Semantic Maps and Mental Representation

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Semantic maps are usually assumed to describe a universal arrangement of different conceptual situations in a speaker's mind as determined by perceived relations of similarity between these conceptual situations. This paper provides a number of arguments that challenge this view, based on various types of evidence from processes of semantic change and synchronic implicational universals. The multifunctionality patterns described by semantic maps may originate from processes of form-function recombination in particular contexts rather than any perceived similarity between individual conceptual components. These patterns may also originate from the fact that a particular functional principle leads to the association of a particular construction type with different conceptual situations, independently of any specific relation between these conceptual situations as such. A number of synchronic and diachronic phenomena pertaining to the very structure of individual semantic maps further reveal that, even if one assumes that these provide a representation of similarity relations between different conceptual situations, they do so only to a limited extent.

1. Introduction

This paper examines the implications of cross-linguistic multifunctionality patterns, as described by semantic maps, in terms of mental representation—that is, we shall examine to what extent these patterns tell us something about the existence between different conceptual situations of a relationship that is perceived by speakers and is arguably represented in a speaker's mind. "Conceptual situation" means here, in a maximally general sense, the semantic and pragmatic content associated with a linguistic form in a particular context, which is variously described in the literature as the meaning, function, or usage of that form.

A semantic map is a representation of a multifunctionality pattern attested in a particular language whereby the same linguistic form is used in different contexts to express a range of different conceptual situations. Languages display significant similarities in their multifunctionality patterns in that the range of conceptual situations that may be associated with a single form is typically the same from one language to another. This is commonly taken as evidence that individual multifunctionality patterns originate from some universally perceived relationship of similarity between the relevant conceptual situations—a relationship which is somehow part of a speaker's mental representation. In fact, a distinction is sometimes made, and will be maintained in this paper, between the representations of the multifunctionality patterns found in individual languages, which are referred to as semantic maps proper, and the general schemes including the range of conceptual situations that may be associated with a single form cross-linguistically, which are referred to as conceptual spaces (Croft 2001 and 2003, Haspelmath 2003). A conceptual space is assumed to correspond to a portion of a speaker's mental representation where the relevant conceptual situations are universally arranged in terms of their lower vs. higher similarity, as manifested in the multifunctionality patterns which can be defined for individual languages and described by the semantic maps.

This view was explicitly proposed with the first applications of the semantic map model and has been maintained in the literature on semantic maps ever since. For example, Anderson (1982:227) argues that if two particular meanings are often expressed by the same surface form

across a random sample of languages, then we can assume that the two meanings are similar in the human mind. Likewise, Haspelmath (2003:233) and Croft (2001 and 2003) argue that semantic maps and conceptual spaces can be taken as a direct representation of the similarity relationships between meanings in a speaker's mind.

The idea that semantic maps and conceptual spaces may tell us something about a speaker's mental representation is in fact what has made them particularly appealing to typologists. Many of the cross-linguistic patterns identified by typological research resemble semantic maps and conceptual spaces in that they reveal recurrent correlations between different contexts in terms of linguistic encoding—that is, if a context X displays particular grammatical features, then the same features will be found in other contexts, e.g. Y, or Y and Z. These are the well-known patterns described by implicational generalizations (see for example Croft 2003). However, these patterns typically pertain to the distribution of constructional schemes such as particular clause types or presence vs. absence of overt marking for particular categories. This distribution can usually be accounted for in terms of principles of correspondence between the formal features of the constructional scheme and the functional features of individual contexts rather than any specific connection between the various contexts as such. For example, Keenan and Comrie's (1977) Accessibility Hierarchy for relativization describes a number of implicational correlations between different syntactic roles, such that, if relative clauses can be formed on a role on the hierarchy, then they can be formed on other roles too. This pattern has been accounted for in terms of principles such as the relative ease of processing relative clauses formed on the various roles (Keenan and Comrie 1977, Hawkins 1994 and 2004), or the discourse function of these clauses (Fox 1987, Fox and Thompson 1990). For each role, these principles motivate the possibility vs. impossibility of forming relative clauses on that role in a language, but they do not point to any specific connection between the various roles as such. On the contrary, at least in the traditional applications of the semantic map model, semantic maps and conceptual spaces describe a pattern whereby individual forms, rather than constructional schemes, are used in different contexts, e.g. a particular case marker is used to encode a variety of semantic notions, or a particular verbal affix is used to encode a variety of temporal or aspectual notions. This naturally suggests that the relevant patterns might originate from some perceived similarity between the conceptual situations expressed in the various contexts—a similarity which is represented in a speaker's mind and triggers processes of diachronic extension of the form from one context to another.

The literature on semantic maps and conceptual spaces has however devoted relatively little attention to the actual mechanisms that bring about individual multifunctionality patterns. In what follows, some of these mechanisms will be examined in detail, in order to ascertain to what extent they support the idea that semantic maps and conceptual spaces reflect a speaker's mental representation of the relationship between different conceptual situations. To do so, a number of cases picked from the literature on grammaticalization and semantic change in general will be examined (a part of the relevant examples are also discussed in Cristofaro 2008). Although not all of these cases have been explicitly described in terms of semantic maps and conceptual spaces, they all involve cross-linguistic multifunctionality patterns. Some synchronic and diachronic phenomena concerning the internal structure of semantic maps and conceptual spaces will also be examined, and a comparison will be made between semantic maps, conceptual spaces, and implicational hierarchies. It will be argued that, while semantic maps and conceptual spaces reveal a number of diachronic principles of form-function association that are arguably relevant for all speakers, they do not actually provide evidence about a specific arrangement of

the relevant conceptual situations in a speaker's mind.

2. Multifunctionality patterns and mechanisms of semantic change

2.1 Metonymization

Several cross-linguistic multifunctionality patterns originate from a mechanism which Traugott and Dasher (2005:27-8) call metonymization. This term refers, in a somewhat loose sense, to a variety of processes of change that have been variously described in the literature as inference, conventionalization of implicature, hypoanalysis, and context-induced reinterpretation (see e.g. Heine, Claudi, and Hünnemeyer 1991:65-78, Traugott and König 1991, Bybee, Perkins, and Pagliuca 1994:25 and 285-9, Croft 2000:126-30, and Heine 2003, among others). The distinguishing feature of these processes is that an aspect of meaning that originally characterizes the larger context of occurrence of a grammatical form (permanently or as the result of occasional inferences) becomes associated with that form.

A classical example of metonymization is represented by the evolution of conjunctions expressing simultaneity into adversative conjunctions, which has been described in detail for languages such as English and German (see e.g. Heine 2003 and Hopper and Traugott 2003: Chap. 4). Individual conjunctions are first used to express simultaneity, as in (1a). As simultaneous events may be in contrast, as in (1b), these conjunctions may be reinterpreted as adversative conjunctions. Thus, an aspect of meaning that sometimes characterizes the larger context in which the conjunction is used becomes associated with the conjunction as such. At this stage, a multifunctionality pattern is obtained whereby the conjunction is used to express both simultaneity and adversativity.

English
(1)   a.   *ðaet lastede þa [xix] winttre wile Stephne was king*
        'That lasted those 19 winters while Stephen was king' (ChronE [Plummer] 1137.36)

      b.   *Whill others aime at greatnes boght with blod, Not to bee great thou stryves, bot to bee god*
        'While others aim at greatness that is bought with blood, you strive to be not great but good' (1617, Sir W. Mure, *Misc. Poems* xxi.23) (Hopper and Traugott 2003:91)

Another case of metonymization is represented by the process whereby imperfective verb forms, such as presents, come to be used to express unrealized situations in main clauses, for example in weak obligation and hortative contexts such as (2a) and (2b).

Armenian (Bybee, Perkins and Pagliuca 1994:232)
(2)   a.   *inč   lezvòv   gərèm   hascèn*
        what   language   write.1SG   address
        'In what language should I write the address?'

b. *gənank   Mez   mòt^c*
   go.PRES.1PL   POSS.1SG   house
   'Let's go to my place'

This process has been described for several languages (Bybee, Perkins, and Pagliuca 1994:230-6, Haspelmath 1998) and is triggered by the development of new progressive forms in the language. This development restricts the domain of the old imperfective forms to contexts that are somehow incompatible with progressivity because the situation being described is viewed as bounded. This is, for example, the case with futures, purpose clauses, protases of reality conditions, temporal clauses introduced by conjunctions such as "until", and complements of verbs such as "be necessary". As these contexts involve unrealized situations, this aspect of meaning comes to be associated with the old imperfective forms, which are then extended to contexts where they specifically indicate that the conceptual situation being expressed is unrealized.

Metonymization has also been invoked to account for the multifunctionality patterns involving modal verbs. Individual modal verbs can typically express various types of ability, deontic, and epistemic notions. This has been explicitly described in terms of semantic maps (van der Auwera and Plungian 1998) and has been related to a metaphorical process whereby epistemic notions are mapped onto ability and deontic notions (Sweetser 1990: Chap. 3). Based on detailed textual evidence from various stages of English, Traugott and Dasher (2005: Chap. 3) argue however that the various meanings associated with modal verbs originate from processes of inference in highly particularized contexts rather than any specific connection between the old and the new meanings as such. For example, the verb *must* originally expressed participant-internal ability, as illustrated in (3a). In certain contexts, a participant's internal ability may be related to external circumstances that enable the participant to perform the relevant action, thus permitting this action. For example, in (3b), the adressee's ability to sleep originates from the action of the speaker, who will remove all barriers to sleep. As a result, an inference of permission may arise, and this may have triggered the use of *must* in unambiguous permission contexts such as (3c), which describes a burial custom that permits the relevant actions, and (3d), where the source of permission is an individual who has authority over the permittees. In fact, it is contexts such as (3d) that give rise to the meaning of deontic necessity associated with *must* in modern English. In these contexts, an invited inference of obligation arises out of the granting or willing into being of projected enabling conditions. For example, in (3d), since the Pope's advisors are allowed to bring Equitius to Rome, it is inferred that they should bring Equitius to Rome. An unambiguous sense of obligation is found in contexts such as (3e). These contexts may trigger an epistemic conclusion about the inevitability of the relevant events (for example, in (3e) 'we must all die' > 'we will all die'), which gives rise to the meaning of epistemic necessity illustrated in (3f) and is still associated with *must* in modern English.

English (Traugott and Dasher 2005:122-9)

(3) a. *Wilt ðu, Gif Þu **most,** wesan usser her aldorema, leodum   lareow?*
       will   you   If   You   able:are be-INF our   army leader   people-DAT teacher
       'Are you willing, if you are able, to be the leader of the army, the teacher of the people?' (8th century, Genesis, 2482)

b. *Ic   hit   þe   þonne   gehate   þæt   þu   on   Heorote   **Most**   sorhleas   swefan*
   I   it   you   then   promise   that   you   in   Heorot   will.be.able   anxiety-free   sleep

'I promise that you will be able to sleep free of anxiety in Heorot' (8th century, Beowulf, 1671)

c. *þonne   Rideð   ælc   hys   weges   mid   ðan   feo   &   hyt   **Motan**   habban   eall*
   then   Rides   each   his   way   with   that   money   and   it   be:permitted   have:INF   all

'Then each rides his own way with the money and can keep it all' (c. 880 Orosius, 21.4)

d. *swa   þa   Lærendum   Þam   preostum   se   papa   geþafode*
   so   then   advising:DAT   those:DAT   priests:DAT   the   pope   granted

*þæt   Equitius   **moste**   beon   gelæded   to   Romebyrig*
   that   Equitius   should   be   brought   to   Rome

'So then the pope granted to those priestly advisors that Equitius should be brought to Rome' (c. 1000 GD 35.19)

e. *Ealle   We   **moton**   sweltan*
   all   We   Must   die

'We must all die' (?8th century Exodus 12.33)

f. *He   **Moste**   kunne   mcuhel   of   art*
   he   Must   know   much   of   art

'He must know much of art' (c. 1300 (?1250) Floris (Cmb), 521)

The mechanisms of change described so far, which are representative of metonymization processes in general, differ substantively from those that follow from the general assumptions of the semantic map model. The latter are represented in Figure 1. A form X, originally associated with a conceptual situation A, comes to be associated with a conceptual situation B because speakers establish a direct connection between A and B. This is taken as evidence that A and B are located in adjacent positions in a speaker's mental representation.
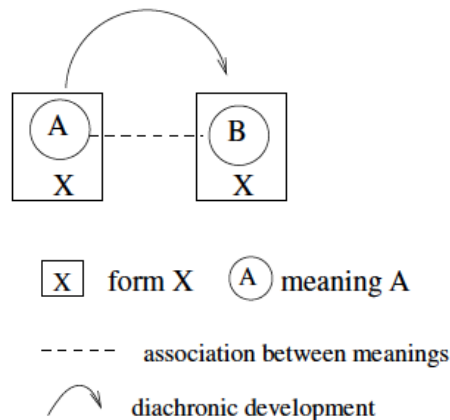
Figure 1: Diachronic extension in the semantic map model

Metonymization processes, on the other hand, can be described as in Figure 2. A form X, which is initially associated with a conceptual situation A, comes to be associated with a conceptual situation B because B is either part of the global meaning C of a complex expression Y of which X is a component, or can be inferred from C anyway. In this case, then, a direct connection is established between a particular form and a particular conceptual situation, but there is no direct connection between this conceptual situation and the conceptual situation originally associated with the form.

X form X   (A) meaning A

········   form–meaning association
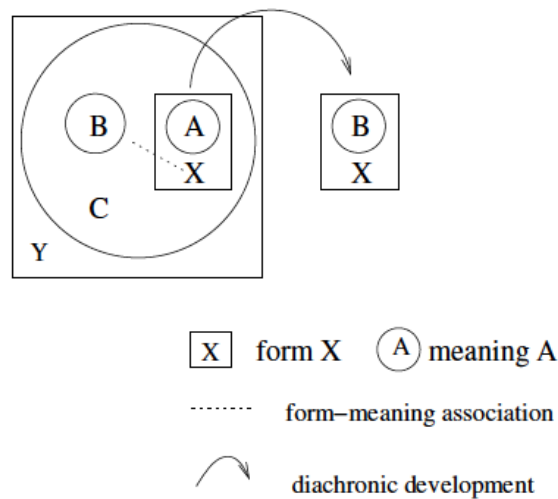
        diachronic development

Figure 2: Metonymization

This scenario involves a local process of form-meaning redistribution within complex expressions rather than a process of association based on a perceived relationship between the relevant conceptual situations. For example, the use of imperfective forms to specifically indicate that particular situations are unrealized does not originate from any perceived similarity between imperfectivity and unrealized situations (in fact, imperfective forms are originally used to express both realized and unrealized situations). Rather, imperfective forms come to express unrealized situations because, due to the development of new progressive forms, their use becomes restricted to contexts involving unrealized situations, and they acquire the relevant aspects of meaning from these contexts.

   Similarly, the development from temporal to adversative conjunction and the development of the various meanings associated with modal verbs are independent of any perceived relationship between the conceptual situations expressed in the old and the new contexts where the relevant forms are used. What happens, rather, is that, in some of the original contexts of occurrence of the forms, particular meanings may be inferred that become associated with the forms as such, and this determines the extension of the forms to new contexts involving these meanings.

   Thus, metonymization reveals which processes of form-meaning redistribution may take place in a complex expression rather than any specific relationship of similarity between particular conceptual situations. This does not exclude the possibility that speakers may perceive such a relationship. In fact, in some metonymization processes, the various conceptual situations that become associated with a single form are actually quite similar to each other. This is, for example, the case with the evolution of *must*, as well as of other modal verbs (see Traugott and Dasher 2005: Chap. 3 for an extensive discussion of such cases in English and Mandarin Chinese). The point however is that, insofar as the association of a particular form with different

conceptual situations is due to a metonymization process, the perceived similarity between these conceptual situations (if any) does not play any role in the association. The association is based on the fact that the relevant conceptual situations co-occur in particular contexts, not on the fact that they are related in a speaker's mental representation. It follows that, if the multifunctionality patterns described by semantic maps originate from metonymization, these patterns cannot be taken as evidence for any specific arrangement of the relevant conceptual situations in a speaker's mind.

2.2 Generalization

Another mechanism which may give rise to cross-linguistic multifunctionality patterns is what Bybee, Perkins, and Pagliuca (1994:81-7; 289-93) call generalization. Generalization is the loss of some of the meaning features associated with a grammatical form, with consequent expansion of the range of appropriate contexts of use for that form.

Generalization has been argued to play a prominent role in grammaticalization in that many processes of grammaticalization originally interpreted in terms of metaphorical extension have been argued to result from generalization. For example, as is well-known, motion verbs give rise to futures, which is the case with the English construction *be going to*, and locative constructions give rise to progressives, as is the case with the Ewe construction in (4) ((4a) and (4c) are the source and the target construction respectively, while the star in (4b) indicates a reconstructed stage).

Ewe (Heine 1993:121-3)

(4) a. *Kofí   le   xɔ   me*
         Kofi   be.at   house   inside
         'Kofi is in the house.'

     b. * *Kofí   le   xɔ   tu-tu-´   Me*
            Kofi   be.at   house   build-build-NOMIN Inside
            lit. 'Kofi is in the building of a house'

     c. *Kofí   le   xɔ   tu-´m*
         Kofi   PROG   house   build-PROG
         'Kofi is building a house'

These developments have often been accounted for in the literature in terms of a "TIME IS SPACE" metaphor. However, as has been observed by Bybee, Perkins, and Pagliuca (1994:25; 291-2) and others, the temporal meaning is present in the constructions expressing the spatial notions from the beginning. Futures originate from constructions indicating that the subject is moving towards a place where a certain activity will take place ("subject is going to verbing"), which implies the notion of futurity. Progressives originate from constructions indicating that the subject is located in a certain place involved in an activity ("subject is at verbing"), which implies that the subject is involved in the activity. Thus, the development from spatial to temporal and aspectual notions

takes place in constructions where these notions are combined through loss of the spatial meaning.

A similar analysis has been proposed by Heine, Claudi, and Hünnemeyer (1991:65-78) for the well-known meaning shifts whereby terms that originally designate body parts come to be used to express spatial, temporal, and possibly quality relations, as illustrated in (5).

(5)   object > space > time > quality (Heine, Claudi, and Hünnemeyer 1991:65)

Heine, Claudi, and Hünnemeyer (1991:65-9) argue that at least some of these meaning shifts involve contexts where the old and the new meaning are simultaneously present, and the old meaning is deactivated. For example, in (6b), the term 'back' can be interpreted as referring either to a body part or to the location of that body part. If the meaning of location becomes prominent, then the shift from body part term to spatial relation term takes place.

Ewe (Heine, Claudi and Hünnemeyer 1991:65-6)

(6)   a.   *é-pé*   *Megbé*   *fá*
           3SG-POSS   Back   be.cold
           'His back is cold'

      b.   *dzra*   *xɔ -á*   *pé*   *megbé*   *ɖó*
           prepare   house-DEF   of   back   ready
           'Prepare the back wall of the house! / Prepare the place behind the house!'

      c.   *é-le*   *megbé*   *ná-m*
           3SG-be   behind   to-1SG
           'He is behind me (spatially)'

The implications of generalization processes for semantic maps and conceptual spaces are similar to those of metonymization processes. Generalization can be described as in Figure 3: given two distinct components A and B of the complex meaning associated with a form X, A is deactivated while B becomes prominent so that the form comes to express B independently of A.
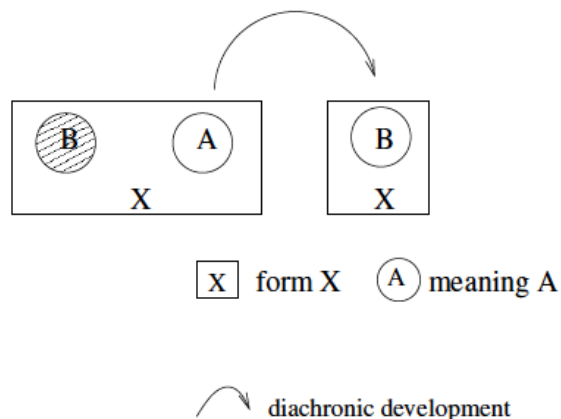

Figure 3: Generalization

As in metonymization processes, the shift from the old to the new meaning is not determined by any specific connection that speakers establish between the two meanings as such, but rather by the fact that the two meanings co-occur in particular contexts (that is, in this case, the two meanings are combined in the complex meaning associated with a particular form). For example, anterior forms give rise to past forms through elimination of the feature of current relevance, not because of any specific relationship that speakers establish between anteriority and past as such. In fact, the notion of past appears to be completely independent of anteriority in that past actions may or may not have current relevance. Similarly, if the development from spatial to temporal constructions originates from generalization, constructions involving spatial notions acquire temporal and aspectual meanings because these meanings are inherent to the complex meaning of the construction, not because of any specific relationship between space, tense, and aspect that is perceived by speakers and is represented in a speaker's mind. Once again, then, if the patterns described by semantic maps and conceptual spaces originate from generalization processes, these patterns reveal how speakers may recombine the formal and the conceptual components of a complex expression, but they are not evidence of any specific arrangement of the different conceptual components in terms of mental representation.

3. The internal structure of semantic maps and conceptual spaces

A number of diachronic and synchronic phenomena pertaining to the internal structure of semantic maps and the corresponding conceptual spaces suggest that, even if one assumes that semantic maps and conceptual spaces reveal relationships of similarity between different conceptual situations, they do so only to a limited extent.

The literature on semantic maps and conceptual spaces has long pointed out that the processes of diachronic extension that bring about individual multifunctionality patterns are incremental, that is, a form encoding a particular conceptual situation is not extended simultaneously to both adjacent and nonadjacent conceptual situations on a conceptual space. Rather, the form is extended to adjacent situations before it is extended to nonadjacent situations, that is, given the conceptual space in (7),

(7)   A B C D

a form encoding A will be extended to B before it is extended to C and D (see e.g. Croft, Shyldkroft, and Kemmer 1987 and Haspelmath 1997:129).

In principle, such a pattern could originate from two mechanisms. First, there might be sequential processes of extension of a particular form from the same conceptual situation to other conceptual situations, e.g. a form could be extended first from A to B and then from A to C and from A to D. Second, there might be chains of processes of extension where the same conceptual situation is the target of one process and the source of another, e.g. a form is extended from A to B and from B to C rather than from A to both B and C.

The literature on semantic maps and conceptual spaces often does not specify which of these two mechanisms is responsible for individual multifunctionality patterns. If however there were sequential processes of extension from the same conceptual situation A to other situations B, C, and so on, there would be no obvious reason why, in order to be extended to nonadjacent conceptual situations, a form should be extended to adjacent conceptual situations first. In the

semantic map model, extension processes are motivated by the relative degree of similarity between the relevant conceptual situations, and adjacency on a conceptual space reflects higher similarity. All that this implies is that, if the same form is used to encode nonadjacent, and therefore less similar conceptual situations, then it should be used to encode adjacent, and therefore more similar conceptual situations. This does not exclude that a form may be simultaneously extended to both adjacent and nonadjacent conceptual situations. An analogy with relativization can be made here. The accessibility to relativization of different syntactic roles is arguably motivated in terms of the relative ease of processing the relative clauses formed on those roles (Section 1). This implies that, if a language can form relative clauses that are more difficult to process, then it can form relative clauses that are easier to process. This does not mean, however, that, in order to form relative clauses that are more difficult to process, a language must first go through a stage where it can only form relative clauses that are easier to process, and this pattern is not usually found cross-linguistically.

The idea that the same conceptual situation is the target of an extension and the source of a subsequent extension provides, on the other hand, a natural explanation for why, in order to be extended to C, a form must be extended to B first. This scenario is in fact supported by the diachronic evidence for the development of individual multifunctionality patterns. For example, in the evolution of English *must* described in section 2.1, the various functions of the verb develop in different contexts to which the verb has been previously extended. Similar patterns have been described for a variety of other phenomena, e.g. the evolution of tense and aspect systems (Bybee, Perkins and Pagliuca 1994), or that of intensifiers, reflexives, and markers of derived intransitivity (König and Siemund 1999).

This scenario also provides a clue for some synchronic aspects of individual semantic maps. Haspelmath (2003) provides the semantic maps in Figure 4 to describe the range of conceptual situations associated with dative markers such as the English preposition *to* and the French preposition *à* (the connecting lines in the figure are meant to emphasize the conceptual closeness between the connected situations, as also indicated by the adjacency of these situations on the maps: Haspelmath 2003:60).
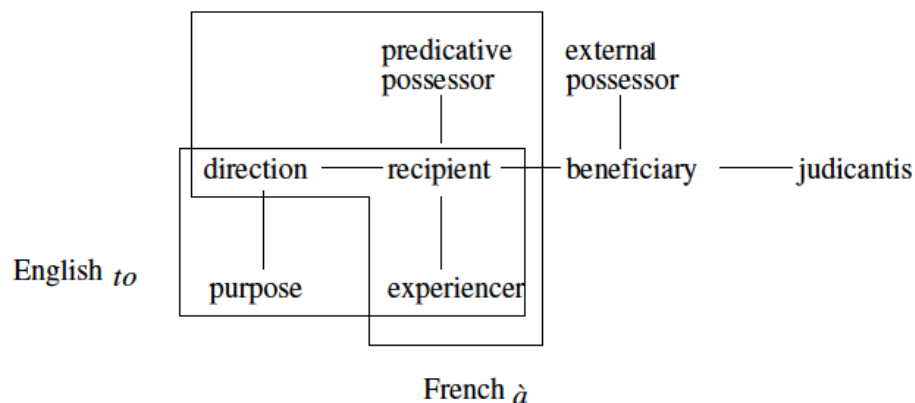

Figure 4: Semantic maps of typical dative functions (Haspelmath 2003:213-5)

French *à* is used for the two adjacent nodes direction and recipient, as well as for experiencer and predicative possessor, which are not adjacent to direction, but it is not used for purpose, which is adjacent to direction. If the use of *à* for experiencers and predicative possessors had originated from its use for direction (as in the first of the two diachronic scenarios outlined above), one would have to assume that nonadjacent, and therefore less similar conceptual situations may be

associated in terms of linguistic encoding even if adjacent, and therefore more similar conceptual situations (in this case, direction and purpose) are not. The distribution of *à* can however be naturally accounted for if one assumes that there are separate developments from direction to purpose, from direction to recipient, and from recipient to experiencer and predicative possessor. In this case, what is relevant for each extension process is only the relationship between the two conceptual situations involved in the process, so the relative degree of similarity between direction, experiencer, and predicative possessors poses no problem.

The fact that that processes of diachronic extension may only involve adjacent situations on a conceptual space implies however that these processes provide information about possible connections between conceptual situations only for a subset of the situations included in the space. If a form is extended from A to B and then from B to C, this shows that there may be a connection between A and B and one between B and C, but there is no evidence of a connection between A and C. Furthermore, the extension of a form from B to C may be completely independent of the fact that the form has been previously used for A or has been extended from A to B.

Thus, if the various processes of extension are assumed to be motivated in terms of a universal arrangement of the relevant conceptual situations in a speaker's mind, the conceptual space shows that A is contiguous to B and B is contiguous to C, but it does not tell us anything about the reciprocal position of A and C. The only information that the conceptual space gives us is that the distance between the two must be higher than that between A and B or B and C. In this respect, however, the conceptual space does not contribute to advancing our knowledge of the relationship between A and C any more than it does for the relationship between A or C and any other conceptual situation, D, E, and so on, that is not on the conceptual space but is arguably part of a speaker's mental representation.

Further evidence that semantic maps and conceptual spaces reveal possible connections between only a subset of the relevant conceptual situations is provided by the fact that, in some cases, the structure of the semantic maps that define a conceptual space can only be accounted for if one assumes that there actually is no connection between the situations that are nonadjacent in the space. König and Siemund (1999) propose a conceptual space encompassing body parts, intensifiers, reflexives, and derived intransitivity, including middle and passives, as illustrated in Figure 5. This conceptual space is meant to describe the fact that, cross-linguistically, reflexives may be encoded by means of the same forms used for intensifiers, and derived intransitivity may be encoded by means of the same forms used for reflexives. The relevant forms typically originate from body part terms (the arrows in Figure 5 describe the diachronic processes of extension of individual forms from one conceptual situation to another; although König and Siemund do not have any arrows from reflexives to middle, the forms used for the former may come to be used to express the latter, as described in detail, for example, in Kemmer 1993: Chap. 5).

Body parts $\Rightarrow$ Intensifiers $\Rightarrow$ Reflexives

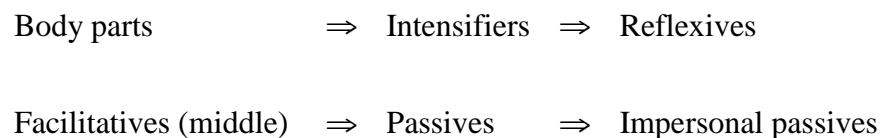Facilitatives (middle) $\Rightarrow$ Passives $\Rightarrow$ Impersonal passives

Figure 5. The conceptual space for intensifiers, reflexives, and derived intransitivity
(König and Siemund 1999:60)

König and Siemund (1999:61) observe that, if a language uses the same form both as an intensifier and as a reflexive, that form will not be used as a marker of derived intransitivity, that is, the conceptual space in Figure 5 corresponds to semantic maps of the form in (a) and (b) in Figure 6, rather than semantic maps of the form in (c) (the star preceding this type of map in the figure is meant to indicate that the relevant multifunctionality pattern does not seem to be attested in the world's languages).

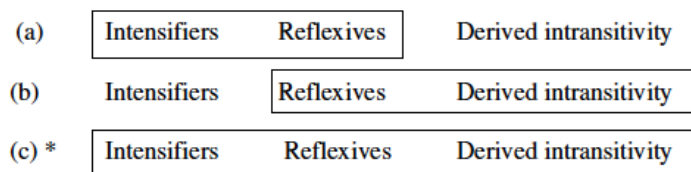| (a)	Intensifiers	Reflexives	Derived intransitivity
(b)	Intensifiers	Reflexives	Derived intransitivity
(c) *	Intensifiers	Reflexives	Derived intransitivity

Figure 6: Semantic maps for intensifiers, reflexives, and derived intransitivity

In principle, such a phenomenon could be the result of two diachronic scenarios. First, it could be the case that forms used as intensifiers evolve into reflexives, but not into markers of derived intransitivity, or at least not usually. In this case, markers of derived intransitivity would originate either from sources other than intensifiers or reflexives, or from reflexives that were not originally intensifiers. However, while there is evidence that some markers of derived intransitivity did not originate from intensifiers or reflexives (Kemmer 1993:197), the overall evidence about the evolution of these forms is limited (König and Siemund 1999:55), so in many cases it cannot be ruled out that markers of derived intransitivity originated from former intensifiers. Another possibility is that individual forms evolve from intensifiers to reflexives and from reflexives to markers of derived intransitivity, but the latter process only takes place when the form has lost its intensifier function. Evidence in support of this scenario comes from the fact that various languages display forms that are used as reflexives and markers of derived intransitivity, but were originally intensifiers (see the discussion of Nilotic languages, particularly Acooli, in Kemmer 1993:193-5).

    Both of these scenarios suggest that there is some incompatibility between the intensifier function and derived intransitivity such that the fact that a form is used as an intensifier prevents the extension of that form to the expression of derived intransitivity (even if the form is used in other functions that may otherwise trigger the extension process, e.g. as a reflexive). This is in line with a general tendency that has been observed for grammaticalization processes, one whereby the conceptual properties of the context in which a form is originally used may persist in the course of grammaticalization and influence the development of that form (Hopper and Traugott 2003:115-26). If this hypothesis is correct, however, it means that speakers do not establish any association between intensifiers and derived intransitivity. Thus, even if the two can be included within the same conceptual space because they may both be encoded by means of the same forms used for reflexives, there actually is no connection between them in a speaker's mental representation.

    The fact that speakers may not establish any specific connection between some of the conceptual situations included in a semantic map or conceptual space is not per se evidence against the hypothesis that semantic maps and conceptual spaces provide a picture of a speaker's mental representation. Insofar as there are recurrent processes of extension involving at least some of the conceptual situations on the map or space, these processes may be assumed to be based on perceived relationships of similarity between the relevant conceptual situations that are part of a speaker's mental representation. These relationships, however, only pertain to the

conceptual situations for which there is a direct diachronic link. Although this fact is quite different in nature from those discussed in regard to metonymization and generalization phenomena, it confirms the basic implication of these phenomena, namely that semantic maps and conceptual spaces are best regarded as a representation of particular diachronic processes rather than a picture of a speaker's mental representation at the synchronic level.

4. Semantic maps, conceptual spaces, and typological hierarchies

Some remarks are now in order concerning a development of the semantic map model that, though quite different in nature from the original applications, reflects the same basic assumptions. In a number of recent publications, Croft (2001, 2003) has used the semantic map model to account for the distributional patterns found for particular constructional schemes, not just individual forms, cross-linguistically. These patterns are those described by typological hierarchies, e.g. the animacy hierarchy in (8).

(8)   first/second person pronouns > third person pronouns > proper names > human
          common noun > nonhuman animate common noun > inanimate common noun
          (Croft 2003:130)

The animacy hierarchy governs the distribution of a variety of grammatical phenomena such as, for example, the presence vs. absence of number inflection for different noun phrase types. If a noun phrase type displays a certain number of inflectional distinctions, then the noun phrase types to the left of it on the hierarchy will display at least as many inflectional distinctions. Croft (2003:133-5) argues that these patterns correspond to a universal conceptual space that encompasses the various noun phrase types on the animacy hierarchy. Higher vs. lower contiguity between noun phrase types on the conceptual space depends on the relative degree of animacy of their referents and determines the use of individual constructional schemes, e.g. plural inflection for different noun phrase types in different languages. This yields the cut-off points found for the hierarchy in individual languages, which correspond to the semantic maps for plural inflection in those languages. This is illustrated in Figure 7, where the boxes represent the semantic maps that can be defined for different languages with regard to the distribution of plural inflection, while the reciprocal position of the various noun phrase types corresponds to a conceptual space where these noun phrase types are arranged in terms of animacy.
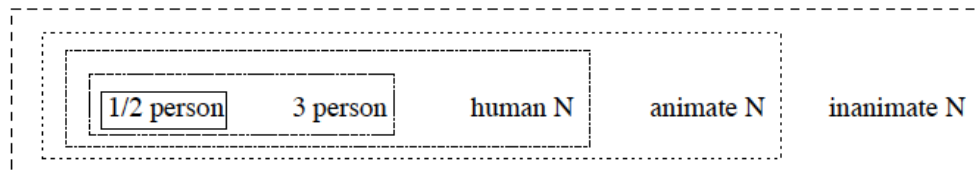

Figure 7: Semantic maps of plural inflection in various languages (Croft 2003:134)

This approach is obviously different from traditional applications of the semantic map model in that the relevant conceptual situations are not expressed by the same form but rather by the same constructional scheme. In this case too, however, the assumption that the distribution of individual constructional schemes can be dealt with in terms of semantic maps and conceptual spaces is motivated insofar as there are recurrent cross-linguistic associations between the same conceptual situations in terms of linguistic encoding, in that a single constructional scheme is

used for the same range of conceptual situations from one language to another. This suggests that speakers might perceive a relation between these conceptual situations and that the arrangement of these situations in a typological hierarchy might correspond to a universal arrangement that is specifically represented in a speaker's mind. In fact, Croft (2001:92-102; 2003:133-55) argues that the conceptual spaces and semantic maps corresponding to individual typological hierarchies provide a representation, respectively, of universal and language-specific aspects of a speaker's linguistic knowledge. The universal aspects involve knowledge of the reciprocal arrangement of different conceptual situations, as represented by conceptual spaces, while the language-specific aspects involve knowledge of the way in which these situations are encoded in the speaker's language, particularly which situations are encoded by the same constructional schemes, as represented by semantic maps. The conceptual situations that are in adjacent positions in typological hierarchies and the corresponding conceptual spaces typically display a number of similarities. For example, the structure of the animacy hierarchy reflects the degree of similarity to the speech act participants, in that non-first and non-second person humans are the most similar to the speaker and the addressee, other animates are the next most similar, and inanimates are the least similar (Croft 2003:137).

As mentioned in Section 1, however, the various hierarchies that have been identified in the typological literature can usually be accounted for in terms of functional principles such as frequency or processing ease. These principles provide a motivation for why particular constructional schemes may be used to encode particular conceptual situations, but are independent of any specific connection between these situations in a speaker's mind.

For example, the presence vs. absence of inflectional distinctions has been accounted for in terms of higher vs. lower frequency of the relevant grammatical categories, in that inflectional distinctions will be easier to remember for a more frequent category, or in terms of semantic compatibility or appropriateness of the relevant inflection for particular grammatical categories (Croft 2003:112-3). If these analyses are correct, then the presence of the same inflection for different grammatical categories is due to the fact that, for each category, there is a correspondence between the use of the inflection and the frequency of the category. This provides an explanation for why the inflection may develop or be lost for particular categories, that is, a diachronic process (see Croft 2003:240-4 and Cristofaro 2008 for similar observations about the diachronic implications of typological markedness patterns). However, this process originates from the frequency of individual categories, not any specific connection between the various categories that is represented in a speaker's mind at the synchronic level. Thus, this is another case where the specific phenomena that bring about a particular multifunctionality pattern do not provide evidence about the arrangement of the conceptual situations involved in that pattern in terms of mental representation. This does not exclude that the arrangement of particular conceptual situations in a typological hierarchy might correspond to a universal arrangement of those situations in a speaker's mind. If the phenomena that define the hierarchy originate from factors other than a possible connection between the relevant conceptual situations, however, the existence of such an arrangement cannot be postulated based on the hierarchy as such.

5. Concluding remarks

Semantic maps and the corresponding conceptual spaces are generally regarded as a means to gain insights into the reciprocal position of different conceptual situations in a speaker's mental

representation.

Yet, there are at least two mechanisms that lead to cross-linguistic multifunctionality patterns and are independent of any specific relationship between the relevant conceptual situations in a speaker's mind. In metonymization and generalization processes, the conceptual situations that come to be associated with a particular form are already present in some of the original contexts of occurrence of the form, either as the result of inferences, or as proper components of the meaning originally associated with the form. Thus, the multifunctionality pattern originates from a process of recombination between conceptual components and formal components in these contexts rather than any perceived similarity between individual conceptual components. In the multifunctionality patterns described by typological hierarchies, the same functional principle leads to the association of a particular construction type with different conceptual situations, independently of any specific relationship between these conceptual situations as such. It follows that, if the multifunctionality patterns described by semantic maps and conceptual spaces originate from either of these two mechanisms, these patterns cannot be regarded as evidence of a universal arrangement of the relevant conceptual situations in a speaker's mind.

A number of synchronic and diachronic phenomena pertaining to the very structure of individual semantic maps also show that semantic maps and conceptual spaces might not actually provide a representation of similarity relationships that speakers establish between different conceptual situations, or in any case might do so only to a limited extent.

All this suggests that the theoretical assumptions underlying the semantic map model should be revised. Rather than providing a representation of universally perceived relationships of similarity between different conceptual situations, as in Figure 1, semantic maps and conceptual spaces may reflect a number of diachronic mechanisms whereby speakers create novel constructions out of existing ones (in metonymization and generalization processes) or associate particular construction types with particular conceptual situations anyway (in the case of the patterns described by implicational hierarchies). This is illustrated in Figures 8 and 9. These figures represent the fact that there are diachronic processes whereby a construction develops out of another (Figure 8), or a construction type is associated with different conceptual situations because of the same functional principle (Figure 9). Contrary to Figure 1, however, in these figures there is no specific link between the relevant conceptual situations as such.
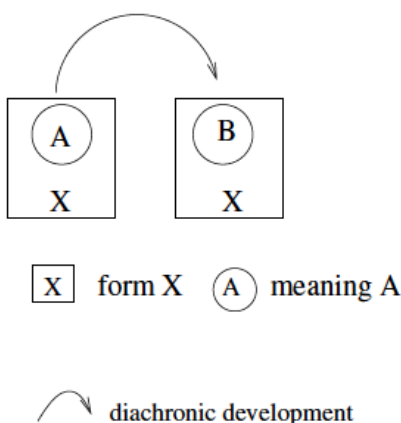

Figure 8: The implication of semantic maps revisited
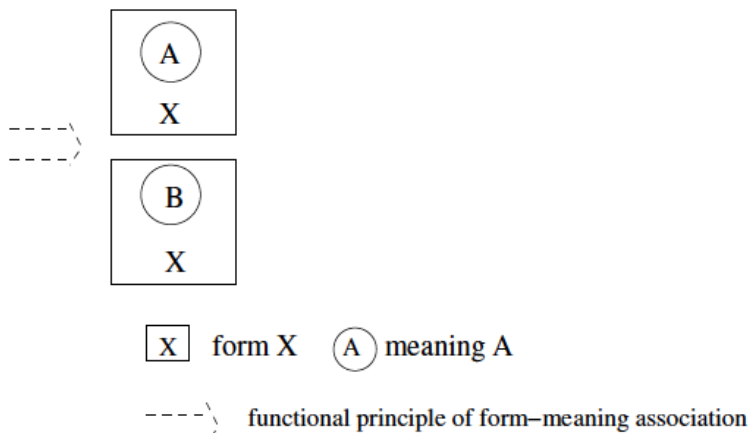(metonymization and generalization processes)

Figure 9: The implications of semantic maps revisited
(implicational hierarchies)

Insofar as the diachronic mechanisms that they reveal can be assumed to be valid for all speakers, semantic maps and conceptual spaces do cast light on universal aspects of grammatical organization in a speaker's mind. These aspects, however, pertain to the principles that govern the creation of novel constructions at the diachronic level, independently of synchronic grammatical representation in a speaker's mind. This view is consistent with a position that has become increasingly prominent within the typological community, according to which linguistic facts do not provide us with direct evidence about grammatical representation in a speaker's mind (Croft 1998, Haspelmath 2004), and universals of language are found in the principles of form-function correspondence that govern the creation of novel constructions rather than in any synchronic property of a speaker's mental representation (Dryer 2006a, Dryer 2006b, Croft 2001, Cristofaro to appear, among others).

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