2 Linguistic-based associative meaning

Linguistic associative meanings are those associative meanings which are linguistically determined, i.e. determined by the semantics of the language involved, rather than by features of the extralinguistic real world. Linguistic associative meanings are illustrated with particular clarity by certain cases of what is sometimes known as ‘imperfect synonymy’, i.e. pairs of words which have the same range of meanings (extension), and thus the same denotation, but tend to mean different things from one another. A good example is provided by the two verbs *vernietigen* and *vernielen* ‘to destroy, bring to nought’ in nineteenth-century written Dutch (see Geeraerts 1988; discussed in Dickins 1998: 118).

The two words appear to have referred to exactly the same range of situations and exhibited identical selection restrictions, even in the writings of one and the same author. Were these two words, then, “perfect synonyms”? Geeraerts argues they were not. Differences emerged when the frequencies of different senses were compared, *vernietigen* being used predominantly in an abstract sense, while *vernielen* referred predominantly to an act of physical destruction. Remarks in contemporary handbooks of good usage also pointed to a difference in the conceptual centres of the two words (Taylor 1989: 56).

In 19th century written Dutch, *vernietigen* and *vernielen*, seem to have been denotatively identical (“The two words appear to have referred to exactly the same range of situations and exhibited identical selection restrictions”). They were, however, connotatively different – more specifically, different in terms of their associative meanings (“Differences emerged when the frequencies of different senses were compared, *vernietigen* being used predominantly in an abstract sense, while *vernielen* referred predominantly to an act of physical destruction”; as discussed in Section 4, these are described in the present paper as *sub-senses* rather than *senses (proper)*). The fact that *vernietigen* was used predominantly to refer to abstract destruction, while *vernielen* referred predominantly to an act of physical destruction had nothing to, however, do with the nature of the real world in nineteenth century Holland. Rather, it was a matter of the linguistic semantics of these two words (in the relevant sense).

3.3 Scalar implicature-based associative meaning

There is a third category of associative meaning which is neither extralinguistic (Section 3.1) nor linguistic (Section 3.2), i.e. it relates neither to features of the real world, nor to linguistic semantic conventions. Rather it is typically analysed as involving what Grice (1989) terms conversational implicature. This can be illustrated by the following example,

which involves scalar implicature (Grice 1989). If I say, “The house is big”, I tend to mean that it is big, but not huge. This is despite the fact that in principle one can refer to a huge object by saying that it is ‘big’. Usages such as “This house is big” to mean ‘[...] not huge’ are frequently explained in terms of Grice’s maxim of quantity, which requires the speaker to be just as informative as is required. If the speaker had been in a position to make the stronger statement “the house is huge”, they would have done so. Since they did not, however, the hearer is expected to believe that the stronger statement is not true. ‘Big’ can be said to have the associative meaning of ‘[big but] not huge’ (for a refinement of this, see Section 5.2.1.1).

In addition to the Gricean, there are numerous current alternative views about how we understand scalar implicature and related phenomena. Horn (1972 and 1989) provides a still popular account, based on pre-existing lexical scales (often referred to as Horn scales). Recent works include Schlenker (forthcoming) and Sauerland (2012), both of whom consider various approaches, Geurts (2009), who argues that the Gricean account needs to be supplemented by ‘local pragmatics’, and Breheny (2008), who offers a relevance theory account of numerically quantified noun phrases. There is also a large experimentally-based psycholinguistic literature on scalar implicature; e.g. Katsos and Breheny (2010), Tavano (2010). For a recent approach which partially rejects ‘pragmatic’ accounts see Boguslawski (2010).

It is not the purpose of this paper to consider the viability, or otherwise, of any of these approaches. The point here is simply to note that if the Gricean or another pragmatic account of such phenomena is true, scalar implicature-based associative meaning is rooted in universal human communicative behaviour.

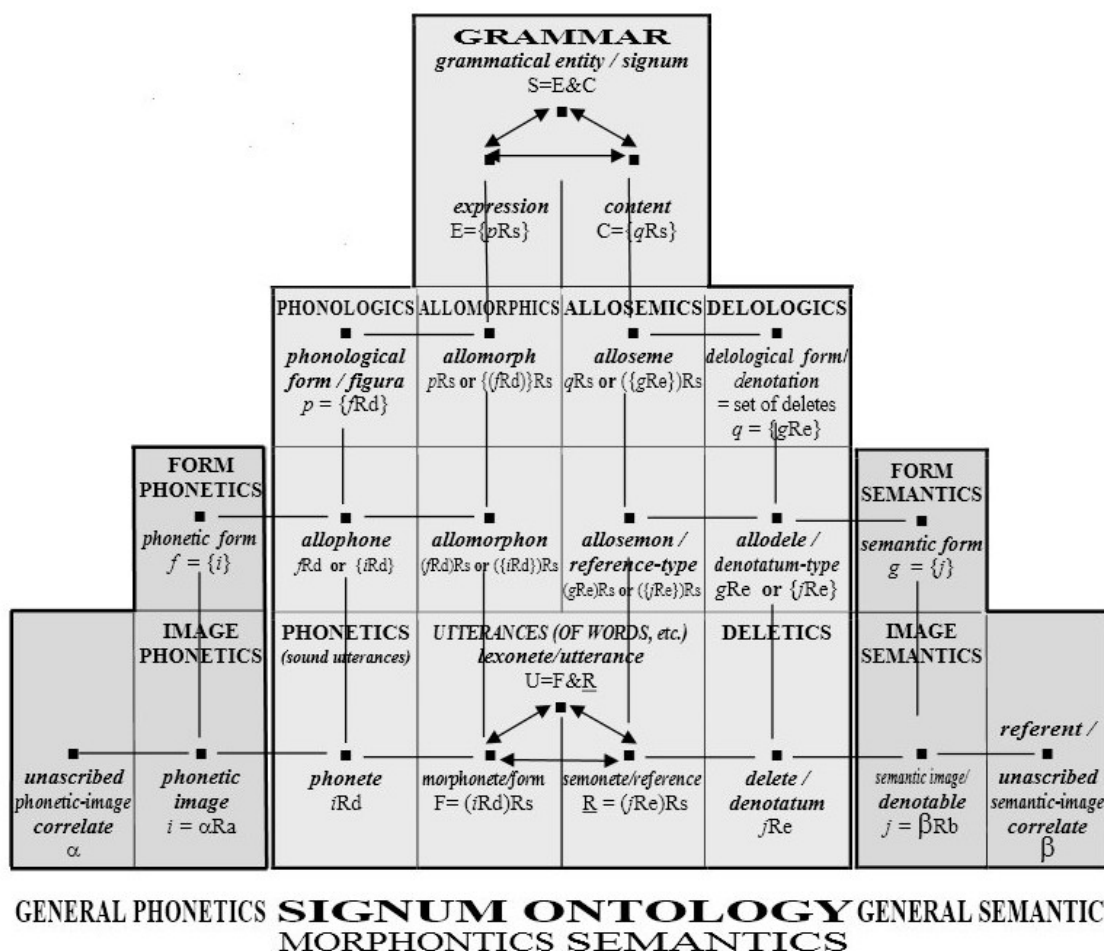
4. A formal model for associative meaning: signum ontology

Dickins (1998: 117–125) provides a formal model for the semantic analysis of associative meaning in terms of the general linguistic (and semiotic) theory of extended axiomatic functionalism – and specifically one of the two components of the theory, the signum ontology. A brief explanation of the signum ontology is necessary for an understanding of subsequent analyses in this paper (a more detailed explanation of the rationale for the signum ontology is provided in Dickins, *in prep.*). The signum ontology (plus the associated areas of general phonetics and general semantics) can be visualised as in Figure 1.

In explaining Figure 1, I will start with general phonetics and general semantics. These are ancillary areas of enquiry to the signum ontology, but necessary for it, as will be made clear later in this section.

General phonetics provides models for speech sounds. The most basic notion in relation to general phonetics is a pure sound event, i.e. a completely unanalysed ‘thing’. This is a maximally minimal model, one so minimal that all it does is to ‘register’ the existence of the entity in question without analysing that entity in any way. We may call this ‘thing’ an *unscribed phonetic image-correlate* (the reasons why it is ‘unscribed’ will be made clear below), and we may symbolise it as α . There is, by definition, nothing which we can do merely using this *unscribed phonetic image-correlate* in terms of linguistic analysis, since all we have done is to characterise it as existing.

Figure 1
Signum ontology (plus general phonetics and general semantics)²



A phonetic image (symbolised as *i*) consists of an *unascribed phonetic image-correlate* (symbolised as α , as discussed above) brought into a relationship (symbolised as R) with a *set-forming criterion* (symbolised as a); i.e. it is an unascribed phonetic-image correlate which is ascribed to a particular set of unascribed phonetic-image correlates (for discussion of this, see Dickins *in prep.*). Thus, phonetic image can be defined as $i = \alpha Ra$. Phonetic image (as a notion) can also be symbolised as $\langle \alpha \rangle$ (as an alternative to *i*).

An example of a phonetic image is $\langle p^h \rangle$, i.e. a particular sound event characterised as belonging to a particular class (or set) of sound events all of whose members are conceived of belonging to a class ‘aspirated *p*’. A phonetic image $\langle p^h \rangle$ can thus be more fully symbolised as $\alpha^i R \{p^h\}$ (i.e. a particular phonetic image α^i , conceived as a token/member a type/class/set of phonetic images, i.e. $\{p^h\}$, deemed all to be the same except for their

² A few terminological points may be noted in relation to Figure 1. Extended axiomatic functionalism uses the suffix *-ete* consistently for all entities at the level of individual realisations (instantiations: Dickins 2009: Def. 22): i.e. the entities *phonete*, *morphonete*, *semonete*, and *delete*. The prefix *allo-* is similarly used consistently for all entities at the levels of generalised realisations (manifestations: Dickins 2009: Def. 260): i.e. the entities *allomorph*, *allomorphon*, *alloseme*, *allosemon*, *allocene*, and *allosemon*. The term ‘*phonete*’ is thus preferred to the equivalent term in Mulder ‘*allophoton*’ (Mulder 1989: 166), or in Bičan ‘*phonon*’ (Bičan 2008: 7). Other principles of consistency of terminology should be fairly evident from Figure 1.

time/space individuality). This relating to a particular type of what would otherwise merely be an *unascribed phonetic image-correlate* may be called its *ascription*: by *ascribing* the *unascribed phonetic image-correlate* to a particular type/class/set we are giving it a manipulable modelled identity.

The class (set) to which individual phonetic images belong is a phonetic form. This can be defined $\{i\}$, i.e. a class (set) of phonetic images (a phonetic image being i , as discussed above). Phonetic form is also symbolised in Figure 1 as f . Phonetic forms can be symbolised using reverse square brackets, $]$ and $[$ – for example $]p^h[$.

Phonetic image and phonetic form are models for sound events and generalisations (classes) of these sound events, regardless of the linguistic status of these sound events. We can, however, consider such sound events in relation to specific languages, and in particular in relation to the phonological entities of specific languages. When we do this, we are moving into the signum ontology (proper) of the theory.

A phonete is a phonetic image (i) brought into a relationship (R) with a particular phonological entity – phoneme, etc. (d). That is to say, it is a model for a specific speech sound (uttered at a specific time and place) in relation to a particular language (i.e. realising a phonological entity – phoneme, etc. – in a particular language). Phonete is symbolised as iRd . Angle brackets can be used to signify phonetes, e.g. $\langle p^h \rangle$.

An allophone is a phonetic form (f) brought into a relationship (R) with a particular phonological entity – phoneme, etc. (d). The English phoneme /p/ might be said to have the allophones $[p]$ (unaspirated ‘p’), $[p^h]$ (aspirated ‘p’), and $[p^-]$ (unreleased ‘p’). Unlike phonetes, allophones are not individual space-time bound entities. We can, in fact, also define an allophone as a set of all the phonetes which have ever been and could ever be uttered belonging to the relevant class (for the phoneme /p/ in English there are three relevant classes $[p]$, $[p^h]$ and $[p^-]$, assuming we analyse English /p/ as having three allophones $[p]$, $[p^h]$ and $[p^-]$). As a set of phonetes, we can thus symbolise an allophone as $\{iRd\}$. What is meant by ‘allophone’ in extended axiomatic functionalism is roughly the same as what is meant by allophone in traditional linguistics. An allophone can be represented as in traditional linguistics, and as above.

A figura or phonological form (which for present purposes can be taken to be the same as a phonological entity) can be defined as a set of allophones belonging to the same phonological identity (the same d). Thus the English phoneme /p/ (as a phonological form/entity) can be defined as a set of allophones $[p]$, $[p^h]$ and $[p^-]$. Phonological form (entity) can be symbolised as p , and defined $p = \{fRd\}$. A phonological form in extended axiomatic functionalism is roughly the same as a phonological entity in traditional linguistics, and can be represented (like phonological entities in traditional linguistics) by slant brackets (as with /p/ above).

General semantics provides models for ‘(meanable) entities’ (with ‘entity’ understood in the broadest possible way to include not only concrete and abstract ‘things’, but also processes, relations, etc., and not only actually existing entities, but also potential and imaginary entities, etc.). The most basic notion in relation to general semantics is a pure ‘entity’, i.e. a completely unanalysed ‘thing’. We may call this ‘thing’ an *unascribed semantic image-correlate* or a *referent*, and we may symbolise it as β . There is, by definition, nothing which we can do merely using this *unascribed semantic image-correlate* or *referent* in terms of linguistic analysis, since all we have done is to characterise it as existing. (What I

have here termed above an *unascribed phonetic-image correlate* is termed an ‘(auditory) perceptual-object’ in Heselwood 2013: 204. The notion of *unascribed phonetic/semantic image-correlate* also has strong similarities to Peirce’s notion of a ‘First’; e.g. Gorlée 2009.)

A semantic image or denotable (symbolised as j) consists of an *unascribed semantic image-correlate* or *referent* (symbolised as β , as discussed above) brought into a relationship (symbolised as R) with a particular *set-forming criterion* (symbolised as b); i.e. it is an *unascribed semantage-image correlate / denotable* which is ascribed to a particular set of *unascribed semantic-image correlates / denotables* (for discussion of this, see Dickins *in prep.*). Thus, semantic image can be defined as $j = \beta R b$. Semantic image (as a notion) can also be symbolised as $\beta <$ (as an alternative to i).

An example of a semantic image is $>civil\ engineer<$, i.e. a particular entity characterised as belonging to a particular class (or set) of entities all of whose members are conceived of belonging to a class $\{civil\ engineers\}$. A semantic image $>civil\ engineer<$ can thus be more fully symbolised as $\beta^i R \{civil\ engineers\}$ (i.e. a particular semantic image β^i , conceived as a member a set of semantic images, i.e. $\{civil\ engineers\}$, deemed all to be the same except for their time-space individuality). This relating to a particular type of what would otherwise merely be an *unascribed semantic image-correlate* or *referent* may be called its *ascription*: by *ascribing* the *unascribed semantic image-correlate* or *referent* to a particular type/class/set we are giving it a manipulable modelled identity. Semantic images can be represented (as with $>civil\ engineer<$ above) by reverse angle brackets (paralleling the use of reverse angle brackets to represent phonetic images).

The class (set) to which individual semantic images belong is a semantic form. This can be defined as $\{j\}$, i.e. a class (set) of semantic images (a semantic image being i , as discussed above). Semantic form is also symbolised in Figure 1 as g .

Semantic image and semantic form are models for ‘entities’ and generalisations (classes) of these ‘entities’, regardless of the linguistic status of these entities. We can, however, consider such ‘entities’ in relation to specific languages, and in particular in relation to the abstract semantic entities – i.e. what are called in Figure 1 the delogical forms or denotations of specific languages. When we do this, we are moving into the signum ontology (proper) of the theory. Semantic forms can be represented using reverse square brackets, e.g. $]engineer[$ (paralleling the use of reverse square brackets to represent phonetic forms).

A delete or denotatum is a semantic image (j) brought into a relationship (R) with a particular delogical form / denotation (d). That is to say, it is a model for a specific ‘entity in relation to a particular language (i.e. realising a delogical form / denotation in a particular language) Delete is symbolised as $j R e$. For convenience, I will provide an example of a delete, after first providing an example of an allodele (below). Deletes/denotata can be represented using angle brackets, e.g. $<engineer>$ (paralleling the use of angle brackets to represent phonemes).

An allodele is a semantic form (g) brought into a relationship (R) with a particular delogical form / denotation (e). Let us, for the sake of argument, take it that the sense (delogical form / denotation) conveyed by the word (signum) ‘engineer’ in English has three variant meanings ‘civil engineer’, ‘electrical engineer’, and ‘chemical engineer’. Just as $[p]$, $[p^h]$ and $[p^-]$ can be analysed as allophones of the phoneme $/p/$ in English, so $[civil\ engineer]$, $[electrical\ engineer]$ and $[chemical\ engineer]$ can be analysed as *allodeles/denotatum-types* of the delogical form / denotation $/engineer/$ in English. (Square

brackets can be used to represent allodeles/denotatum-types, paralleling the use of square brackets to represent allophones, while slant brackets can be used to mark delogical forms / denotations, paralleling the use of slant brackets to represent phonological forms / figura: thus /*engineer*/.) A delete is the individual-instance counterpart of an allodele. So, an individual realisation (an instantiation) of a delogical form / denotation ‘engineer’ referring to a specific engineer (civil, electrical or chemical) is a delete. Unlike deletes, allodeles / denotatum-types are not individual entities. We can, in fact, also define an allodele as a set of all the deletes which have ever been and could ever be uttered belonging to the relevant class (for the delogical form / denotation /*engineer*/ in English there are three relevant classes [*civil engineer*], [*electrical engineer*] and [*chemical engineer*], assuming we analyse English /*engineer*/ as having three allodeles [*civil engineer*], [*electrical engineer*] and [*chemical engineer*]). As a set of deletes, we can thus symbolise an allodele as $\{jRe\}$.

A delogical form or denotation (which for present purposes can be taken to be the same as a delogical entity) can be defined as a set of allodeles belonging to the same delogical identity (the same *e*). Thus the English delogical form / denotation /*engineer*/ can be defined as a set of allodeles [*civil engineer*], [*electrical engineer*] and [*chemical engineer*]. Delogical form / denotation can be symbolised as *q*, and defined $q = \{gRe\}$.

Having considered entities and notions which are on the sound and meaning ‘peripheries’ of the signum ontology (including the ancillary entities of general phonetics and general semantics), it is appropriate now to consider the central notion of the theory, the signum or grammatical entity. The signum, symbolised *S*, is defined as a bi-unity of an expression (symbolised *E*) and a content (symbolised *C*), i.e. $S = E \& C$. An alternative to the word ‘signum’ might be ‘sign’ (for the distinction between ‘sign’ and ‘signum’, see Dickins 2009: Def. 2a2). Examples of signa / grammatical entities in English are morphemes (e.g. the morphemes ‘un’, ‘luck’ and ‘y’ making up the word ‘unlucky’) words (e.g. the word ‘unlucky’) and grammatically ‘coherent’ phrases (e.g. ‘the unlucky man’, or ‘the unlucky man needs friends’) – these being understood as abstract entities, not as utterances (or models for utterances) which instantiate these signa. A content is the semantic aspect of a signum, while an expression is the ‘formal’ (non-semantic) aspect of a signum.

Signa are instantiated as lexonetes/utterances, symbolised as *U*, i.e. modelled speech events. The meaningful aspect of a lexonete/utterance is a semonete/reference, symbolised as \underline{R} , and the ‘formal’ (non-meaning-related) aspect of a lexonete/utterance is a morphonete/form, symbolised as *F*. A lexonete/utterance is thus defined as $U = F \& \underline{R}$ (paralleling the definition at the more abstract level of signum as $S = E \& C$). The lexonete/utterance (with its form/morphonete and semonete/reference aspects) thus provides a model for an instantiation – i.e. an individual realisation at a particular time and place of occurrence – of a signum. Morphonetes/forms, lexonetes/utterances and semonetes/references all stand in relationship to the signum/grammatical entity (symbolised as *S*, as discussed above), i.e. they all have the characteristic *R*s (where *s* stands for ‘signum identity’ / ‘grammatical identity’).

Morphonete/form, however, can also be related to phonete (discussed above): it is a phonete (symbolised *iRd*, as discussed above), brought into a relationship with a grammatical identity (i.e. *R*s, as discussed above); i.e. $F = (iRd)Rs$. Similarly, semonete/reference can be related to delete/denotatum (discussed above): it is a delete/denotatum (symbolised *jRe*, as discussed above), brought into a relationship with a grammatical identity (i.e. *R*s, as discussed above); i.e. $\underline{R} = (jRe)Rs$.

Just as we can generalise away from individual sound events to classes of sound events deemed to be identical apart from their time-space specificities, i.e. just as we can generalise from a phonete to an allophone, so we can generalise from a morphonete/form to an allomorphon. An allomorphon can be conceived as a set of phonetes which are identical except for their time-space specificities, i.e. as ($\{iRd\}$)Rs. Or it can be conceived equivalently as an allophone (i.e. fRd) brought into a relationship with a grammatical identity (i.e. Rs), giving the definition of allomorphon: (fRd)Rs.

Correspondingly, just as we can generalise away from individual ‘meaning events’ to classes of ‘meaning events’ deemed to be identical apart from their time-space specificities, i.e. just as we can generalise from a delete/denotatum to an allodele/denotatum-type, so we can generalise from a semonete/reference to an allosemon/reference-type. An allosemon/reference-type can thus be conceived as a set of semonetes/references which are identical except for their time-space specificities, i.e. as ($\{jRe\}$)Rs. Or it can be conceived equivalently as an allodele/denotatum-type (i.e. gRe) brought into a relationship with a grammatical identity (i.e. Rs), giving the definition of allosemon/reference-type: (gRe)Rs. An alternative term for an allosemon would be a sub-sense, or better ‘signum-sub-sense’ or ‘sub-sense of a signum’, since it is a notion which is in a direct relation to a signum / grammatical entity.

Allomorphons are related not only to grammatical identity (the Rs element in their definition: (fRd)Rs), but also to phonological identity (the Rd element in their definition (fRd)Rs). We can thus generalise from allomorphon to establish a set of all allomorphons which have the same phonological identity. A set of all allomorphons having the same phonological identity is an allomorph, defined as ($\{jRd\}$)Rs. Since an allomorph is, equivalently, a phonological form (p) brought into a relationship with a grammatical identity (s), allomorph can also be defined as pRs . An allomorph in extended axiomatic functionalism is roughly the same as an allomorph in traditional linguistics. Examples of allomorphs in British English are $/gæɾɑ:z/$ and $/gæɾɪdʒ/$ as phonological forms of (realising) the signum (word) ‘garage’ (assuming $/gæɾɑ:z/$ and $/gæɾɪdʒ/$ to be valid phonological analyses).

Correspondingly, allosemons/reference-types are related not only to grammatical identity (the Rs element in their definition: (gRe)Rs), but also to delogical (i.e. ‘purely abstract’ semantic) identity (the Re element in their definition (gRe)Rs). We can thus generalise from allosemon/reference-types to establish a set of all allosemons/reference-types which have the same delogical (‘purely abstract’ semantic) identity. A set of all allosemons/reference-types having the same delogical identity is an alloseme, defined as ($\{gRe\}$)Rs. Since an alloseme is, equivalently, a delogical form/denotation (q) brought into a relationship with a grammatical identity (s), alloseme can also be defined as qRs . An alternative term for an alloseme would be a sense, or better ‘signum-sense’ or ‘sense of a signum’, since it is a notion which is in a direct relation to a signum / grammatical entity. An alloseme is roughly equivalent to the sense word or phrase (or even a morpheme) as understood pre-theoretically, e.g. in lexicography. Examples of allosemes in English (assuming the analyses to be valid) are the senses of ‘garage’: 1. “Building, either private or public, intended for the storage and shelter of motor vehicles while not in use”; 2. “Commercial establishment that sells petrol, oil, and similar products and freq. also undertakes the repair and servicing of motor vehicles” (definitions from Oxford English Dictionary).

It is possible to further generalise from an allomorph to expression (symbolised E), an expression being a set of allomorphs having the same grammatical identity, i.e. $E=\{pRs\}$. It is correspondingly possible to further generalise from an alloseme to content (symbolised C), a content being a set of allosemes having the same grammatical identity, i.e. $C=\{qRs\}$. As noted, above a sigum / grammatical entity (symbolised S) is a bi-unity of an expression and content, i.e. $S=E\&C$.

In the remainder of this paper, I will in almost all cases make use of the terminologically integrated terms throughout: i.e. unascribed phonetic image correlate, unascribed semantic image correlate, phonetic image, phonetic form, semantic image, semantic form, phonete, allophone, phonological form, delete, allodele, delological form, mophonete, allomorphon, allomorph, semonete, allosemon, and alloseme – plus expression, content and sigum. There are three reasons for this: (i) these terms express the relationships between the entities in the theory most clearly (more clearly than more ad-hoc terms such as ‘denotable’, ‘denotatum’, or ‘reference’); (ii) other terms, such as ‘denotable’, ‘denotatum’ or ‘reference’ are used in other theories and other contexts with different meanings to those which they have in this paper, and their use here might therefore be confusing; (iii) use of multiple terms (e.g. ‘allosemon/reference-type/sub-sense’ would be long-winded and confusing, rather than helping to clarify what is meant); (iv) inconsistent use of terms (e.g. use of a terminologically integrated term, such as ‘allosemon’, followed closely by use of a terminologically non-integrated term with the same sense, such as ‘reference-type’) would be confusing.

4.1 Extralinguistic- and linguistic-based associative meaning revisited

Consider the following (in the following paragraphs, I will consider the word ‘nurse’, first discussed in Section 3.1; the same analytical principles, however, apply also to *vernietigen* and *vernieten*, discussed in Section 3.2):

(1) *My sister is a nurse.*

In 1, the unascribed semantic-image correlate (= referent) of ‘nurse’ is the same as that of ‘sister’ (they refer to the same entity). The ascription in the case of ‘nurse’ and ‘sister’ is, of course, different. Focusing on ‘nurse’ (though the same general arguments apply to ‘sister’), we may regard the ascription as the type/class/set of nurses in the full extension of ‘nurse’ (in the relevant alloseme).

It needs to be noted that the number of allodeles we establish (e.g. for the English delological form ‘nurse’) is ultimately an ad hoc matter, depending on how many ascriptions we establish. This becomes more obvious when we consider the formal (non-meaning-related) analogue of the allodele, the allophone.

The number of allophones we establish (e.g. for the English phoneme /p/) is ultimately an ad hoc matter (i.e. it is ultimately conventional, and could have been done in another way – though it could not, of course, reasonably be done in *any* way one wanted: some ways of analysing phenomena are reasonable, while others definitely are not). Thus, the English phoneme /p/ might be said to have the allophones [p] (unaspirated ‘p’), [p^h] (aspirated ‘p’), and [p⁻] (unreleased ‘p’). However, if we were to adopt a more detailed (nar-

rower) phonetic analysis, we could establish many more allophones for English /p/ than this. Alternatively, if we had a less detailed (broader) phonetic analysis, we might say that English /p/ had only two allophones (e.g. [p] and [p^h]), or even just one allophone (which we might represent as [p]).

The allophone (also phonetic form, phonete, and phonetic image) is dependent on the notion of ascription: the number of allophones we deem a phoneme (or other phonological entity) to have depends on how many relevant ascriptions (ascriptional types/classes/sets) we establish. Thus if we establish three relevant ascriptions, R{p}, R{p^h} and R{p⁻}, we have three allophones of /p/ in English: [p], [p^h] and [p⁻]. If, however, we were to establish only one ascription R{p} (covering the full range of realisations of English /p/), we would have only one allophone [p].

Similarly, the number of allodeles we establish (e.g. for the English delogical form ‘nurse’) is ultimately an ad hoc matter, depending on how many ascriptions we establish. Because it is easier to work in relation to signa (e.g. words) rather than in relation to pure delogical forms, we can rephrase this to include relationship to signum (e.g. word). We can thus say that the number of allosemes we establish (e.g. for the relevant English signum ‘nurse’, in the relevant alloseme) is dependent on how many ascriptions we establish. We might, accordingly establish a single ascription for ‘nurse’ (in the relevant alloseme) R{nurse}, i.e. an ascription which covers the full extensional range of ‘nurse’ in the relevant sense. In this case, ‘nurse’ in the example ‘My sister is a nurse’ would have the ascription R{nurse} (as the only ascription available), and thus the delete <nurse>.

Alternatively, however, we could establish two different ascriptions: R{male nurse} and R{female nurse}. In this case, ‘nurse’ in the example ‘My sister is a nurse’ would have the ascription R{female nurse} and thus the delete <female nurse> (on the basis that the nurse in question, being my sister – and not, for instance, my brother – must be female). Alternatively again, we could establish four different ascriptions: R{young male nurse}, R{young female nurse}, R{old male nurse}, and R{old female nurse}. Assuming the nurse in question is young (as well as female), ‘nurse’ here would have the ascription R{young female nurse}, and thus the delete <young female nurse>.

One factor in how many ascriptions we decide to establish is what we are attempting to do in our analysis of the data – as is also the case with ascriptions in phonetic analysis relating to phonological analysis. Thus, if we are a phonetician wanting to investigate in great detail the relative frequencies of minutely different realisations of the phoneme /p/ in English, we will want to establish an extremely large number of different ascriptions – and thus different phonetic forms and allophones. Similarly, if we are a semanticist wanting to investigate in great detail the relative frequencies of different types of things (entities) which the signum ‘nurse’ (in the relevant alloseme) in English is used to refer to, we will want to establish a large number of ascriptions.

Extended axiomatic functionalism in fact provides a straightforward means of doing this kind of statistically based analysis. In the case of the relative frequencies of different realisations of phonological entities (phonemes, etc.), we (i) establish a large number (a corpus) of relevant speech events (utterances, in the general sense of the term), which we believe to be representative; (ii) establish a set of relevant ascriptions (e.g. for realisations of the phoneme /p/ in English), which we believe to be adequate for the phonetic detail which we require; (iii) apply the ascriptions which we have to the relevant aspects of the utterance-

set (corpus), to yield phonetes; and (iv) analyse the phonetes statistically (by counting them) according to the allophone which each belongs to.

We can correspondingly investigate the relative frequencies of different realisations of delogical forms (i.e. to establish what a particular signum, such as a word, typically means in a particular alloseme). To do this, we (i) establish a large number (a corpus) of relevant speech events (utterances, in the general sense of the term), which we believe to be representative; (ii) establish a set of relevant ascriptions (e.g. for realisations of the delogical form ‘nurse’ in English), which we believe to be adequate for the semantic detail which we require; (iii) apply the ascriptions which we have to the relevant aspects of the utterance-set (corpus), to yield deletes (and by extension semonetes); and (iv) analyse the deletes (by extension semonetes) statistically (by counting them) according to the allodele (by extension allosemon) to which each belongs.

Ascription for semantic analysis of the above kind is ultimately ad hoc; we can make use of as few or as many different types/classes/sets as we want. We can decide to operate with intuitively sensible ascriptions for ‘nurse’ (in the relevant alloseme), such as $R\{female\ nurses\}$ and $R\{male\ nurses\}$. We could, however, also decide to operate with intuitively bizarre ascriptions, e.g. $R\{nurses\ who\ regularly\ eat\ seaweed\}$ vs. $R\{nurses\ who\ do\ not\ regularly\ eat\ seaweed\}$.

This kind of deployment of ascription does not tell us anything about human communication – and in particular, it tells us nothing about the ways in which the possible range of meanings of a signum (word, etc.) are communicatively restricted in specific contexts. As the example ‘My sister is a nurse’ shows, it does not matter whether we consider the ascription to be $R\{nurse\}$, or $R\{female\ nurse\}$, or $R\{old\ female\ nurse\}$ (provided these are all reasonable – true, or similar – in the context). Since this deployment of ascription provides no insights into human communication (and in particular into ‘meaning-restriction’), we can refer to it as *non-communicative ascription*.

Non-communicative ascription can, however, be contrasted with *communicative ascription* – i.e. cases in which ascription does provide insights into human communication (meaning-restriction). Communicative ascription most obviously obtains where the ascription provides an allosemon – as intended by the speaker/writer – of the overall denotative range (expressed by the delogical form) of a signum (e.g. word) in a particular alloseme. Particularly clear examples of this are found where an indefinite noun has a non-specific reference (cf. Lyons 1999), i.e. where what is being referred to is not something specific but some-or-other example of the relevant type. Consider the following example:

(2) *John wants a romantic relationship with a nurse.*

Under most circumstances, ‘nurse’ here would be taken to refer to – and ‘actively mean’ – a female nurse, rather than a male nurse. Here, we can only reasonably say that the ascription (i.e. communicative ascription) is $R\{female\ nurse\}$ – ignoring the question of whether non-specificity (to be distinguished from indeterminacy: Section 5.1.1) is to be treated as a feature of the ascription or a feature of the unascribed semantic-image correlate.³

³ The question of whether specificity and non-specificity are a feature of the ascription or the referent, raises challenges for the current approach. An attempt to deal with these, however, would go well beyond the scope of this paper.

Corresponding examples occur with non-nouns. A good example is the word (signum) ‘do’ in English (in the relevant alloseme). As discussed in Dickins (1998: 221–222), ‘do’ in ‘I want to do my hair’ can be used to mean, among other things, ‘I want to wash my hair’, or ‘I want to dry my hair’, or ‘I want to comb my hair’ – or all three at once, or many other things, or combinations of other things (examples adapted from Moore and Carling 1982: 131–132). It is also perfectly reasonable to say, ‘When I said I wanted to do my hair, I meant I wanted to comb it, not to wash it’. Here we are dealing with ascriptions which are – in the local context at least – communicative and not simply ad hoc. The relevant ascriptions – $R\{wash\}$, $R\{dry\}$, $R\{comb\}$, $R\{wash, dry\}$, $R\{wash, dry\}$, etc. – are intended by the speaker (as is clear from the reasonableness of ‘When I said I wanted to do my hair, I meant I wanted to comb it, not to wash it’).

Another clear example where the ascription is communicative is provided by the signum (word) ‘like’ (in the relevant alloseme). Consider the following:

(3) *The brain is like a computer.*

It is very unlikely that the speaker/writer means here that the brain is like a computer in that it is made out of silicon, or that it is probably produced in East Asia, or that it involves solid-state circuitry; and much more likely that he or she means that the brain is like a computer in terms of its more abstract organisation. Here the ascription $R\{like\ in\ terms\ of\ its\ abstract\ organisation\}$ or similar (and thus the corresponding allosemon) is imposed by considerations of plausibility (general and/or in the specific context), and other ascriptions (e.g. $R\{like\ in\ that\ it\ is\ made\ out\ of\ silicon\}$) are specifically excluded.⁴

In the following sections, I will consider further examples of where the ascription and thus the allosemon is communicative, particularly in relation to cases where one allosemon is properly included within one another (as it is with the ascriptions of ‘do’, in the relevant alloseme, with the ascriptions $R\{wash\}$ and $R\{wash, dry\}$ discussed above).

5. A formal analysis of scalar-implicature based associative meaning

In the following sections, 5.1–5.3.2, I will consider associative meaning in relation to scalar implicature. I will argue that there are three different kinds of phenomena involved – those which involve hyperonymy-hyponymy (Section 5.1), those which involve what I shall call ‘quasi-hyponymy’ (Section 5.2), and those which involve what I shall call ‘pseudo-hyponymy’ (‘para-referentiality’) (Section 5.3).

5.1 Scalar implicature and hyperonymy

I turn now to a formal analysis of scalar implicature-based associative meaning involving hyperonymy-hyponymy using relevant aspects of the model of extended axiomatic functionalism discussed in Sections 4–4.1).

⁴ In traditional rhetoric, the element in addition to ‘like’ is known as the grounds (in fact, particularly in relation to metaphor, rather than simile). Thus, in $R\{like\ in\ terms\ of\ its\ abstract\ organisation\}$, the grounds is *in terms of its abstract organisation* (e.g. Dickins 2005).

Figure 2

	Hyperonymy-Hyponymy	Semantic overlap	Semantic disjunction
∅	√It's a car, a hatchback √It's big, very big √It's a lorry, a juggernaut ⁵ √It's a jet, a jumbo (jet)	*It's big, useful	*?It's big, small
'and'	*It's a car and a hatchback *It's big and very big *It's a lorry and a juggernaut *It's a jet and a jumbo (jet)	√It's big and useful	*?It's big and small
'and not'	?It's a car and not a hatchback ?It's big and not very big ?It's a lorry and not a juggernaut ?It's a jet and not a jumbo (jet)	√?It's big and not useful	*It's big and not small
'but'	√?It's a car but a hatchback *It's big but very big *It's a lorry but a juggernaut √?It's a jet but a jumbo (jet)	√It's big but useful	*It's big but small
'not'	*It's a car, not a hatchback *?It's big, not very big *It's a lorry not a juggernaut *It's a jet not a jumbo (jet)	?It's big not useful	√It's big not small
'not'– with reversal of terms	*?It's a hatchback, not a car *?It's very big not big *?It's a juggernaut not a lorry *?It's a jumbo (jet) not a jet	?It's useful not big	√It's small not big
'but not'	√It's a car but not a hatchback √It's big but not very big √It's a lorry but not a juggernaut √It's a jet, but not a jumbo (jet)	√It's big but not useful	*It's big but not small
'in fact'	√It's a car, in fact a hatchback √It's big, in fact very big √It's a lorry, in fact a juggernaut √It's a jet, in fact a jumbo (jet)	*It's big , in fact useful	*It's big, in fact small
'not in fact'	*It's a car, not in fact a hatchback *It's big, not in fact very big *It's a lorry, not in fact a juggernaut *It's a jet, not in fact a jumbo (jet)	*It's big, not in fact useful	√It's big, not in fact small
not just'	√?It's a hatchback, not just a car √?It's not just a car, it's a hatchback √It's very big, not just big √It's not just big, it's very big √It's a juggernaut, not just a lorry	√It's useful, not just big √It's not just big, it's useful	*It's small, not just big *It's not just big, it's small

⁵ 'Lorry' is British English for American 'truck'. A 'juggernaut' is a large lorry.

	√It's not just a lorry, it's a juggernaut √It's a jumbo (jet), not just a jet √It's not just a jet, it's a jumbo (jet)		
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Although the examples used in Figure 2 (also Figures 8 and 11, below) are largely based on examples which are found elsewhere in the literature and are intended to point up the kind of semantic contrasts which are of interest to this paper, they have been chosen on a rather intuitive basis (something which is perhaps unavoidable, given the undeveloped nature of 'associative meaning' as an area of enquiry). The acceptability judgements for Figure 2 are largely my own (though I have informally tried some of them out on other people (including my wife). Use of a survey with multiple respondents would no doubt improve the reliability of the results. As Figure 2 shows, hyperonymy-hyponymy pairs, such as 'car-hatchback', 'big-very big', 'lorry-juggernaut', and 'jet-jumbo (jet)' function fairly similarly to one another, but rather differently from semantic overlap-pairs, such as 'big' and 'useful', and semantic disjunction-pairs, such as 'big' and 'small'.

'Hatchback' and 'car' are not related in scalar terms – the relationship between 'car' and 'hatchback' is not one of size. The other terms considered in the hyperonymy-hyponymy column do, however, stand in a scalar relationship to one another: a juggernaut is a very big lorry (and may have other features, apart from size, which distinguish it from a more standard kind of lorry), a jumbo / jumbo jet is a very big jet (though it also has other distinctive features such as shape, which distinguish it from a more standard kind of jet), and something which is very big is bigger than something which is (just) big. There also seems to be no doubt that all three cases involve hyperonymy-hyponymy: a juggernaut is a type of lorry, a jumbo (jet) is a type of jet, and something which is very big is also big (but not vice versa; i.e. *very bigness* is a type of *bigness*, if one likes).

Consider the following example:

(4) *The house is big.*⁶

Example 4 would in many contexts be taken to mean 'The house is big (but not very big)', i.e. 'big' here would be understood as meaning 'big but not very big'. (The specific issues are investigated in the following sections of this paper. For the moment, we may say that if, as a hearer/reader we are forced to choose, between a peripheral interpretation of what is meant by 'big' – e.g. 'very big' or 'big, but only a little bit big' – or a core interpretation – i.e. 'big in the middle of the scale of what counts as big' – we will normally chose the core interpretation.) In fact, the related claim typically made in the literature (e.g. Levinson 2000) is that in the 'The house is big', 'big' means 'big but not huge'. The interpretation 'big but not very big' is also valid, however, I believe. 'Big' will be discussed in relation to 'huge' in Sections 5.2–5.2.1.1.

⁶ A significant shortcoming of the great majority of works on scalar implicature is that they fail to take intonation into account – or that they fail to take it into sufficient account. The current paper sadly perpetuates this shortcoming. Lack of sufficient context is a further problem. In this paper, I have tried to overcome this by providing detailed context where this seems necessary (though space restrictions preclude providing very detailed context for all examples).

Contrast this with the following example:

- (5) *The house is big, in fact very big.*

Here ‘big’ cannot be understood to mean ‘big but not very big’. Rather, for the following phrase ‘in fact very big’ to make sense, it has to be understood along the lines ‘big including (the possibility of) very big’.

Going back to the *referent-plus-ascription* (*unascribed semantic-image correlate plus ascription*) model of meaning discussed in Section 4, we can say that ‘big’ (in the relevant alloseme) has two allosemons: 1. [*big excluding very big*] and 2. [*big including very big*] and therefore two ascriptions $R\{big\ excluding\ very\ big\}$, and $R\{big\ including\ very\ big\}$, both of which are communicative. In an utterance ‘The house is big’, we typically have the ascription $R\{big\ excluding\ very\ big\}$, but in an utterance ‘The house is big, in fact very big’, we have the ascription $R\{big\ including\ very\ big\}$.

In fact, if we are considering the word ‘big’ (and not simply an abstract semantic ‘notion’, i.e. allodele, such as [*big excluding very big*]), we are making reference at one and the same time to signum identity and semantic identity, i.e. we are bringing a particular allodele, gRe or $\{j\}Re$, into a relationship (R) with a signum (s); i.e. we are dealing not with an allodele, but with an allosemon (see Section 4): $(gRe)Rs$ or $(\{j\}Re)Rs$, allosemons having the same nature as allodeles, because they incorporate (in their definition) allodeles. Thus, we may say that the signum (word) ‘big’ in English has (in the relevant alloseme; see Section 4), for the purposes relevant to thinking about scalar implicature, two communicative allosemons [*big excluding very big*] and [*big including very big*].

It is useful at this point to introduce the notion of canonicity. While canonicity is not strictly speaking part of extended axiomatic functionalism, it can be applied insightfully to all ‘allo-notions’ in extended axiomatic functionalism: allophone, allomorphon, allosemon, allodele, allomorph, and alloseme. Canonicity can be considered from a number of perspectives, and can also be related to other notions such as prototypicality (cf. Dickins 1998: 310–315). The simplest – though not the only – way of thinking of a canonical ‘allo-form’ (what is technically known in extended axiomatic functionalism as an *allont*: Dickins 1998: 137) is that it is that ‘allo-form’ which occurs most frequently (cf. Dickins 1998: 253–257). The canonical allosemon is thus that allosemon which occurs predominantly. Canonical allosemons can be investigated quantitatively, by analysing statistically a representative sample (corpus) of utterances (both in the general sense and the specific extended axiomatic-functionalist sense) (as discussed in Section 4.1). Thus in the case of the signum (word) ‘big’ in the alloseme ‘large / not small’ (etc.), we can investigate, by counting individual deletes relating to individual utterances, what proportion ‘belong to’ (realise) the allosemon ‘big’ [*big excluding very big*] (involving the ascription $R\{big\ excluding\ very\ big\}$), and what proportion ‘belong to’ (realise) the allosemon [*big including very big*] (involving the ascription $R\{big\ including\ very\ big\}$). In conducting this kind of analysis, one can make use of non-communicative ascriptions only, communicative ascriptions only, or both non-communicative and communicative ascriptions.

Canonical allosemon can in fact be identified with associative meaning. The word ‘big’ has the associative meaning – i.e. canonical allosemon – [*big excluding very big*] (i.e. the ascription $R\{big\ excluding\ very\ big\}$). In the case of the signum (word) ‘nurse’ (Section

4.1) (in the relevant alloseme) an obvious canonical allosemon to identify is [*female nurse*] involving the ascription $R\{female\ nurse\}$. Similarly, in the case of *vernietigen* we can identify a canonical allosemon [*destroy abstractly*] (and ascription $R\{destroy\ abstractly\}$), while in the case of *vernietelen* we can identify a canonical allosemon [*destroy physically*] (and ascription $R\{destroy\ physically\}$; Section 3.2).

5.1.1 Interminacy of referent vs. indeterminacy of ascription

A distinction is frequently made in linguistics between ambiguity and indeterminacy. Ambiguity involves lack of clarity between what are in an extended axiomatic-functional analysis two allosemes, e.g. ‘He’s funny’ meaning either ‘He’s amusing’ or ‘He’s odd’ (cf. also ‘He’s funny in both senses [of the word]’; Dickins 1998: 193–215; 202–219). Indeterminacy involves what are in an extended axiomatic-functional analysis two allosemes (e.g. whether ‘do’ in ‘I want to do my hair’ means ‘wash’ or ‘dry’, etc; Section 4.1; also Dickins 1998: 221–223; 269–274).

It has already been argued (Section 5.1) that ‘big’ can be taken to have two allosemes [*big including very big*] and [*big excluding very big*]. In an utterance ‘The house is big’, ‘house’ and ‘big’ have the same unascribed semantic-image correlate (referent). However, in using ‘house’ and ‘big’ we are ascribing the entity in question to two different classes (sets): the class of houses – the ascription being $R\{houses\}$, and the class which we may provisionally classify as that of ‘big [entities]’ (with the ascription $R\{big\ [entities]\}$). Consider now the following (with possible variants ‘written in’, as indicated by the forward slashes and square brackets):

- (6) A. *The house is big. / Is the house big?*
 B. *Yes, [in fact] it’s very big. / No, [it’s not big], it’s very big.*

As speaker B’s answers to speaker A’s statement/question show, ‘big’ as used by speaker A is indeterminate between the allosemes [*big including very big*] and [*big excluding very big*]. That is to say, ‘big’ here indeterminately has the ascription $R\{big\ including\ very\ big\ [entity]\}$ or the class $R\{big\ excluding\ very\ big\ [entity]\}$; and it is possible that this indeterminacy is radical, in that the speaker themselves intends it.⁷

⁷ As well as indeterminacy of ascription (indeterminacy in the normal sense), it is also possible to have indeterminacy of referent (unascribed semantic-image correlate), particularly one which is indeterminate for (unclear to) the hearer/reader. This is brought out in exchanges of the following type: A. ‘Can you see that bird?’; B. ‘Which one?’. Non-universal quantifiers, such as ‘some’, ‘many’ and ‘most’ typically have indeterminate referents. If I show you a photo of a group of people, and say “[These are] some friends of mine”, the referent is determinate: I am referring to the people in the photo, and no other people. If, however, someone says to me, “Do you know all the people in the room?”, and I reply “[I know] some of them”, my referent is likely to be indeterminate. I may well not have looked at everyone present to check whether I know them or not. All that’s needed for ‘some’ to be reasonable here is for me to have checked that there are people in the room that I know (and also, in the context, that there is at least one person whom I don’t know). Who exactly is being referred to by ‘some’ in this context is not entirely clear.

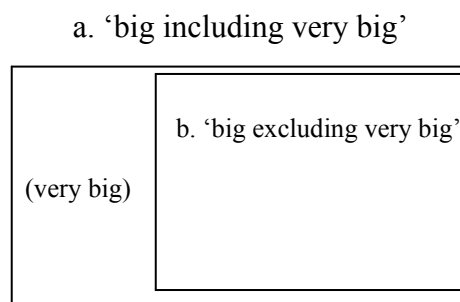
5.1.2 Allosemes compared to allophones

Semones and allosemes (and, by abstraction from grammatical identity, deletes and allodeles) present a number of interesting contrasts with phonemes and allophones (and, with inclusion of grammatical identity, morphemes and allomorphs).

A delete may be indeterminate as to ascription; it may not be knowable which class (set) the entity in question is being ascribed to (cf. ‘Is this house big?’). In the case of phonemes this kind of indeterminacy does not exist; once we have established an agreed set of phonetic forms for a particular description/analysis (e.g.]p[,]p^h[and]p⁻[), we can ascribe each phoneme to one of these sets as an instantiation of an allophone [p], [p^h] or [p⁻].

There is a further significant feature of ascription (as an aspect) of allodeles and allosemes. Consider the previously discussed allosemes of ‘big’ in set-theoretical terms: a. ‘big including very big’, and b. ‘big excluding very big’ (Figure 3).

Figure 3



Allosemon b. [*big excluding very big*] is properly included within allosemon a. [*big including very big*]: all entities which are *big but not (= excluding) very big* are also *big including very big*, but not vice versa. Very big entities thus belong to class a. but not class b. The term autohyponymy is sometimes used to describe a situation in which one alloseme of a word (signum) is properly included (extensionally) within another (cf. Geeraerts 1993: 237); another term for this would be autohyposemy. Cruse (1986: 59) very elegantly shows that ‘bitch’ in English has distinct senses (allosemes, in terms of the current approach) ‘canine’ and ‘female dog’, the second of which is properly included within the first – i.e. that this is a case of autohyponymy (or autohyposemy) (cf. also Dickins 1998: 205–208).

‘Big’ (in the relevant alloseme/sense) having two allosemons 1. [*big excluding very big*] and 2. [*big including very big*] (the first being properly included within the second) is not a case of autohyponymy (autohyposemy), since only one alloseme is involved. Rather, since we are dealing with allosemons, this situation could be termed auto-hyposemony. The word (signum) ‘big’ (in the relevant alloseme) can be termed auto-hyposemonic (or auto-hyposemonous).

The first ‘smaller’ allosemon of ‘big’ (in the relevant alloseme) [*big excluding very big*] (properly included within the second ‘larger’ allosemon [*big including very big*]) we can refer to as the narrow allosemon, while the second ‘larger’ allosemon [*big including very big*] we can refer to as the broad allosemon.

This situation contrasts dramatically with that in phonetics/allophonics. Once we have established – for whatever purpose – a set of phonetic forms as the phonetic forms of a corresponding set of allophones, e.g. [p], [p^h] and [p⁻] as the allophones of English /p/, there is no possibility – or virtue – in one of these allophones being properly included in another ‘super-allophone’, e.g. ‘[p]plus[p^h]’. We might, for example, imagine that we could in principle establish two different allophones for a particular phoneme (in a particular language), the extension of the first of which was properly included in the extension of the other. An example would be an allophone which we can call [Θ], and another allophone which we can call [Λ] of a phoneme which we can call /Π/ (in a particular language), such that the phonetic range of [Θ] was properly included within the phonetic range of [Λ]. (All occurrences of [Θ] would accordingly also be occurrences of [Λ], but not vice versa.) There would, however, be no virtue in practice of doing this because it would lead to ad hoc analyses: if we had a realisation of /Π/ which was analysable as the allophone [Θ], it would necessarily also be analysable as the allophone [Λ] – and there would be no particular reason to adopt one analysis rather than the other. In order to achieve non-ad-hoc analyses, allophones have to be conceived of as having non-overlapping extensions.

The fundamental reason for these discrepancies between morphontic/expression-side (form-related) and semantic/content-side (meaning-related) entities is that languages (like other semiotic systems) are ‘encoded’ immediately into physical phenomena (vocal sounds, marks on paper) but only ‘point’ mediately to the entities they mean: these entities are outside language itself.

5.2 *Scalar implicature and quasi-hyponymy*

In the following sections I will consider a form of scalar implicature which involves ‘quasi-hyponymy’ – i.e. a semantic relation which, although rather like a true hyperonymy-hyponymy relation, is in fact subtly different.

5.2.1 Realisational (concrete) overlap vs. abstract disjunction

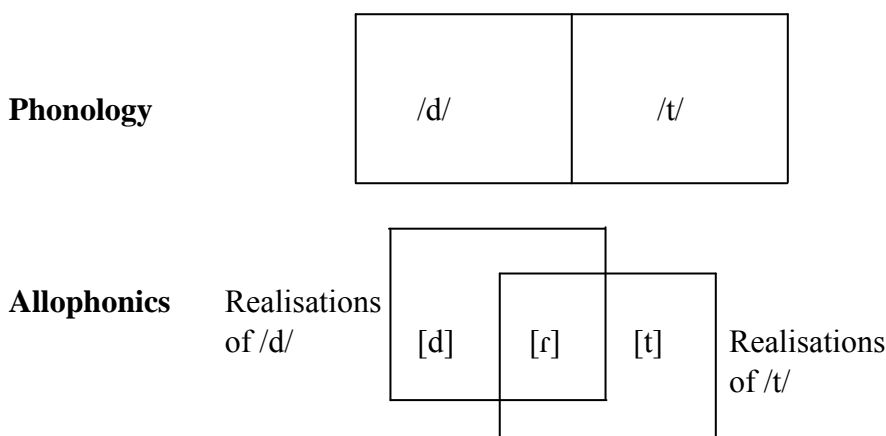
Labov (1972) showed that English speakers distinguish cups from mugs according to a variety of features including the shape of the vessel concerned. What are of interest here are not the focus or details of Labov’s analysis, but the following facts: (i) there are numerous objects which a speaker might describe as a cup or a mug (and one might even say, for example, ‘You could call that a cup or a mug’), and (ii) that ‘cup’ and ‘mug’ are not, apparently, examples of semantic overlap. In cases of semantic overlap, one can describe the entity (object, etc.) in question as ‘(both) X and Y’, e.g. ‘the box is (both) big and useful’, or ‘he’s (both) a doctor and a magician’. One cannot say, however, of a particular relevant vessel, however, ‘It’s (both) a cup and a mug’. Conceptually (abstractly) cups and mugs are quite distinct, even though there is an overlap in the real-world objects which they may refer to.

The combination of abstract discreteness with real-world (realisational) overlap is well known in phonology. It is illustrated by *budding* and *butting* (and similar intervocalic ‘d’-‘t’ pairs) in most dialects of American English. These are typically pronounced with an intervocalic medial flap (or *median tap* in the IPA system) [ɾ]. In careful speech, however, the first will have a [d] and the second a [t] (as noted in Port and O’Dell 1985: 465; cf. Shimizu and Lamb 1985: 109; also Dickins 1998: 91; Dickins 2007: 15).

Here, the phonological distinction (discreteness) between /d/ and /t/ is demonstrated by the fact that there are realisations (pronunciations) of ‘budding’ (those with a medial [d]), which cannot also be realisations of ‘butting’, and realisations of ‘butting’ (those with a medial [t]), which cannot also be realisations of ‘budding’. Where there is a medial [ɾ], this may be a realisation either of /d/ or of /t/.

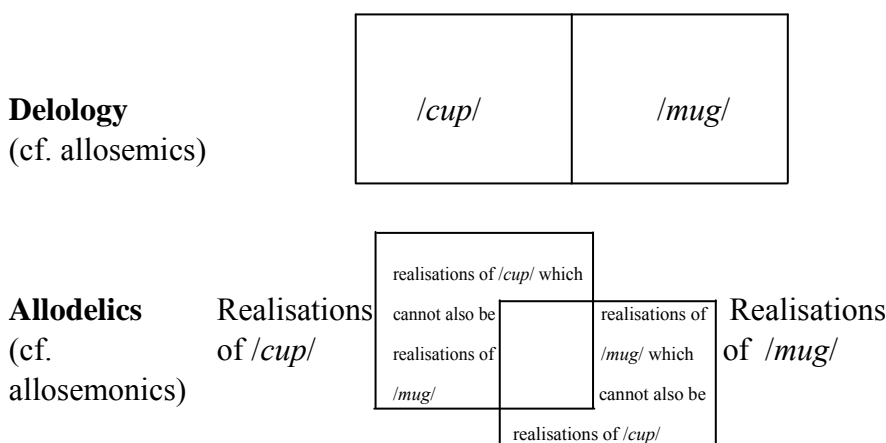
This situation of phonological discreteness vs. realisational (allophonic) overlap can be represented as in Figure 4:

Figure 4
Phonological discreteness vs. realisational overlap of /d/ and /t/ in American English



This same basic analysis can be applied to the semantics of ‘cup’ and ‘mug’, as in Figure 5:

Figure 5
Abstract discreteness vs. realisational overlap of ‘cup’ and ‘mug’ in English



5.2.1.1 Quasi-hyponymy: realisational overlap, abstract discreteness and scalar implicature

Having considered realisational overlap in relation to abstract discreteness (disjunction), I want now to consider a slightly different phenomenon: realisational proper inclusion in relation to abstract discreteness. In respect of phonology, an example is provided by Central Urban Sudanese Arabic, where final unstressed post-vocalic word-final /d/ may be realised as voiced [d] or voiceless [t], while unstressed post-vocalic word-final /t/ can only be realised as unvoiced [t] (cf. Mustapha 1982: 226; Dickins 2007: 16–18). Thus:

<i>ba^cad</i>	‘after, following’	realised as: [ba ^c ad] or [ba ^c at]
<i>ba^cat</i>	‘he sent’	realised as: [ba ^c at]

Here the realisations of *ba^cat* ‘he sent’ are, in set-theoretical terms, properly included within those of *ba^cad* ‘after, following’. This situation is distinct from that of *budding* vs. *butting* given above. In the case of *budding* vs. *butting*, while there is realisational overlap between the two words (in pronunciations involving [r]), there are realisations of both words (with [d] and [t] respectively) which are unambiguously distinct from those of all realisations of the other word.

In the case of *ba^cad* ‘after, following’ vs. *ba^cat* ‘he sent’, there are no realisations of *ba^cat* which are unambiguously distinct from those of *ba^cad*, although there are realisations of *ba^cad*, i.e. as [ba^cad], which are unambiguously distinct from those of *ba^cat*.

The case of *budding* vs. *butting* establishes the principle that realisational overlap – i.e. partial non-distinction at the allophonic level – is compatible with different phonemes – i.e. (full) phonological distinction – at the phonematic level. The application of this principle to the example of *ba^cad* vs. *ba^cat* leads to the conclusion that realisations of *ba^cad* as [ba^cat] involve realisations of the phoneme /d/ and not realisations of the phoneme /t/, while realisations of *ba^cat* as [ba^cat] involve realisations of the phoneme /t/: as in the case of *budding* vs. *butting*, phonetic identity does not necessarily imply phonological identity. (For further discussion in support of this conclusion, see Dickins 2007: 18–19.)

As is also pointed out in Dickins (2007: 18–19):

In fact, in the case of *ba^cad* vs. *ba^cat* there is also a common-sensical phonetic element to this interpretation. We do not really know what the extensional bounds are of realisations of /d/ or /t/ (or any other phoneme for that matter): all we can ultimately do is impose some reasonable, but inevitably arbitrary, limits. What I have analysed as realisations of /d/, in *ba^cad* (and other words involving unstressed post-vocalic word-final /d/) may involve different degrees of devoicing (cf. Mustapha 1982: 226 [...]). Since we can only determine the extensional bounds of realisations of /t/ on ultimately arbitrary (though reasonable) grounds, the point at which we determine realisations of /d/ (as [t]) to be indistinguishable from valid realisations (as opposed to unacceptable mispronunciations) of /t/ is also ultimately arbitrary.

This situation of phonological discreteness in combination with realisational overlap can be represented as in Figure 6:

Figure 6
Phonological discreteness vs. realisational proper inclusion of /d/ and /t/ in Central Urban Sudanese Arabic

Phonology	/d/	/t/
Allophonics	[d]	[t] <i>Realisations of /t/ ([t] only)</i>

I will now turn to what I believe to be the corresponding situation to this in semantics. Consider the following:

- (7) *A mountain is a very large hill.*
- (8) *A mountain is larger than a hill.*

Both of these statements seem fairly reasonable (5 being perhaps more reasonable than 4). They also, however, seem to be mutually exclusive (contradictory). An analysis of abstract semantic (delogical) discreteness vs. realisational (alodelic) proper inclusion, as represented in Figure 7, provides a possible answer to this conundrum.

Figure 7

Delology (cf. allosemics)	<i>/hill/</i>	<i>/mountain/</i>
Allodelics (cf. allosemics)	Realisations of /hill/	<i>Realisations of /mountain/</i>

As with the ‘budding’ / ‘butting’ example in relation to phonology and allophonics, what this analysis implies is that any entity which can be referred to as a mountain could, in extremis at least, be referred to as a hill (cf. ‘Everest is a mighty hill!’), but not every entity which could be referred to as a hill can also be referred to as a mountain.⁸ Properly speaking, we are talking here about words (signa) in particular senses (allosemes), rather than about abstract senses (delogical forms): thus, it is more coherent to talk about allosemes and their allosemonic realisations than about delogical forms and their allodelic realisations (cf. corresponding remarks made about ‘cup’ and ‘mug’; Section 5.2.1, above).

While any entity which can be referred to as a mountain might also be referred to as a hill (but not the reverse), ‘hill’ and ‘mountain’ are as abstract delogical/allosemic notions distinct, as are ‘cup’ and ‘mug’. It is for this reason that we can say what clearly differentiates a mountain from a hill (e.g. ‘a mountain is bigger than a hill’), just as we can say what clearly differentiates a cup from a mug (e.g. ‘a cup is smaller than a mug and has a bottom which is smaller than its rim’).

Consider now Figure 8, which introduces the relevance of this analysis to scalar implicature.

Figure 8

	Hyperonymy-hyponymy, and Quasi-hyponymy	Semantic overlap	Semantic disjunction
∅	√It’s big, very big *It’s big, huge *It’s warm, hot	*It’s big, useful	*?It’s big, small
‘and’	*It’s big and very big *It’s big and huge *It’s warm and hot	√It’s big and useful	*?It’s big and small
‘and not’	?It’s big and not very big ?It’s big and not huge ?It’s warm and not hot	√?It’s big and not useful	*It’s big and not small
‘but’	?It’s big but very big *It’s big but huge *It’s warm but hot	√It’s big but useful	*It’s big but small
‘not’	*?It’s big, not very big *?It’s big, not huge √It’s warm, not hot	?It’s big not useful	√It’s big not small

⁸ As with phonemes (and phonological entities more generally; cf. the discussion of the realisations of /ba^ːad/ vs. /ba^ːat/ in Section 5.2.1.1), we do not really know what the extensional bounds are of realisations of delogical entities, and by extension allosemes. All we can ultimately do is impose some reasonable, but inevitably arbitrary, limits. Since we can only determine the extensional bounds of realisations of /hill/ and /mountain/ on ultimately arbitrary (though reasonable) grounds, the point at which we determine putative realisations of /hill/, for example, to be no longer valid, but misapplications of the notion ‘hill’ is also ultimately arbitrary.

‘not’– with reversal of terms	*?It’s very big not big *?It’s huge not big *?It’s hot, not warm	?It’s useful not big	√It’s small not big
‘but not’	√It’s big but not very big √It’s big but not huge √It’s warm but not hot	√It’s big but not useful	*It’s big but not small
‘in fact’	√ It’s big, in fact very big √It’s big, in fact huge √It’s warm, in fact hot	*It’s big , in fact useful	*It’s big in fact small
‘not in fact’	*It’s big, not in fact very big *It’s big, not in fact huge *It’s warm, not in fact hot	*It’s big, not in fact useful	√It’s big, not in fact small
not just’	√It’s very big, not just big √It’s not just big, it’s very big √It’s huge, not just big √It’s not just big, it’s huge √It’s hot, not just warm √It’s not just warm, it’s hot	√It’s useful, not just big √It’s not just big, it’s useful	*It’s small, not just big *It’s not just big, it’s small

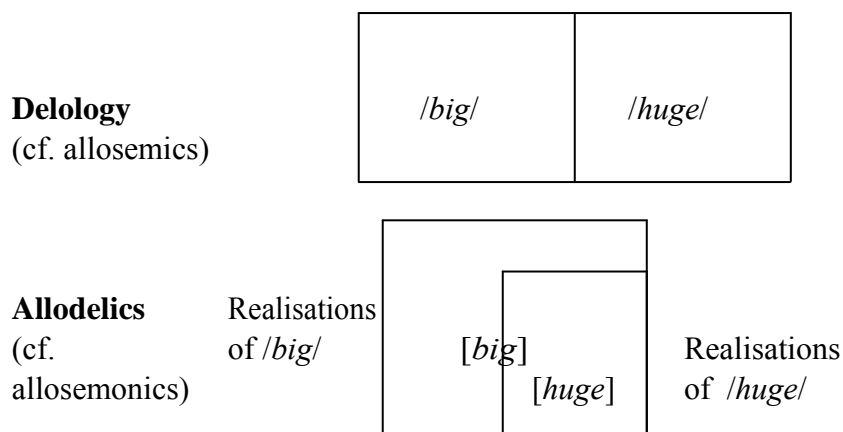
However, there is also one striking major difference, in the top row. ‘It’s big, very big’ is fine – just as are other ‘substitutive’ examples involving hyperonymy-hyponymy, given in Figure 8: ‘it’s a lorry, a juggernaut’ and ‘it’s a jet, a jumbo (jet)’. Examples such as ‘it’s big, huge’, and ‘it’s warm, hot’ seem very odd – suggesting that the relationship between ‘big’ and ‘huge’ or ‘warm’ and ‘hot’ is not one of hyperonymy-hyponymy (unlike that between ‘big’ and ‘very big’).

There is also further compelling evidence that the relationship between ‘big’ and ‘huge’ is not the same as that between ‘big’ and ‘very big’. Consider the following:

- (9) *It’s not (just) very big, it’s huge.*
(10) *It’s not (just) very, very big, it’s huge.*
(11) *It’s not (just) very, very, very, very, very big, it’s huge.*

No matter how extremely big an object is described as being – by the addition of more and more *verys*, its description as ‘huge’ seems to describe something bigger: i.e. ‘huge’ is in an abstract sense bigger than any degree of ‘big’ – i.e. ‘huge’ is abstractly (in terms of delogical form, and by extension, allosemes) discrete from ‘big’, albeit that we could, I suspect, fairly reasonably refer to any ‘huge’ entity as ‘big’. If this analysis is right, the relationship between ‘big’ and ‘huge’ is the same as that between ‘hill’ and ‘mountain’ – abstract (delogical, hence also allosemic) discreteness vs. realisational (allodelic, hence also allosemonic) proper inclusion, as in Figure 9.

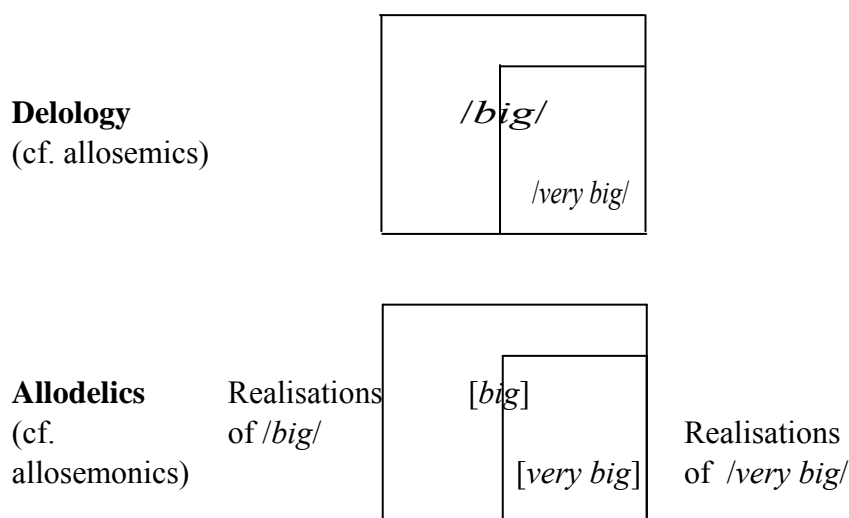
Figure 9



By contrast, ‘very big’ things are abstractly properly included within ‘big’ things: All ‘very big’ things are by definition – i.e. delogically, and hence allosemically – also ‘big’ things (but not vice versa). Realisationally – i.e. allodelically, and hence allosemonically – it also seems a reasonable claim that ‘very big’ is properly included within ‘big’: anything which can be reasonably described as ‘very big’ can also be reasonably described as ‘big’, but not vice versa. The relationship between ‘big’ and ‘very big’ can thus be diagrammed as in Figure 10 (next page).

The basic analysis in Figure 9 applies not only to the pair ‘big’/‘huge’ but also the pair ‘warm’/‘hot’. Just as ‘big’/‘huge’ (or ‘huge’/‘big’) can be expanded by adding negative-type counterparts to give the series ‘huge’/‘big’/‘small’/‘tiny’, so ‘warm’/‘hot’ (= ‘hot’/‘warm’) can be expanded to give the series ‘hot’/‘warm’/‘cool’/‘cold’.

Figure 10



There are two striking differences between these two series, however. Firstly, while the non-extreme terms ‘big’ and ‘small’ are the more basic terms in the series ‘huge’/‘big’/‘small’/‘tiny’, the extreme terms ‘hot’ and ‘cold’ are the more basic terms in the series ‘hot’/‘warm’/‘cool’/‘cold’. An obvious partial reason why ‘hot’ and ‘cold’ are more basic than ‘warm’ and ‘cool’ is that entities – objects, etc. – are only ‘warm’ or ‘cool’ within very small tolerances (having to do with partly with the ability of human beings to handle them without causing themselves discomfort or injury). Entities can, however, be hot to an unlimited degree, and cold to an apparently unlimited degree (in fact limited by absolute zero).

A second, and perhaps related, difference between the series ‘huge’/‘big’/‘small’/‘tiny’ and ‘hot’/‘warm’/‘cool’/‘cold’ is that there seems to be a more significant conceptual gap between ‘warm’ or ‘hot’ and ‘cool’ and ‘cold’, than there does between ‘big’ and ‘huge’, or perhaps ‘small’ and ‘tiny’. In abstract (delogical, and hence allosemantic) terms, ‘warm’ and ‘hot’ (also ‘cool’ and ‘cold’) seem to be discrete in the same way as are ‘huge’ and ‘big’ (also ‘small’ and ‘tiny’). Realisationally (allodelically, and hence allosemantically), however, it seems less plausible to say that ‘hot’ is properly included within ‘warm’ (also that ‘cold’ is properly included within ‘cool’) in the same way that ‘huge’ is properly included within ‘big’ (cf. Figure 10). Not all hot things (in the real world) could reasonably be described as ‘warm’ (just as not all cold things in the real world could also reasonably be described as ‘cool’). Some things are unambiguously hot and not even plausibly describable as warm (just as some things are unambiguously cold, and not even plausibly describable as cool). If this line of argument is correct, the relationship between ‘hot’ and ‘warm’ (also ‘cold’ and ‘cool’) is one of abstract (delogical, hence also allosemantic) discreteness, and realisational (allodelic, hence also allosemantic) overlap (rather than realisational proper inclusion, as in the case of ‘big’ and ‘huge’: Figure 9).

5.3 *Scalar implicature and para-referentiality*

I have so far considered cases of scalar implicature which involve hyperonymy-hyponymy (e.g. ‘big’ and ‘very big’) and cases which I have argued involve only quasi-hyponymy, i.e. where there are two discrete abstract (delogical, hence also allosemantic) entities but realisational (allodelic, hence also allosemantic) proper inclusion (e.g. ‘big’ and ‘huge’).

In the following sections, I will consider a third kind of scalar implicature which might be said to involve pseudo-hyperonymy. Scalar implicature of this third kind relies not on abstract (delogical, hence also allosemantic) proper inclusion or even realisational (allodelic, hence also allosemantic) proper inclusion, but a form of proper inclusion which emerges by consideration of what I will call here para-reference, rather than reference proper.

5.3.1 Reference and para-reference

Consider the following:

(12) *I’m going to buy bread.*

In referring to ‘bread’ here, the speaker has not said anything about whether they are going to buy bread only or bread and other things. The reference is simply to ‘bread’. Consider, now, however, the following:

- (13) A. *What did you buy at the Co-op?*
 B. *[I bought] bread.*

Here, speaker B’s statement – whether in its full form ‘I bought bread’ or the conversationally more plausible ‘bread’ – is likely to be interpreted as meaning ‘bread and nothing else’. However, in saying ‘bread’, the speaker has simply referred to ‘bread’. The additional information ‘and nothing else [of relevance in the context]’ we can refer to as a ‘para-reference’; it is not part of the reference of ‘bread’ but it can be regarded as an element of what is being referred to overall. This kind of para-reference which excludes other things we can refer to as an exclusive para-reference.

We can, for current purposes contrast exclusive para-reference with non-exclusive para-reference. Consider the following:

- (14) *When you go to the shops buy [some] bread.*

The reference of ‘bread’ here is, as in the previous examples, to bread. However, the speaker in 14 is unlikely to be interpreted as in 13 to mean ‘bread only’. Rather in this context, what is meant is ‘bread – together (possibly) with other things’. This reference, which is additional to the basic reference ‘bread’, can be referred to as a non-exclusive para-reference.

5.3.1.1 Referential excluders (exclusives)

The analysis of examples such as 13 and 14 as involving what I have termed para-reference needs some justification. The most straightforward means of justification is to consider – and reject – the obvious alternatives. The first alternative is that there is no need to distinguish between reference and para-reference (with its exclusive, non-exclusive, and no doubt other sub-types): everything can be included within reference (proper).

This view leads to rapid and extreme complications. In the case of ‘When you go to the shops buy [some] bread’ we would have to say that the reference of ‘bread’ is something like ‘bread and other things’ or ‘bread – not excluding other things’, or similar. Given a rather crude version of this approach, we would have to say that the range of references of ‘non-exclusive bread’ is ‘bread and everything else’. Similarly, the range of references of ‘non-exclusive cheese’ would be ‘cheese and everything else’. The set ‘bread and everything else’ is the same extensionally as the set ‘cheese and everything else’ – they have the same members (bread, cheese, and everything else). It would thus, under this rather crude interpretation, be impossible to distinguish the delogical form (viewed in extensional terms) of ‘bread’ from the delogical form of ‘cheese’ – or of anything in fact.

A more sophisticated version of this approach might deal with some of these problems – but at the cost, I believe, of great complication in the analysis. Even with a sophisticated ver-

sion, however, such an approach would apparently yield two senses (allosemes) for words where there is, according to all other standard criteria, only one. Thus, we would, apparently, have to say that ‘bread’ (= ‘food made from a dough of flour or meal, mixed with water or milk’: Collins English Dictionary) is one alloseme when it has the meaning (or ‘interpretation’) ‘bread only’ (‘exclusive bread’) and another alloseme when it has the meaning (‘interpretation’) ‘bread, not excluding other things’ (‘non-exclusive bread’). The attempt to include ‘para-reference’ within reference (‘reference proper’) thus appears to break down.

The second alternative to the *reference plus para-reference* analysis would be to accept the notion of reference, but to reject the notion of para-reference altogether – perhaps regarding ‘para-reference’ as merely a matter of pragmatic inference (just as one can infer from a statement ‘It’s hot in here’ uttered in the right circumstances that the speaker wants the hearer to open a window in the room where they are both sitting). There are, however, fairly compelling reasons not to do this. Consider the following (for recent pragmatic analyses of ‘only’, see Abbott 2006; Beaver and Clark 2008: 248–279; Horn 2009):

(15) *When you go to the Co-Op buy bread only.*

(16) *When you go to the Co-Op buy bread.*

If we reject the notion of para-reference altogether, we would have to say that 15 and 16 uttered in the same (equivalent) circumstances mean the same thing: they have the same reference. However, not only do 15 and 16 mean different things, in an obvious pre-theoretical sense (16 meaning, normally, that the addressee should buy bread amongst other things, and 15 meaning, absolutely, that the addressee should buy nothing except bread). More than this, if we were to say that they have the same (equivalent) reference, we would have to say that ‘only’ does not have a reference, and therefore, by extension, that ‘only’ does not have a delogical form. Yet, it seems intuitively obvious that ‘only’ (in the relevant sense, i.e. alloseme) does have a meaning (yielding a difference in standard meaning between ‘When you go to the Co-Op buy bread’ and ‘When you go to the Co-Op buy bread only’), and that this meaning should be accounted for by an analysis in terms of denotation (and reference). The attempt to reject ‘para-reference’ altogether thus also seems to break down.

The above sketch of ‘reference’ vs. ‘para-reference’ is only exploratory. I have not, for example, considered how para-reference relates to more abstract semantic notions – delogical form (and by extension alloseme). For a proper account these aspects would need to be coherently developed and justified. For present purposes, however, the notion of para-reference is sufficient.

5.3.2 Para-reference and scalar implicature

Having considered and attempted to justify the distinction between reference and para-reference, I turn now to the application of the notion of para-reference – involving pseudo-hyponymy – to scalar implicature, looking in particular at ‘some’ vs. ‘all’ and cardinal numbers (for recent pragmatic accounts of these, see Carston 1998, and Breheny 2008). Consider Figure 11:

Figure 11

	Hyperonymy-hyponymy, Quasi-hyponymy, and Pseudo-hyponymy	Semantic overlap	Semantic disjunction
∅	√It's a car, a hatchback *?It's big, huge *I know some of them, all of them *I know 3 of them, 4 of them	*It's big, useful	*?It's big, small
'and'	*It's a car and a hatchback *It's big and huge *I know some of them and all of them * I know 3 of them and 4 of them	√It's big and useful	*?It's big and small
'and not'	?It's a car and not a hatchback ?It's big and not huge ?I know some of them and not all of them ?I know 3 of them and not 4 of them	√?It's big and not useful	*It's big and not small
'but'	√?It's a car, but a hatchback *It's big but huge *I know some of them but all of them *I know 3 of them but 4 of them	√It's big but useful	*It's big but small
'not'	*It's a car, not a hatchback ?It's big, not huge √?I know some of them not all of them √?I know 3 of them not 4 of them	?It's big not useful	√It's big not small
'not'– with reversal of terms	*?It's a hatchback, not a car *?It's very big not big √?I know all of them not some of them √I know 4 of them not 3 of them	?It's useful not big	√It's small not big
'but not'	√It's a car but not a hatchback √It's big but not very big √I know some of them, but not all of them √?I know 3 of them but not 4 of them	√It's big but not useful	*It's big but not small
'in fact'	√It's a car, in fact a hatchback √It's big, in fact very big √I know some of them, in fact all of them √? I know 3 of them, in fact 4 of them	*It's big, in fact useful	*It's big in fact small
'not in fact'	*It's a car, not in fact a hatchback *It's big, not in fact very big *I know some of them, not in fact all of them *I know 3 of them, not in fact 4 of them	*It's big, not in fact useful	√It's big, not in fact small

not just'	√?It's a hatchback, not just a car √?It's not just a car, it's a hatchback √It's very big, not just big √It's not just big, it's very big √I know all of them not just some of them √I know 4 of them not just 3 of them	√It's useful, not just big √It's not just big, it's useful	*It's small, not just big *It's not just big, it's small
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As Figure 11 shows, just as quasi-hyponymy (Sections 5.2–5.2.1.1) patterns rather like hyperonymy-hyponymy, so scalar implicature involving para-reference – what I shall call ‘pseudo-hyponymy’ – patterns rather like (though not identically to) hyponymy and quasi-hyponymy.

I will consider cardinal numbers first, then go on to ‘some’ and ‘all’. Given that cardinal numbers fit fairly well with hyperonymy-hyponymy in Figure 11 (and given that this is the simplest situation represented in that figure), the first question to ask is why cardinal numbers cannot simply be analysed in terms of hyperonymy-hyponymy. According to such an analysis, ‘two’ (and numbers above two) would be properly included within ‘three’, ‘four’ (and numbers above four) would be properly included within ‘three’, etc.

This analysis is intuitively rather bizarre, suggesting that ‘four’ is a type of ‘three’ (just as a hatchback is a type of car). It also seems intuitively impossible to fit with the fact that in mathematics ‘four’ is not a type of ‘three’, or ‘three’ a type of ‘two’. In mathematics, $3+2=5$. If ‘four’ was a type of ‘three’, and ‘three’ a type of ‘two’, there would be no obvious reason why $3+2$ could not equal seven (interpreting ‘three’ as a type of ‘four’ and ‘two’ as a type of ‘three’) – or any other number (given that ‘three’, for example, would also be a type of ‘five’, or ‘six’ or ‘seven’, etc. etc.). This already seems too problematic to incorporate within a hyperonymy-hyponymy model.

Even worse, however, a form such as ‘in fact’ can co-occur not only with larger numbers, but also with smaller ones (cf. Carsten 1998). Thus:

(17) *Twelve men will be able to shift that rubble – in fact six.*

Or, rather better, but illustrating the same basic point:

(18) *A dozen men will be able to shift that rubble – in fact half a dozen.*

If we were to adopt a hyperonymy-hyponymy analysis for cardinal numbers, we would have to conclude that ‘three’ is properly included not only within ‘four’ and all other larger numbers, but also within ‘two’ and all other smaller numbers (including minus numbers?). Similarly ‘four’ would be properly included within ‘five’ and all other larger numbers, but also within ‘three’ and all other smaller numbers. By logical extension all cardinal numbers would be properly included within all other cardinal numbers – making them all synonyms, and thus destroying (by *reductio ad absurdum*) the analysis of proper inclusion (hyperonymy-hyponymy) altogether.

The second alternative analysis of cardinal numbers to consider is that of quasi-hyponymy, i.e. that ‘three’ for example is realisationally properly included within ‘four’,

but that ‘three’ and ‘four’ are abstractly (delogically) discrete. This proposed analysis also collapses because the realisations of ‘four’ (taking both larger-number and smaller-number ‘extensions’ into account) are no different from the realisations of ‘three’, or of any other number. This situation is not, therefore, like that of *ba^cad* ‘after, following’ and *ba^cat* ‘he sent’ (Section 5.2.1.1), where there are no realisations of *ba^cat* which are unambiguously distinct from those of *ba^cad*, although there are realisations of *ba^cad*, i.e. as [ba^cad], which are unambiguously distinct from those of *ba^cat*. In the case of cardinal numbers, there would be no realisational distinctness whatsoever – dictating that all cardinal numbers were synonyms of one another.

In terms of the options established in this paper, this leaves only the choice that scalar implicature in relation to cardinal numbers is a function of para-reference (pseudo-hyponymy). In fact, this is a common-sense analysis. Consider the following:

- (19) *I went to the cinema with John and Mary – not John, Mary and Paul.*
 (20) *I went to the cinema with two of them – not three of them.*

In the case of 19, ‘John and Mary’ has an exclusive para-reference – i.e. ‘John and Mary only’, and one might say in this context ‘John and Mary only’ rather than just ‘John and Mary’. Similarly, in the case of 20, ‘two of them’ has an exclusive para-reference, and one might say here ‘two of them only’ rather than just ‘two of them’. Cardinal numbers thus function in the same kind of way as does the mentioning of individuals (or other entities), allowing for either the possibility of additional entities (non-exclusive para-reference) or, as here, for their exclusion (exclusive para-reference). In the case of cardinal numbers, there is a further ‘dimension’ of para-referentiality which is opened up. Thus, I can say ‘I went to the cinema with two of them’, while not excluding other groups of people with whom I also went to the cinema. This, however, is a further complication to the analysis rather than a refutation of it.

To recap and amplify, cardinal numbers have as their reference what seems to be their reference: ‘two’ refers to two, ‘three’ to three, ‘four’ to four, etc. In addition, however, they have para-references: exclusive or non-exclusive (amongst other types, probably). In most contexts, cardinal numbers have an exclusive para-reference, and always in a mathematical context. However, they may also have a non-exclusive para-reference:

- (21) A. *I need a couple of quid.*
 B. *It’s okay. I’ve got two pounds on me.*

Here, speaker B is not saying that they have only two pounds on them. They are not using ‘two’ with an exclusive, but rather with a non-exclusive para-reference.

The same principles which apply to cardinal numbers also apply to ‘some’ and ‘all’. I will not go through the full workings to show that the relationship between ‘some’ and ‘all’ involves para-reference (pseudo-hyponymy), rather than quasi-hyponymy, or hyperonymy-hyponymy. The parallelism between cardinal numbers and ‘some’ and ‘all’ seems sufficiently established by considering the fact that one can say not only ‘I went to the cinema with John and Mary – not John, Mary and Paul’ and ‘I went to the cinema with two of them – not three of them’, but also ‘I went to the cinema with some of them – not all of them’.

Referential excluders (cf. Section 5.3.1.) are, of course, common with cardinal numbers, and may occur with ‘some’: thus, ‘I know three of them, in fact four’ (but not *‘I know only three of them, in fact four’), ‘I know some – in fact all – of them’ (but not *‘I know only some – in fact all – of them’). With cardinal numbers, ‘exactly’ is also used as a referential excluder (e.g. thus we cannot coherently say *‘I know exactly three of them, in fact four’).

Also common with cardinal numbers are referential non-excluders (i.e. the opposite of referential excluders), that is words and phrases whose meaning is not compatible with an exclusive para-reference, such as ‘at least’ and ‘at most’ (e.g. ‘I know at least three of them, in fact four’).

6. Contextually determined associative meaning: an example from Arabic

There is obviously a strong tradition from Grice onwards, that what is termed in this paper scalar implicature-based associative meaning has a pragmatic basis. It is, however, worth entertaining the possibility that even this type of associative meaning may not be entirely pragmatic, and may involve conventional elements which can vary in different languages.

Certainly, there are ways in which associative-type meaning can differ between languages which go beyond the fairly simple linguistic-semantic conventions illustrated by 19th century written Dutch *vernietigen* vs. *vernien*. A good example is provided by Arabic. Consider example 22, from the short story *ʿurs az-zain* (‘The Wedding of Zein’; reproduced in Dickins, Hervey and Higgins 2002: 95), where the Arabic original is followed by a relatively literal English translation and then a relatively idiomatic English translation.

(22) *Arabic original*

yataḥawwal al-mā’ ilā mir’ā ḍaxma muḍī’a tataḥarrak fawq šafḥati-hā ḍilāl al-naxl wa-ağšān al-šajar.

Relatively literal English translation

[...] the water is transformed into a giant shining mirror on whose surface move the shadows of the palms and the branches of the trees.

Relatively idiomatic English translation

[...] the water is transformed into a giant shining mirror on whose surface move the shadows of the palms and the branches of the other trees.

Here *šajar* ‘trees’, is a hyperonym/superordinate of *naxl* ‘palms/palm-trees’ In this context in Arabic, however, the meaning of *šajar* has to be taken to exclude that of *naxl* ‘palms/palm-trees’, i.e. in this particular context *šajar* (in the relevant allosetime) has to be interpreted as having the particular allosetime [*trees excluding palm-trees*] (i.e. the ascription R{*tree excluding palm-tree*}) – as reflected in the idiomatic English translation ‘other trees’).

Example 23 (from a short story by Anis Mansour entitled *ḥafnat turāb* ‘A Handful of Dust’, discussed in Dickins and Watson 1999: 550) illustrates the same general point.

(23) *Arabic original*

wa-hum lā yataḥaddatūn ‘ilā ‘aḥad min an-nās ... wa-lākinna-hum yudā‘ibūn al-bā‘a wa-l-mutajawwilīn

Relatively literal English translation

They don’t talk to anyone, but they joke with the sellers and the barrow-men.

Idiomatic translation:

They don’t talk to anyone, but they joke with the shopkeepers and the barrow-men.

Here, *bā‘a* ‘sellers’, is a hyperonym/superordinate of *mutajawwilīn* ‘barrow-men’ (literally ‘travelling [people]’), but in this alloeme meaning people who sell goods from a barrow or handcart); all barrow-men are sellers but not all sellers are barrow-men. Here, the meaning of *bā‘a* has to be taken to exclude that of *mutajawwilīn* ‘barrow-men’, i.e. in this particular context *bā‘a* (in the relevant alloeme) has to be interpreted as having the particular alloemon [*sellers excluding barrow-men*] (i.e. the ascription R{*seller excluding barrow-man*}) – as reflected in the English idiomatic English translation ‘shopkeepers’).

Cases in which a hyperonym/superordinate is coordinated with a hyponym are relatively frequent in Arabic (cf. Dickins and Watson 1999: 550–555 for other examples). In all cases, the hyperonym/superordinate (necessarily in the relevant alloeme) is interpreted as having a communicative contextually determined alloemon whose ascription can be characterised as R{*HYPERONYM EXCLUDING HYPONYM*}. This interpretation derives from a convention of Arabic which does not obtain in English.

7. Conclusions

In this paper I have considered three types of associative meaning – extralinguistic-based, linguistic-based, and scalar implicature-based. I have also briefly considered a fourth type of ‘sub-denotative’ meaning from Arabic involving coordinated hyperonym-hyponym pairs. I have progressively developed a model for what is meant by associative meaning, via an exposition of relevant aspects of the theory of extended axiomatic functionalism. I have also developed a *referent-plus-ascription (unascribed semantic-image correlate plus ascription)* model of ‘utterance-meaning’ on the basis of ideas put forward in Dickins 1998 (though with a better integration of these ideas into the overall theoretical model of extended axiomatic functionalism than in Dickins 1998). I have tried to show that because of its precise and integrated approach, the current model is able, via notions such as auto-hyposemony (Section 5.2), to provide accounts of utterance-meaning which are specific, adequate to the facts, and coherent.

The current paper has not attempted to provide a new account – or even to consider in any detail – existing accounts of how we understand the meaning of scalar implicatures, or other aspects of utterance-meaning. However, it has attempted to produce what I believe is a sine qua non for such an undertaking – an account of what the utterance-meanings of the relevant phenomena are. In order to understand *how* a hearer understands what an utterance means, we need to know first *what* it means: that is to say, we have to have a coherent model of utterance-meaning – and the more coherent our model of utterance-meaning, the

more we are likely to be able to provide an adequate account of how speakers/hearers understand what utterances mean.

A coherent model of utterance meaning implies also (i) a coherent model of the more abstract elements on which utterance-meaning relies, and (ii) an account of what utterances of the type being investigated might mean – since actual meaning can only be properly understood against the backdrop of the range of things which an utterance of this type might mean. This is particularly clear in respect of areas of utterance meaning such as scalar implicature: the understanding of the meaning of ‘some’, for example, on a particular occurrence of use can be regarded as ‘selected’ from the range of possible meanings which ‘some’ might have across all similar, and different, types of possible occurrence. At its most basic, this implies a model which accounts for the full extensional range of utterances of the type being investigated.

To illustrate the principles laid out in the previous paragraph in practice, we may consider first cases of abstract disjunction plus realisational overlap (e.g. ‘cup’ vs. ‘mug’; Section 5.21), as contrasted with cases of abstract overlap plus realisational overlap (e.g. ‘surgeon’ vs. ‘goalkeeper’). If we were simply to consider the set of entities in all possible worlds which can be referred to as ‘cups’, as compared to those which can be referred to as ‘mugs’, we would conclude correctly that there are some entities which can be referred to equally as ‘cups’ or as ‘mugs’. If we were similarly simply to consider the sets of entities in all possible worlds which can be referred to as ‘surgeons’, as compared to ‘goalkeepers’ we would also correctly conclude that there are some entities which can be referred to equally as ‘surgeons’ or ‘goalkeepers’. A simple possible world-based comparison of this type would lead us to conclude, incorrectly, that the semantic relationship between ‘cup’ and ‘mug’ in English is the same as that between ‘surgeon’ and ‘goalkeeper’ – a view refuted by the fact that we can meaningfully say ‘he is both a surgeon and a goalkeeper’, but not ‘it is both a cup and a mug’.

Conversely, if we were to adopt a purely abstract-based approach to utterance meaning, we would conclude that ‘cup’ and ‘mug’ are purely disjunct concepts, while ‘surgeon’ and ‘goalkeeper’ are overlapping concepts – a view refuted by the fact that there are entities in the world which can be referred to either as ‘cup’ or as ‘mug’. What is needed is a combination of the abstract (delogical, and by extension allosemic) and the concrete (or realisational, i.e. allodelic and deletic, and by extension allosemonic and semonetic). This allows us to understand semantic elements as being abstractly (delogically, and by extension allosemically) disjunct but concretely (realisationally, i.e. allodelically and deletically, and by extension allosemonically and semonetically) overlapping (as in the case of ‘mug’ and ‘cup’) as opposed to semantic elements, for example, such as ‘surgeon’ and ‘goalkeeper’, which are both abstractly (delogically, and by extension allosemically) and concretely (realisationally, allodelically and deletically, and by extension allosemonically and semonetically) overlapping. The double abstract-concrete/realisational model makes plain why pairs such as ‘cup/mug’ and ‘surgeon/goalkeeper’ behave similarly in language use in some respects but differently in others.

The same general principles apply to the different hyponymy-type relationships considered in this paper: hyperonymy-hyponymy (hyponymy proper), quasi-hyponymy, and pseudo-hyponymy (para-referentiality). The different possibilities for meaningful utterances which these display reflect both the abstract (delogical, and by extension al-

losemic) and concrete (realisational – allodelic and deletic, and by extension allosemonic and semonetic) levels.

In the case of hyperonymy-hyponymy, or hyponymy proper (as in ‘lorry’-‘juggernaut’; Section 5.1), we cannot, for example, meaningfully (truthfully) say (a) “a juggernaut is larger than a lorry”, but we can meaningfully say “a juggernaut is a very large lorry”. This reflects the analysis that ‘juggernaut’ is properly included within ‘lorry’ at both the abstract and concrete levels.

By contrast, in the case of quasi-hyponymy (as in ‘hill’-‘mountain’), we can meaningfully say both (a) “a mountain is larger than a hill” (what I have suggested is an abstract-oriented utterance; Section 5.2.1.1), and (b) “a mountain is a very large hill” (a concrete/realisational-oriented utterance; Section 5.2.1.1). This reflects the analysis that ‘mountain’ is abstractly disjunct from ‘hill’, but concretely/realisationally properly included within it.

In the case of pseudo-hyponymy, involving para-reference (as in the case of ‘three’-‘four’; Section 5.3.2) we can meaningfully say (a) “four books is/are more than three books” (cf. Section 5.2.1.1), but we cannot meaningfully say (b) “four books is an extreme case of three books” (cf. Section 5.2.1.1 – one cannot, of course, meaningfully talk about “a very large three books”; I have therefore substituted the roughly corresponding “An extreme case of three books”). This patterning reflects the fact that ‘four’ is both abstractly and concretely/realisationally disjunct from ‘three’.

The utterances discussed in the previous paragraph can be tabulated as in Figure 12.

Figure 12

	(a)-type: abstract-oriented utterance COMPARATIVE+<i>than</i>	(b)-type: concrete/realisational-oriented utterance
Hyperonymy-hyponymy: <i>abstract and concrete</i> <i>/realisational proper inclusion</i>	<i>*a juggernaut is larger than a lorry</i>	<i>a juggernaut is a very large lorry</i>
Quasi-hyponymy: <i>abstract disjunction and concrete</i> <i>/realisational proper inclusion</i>	<i>a mountain is larger than a hill</i>	<i>a mountain is a very large hill</i>
Pseudo-hyponymy: <i>abstract and concrete</i> <i>/realisational disjunction</i>	<i>four books is more than three books</i>	<i>*four books is an extreme case of three books</i>

As can be seen from Figure 12, different configurations of proper inclusion and disjunction at the abstract and concrete/realisational levels are reflected in different utterance possibilities. In the case of hyperonymy-hyponymy (abstract and concrete/realisational proper inclusion) the (a)-type comparative structure is not meaningful (true), but the (b)-type ‘very large’ structure is. In the case of quasi-hyponymy (abstract disjunction with concrete/realisational proper inclusion) both the (a)-type comparative and the (b)-type ‘very large’ structures are meaningful. In the case of pseudo-hyponymy (abstract and concrete disjunction), the (a)-type comparative structure is meaningful, but the (b)-type ‘extreme case of’ (equivalent to ‘very large’) structure is not.

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