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Hjelmslev, a forerunner of the semantic maps method in linguistic typology?

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ABSTRACT

In this paper, we show that Hjelmslev's approach to language description and crosslinguistic comparison, on the one hand, and the semantic maps model used in linguistic typology, on the other, differ significantly. Although Hjelmslev paved the way for employing graphic representations as a means to show how each language of the world subdivides the semantic continuum in its own way, he can hardly be considered as a forerunner of the semantic maps tradition. In a nutshell, Hjelmslev's schemas are meant to compare the specific organisation of individual linguistic systems, but the semantic maps method aims at unveiling semantic regularities across languages. The former targets the particular 'grid' imposed by each language on a given semantic space, but the latter abstracts away from specific linguistic systems and posits universal atoms of sense that can be organised in cross-linguistically valid networks.

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1. Introduction

In his *Prolegomena of a Theory of Language* ([1943] 1961, 52–54), Hjelmslev used two graphic representations in order to visualise the fact that each language sets its own boundaries on an amorphous semantic continuum. In a first example (Figure 1), he compares how Welsh and English respectively split up the colour spectrum, and a 'schematic confrontation shows the lack of coincidence between the boundaries' (Hjelmslev, [1943] 1961, 53):

These schemata appear in a section that discusses more broadly how the languages of the world introduce discrete boundaries in the phonetic continuum, in the morphosyntactic functions, as well as in various semantic domains.

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This article has been corrected with minor changes. These changes do not impact the academic content of the article.

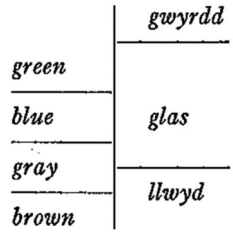


Figure 1. Lack of coincidence between the boundaries set by different languages.

Hjelmslev's schemata have been considered as a first attempt to chart systematically the relationships between linguistic units, showing crosslinguistic regularities or dissimilarities within a single domain. Despite the relative recency of semantic maps[1] (Anderson 1982, 1986; Kemmer 1993; Haspelmath 1997a, 1997b) – a method for visually representing crosslinguistic regularity or universality in semantic structure (Haspelmath 2003; van der Auwera 2013; Georgakopoulos and Polis 2018, 2022) – linguists have claimed that they are based on a tradition in comparative linguistics that goes back (at least) to Louis Hjelmslev:[2]

> Recently, the issue of applying semantic maps to lexical typology – as anticipated already in the early studies by Hjelmslev and Lazard – has also been taken up by Majid et al. (2008) and François (2008) (Cysouw, Haspelmath, and Malchukov 2010, 1)[3]

> The multivariate probabilistic effects, which reflect various salience phenomena, cannot be captured by semantic maps like Hjelmslev's [1957] 1959 or, more recently, Haspelmath's (2003) (Levshina, Geeraerts, and Speelman 2013, 826).

In this paper, we first discuss the origin of the attribution of semantic maps to Hjelmslev and show that the reception of Haspelmath's influential paper (Haspelmath 2003) in linguistics actually created a tradition that is not posited by Haspelmath himself (Section 2). We then introduce Hjelmslev's comparative method and analyse the types of visual representations that he

[1]*We are very grateful to Sémir Badir (Liège), Hans Basbøll (Odense), Eitan Grossman (Jerusalem), Frederick Newmeyer (Washington), and an anonymous reviewer for insightful comments on earlier drafts of this paper.

See Section 'Early Studies and Theoretical Foundations' of Georgakopoulos (2019). In this paper, we focus on so-called 'classical semantic maps' (van der Auwera 2008). Many observations could also apply to the proximity maps (van der Auwera 2013), but they are not discussed here specifically. For a recent comparison of the two approaches, see Croft (2022).

[2]Wälchli refers to Schopenhauer (1913), who "used overlapping circles to illustrate the non-congruence of concept across different languages", as an "early philosophical pioneer of the semantic map method" (2010, 336).

[3]Gilbert Lazard, to whom reference is made by Cysouw, Haspelmath, and Malchukov (2010, 1), is an important intermediate figure between orthodox structuralism and modern functional typology. In his contribution about "La catégorie de l'éventuel", for instance, he mentions explicitly Hjelmslev's "substance du contenu" and "forme du contenu" (Lazard 1975, 358), while anticipating many aspects of the semantic map method. We are thankful to an anonymous reviewer for drawing our attention to Lazard's early influence in this field.

used (Section 3). Finally, we compare the semantic maps model to Hjelmslev's method and conclude that, despite the fact that they both make use of visual representations, the two approaches differ so drastically that one can hardly posit a relationship between them, whether at the epistemological, methodological, or practical level (§4).

2. Building up a tradition

The first explicit mention of Hjelmslev in the literature about semantic maps is found in Haspelmath (2003). Having explained the method and its advantages based on grammatical meanings, he notes that:

> [T]he problem of multifunctionality arises in the same way with lexical meanings, so for the sake of completeness I give one example here. It involves various senses or uses of words for 'tree' and 'wood', and it comes from Hjelmslev (1963, p. 53), an important theoretical work of European structuralism. Hjelmslev compared just four languages (Danish, German, French, Spanish) and found that five different functions have to be distinguished: "tree", "firewood", "wood (stuff)", "small forest", and "large forest". The semantic map is one-dimensional, so the boundaries of the lexemes in the four languages can be conveniently represented together (as in Figure 8.19).

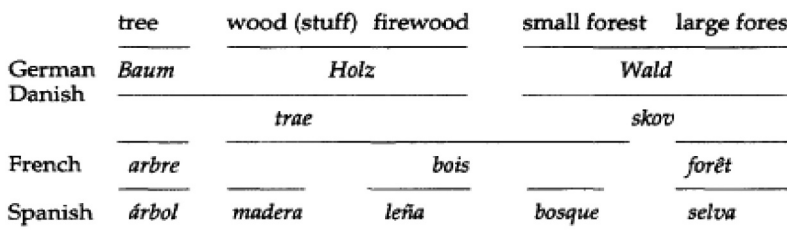


Figure 8.19. A semantic map for "tree"/"wood," and the boundaries of four languages.

> Being a structuralist, Hjelmslev used this example to show how different languages carve up the semantic space in radically different ways, but from the present perspective, the differences are not all that great. One could easily imagine the differences to be such that no non-trivial universal semantic map can be drawn. Thus, Hjelmslev's own example can be used to make a very different point, not for relativism, but for universalism of meaning (Haspelmath 2003, 237).

Haspelmath explicitly refers to the schema discussed by Hjelmslev in his *Prolegomena* ([1943] 1961, 54 = Figure 2a), which is used again in his paper entitled 'Pour une sémantique structurale' ([1957] 1970, 104 = Figure 2b):

This example is quite famous in semantic studies (see the discussion in Koch 1998). The addition of Spanish as a fourth language is not from Hjelmslev himself but comes from Koch (2001, 1153–1154, see also Koch 2005, 15–16), where the case of Spanish is mentioned. Haspelmath talks

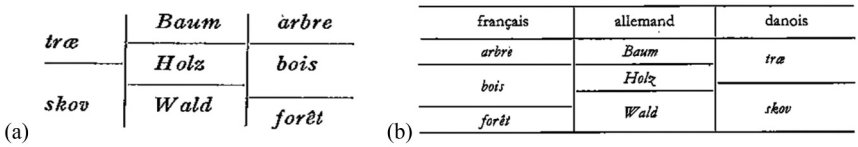


Figure 2. Comparison showing the lack of congruence between the lexical structures of Danish, German and French.

explicitly about an 'example' that 'comes from Hjelmslev', namely the different senses or uses of lexemes that express meanings such as 'tree' and 'wood'. He uses this example in order to argue for 'universalism of meaning' and not for 'relativism'. In doing so, he proves to be unaware of the epistemological and methodological differences between Hjelmslev's approach and his own use and interpretation of the example. Therefore, the relationship posited by later scholars between Hjelmslev's comparison and the semantic maps framework results from a biased reception of his argument.

This reception was anticipated and facilitated by Haspelmath himself, who downplays the divergences between the two approaches when he states that 'from the present perspective, the differences are not all that great' (2003, 237). The comparison between his table and Hjelmslev's schemata indeed reveals transformations that are not from trivial:

(1) Concepts – defined with English as a metalanguage as 'tree', 'wood (stuff)', 'firewood', 'small forest', 'large forest' – are identified as crosslinguistic invariants by Haspelmath and used as primitives to map the behaviour of lexical items in different languages.
(2) This leads to a simplification of Hjelmslev's analysis: Danish *træ* now shares a boundary with German *Holz*, which was not the case in Hjelmslev's representation (cf. Figure 2a,b), and Danish *skov* covers the same meanings as German *Wald*, i.e., '(small and large) forest', which is again not consistent with Hjelmslev's figures. This is not unproblematic, since Hjelmslev precisely chose this example to illustrate the fact that, across languages, one can observe 'incongruence within one and the same zone of purport' ([1943] 1961, 54). In his essay 'Pour une sémantique structurale', having dealt with kinship terms that are 'relativement bien définis' and make the comparison 'facile à opérer' (precisely because of the congruence across languages), he moves on with the present example and notes '[l]a comparaison se complique, mais devient d'un certain point de vue plus

> impressionnante encore, dès le moment où elle révèle un manque de congruence entre les structures examinées' ([1957] 1970, 104).

If one endorses the change in perspective proposed by Haspelmath, which involves the definition of an 'etic grid against which cross-linguistic comparison can be undertaken' (François 2008, 163), his Figure 8.19 may be turned into a lexical matrix (Figure 3) based on which a classical semantic map (Figure 4) can be plotted using the Connectivity Hypothesis (Croft 2001, 96) and respecting the Economy Principle (for a full discussion, see Georgakopoulos and Polis 2018, 3–7).

The basic assumption of the semantic maps model is indeed that language-specific patterns of co-expression point to recurrent similarities (hence relationships) between meanings across languages.[4] As such, seman-

		Lexical items			
		Danish	**French**	**German**	**Spanish**
CONCEPTS	**TREE**	*træ*	*arbre*	*Baum*	*árbol*
	WOOD (mat.)		*bois*	*Holz*	*madera*
	FIREWOOD				*leña*
	FOREST (small)	*skov*		*Wald*	*bosque*
	FOREST (large)		*forêt*		*selva*

Figure 3. Subdivision of the 'tree-wood-forest' semantic domain in four languages.

Figure 4. A classical semantic map inferred from the data in Figure 3.

[4]This is also known in the literature as 'Haiman's isomorphism hypothesis' (see Wälchli 2010, 337). To put it bluntly: identity of form reflects similarity in communicative function or meaning (see already Anderson 1982, 227–228).

tic maps should be plotted so that any language-specific item maps onto a connected region (or subgraph) of the map.

Accordingly, Hjelmslev's schemata (Figure 2a,b) may have paved the way for cross-linguistic comparisons and generalisations, but they were conceived for a quite different purpose, namely for explaining in a reader-friendly fashion the difference between linguistic *form* and *substance*, two key concepts of his glossematic theory. These diagrams show that linguistic comparison cannot be carried out based on the *substance* (the formed purport), since each language forms it in its own way. However, they do not tell us in what sense or in which way[5] *form* could be taken as ground for comparison.

What is visualised in Hjelmslev's diagram is actually a general principle underlying language description and comparison, not the method, which was offered in *La catégorie des cas* (1935–37) and in later essays (cf. Hjelmslev [1938] 1970, [1939] 1970). Section 3 is devoted to a presentation and discussion of Hjelmslev's comparative method in order to assess in Section 4 whether analogies with the semantic map model can be highlighted.

3. Hjelmslev's comparative method

In line with the basic principles of structuralism, Hjelmslev's basic insight is that linguistic comparison cannot be carried out directly, by singling out linguistic units from various languages and comparing them, since the definition of each unit strictly depends on its place within the system to which it belongs (generally, the corresponding paradigm or *category*). What can be compared are the language-specific formal articulations of individual linguistic domains (phonological, morphological, lexical, etc.), namely the grids which represent how languages organise and carve up the purport (which is captured visually by Figure 2a,b for the 'tree – wood' domain). In other words, comparison may not rely on particular units (e.g., specific lexemes), nor on specific classes of units (a morphological category) but should be based on the internal boundaries of such classes, i.e., the network of differences that defines each linguistic element.

The principles of this method were first discussed in his *Principes de grammaire générale* (1928), where he reflected upon the very foundation of a general grammar that could avoid the dangers of *squinting perspectives*.[6] The rationale for analysing the system of each language were specified in 1933 (cf. [1933] 1973) and summarised in 1934 (cf. [1934] 1972), in

[5]Commutation is the most important requisite for comparison (Hjelmslev [1943] 1961, 74), but not the only one. Its role is discussed in detail in §14, *Invariants and variants*.

[6]The linguistic description resulting from the projection of the structure of a language onto another (Hjelmslev 1935, 80).

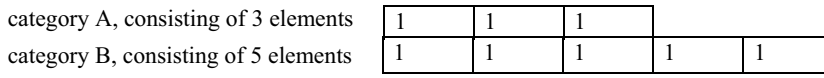
a posthumous essay. The first thorough application of these ideas is *La catégorie des cas* (1935, 1937), in which Hjelmslev proposes a comparative description of more than 15 case-systems, mostly belonging to Caucasian languages. The general procedure follows roughly three logical steps:

(1) *Analysis*: the category, already defined based on its general morpho-syntactic features ('government'), is set up by identifying all its constitutive elements (called 'taxemes'[7]) thanks to standard criteria and operations (mostly *commutation*). For example, the category of cases of Eskimo is said to consist of eight taxemes (Hjelmslev 1937, 74).
(2) *Classification*: the taxemes are distributed within an up-to-three-dimensional space – which represents a category as a system of coordinates (or parameters) – according to criteria and rules that are said to govern or influence the internal organisation of the category (mostly markedness-patterning which is assumed to be the default state of any linguistic system; see Hjelmslev 1935, 102f., 111f.). In this step, each unit receives a formal, purely positional, definition (called 'extensional definition').
(3) Reduction: taxemes are further decomposed into smaller components, which are the irreducible invariants or 'glossemes' (Hjelmslev [1943] 1961, 99–101) and represent the formal equivalent of the Praguian distinctive features.[8] Since this last step is specific to the glossematic framework and is not found in any other structural model, we will not discuss it further here. We focus on the first two steps.

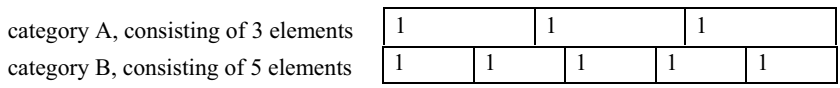
3.1. Analysing a category

The category is conceived as a perimeter whose boundaries are fixed from a cross-linguistic perspective and whose formal definition is given morpho-syntactically (see Figure 5). The general definition of the category of inflectional cases, for instance, is based on specific features that distinguish it from

[7]The proper 'cases', as content-elements, not the case-markers, called *formants*, which are their corresponding expression-elements.
[8]The reduction of linguistic units to minimal distinctive features is of course a shared methodological stance across structural approaches, yet the way glossematics carries out this reduction is specific to glossematics, because it follows Hjelmslev's assumption of glossemes as pure forms. This contrasts with the Prague school, whose conception of 'distinctive features' was substance-based. In glossematics, the analysis into glossemes is universal: their number comes from a decomposition of the number of taxemes into prime factors (see Hjelmslev [1943] 1961, 100) and their definition depends on structural phenomena within a given class of taxemes (mostly neutralisations). Glossemes may receive a substance-interpretation, yet this is not indispensable and is carried out at a different stage of the analysis. For instance, the position β on the first dimension of the case-category ('approximation – distancing') can be interpreted as denoting 'mostly proximity,' while the position α on the first dimension of the vowel-system ('anterior – non anterior') can receive the interpretation 'exclusively non anterior' (see for instance Hjelmslev [1948] 1970, 220).



a. Representation of two non-structurally-conceived categories, resulting in unequal extension



b. Representation of two structurally-conceived categories, resulting in equal extension

Figure 5. (a) Representation of two non-structurally conceived categories, resulting in unequal extension. (b) Representation of two structurally conceived categories, resulting in equal extension.

all other morphological categories. In Hjelmslev's model, case is a nominal class (also called 'extense', as opposed to the paradigm of verbal classes, called 'intense') that includes elements that can be directed (morphemes) and contract 'exclusively homonexual government'[9] This is a general definition of case, not a universal one. Case cannot be said to be a permanent and necessary feature of languages, but in those languages that display inflectional cases, the corresponding category will be defined that way. It is diagrammatically represented by *uniform extension* (see below). So conceived, a category does not coincide with the sum of its elements (compare Figure 5b with the non-structurally conceived categories of Figure 5a):

Grammatical categories are not just pure syntactic constructs. According to a hypothesis formulated as early as 1928,[10] they also have a (often very abstract) general meaning, called 'fundamental meaning' (1935). All the forms belonging to a given category can be subsumed under this meaning. For instance, the fundamental meaning of the category of cases is *direction*, which is in line with Hjelmslev's localism, and the signification of all the cases within a given linguistic system can be explained in relation to this meaning[11] As a content-substance, this meaning is the *intensional* definition of the category and is diagrammatically represented by the positive (greyish) filling of the category, while its content-form is represented by the frame (see Figure 6):

The extension of a category is cross-linguistically stable, since a formal definition invariably identifies it among the set of categories that are believed to be found in every language; what varies across languages is the internal articulation of a given category, i.e., the number of its elements and their markedness-governed distribution (see Figure 5b). The case inventory of

[9]i.e., a government which can only occur between elements belonging to the same sentence (nexus), see Hjelmslev ([1938] 1970, 157–158).
[10]The hypothesis of the meaningful content of categories, see Hjelmslev (1928, Ch. III, § I).
[11]This claim is not absolute, since the meaning depends on the value of every element within a given category.

Figure 6. Representation of a category from both an extensional (formal definition) and an intensional point of view (substantial definition).

a.

	+β	B	γ
+α	Il	Al	Mt
A	Cp	G	Er
β	Dr	Tm	Eq
B	E	Ab	Dl
γ	D	Ad	In
Γ	Ine	Ads	N

b.

β	S	(Subjective)
B	T	(Translative)
γ	D	(Dative)
Γ	G	(Genitive)

Figure 7. (a) Chechen (Hjelmslev 1937, 51). (b) English (Hjelmslev 1935, 119).

Chechen, for example, is said to consist of 18 cases, whereas the same category in Modern English is said to consist of only 4 cases (compare Figure 7a,b).

3.2. *Classification of the elements within a category*

The elements within a category are arranged according to specific principles formulated by Hjelmslev in order to account for general markedness patterns

inside the category. These principles were discussed both in *La catégorie des cas* (1935, 111–sq.) and in *Prolegomena* (Hjelmslev [1943] 1961, 99–100). The basic idea is that the value of each element is defined based on a set of coordinates (or parameters) called 'dimensions'. The category of cases, for instance, systematically includes three dimensions (see for instance Figure 8), namely (a) proximity/distance, (b) coherence/incoherence (contact vs. non-contact), and (c) subjectivity/objectivity (involvement or non-involvement of the point of view of the speaker).

Dimensions are hierarchised. The third dimension is the weakest and is rarely realised, while the first is present in every inflectional case-system (Hjelmslev 1935, 134–135). Individual languages may actualise grammatical categories in different ways as far as the number of dimensions is concerned. Chechen's case system is distributed over two dimensions, while the same category has only one dimension in Modern English (see Figure 7a,b). Yet the hierarchy of dimensions is respected across languages: a two-dimensional

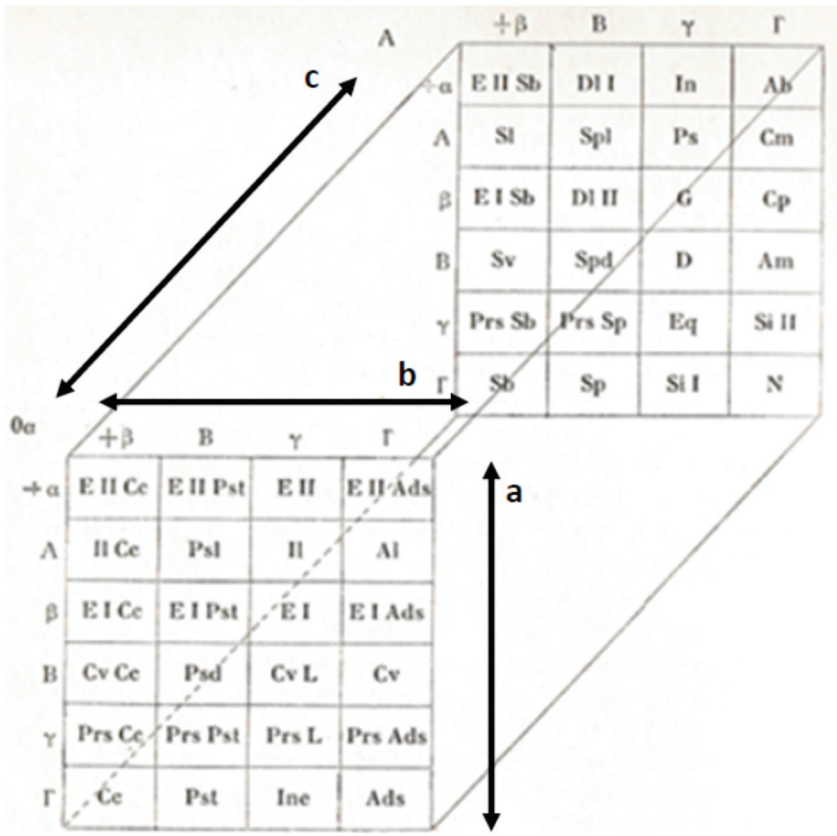


Figure 8. Lak (Hjelmslev 1937, 166).

system always involves the ideas of 'approximation/distancing' (first dimension) and 'coherence/incoherence' (second dimension), while it lacks the third dimension, and a one-dimensional system only has the first dimension ('approximation/distancing').

Within a category, each linguistic element is defined by its position with respect to the dimensions. Positions are defined following markedness-values and a set of six (and later seven) values available for each dimension; they are symbolised algebraically with Greek letters: α (representing the pure intensive or marked term, whose distribution of variants occupy a single portion of a dimension), A (the pure extensive or unmarked term, whose value can include any meaning or nuance of the dimension), β and B (respectively the contrary-intensive and contrary-extensive terms), γ and Γ (respectively the contradictory intensive and contradictory extensive terms; cf. Hjelmslev 1935). These algebraic terms are conceived as purely formal, yet they can be interpreted semantically according to their logical values.

The linguistic elements of a category can thus be defined by the position that they occupy on each dimension of a given category. For the sake of clarity, let us comment and compare two examples.

(1) The ablative in Chechen (Ab; cf. Hjelmslev 1937, 55 and Figure 9) is defined as '+1B + 2B', which is to be interpreted as 'distancing without contact'[12] On the first dimension of 'proximity-distance', the ablative is extensive in relation to other concurrent forms: its definition as B means that the ablative conveys the idea of a spatial relation in terms of a 'distancing' (the negative or contrary side of the dimension) as opposed to intensive cases such as the illative (Il) [= +1α +2β] and allative (Al) [= +1α +2B] or directive (Dr) [= +1β +2β], which convey the idea of 'approximation'. On the second dimension ('coherence-incoherence'), the ablative is also defined as B since it conveys the idea of a 'movement that does not involve any contact'. Thus, its value stands in oppositions (by logical contrariety) to the value of cases such as the elative (E), where a contact is involved, or the illative (Il), in which the idea of introjection involves some degree of contact (Hjelmslev 1937, 51), all defined as β.

(2) The ablative of Kuri is defined as '−1β +2β' and can be interpreted as expressing 'distancing by detachment' (Hjelmslev 1937, 47, see Figure 10). The first dimension is negatively oriented, it assumes 'distancing' as its semantic axis or main value, on which the ablative

[12]The semantic explanations provided by Hjelmslev are quite subtle and sometimes felt as subjective, as the process of combining (inferring) the particular meanings of the elements (polysemic state) from the abstract meaning of the category (monosemic state) is not always clear. See in this respect the description of the 'attributive' (Hjelmslev 1935, 139, 154) and 'comparative' cases (Hjelmslev 1937, 15–16; see also Hjelmslev 1937, 72). This might have been one of the reasons why the method was later adapted, with the introduction of purely formal criteria of distribution (such as 'neutralisations' or 'syncretisms').

	+β	B	γ
+α	Il	Al	Mt
A	Cp	G	Er
β	Dr	Tm	Eq
B	E	Ab	Dl
γ	D	Ad	In
Γ	Ine	Ads	N

Figure 9. The place of the ablative within the Chechen category of cases.

	+α	A	β	B	γ
÷α	El	Er			
A	Il	N			
β	Dl	G	Ab	Ab Pst	Ab Sb
B	Spl	D	Al	Psl	Sl
γ	Prl Sp	Ad	Prs Ads	Prs Pst	Prs Sb

Figure 10. The place of the ablative within the Kuri category of cases.

insists (β); on the second dimension, the ablative assumes the same value (β) with respect to other terms, despite the fact that the dimension is positively oriented. As such the main value of the ablative according to the second dimension is here the idea of an intimate contact.

This comparison shows that the ablatives of Chechen and Kuri, while sharing the same label, have different values.[13] They result from different

[13]In this sense, they are language-specific descriptive categories (as opposed to comparative concepts) in modern typological terms (Haspelmath 2010).

systems of opposition: each language moulds the same zone according to its own patterns. As such, the traditional labels – or, in Hjelmslev's terms, 'intensional' definitions – have to be replaced by a set of extensional definitions (cf. for instance the definition of the Chechen ablative as '+1B + 2B'), describing the position (hence the form) of each element with respect to all the other elements within the same category.

Note that the label 'ablative' covers only a portion of all the usages (functions) of those forms (Hjelmslev 1935, 100). This ensues from the fact that a traditional label describes an element by singling it out from the system to which it belongs, irrespective of the oppositions that it contracts with all the other elements of the same category. Since the position of each element depends on the entire system and since each linguistic system is organised differently, there is no guarantee whatsoever that an element will occupy the same position across languages, even if it has the same label. Quite the contrary, there might be systems in which the same semantic function is covered by other forms (Figure 11, Language A vs. B); or systems in which the label cannot apply at all since the said function is allocated to other cases (Figure 11, Language A and B vs. C). Figure 11 illustrates various issues arising when comparing language structures with Hjelmslev's method, namely the illusory identity in the substance of a specific element (here: the ablative-case) across languages:

To sum up, Hjelmslev's approach to language description (and comparison) is based on the following principles:

- a reliable morpho-syntactic definition of the category is provided – in order to single out a given category from other morpho-syntactically or semantically concurrent classes (e.g., case vs. gender, or case vs. prepositions, and so on);

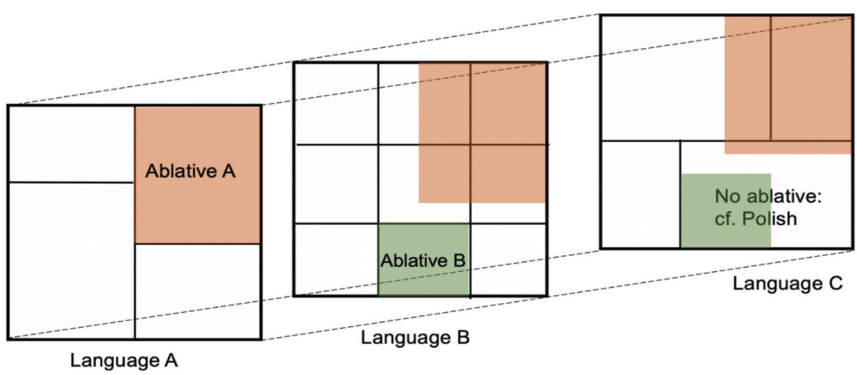


Figure 11. Putative cross-linguistic comparison of two-dimensional categories according to Hjelmslev.

- a closed inventory of elements (taxemes) may be set up (quantitative aspect);
- functional criteria, manifesting the mutual relationships among taxemes, can be identified (qualitative aspect);
- open productive classes of units can be described on the basis of closed classes (Hjelmslev [1943] 1961, 71): dimensions and algebraic definitions resulting from markedness-patterns constitute a closed set of primitives.

These methodological principles come with some other criteria of an epistemological nature. The linguistic forms, for instance, are defined as 'participative.' It means that they can have different degrees of redundant or overlapping usages, and even share some functions. Forms that contract those kinds of inclusive correlations are expressed by the corresponding symbols α, A, β, etc. (see Cigana 2022).

4. Contrasting the two approaches

Having introduced the basic principles of Hjelmslev's glossematics (§3), we can now contrast it with the semantic maps model. We consider here six criteria that are particularly relevant for conducting this comparison (see Figure 12): (1) the *domain* studied by the two models; (2) the *scope* of their analyses; (3) the nature of the *theory* and the relationship between its organisation and the data to be described; (4) the *methodology* for semantic analysis; (5) the set of *semantic primitives* that are used; (6) the *perspective* adopted (synchronic vs. diachronic); (7) the overall *epistemological stance* presupposed by the two models.

4.1. Domain

Despite the semantic interpretations that are attached to morphological categories in Hjelmslev's framework, the aforementioned morphological

	Glossematics	**Semantic maps**
1. Domain	Morphological category	Conceptual space
2. Scope	Fixed	Extendable ad libitum
3. Theory	Deductive	Inductive
4. Methodology	Monosemic	Neutral
5. Semantic primitives	Closed	Open
6. Perspective	Synchronic	Neutral
7. Epistemological stance	(Hyper-)emic	Etic (and emic)

Figure 12. Global comparison between Hjelmslev's and the semantic maps model.

categories are the proper domain of investigation. Since the number of members of a given category can vary across languages and given the fact that each system is structured differently, a general morpho-syntactic definition of each category has to be provided beforehand (see §3). Semantic maps, on the other hand, focus on a given conceptual space that is loosely defined around some key concept(s). The maps capture bits and pieces of the semantic continuum depending on the focus of individual studies.

Accordingly, the basic insight shared by both models is that the languages of the world introduce their own boundaries within a given semantic (or conceptual) space conceived as a *continuum*. The difference lies in how these boundaries are studied: glossematics starts from the *forms*, trying to describe step by step how they are organised in a given language, while semantic maps start from the *functions*, compiling all the different ways in which a meaning or function is linguistically expressed.

In order to illustrate this point, one can take the example of the 'instrumental' function. Narrog and Ito (2007) plotted a semantic map of the comitative/instrumental semantic area based on a dataset of 200 languages (Figure 13). They describe their methodology as follows: "We looked for morphemes with comitative and/or instrumental meaning in the grammars and dictionaries of these languages, and for each morpheme we listed the semantic functions that co-occurred in these morphemes. If a language had more than one such morpheme, we would list up to four per language, leaving out those morphemes which appeared to be more peripheral to comitative and instrumental function according to the language description" (Narrog and Ito 2007, 281). Any morpheme that fulfils a comitative or instrumental function (e.g., case, adposition, etc.) was therefore a suitable candidate in order to build the semantic map of Figure 13.

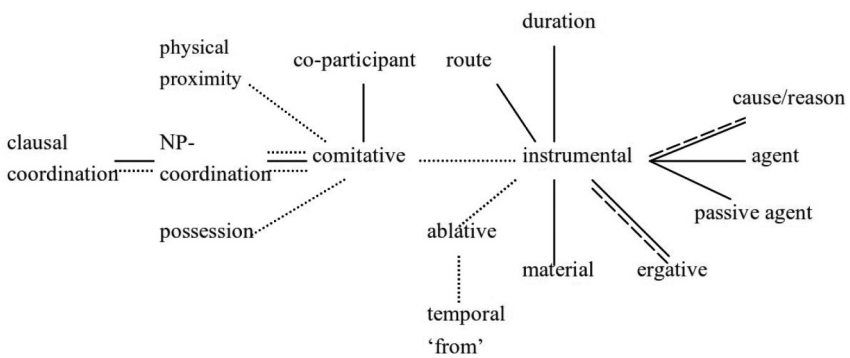


Figure 13. A semantic map of the Comitative-Instrumental domain (Narrog and Ito 2007, 283).

Within the framework of glossematics, the 'instrumental' meaning is also a particular function (content-variant or content-usage) that can be shared by different forms (such as the ablative case in Latin, the instrumental in Chechen) and rendered by different means (for instance, through cases, prepositions, etc.), but it cannot be investigated directly. The starting point and focus is on the morphological category (conceived as a set of forms), not on the meaning itself.

Semantic maps start from meanings or functions and investigate their means of expression, while in glossematics, the forms belonging to a category are analysed and their distribution interpreted semantically.

4.2. Scope

The observations of Section 4.1 make it clear that the scope of the analysis is clearly delineated (and actually predetermined) in Hjelmslev's approach: the range of linguistic facts analysed depends on a set of definitions given beforehand. The cases of a given language, for instance, are conceived as instantiations of the corresponding category, which has been defined from a morphosyntactic point of view, and the inventory of case-forms is established for each language through commutation. One can therefore easily understand that some sectors of a linguistic system, such as lexical semantics, are very difficult to tackle within glossematics: open and productive classes can hardly be reduced to closed inventories. Hjelmslev seems not to have provided much information about this question.[14]

Contrariwise, semantic maps may be expanded (or limited) ad libitum. As noted by Narrog and Ito (2007, 277): "[a]nother issue [...] is the choice of functions to be integrated into a semantic map. Here, apparently, the interests of the individual researcher are heavily reflected. Our own research suggests that even in a relatively confined area, a large number of meanings get involved." Since linguistic forms that co-express different meanings are the basis for plotting semantic maps (Section 2), the investigation of a relatively limited semantic area may lead to expanding the map to a significant number of meanings (provided that they are co-expressed in some languages of the investigated dataset). Correlatively, the same (or similar) functions may appear in different semantic maps. The function 'possession' found in the semantic map of the comitative/instrumental domain (Figure 13), for example, is also present under the labels 'internal possessor' and 'external possessor' in Haspelmath's (2003, 211–215) semantic map of dative functions (Figure 14).

[14]See Hjelmslev's idea of "conversion" in Hjelmslev [1934] 1972, 111–sq., discussed in Cigana 2016; cf. also Hjelmslev [1957] 1970.

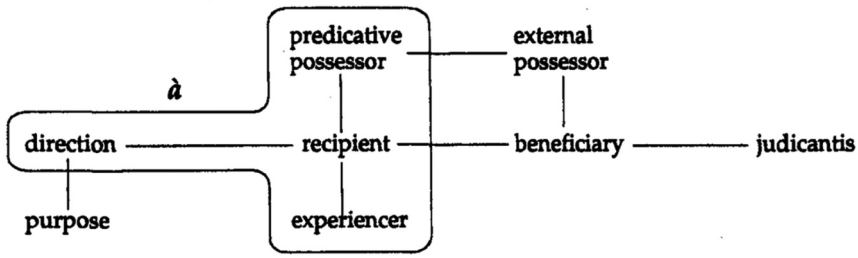


Figure 14. Semantic of dative functions (with the boundaries of French 'à').

4.3. Theory

As is well-known, glossematics builds upon a *deductive* or *top-down* procedure. It starts from a general set of premises – axioms concerning the structure of languages, mostly inheriting from the Saussurean tradition – down to particular linguistic classes. Since each linguistic variety is conceived as an instantiation of a specific combination of categories virtually present in any language, the comparison consists in observing which categories are actually realised (and how) in individual linguistic varieties. A clear distinction is made between *universal classes* ('expression', 'content', 'paradigmatic' and 'syntagmatic' axes, 'commutation', etc.), which belong to the very definition of languages and that can be seen as 'semiotic universals', and *general classes*, such as the categories of verbal morphemes, of vowels, of modulations, etc. The deductive organisation of this language theory entails that there are implicational links between the definitions of those classes. An illustration of such an implication is for example: "A language without accents will be a language without syllables. French is an example of such a language. In most of these languages without syllables the vowel and the consonant cannot be determined either" (Hjelmslev [1939] 1973, 243).

The semantic map model, on the other hand, is essentially *inductive*[15] (or 'matrix-driven' in Zwarts 2010, 378–379), as stated explicitly by the father of the method, Anderson (1982, 227): "[w]e can develop grammar/meaning spaces inductively, finding a 'map' which works consistently for many languages". The heuristic of this model reads indeed roughly as follows: if two particular meanings are regularly expressed by the same surface form in different languages, one can infer that these two meanings are similar in some way to the human mind; based on such observations, meanings can be arranged on a map so that similar meanings are close (or linked) together. Empirical linguistic data are

[15]Deductive semantic analysis is assuredly used (see van der Auwera and Temürcü 2006, 132), but is not a core feature of this model.

therefore the basis of generalisations visualised as maps, and these maps are falsifiable (Cysouw, Haspelmath, and Malchukov 2010, 1), which means that they can be emended or expanded, if additional cross-linguistic evidence contradicts an existing map.

4.4. Methodology

Hjelmslev's approach to semantic analysis can *grosso modo* be defined as *monosemic*: to each linguistic form corresponds a single 'seme', which however does not prevent a seme from having a plethora of variants. He sketches his approach as follows:

> A case, as any other linguistic form in general, does not have many different meanings: it has a single meaning; it bears a single abstract notion from which the concrete uses can be deduced [. . .] to every single unit of the system must correspond a single value (transl. of Hjelmslev 1935, 85).

According to this view, each linguistic form has one fundamental meaning or a "generic term" (see below) to which the other particular semes can be subsumed directly or indirectly, through interpretation. For instance, the "generic term" of the category of cases is said to be the idea of *direction* (a relation both spatial and logical, see §3.1), and each case has one semantic value (which represents a variation of that general idea) and marks the specificity of the case as opposed to all the others within the category. The methodological options for semantic analysis are summarized by Hjelmslev as follows:

> In order to describe the meaning [. . .] different methods can be chosen: 1) one can list the particular meanings (as long as these can be determined to be possibilities); 2) one can also focus on a domain where the division of forms is relatively easy to motivate (for instance when the masculine and the feminine are used to designate respectively a male and a female being [. . .]), conceiving all other usages [. . .] as representing a latent state, a lack of manifestation, and possibly considering the poetic or spontaneous imageries as metaphorical improvisations. 3) But we can also establish by abstraction a 'concept' or 'generic term' that subsumes all particular meanings, insofar as they are observed as possibilities. Only the last procedure is satisfying, as it complies with the general method of science. It is important to understand that the generic term does not imply any postulate of existence. It is only a matter of descriptive procedure, through which we gather and explain the greatest possible number of particular possibilities by subsuming them under a general formula (transl. of Hjelmslev [1956] 1970, 218–219).

This excerpt is of special interest since it shows how Hjelmslev would probably have envisioned the semantic maps method, likely identified with the first option (i.e., a semasiological analysis deductively listing all the meanings for a given linguistic form). Hjelmslev also insists on the fact that the generic term, i.e.,

fundamental meaning, is a matter of descriptive procedure and does not need to 'exist' in the mind of the speaker or elsewhere.[16]

The semantic maps approach to semantic analysis is neutral with respect to the monosemy/vagueness-polysemy-homonymy distinction (Haspelmath 2003, 213–214, 230–232). As Georgakopoulos and Polis (2018, 7–8) put it:

> "A *monosemic* approach would consider the different meanings of a form as being contextually driven (based on a vague or underspecified meaning); a *polysemic* account would recognize that different related meanings are associated with each lexical item; a *homonymic* position would argue that each meaning of a linguistic item on the map corresponds to a single form. By not taking sides, the semantic map model gives a way out of the problems arising in adopting one of the stances. More specifically, its neutral perspective facilitates cross-linguistic comparison, an area in which the aforementioned approaches have little to offer. The very general meanings identified in monosemic analyses and the more sophisticated (but pertaining to language-specific grammars) networks constructed in studies that favor polysemic analyses, albeit both useful in some contexts, are not well suited for comparing languages".

4.5. Semantic primitives

Both models resort to metalinguistic concepts (analytical primitives) thanks to which linguistic forms can be described. However, the nature of these concepts is very different from a qualitative and quantitative viewpoint.

In the case of glossematics, a given category receives a fixed definition, on both the morphosyntactic and semantic levels, and linguistic units are distributed (according to specific rules) within the conceptual area connected to any content-category of a linguistic system. In order to organise this area, a qualitatively invariable and quantitatively finite number of *highly abstract primitives*, symbolised by Greek letters, are used for each dimension (see the discussion of Figures 9,10 above). This is in line with the structural principle that open classes should be described on the basis of a closed inventory of elements[17] (cf. Hjelmslev [1943] 1961, 71).

In the case of semantic maps, on the other hand, the analytical primitives are 'functions', 'meanings', or even 'uses' that are identified

[16]Note that scholars who use the semantic maps method have different opinions about the concepts that they identify and plot on a map. Some linguists see them as cognitively salient (Croft 2001; Cristofaro 2010 is critical of this position), while others consider them to be merely comparative concepts (Haspelmath 2010) constructed for linguistic comparison (Haspelmath 2016, Haspelmath 2018) without any commitment to their cognitive reality.

[17]Which goes back at least to the Humboldtian conception of languages as systems that make infinite use of finite means.

based on crosslinguistic comparison. The basic principle is that 'Only those functions that receive a distinct marking in at least two languages will be represented on the map. The similarity of grammatical functions is not determined a priori but arrived at empirically (inductively) by the study of polysemous grammatical markers' (Narrog and Ito 2007, 274). This principle ensures that the nodes of a map will be linguistically relevant.[18] As such, there is virtually no limit to the number of nodes that may be added to a semantic map, and they correspond to intuitive grammatical, lexical, or even constructional meanings (see the maps of Figures 4, 13, 14).

4.6. Perspective

In the wake of F. de Saussure, Hjelmslev's perspective on linguistic data is strictly synchronic: he aims at analysing language systems at a given point in time. The semantic maps, on the other hand, have been originally conceived as diachronic representations[19] intending to capture diachronic semantic changes within a universal semantic space (e.g., Anderson 1982, 1986; van der Auwera and Plungian 1998). In research with a diachronic orientation, however, there was a strong bias towards the study of the grammatical domain. In the realm of the lexicon, the identification of synchronic crosslinguistic regularities became a prominent theme during the last two decades,[20] but semantic maps have scarcely been used for capturing graphically the way in which semantic changes actually take place. Recent exceptions are François (2022), who studies different types of colexification patterns in diachrony using semantic maps, and Georgakopoulos and Polis (2021), who combine a quantitative approach to large-scale synchronic polysemy data with a qualitative evaluation of the diachronic material in two text languages (ancient Egyptian and ancient Greek) in order to produce weighted diachronic semantic maps (Figure 15).

What is common to these studies is the stance that they take towards polysemy in synchrony and its relation to semantic change in diachrony: they are viewed as two sides of the same coin, so that synchronic polysemies provide information about semantic evolution and can even help the linguists predict potential diachronic pathways (Georgakopoulos and Polis 2022, 21–23). As such, the semantic maps method can be viewed as neutral with respect to the synchrony vs. diachrony opposition.

[18]For this principle, see further Haspelmath (2003) and François (2008). Note that it cannot be easily tested and respected when large databases of colexicalization patterns (such as *Clics*[3] [https://clics.clld.org], see Rzymski et al. 2019) are used as a source for plotting semantic maps. The concepts or meanings in such databases are indeed posited in advance (see the *Concepticon* [https://concepticon.clld.org]); they do not result from cross-linguistic comparison.

[19]For a list, see Georgakopoulos and Polis (2018, 21).

[20]For an overview of the lexical maps, see Rakhilina, Ryzhova, and Badryzlova (2022).

Figure 15. Diachronic semantic map of the domain of time (Georgakopoulos and Polis 2021, 409, Figure 13).

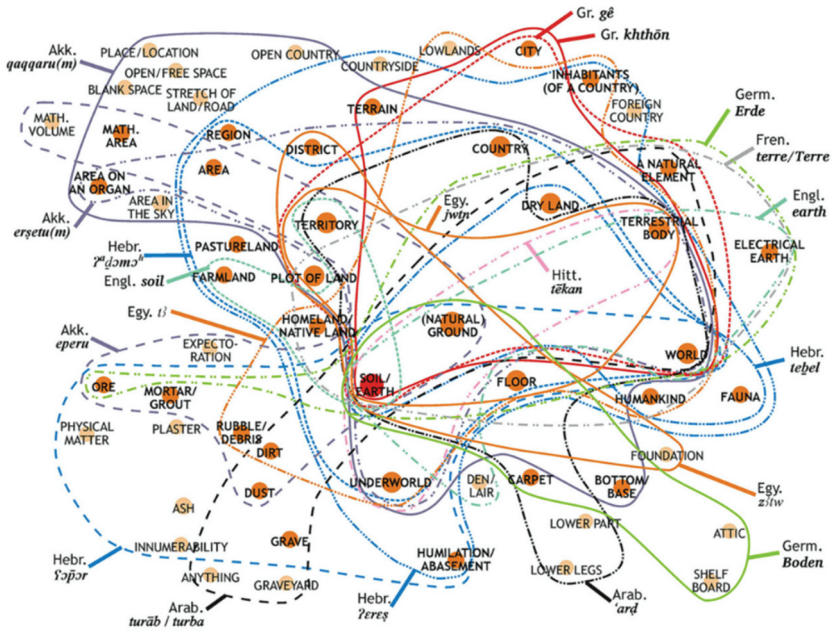


Figure 16. The semantic space of lexemes colexifying the sense 'soil/earth' in different languages (Georgakopoulos et al. 2016, 27, Figure 17).

4.7. Epistemological stance

In both models a distinction is made between the *emic* dimension (namely the described linguistic phenomena) and the *etic* dimension (namely the metalinguistic descriptive tools). Yet each model approaches this distinction rather differently. From Hjelmslev's perspective, the *etic* operations and labels ultimately depend on the general *emic* structure of languages. In this

sense, the intensional labels used in metalinguistic descriptions, for instance, are instantiations of the *emic* values found in languages. This perspective may thus be called as *hyper-emic* and it closely depends on one of the main concepts of glossematics: natural languages enable their own descriptions (cf. Hjelmslev [1941] 1973, 107). As can be observed in the examples discussed in Figures 7a,b–10, Hjelmslev's focus is definitely on the systematic description of language-specific systems, using a general method that can be applied to any language.

The semantic maps method, conversely, strives to build universally valid (i.e., language-independent) *etic networks* based on crosslinguistic comparison, and language-specific items (the *emic* viewpoint) can be mapped onto this network. In Figure 14, for example, the boundaries of French *à* are drawn on an *etic* map of dative functions. As such, the semantic maps tradition fundamentally endorses an etic approach to language comparison (cf. Haspelmath 2020). This respective epistemological positioning of the two approaches leads us to the conclusions.

5. Conclusions

Glossematics, and more broadly the structuralist tradition, envision concepts as purely differential: the linguistic units are not defined positively by their contents, but negatively by their relationship to other elements, by their distribution in a linguistic system as Saussure puts it (see Lazard [1981] 2001, 49–53 for a discussion of this question in typological perspective). François (2008, 165) accurately noted that: "[t]his conception of semantics has led to the structuralist view that the meaning of a given word in one language will never match exactly the meaning of its most usual translation in another language: its 'semantic outline', as it were, is unique to that particular system, and cannot be found identical anywhere else." This is precisely this kind of reasoning that Hjelmslev aimed to illustrate with his schemata (Figures 1 and 2a,b). In such a theoretical framework, language comparison is extremely difficult as the method targets a uniform description of different linguistic systems in synchrony, but does not lead straightforwardly to typological generalizations.[21] When practitioners of the semantic maps model mention Hjelmslev's examples (and sometimes present them as the origin of the method), they certainly fail to acknowledge the significance and impact of the theoretical framework discussed above. The kind of universalist claims targeted by the model are hardly compatible with the fundamental principles of glossematics.

On a positive note, however, this reference to Hjelmslev points to a future challenge for the semantic maps method. If it has proved to be an efficient

[21] A look at the issues visualised by Figure 11, for a single category, should make this point clear.

tool for capturing crosslinguistic semantic regularities, the comparison of the way individual languages shape a given semantic area – which is central in Hjelmslev's approach and would be a means to unveil semantic universals (Lazard 2001) – is still extremely difficult. As illustrated by Figures 15 and 16, even for a limited number of languages and a few meanings, semantic maps are very quickly overcrowded (and consequently difficult to interpret) when linguistic items are mapped onto the network of meanings. Future methodological and technical developments could open new avenues for linguistic research in this area.

Following Hjelmslev's steps, yet another avenue for future research would be to apply the same kind of method to linguistic *forms* (read: *expressions*, and not only to *contents*). Indeed, the analytical tools developed by the Danish linguist can be applied similarly to both *contents* and *forms*, as demonstrated by the description of the expression systems of French and Danish (see Hjelmslev [1948] 1970, [1951] 1973). One could therefore imagine the creation of *phonemic maps* that would chart and compare different linguistic systems on the base of a closed set of form-primitives.

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