

**PART VI**  
 –  
**DIACHRONY**

**INTRODUCTION**

Why is the diachrony of spatial items so special? Why did it attract so much attention in the last centuries? It seems that, as we said in the previous sections, spatial words – which are by the way often best described in functional rather than geometric terms – can take on all kinds of meanings. Of course, semantic and pragmatic extensions are not restricted to spatial words: evolutions from TIME to various logical meanings such as CAUSE, CONSEQUENCE, CONCESSION are very frequent indeed (Dancygier & Sweetser 2000, Marchello-Nizia 2007, 2009). Besides, as we will see in section VI.1, spatial markers have various possible origins. However, the frequency and variety of semantic extensions having a spatial starting point is quite overwhelming, be they temporal (VI.2) or abstract (VI.3).

**VI.1. ORIGIN AND EVOLUTION OF SPATIAL MARKERS**

**VI.1.1 ADNOMINALS**

We deal here with relational markers, spatial nouns, and adpositions, to the exclusion of toponyms and verbs. Deictics are dealt with in section VI.1.2. Our goal is to give an account of their origin –what type of word, with what meaning?– and some possible outcomes: what do adpositions or deictics become if they grammaticalize further?

**VI.1.1.1 ORIGIN of adnominals**

Svorou (1993, sample of 55 languages)

<b>Body parts</b>			
Eye, face, forehead, mouth, head, breast, chest	FRONT	Chest, waist	BETWEEN, MIDDLE
Back, buttocks, anus, loins	BACK / UNDER	Eye, face	TO
Flank, ribs, abdomen, heart, ear	SIDE	In hand	FROM
Mouth, forehead	EDGE	Heart, body	NEAR, BESIDE
Heart, stomach, blood, mouth, neck	INSIDE	Head	TOP

In Heine’s survey (1989, on a sample of 125 African languages), body parts are by far the most frequent source of relational markers, especially for FRONT and BACK. The association of ‘head’ words with ON is pervasive (other lexical sources, like ‘shoulder’, are marginal).

Some languages seem to rely exclusively on body parts for the purpose of lexicalizing spatial relations (e.g. Western Nilotic languages of the Nilo-Saharan family; Heine 1989: 98).

The importance of the body for spatial words in language was also noted by Cifuentes Honrubia (1989: 34), Lyons (1977), Cassirer (1972: 124)...: the human body with its parts is the referential system to which all spatial distinctions are brought back.

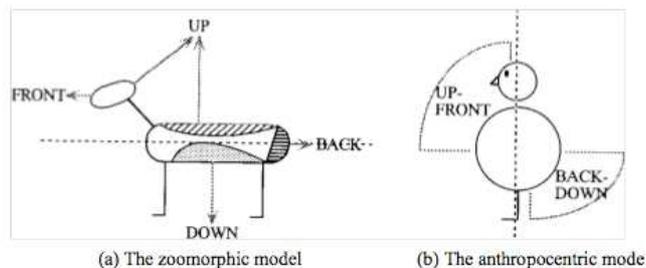
An example of noun > adposition grammaticalization following this trend is Ewe *megbé* ‘behind, after, mentally retarded’ (Heine et al. 1991: 172-3): OBJECT/PERSON ‘back of body’ (possessive marker, NP) > OBJECT ‘back part’ (possessive marker optional, NP) > OBJECT/SPACE ‘place behind’ (possessive marker optional, NP/AdvP) > OBJECT/TIME (id.) > SPACE (possessive marker absent, AdvP) > TIME (id.) (and further semantic evolution > QUALITY ‘retarded’, possessive marker absent, AdjP). Since constructions associated with OBJECT and SPACE are sometimes identical (cf. the optionality of the possessive marker), *megbé* may refer in the same sentence to a part or a region:

(1) *dzra xɔ-á fé megbé qó.*

Prepare house-DEF POSS back ready

‘Prepare the back wall of / the place behind the house.’ (Heine et al. 1991: 162)

Body parts involve two models: an **anthropomorphic** one (by far dominant) and a **zoomorphic**<sup>1</sup> one, which is typically based on a quadruped’s body, as is apparent from the fact that its mapping from body parts to regions follows a characteristic pattern: back (not ‘head’) > UP / TOP, head > FRONT, buttocks, anus > BACK, belly > DOWN / BOTTOM. According to Heine, the zoomorphic model is characteristic of pastoralist societies (1989: 91-2) and is never exclusive of the anthropomorphic model. However, Svorou observes that the zoomorphic model is also found in non pastoralist societies (for ex. in the Mixtec culture, cf. Brugman 1983).



Environmental landmarks			
Sky, heaven	TOP	Further bank	OPPOSITE
Ground, earth, soil	BOTTOM, UNDER	Dam	ACROSS
Shore, land, house, hole	INSIDE	Shore, coastline	ALONG
Track, trail, footprint	BACK	Riverside	SIDE
Doorway, field	OUTSIDE, FRONT	Canyon	MEDIAL (VIA)
Road	VIA, THROUGH, TOWARDS		

NB: the ‘landmark’ quality of *footprint* may seem less obvious.

<sup>1</sup> The term *zoomorphic* was suggested by Haspelmath.

An example of noun > adposition chain following these lines is Zulu *phezulu kwa-* ‘on, on/at the top of’ in e.g. *Inkomishi iphezu kwetafula* ‘The cup is on the table’, which comes from the noun *izulu* ‘sky’ (Taylor 1996: 287, 304).

Heine (1989) notes that UNDER is frequently expressed with words meaning ‘ground’, ‘earth’ or ‘soil’ and exemplifies a rather exceptional case where the landmark model constitutes the major source of lexicalization of a relational concept. The landmark model is also an important lexical source for ON, although to a lesser extent than for UNDER (with words meaning ‘sky’, ‘heaven’ etc.). For ex., Bantu languages typically exhibit the ff pattern:

- ON < ‘sky’
- UNDER < ‘soil / earth / ground’
- IN < ‘belly / stomach’
- FRONT < ‘eye / face / forehead / breast’
- BACK < ‘back’

Verbs			
Be at, sit, live	AT	Pass	VIA
See, take, go, come	ALLATIVE	Fall	DOWN
Exit, leave, go	ABLATIVE	Rise, climb	UP
		Enter	INTERIOR

“Co-verbs” of serial verb constructions are a major source of adpositions. They may evolve into adpositions along the following stages:

Serial-verb > co-verb (the co-verb can still be found in its predicate function) > adposition (where this function has been lost).
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In Ewe, the criterion for distinguishing prepositions and the verbs they have evolved from is their non occurrence with the habitual suffix *-na* (Ameka & Essegbey 2006).

Peyraube (2006) argues that a handful of Chinese directional verbs function as “grammatical elements” (prepositions) of “directional constructions”. They disallow any conjunction between V1 and V2 (for ex. *paojin* ‘run+enter’ i.e. ‘run in’ or *paochulai* ‘run+exit+come’ i.e. ‘run out (this way)’). These verbs form a closed set (*shang* ‘go up’ > ‘up, on’; *xia* ‘go down’ > ‘down’; *jin* ‘enter’ > ‘in’; *chu* ‘exit’ > ‘out’; *qi* ‘rise’ > ‘up’; *hui* ‘return’ > ‘back’; *guo* ‘pass’ > ‘over’). Two other verbs can function as directionals (*lai* ‘come’ > ‘hither’; *qu* ‘go, thither’):

- (2) *fēi-chū yī zhī māotóuyīng.*  
 fly-exit one owl

‘An owl flies out.’ [*chū* ‘exit’ > ‘out’]

In European languages, spatial (simple and complex) adpositions are commonly based on the anthropomorphic and environmental model, as well as on verbs:

- anthropomorphic: English *in front of*, Old French *lez* ‘to the side of’ (< Latin *latus* ‘flank’), Catalan *a la vora de* ‘near’ (< Latin *os, oris* ‘mouth’), German *im Herzen* + *G* ‘in the heart of’, etc.
- environmental: Italian *fuori* ‘outside’ (< Latin *foris* ‘door’), *tramite* ‘through’ (< Latin *trames* ‘path’), Catalan *damunt* ‘above’ (< Latin *mons* ‘mountain’), etc.

- verbs: French *vers* ‘towards’ (< Latin *verto* ‘turn’), *après* ‘after’ (< Latin *pressum* ‘squeezed, pressed’), Occitan & Catalan *tocant (a)* ‘near’ (< Late Latin *\*toccare* ‘hit’), Latin *secundum* ‘along’ (on *sequor* ‘follow’), *sursum* ‘above’ < *subvorsum* ‘upside down’ on *subvertere* ‘upend’.

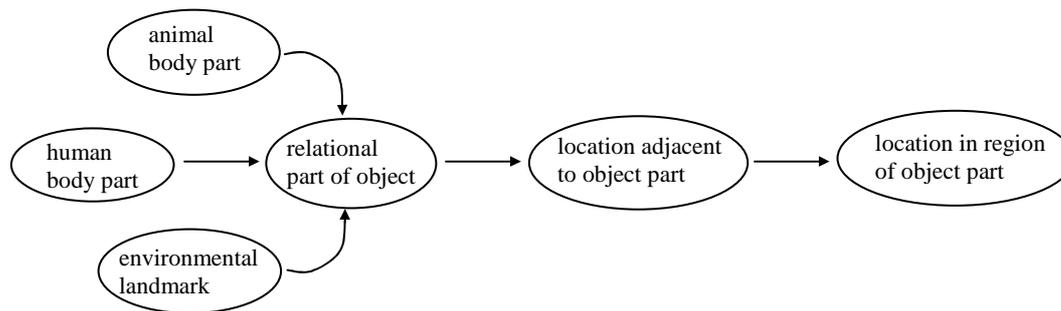
However, the zoomorphic model is, to my knowledge, not attested.

Other grammaticalization chains are possible, e.g. **Adjective > adverb > adposition**: *bassius* ‘lower’ > Iberian Romance *bassiu(m)* > Sp. *bajo*, *debajo* and Port. *baixo*, *debaixo* ‘under, below’. Lat. *inferā / superā parte* > *infra / supra*.

### VI.1.1.2 FROM LEXEMES TO ADPOSITIONS AND BEYOND

#### Semantic evolution of noun-based spatial markers

Svorou (1993: 90):



Ex.: English *front*: 13<sup>th</sup> century: ‘forehead’ (< Latin *frons*); 14<sup>th</sup>: extended to intrinsic parts of objects, for ex. buildings; 17<sup>th</sup>: *in the front of*: location adjacent to (in contact with) intrinsic part; 18<sup>th</sup> century: location near the front part of an object. > *in front of* (phonological and morphological reduction as a result of grammaticalization).

Similar evolution reconstructed for Swahili *mbele* ‘front’ (< *mu-* locative class prefix + *\*-bele* ‘breast’, still found in the animal body part noun *kiwele* ‘udder’; Heine 1989: 101-2)

> relational part of object:

- (3) *mbele ya gari lake ni nyeusi.*  
 front of car his is black

‘The front part of his car is dirty.’

> adjacent location:

- (4) *taa ziko mbele ya gari.*  
 lamps are front of car

‘The lights are on the front part of the car.’

> location in the region of the relational part:

- (5) *gari liko mbele.*  
 car is front

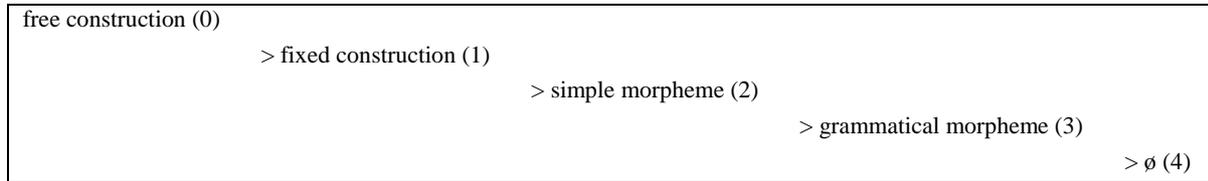
‘The car is in front.’

A similar example (Breast>Front) is found e.g. in Medieval Italian: *a rimpetto di* “(lit.) at the breast of” > “in front of, opposite”.

Semantically, the grammaticalization of a body-part into an adposition entails a process of schematization, as demonstrated by Svorou; this is the case for instance of *à côté de* “to the side of”, which initially designated the *sides* and now simply means that an object is near another one, with no notion of front/back.

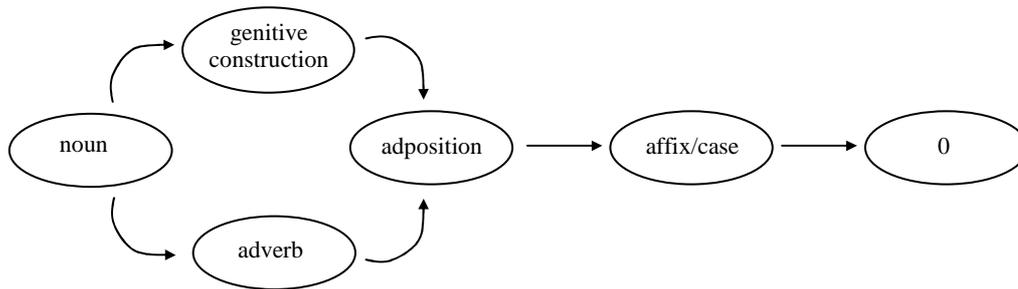
### Grammaticalization and categorial evolution of noun-based spatial markers

The evolution from lexical items to adpositions and beyond could be described as follows (following Lehmann 1985: 311):



Hoffmann (2005) adds the possibility of **grammaticalization by analogy**, for complex adpositions, on the basis of an existing construction. He shows that, in English, complex adpositions can develop according to two very different patterns, ‘normal’ grammaticalization, i.e. a slow process involving all typical features of grammaticalization, or grammaticalization by analogy, which goes much faster, and is not characterized all grammaticalization features, especially frequency (ibid: 140 sqq.).

Svorou (1993: 101) & Heine (1989: 109) argue that the evolution of noun-based spatial markers goes through a branching path. Adpositions may either issue from adverbs or from nominal genitival constructions:



According to Svorou (1993):

- Adpositional constructions derive from genitive constructions if they have the forms: (Prep GEN N) or (Prep-GEN N) or (N GEN PostP).
- Adpositional constructions derive from adverbial constructions if they have the forms: (Prep N-GEN) or (Prep N) or (N-GEN PostP) or (N PostP) (Svorou 1993: 104).

Thus, in Latin, most of the recently coined prepositions come from adverbial uses of nouns, generally in genitive constructions such as [Adv (= inflected noun) + [NP.GEN]] such as *causā* + genitive ‘because of’. The complement sometimes takes another case; *cōram* ‘openly, in public’ for instance is followed by a noun in the dative as in *cōram generō meō* ‘in the presence of my son-in-law’ (Meillet 1948: 521-7). The evolution from genitive construction to adposition can be illustrated with Spanish *encima de la mesa* > *encima la mesa* (both attested), from Latin *cyma* ‘bud of cabbage’ (< Greek *kūma* ‘swollen thing’). Cf. also Lat. *ripa* ‘bank’ > Sp. adv. *arriba* > complex prep. *arriba de* ‘above’.

The evolution that leads from genitive constructions to adpositions sometimes goes in the reverse direction. In Italian, the prep. *sotto* ‘under’ can be integrated into a genitive construction (*al di sotto del livello del terreno* ‘under the ground level’, *il di sotto* ‘the part below, the underside’).



- (10) Ø        *ka-na-ngalbi-u*  
 (him) from-I-run-PAST  
 ‘I ran away from (him).’

They argue that, at a more advanced stage of grammaticalization, the postposition would remain in preverbal position in spite of the fact that its argument is overt, as is the case for *yu* ‘with’:

- (11) *naing taata ngabang yu-i-siik-I nguu-ki*  
 my father silkgrass with-he-come-TNS house-in  
 ‘My father brings (< come+with) the silkgrass (PATIENT) in the house.’

Such “incorporated relational preverbs” (as they call them) correspond to applicative constructions in other languages.

Nichols (1986) labels this process “headward migration” and gives examples in Chechen and Abkhaz (but she argues that migration can be triggered even if the adposition’s argument is overt; cf. also Lehmann 2002: 91<sup>2</sup>).

Imbert (2009) claims that Homeric Greek exhibits the same pattern: there are relational preverbs whose argument takes the same case as the corresponding preposition (*kata* ‘down’ is analyzed as a directional satellite, not as a relational preverb: it does not govern an argument):

- (12) *toi méga teíkhos huper-kat-ebe:san homílo:i*  
 DEM.NOM.PL great.ACC wall.ACC over-down-walk.AOR.3PL throng.DAT  
 ‘(The Trojans) who had got down over the great wall in their multitude.’ [the prep. *huper* takes an ACC]

“Incorporated relational preverbs” no longer command the same case as their prepositional counterpart. They represent a more advanced stage of grammaticalization:

- (13) *táphron d’ ek-dia-bántes oruktè:n*  
 ditch.ACC LNK out-through-walk.PART.AOR.3PL digged:ACC  
 ‘So they walked through and out (from) the digged ditch.’ [the prep. *ek* commands the GEN]

There is thus a cline of grammaticalization, from “cliticized preverbs” to “incorporated relational preverbs”.

Other possible outcomes include **articles**, in particular Genitive > Partitive particle (Romance *di, de*), more rarely Genitive > Indefinite marker (French *des*, cf. Carlier 2007).

Adpositions, in combination with verbs or clauses, can develop uses as **conjunctions** or **aspectual markers**, for instance locative adposition > progressive marker (Heine, Claudi & Hünnemeyer 1991). Such evolutions are attested in Abkhaz (Bybee et al. 1994: 130), in many African languages, and also in European languages: see English *to* + infinitive, *a-* in *He’s a-coming* (though the origin of this construction is not that clear, cf. Bybee et al. 1994: 132), the complementizer uses of *for* (Van Gelderen 2010: 135) and *but* (Brinton 1996: 60)... Romance has its share, see French *de* + infinitive, *en* + gerund, Romanian *a* + infinitive.

Postpositions can grammaticalize in **case endings**: examples can be found in Albanian, Ancient Greek (*-de*), etc. The status of given morphemes is sometimes hard to determine, cf. Spencer (2008:49): “Hungarian nouns don’t have a true case system. Rather, nouns bear inflectional markers which have the functions of adpositions in other languages, and which differ from the true postpositions of Hungarian only in relatively low-level morphological properties (...). The cases, in other words, are

<sup>2</sup> Lehmann (2002: 92) makes the further suggestion that preverbs with cross-referencing indices may evolve to agreement markers, on the basis of a comparison between Swahili noun class prefixes and Abkhaz preverbs.

better thought of as ‘fused postpositions’”. The question is then: do the Hungarian case endings represent an intermediate phase between postposition and ‘real’ case endings, in diachrony, or something else? (see Part IV-Adpositions). Other examples: Portuguese *para* > Sri Lankan Portuguese *p’* used as a dative marker (Hopper & Traugott 2003: 230), and of course Latin *ad*. It seems that even prepositions can develop uses as case affixes (Wilhelm 2008).

One use of adpositions that could be termed **transitivizer** is found for instance in Spanish and Portuguese *de*: Sp. *bajo / tras* ‘under / behind’, formerly used transitively, now take the transitivizer *de* used with adverbs (ex. *bajo de la mesa* ‘under the table’, patterned after *debajo de*). Fagard (2006: 117) suggests that in Spanish and Portuguese this adverbialization of prepositions reflects a progressive division of labor between the former preposition (ex. *bajo* or *tras*), which contributes the lexical meaning of the compound, and a functional preposition, whose role is grammatical (the fact that *bajo* is less and less transitive seems to go against the direction of grammaticalization posited by Svorou; however, this path could be cyclic: Adj > Complex Adp > Adp/Adv > Complex Adp...).

We will illustrate just one more outcome of adpositions, as ‘direct’ object markers (i.e. **differential object marking**). It is the case of Romanian *pe*, Spanish, Portuguese, Sardinian, (Southern) Italian *a*, (Southern) French *à*, cf. Mardale (2008: 450):

(14) *L-am*                      *întâlnit*                      *\*(pe)*    *Ion.*    (Romanian)  
       him-have.PST.1SG    meet.PST.GER.M    to        John  
 ‘I met John.’

(15) *Vi*                      *\*(a)*    *Juan.*    (Spanish)  
       see.PST.1SG    to        John  
 ‘I saw John’

(16) *An*                      *furatu*                      *\*(a)*    *Ercole.*    (Sardinian)  
       have.PRES.3PL    steal.GER.PST.M    to        hercules  
 ‘They have stolen Hercules.’

## VI.1.2. DEIXIS

### VI.1.2.1. ORIGINS OF DEICTICS

#### ADVERBS

As noted by Diessel (1999), deictic adverbs do not seem to result from processes of grammaticalization. They mostly correspond to unanalyzable or only very partially analyzable forms. Think of Romance *ici, là, qui, qua, aquí...* (formed on the roots *hic, iste, ille + ecce*, i.e. deictics, demonstratives or presentatives...), of Germanic *hier, her, here, there, thither*, etc. (which can be traced back to PIE roots which are either demonstratives or deictics), of Slavic *tu, tam, ovde, onde*, etc. A constant feature of deictic elements seems to be their frequent reinforcement with spatial affixes: French *là* > *ilà, ci* > *ici*, Latin *hic*, etc. In Late Latin, the trend is respected, with *iste, ille* reinforced by *ecce* ‘here’ (Marchello-Nizia 2006: 108):

(17) *eccillum*                      *video*  
       here-he.M.A.SG    see.PRES.1SG  
 “There he is, I see him.” (Plautus, *Mercator* 434)

(18) *ecce*    *ista*                      *fundamenta*                      *quae*                      *videtis*  
       here    this.N.A.PL    foundation.A.PL    which.F.N.PL    see.PRES.2PL  
 “These foundations which you see here...”

(*Peregrinatio Aegeriae* 14,2)

## VERBS

The trend for deictic verbs is to originate in verbs indicating *Aktionsart* (Ricca 1993, chapter 5). According to Ricca, in Classical Latin the situation is as follows:

- in Plautus and Terence (3<sup>rd</sup>-2<sup>nd</sup> c. B.C.), *ire* ‘go’ is deictically neutral (ex. *ite foras* ‘go out [where I am]’). There is however an inkling of deixis, as *ire* is not used with *huc* ‘hither’. *Ire* is often found in contexts where ongoing motion is described, and more often atelic motion, with telic motion expressed by prefixed forms (*abire, adire*).

- *venire* is sometimes used to mean ‘arrive’: *Nisi eo ad mercatum venio, damnum maximumst* (lit. ‘if I don’t arrive there for the fair, it is a very big loss’); *venire* seems to appear essentially in telic contexts.

The evolution towards a deictic use of *ire/venire* is perceptible in Donat’s comment (4<sup>th</sup> c.): “*unde is [ap. Terence] modo venis significat*” (‘*where are you going from* simply means *are you coming*’). A comitative use of *venire* also emerges: in the Vulgate (4<sup>th</sup>-5<sup>th</sup> c.): *Venerunt (Gr. ἦλθον) autem mecum sex fratres isti* (‘these six brothers also came with me’).

The range of application of deictic verbs tends to vary over time. It generally expands, as in:

- **Gothic**: in Wulfila’s Bible (4<sup>th</sup> c.), *gaggan* is almost always a translation of the imperfective ἔρχομαι (‘I go’). *Qiman* is goal-oriented (requires a preposition with the dative, not the accusative; cf. German *im / \*ins Haus ankommen*): it focuses on the arrival, or has a static meaning ‘to be there, to have arrived’.

- **Old and Middle English**: the immediate imperative is formed with *gan*: *ga hider* ‘come hither’; *Lazare, veni foras* is translated as ‘Lazarus gá ut’. In the 14<sup>th</sup> c., in Wyclif’s Bible, the translation becomes ‘Lazarus, come thou forth’. Shakespeare generally uses *come* with *hither / here*, but *go* with a comitative (*go with me*).

- **Old High German**: *gân / gên* are used with the immediate imperative: *Tristan, gâ her und küsse mich* “Tristan, come here and kiss me” (c. 1200). In the 16<sup>th</sup> C., *gehen / kommen* are both found in this context: *geh bald herein / kombt doch herein* ‘come on inside’ (also in comitative contexts); cf. ‘Southern’ German *geh her* ‘come here’.

However, the deictic range can also suffer restrictions, cf. Spanish *venir* which was used in the 16<sup>th</sup> c. for the movement towards You, and cannot be used that way nowadays.

### VI.1.2.2. FURTHER DEVELOPMENTS OF DEICTICS

#### From adverb to demonstrative and pronoun

The use of spatial deictics to reinforce demonstratives has been seen in section V. We here illustrate the use of spatial deictic adverbs as pronouns, either with demonstratives or alone. In Louisiana French, *ces-là* “these-there” is used as a pronoun:

(19) *Mes parents ils sont presque tous morts.*  
 my.PL parent.PL he.PL.S be.PRES.3PL almost all.PL dead.M.PL

*Ces-là qui restent y en a*  
 this.M.PL-there who.S stay.PRES.3PL there.CLT of have.PRES.3SG

*plus un qui veut me voir*  
 more one.M.SG who.S want.PRES.3SG me.O see.INF

“My relatives are almost all dead. Of those left not one wants to see me.” (Balfa Brothers, *Je suis Orphelin*)

Another (live) example of Louisiana French:

(20) *les les le pont ça se cachait en-dessous et là*  
 the.PL the.PL the.SG bridge it REFL hide.PST.3SG under and there

*ça se tiendait et là ça levait le pont en là*  
 it REFL hold.PST.3SG and there it raise.PST.3SG the.SG bridge up

*et là ça ça ça sautait tchiou dans l'eau*  
 and there it it it jump.PST.3SG pfiou in the.SG-water

“They would hide under the bridge and then hang on to it until it was all the way up, and then they would dive into the water.”



‘Field work’ in New Orleans...

The use of a deictic adverb as a pronoun is also possible. For instance, it can be found (though rarely) in Spanish, in contexts such as:

(21) *aquí (= éste) me ha dicho la verdad*  
 here that\_guy I.O have.PST.3SG say.PST.GER the.F truth

“That guy told me the truth.”

or:

(22) *acá (= nosotros) cenamos tarde*  
 to-here we.S eat.PRES.1PL late

“We eat late.” (Carbonero Cano 1979: 93)

Of course, since the expression of pronominal subjects is not obligatory in Spanish, a detailed analysis is needed to prove that *aquí* and *acá* are really used as pronouns here.

The use of demonstratives as pronouns can be found in South Estonian and regionally in Finnish (Pajusalu 2006: 242-3); “According to accessibility hierarchy proposed in Gundel, Hedberg, Zacharski 1993, demonstratives point to referents that are activated but not in focus. Demonstratives have more referential power than third person pronouns as they are able to place the non-focused referent in focus.” (ibid.: 247); this would explain the pragmatic use of demonstratives as 3<sup>rd</sup> person pronouns, and their following grammaticalization in such pronouns.

The case of so-called ‘4<sup>th</sup> person’ pronouns is also to be considered for pronominal uses of Estonian distal deictic *too* (Pajusalu 2006: 252).

Demonstratives can also yield complementizers: temporal or causal conjunctions, or relatives (Heine & Kuteva 2002:171 sqq.; we give here a few of their examples): English *that*, German *da* ‘there’ / ‘since (causal)’, Albanian *ke* ‘here’, adverb > conjunction marking a causal clause (Buchholz et al. 1993: 221), Lingala *áwa* ‘here’, locative adverb > temporal conjunction ‘while, when’ > causal conjunction ‘since, because’ (van Everbroeck 1958: 83), ‘here’ > relative (Tok Pisin PE, Tondano).

### **VERBAL DEIXIS**

Deictic verbs can also grammaticalize into various types of markers. We will not deal extensively with verbs here, but simply note in passing the use of deictic *come* verbs as consecutive, hortative, continuous or venitive markers, and, in various constructions, ablative, near past (*come from*) or future (*come to*) markers (Heine & Kuteva 2002: 68 sqq.). The use of *come* as a passive marker is attested in Italian (*viene detto* ‘it comes said’ “it is said”). When *ventive* verbs are used to express the future, this might be on account of the time-in-motion-towards-the-observer metaphor (Fleischman 1982b). However, according to Ricca, this metaphor is superfluous, because V is goal-oriented, hence oriented towards the future. *Itive* verbs can also express the future, on account of a volitive/intentional meaning.

## VI.2 SPACE AND TIME

Pütz (1996: xix) “One of the major domains that have been conceptualized in terms of space is time, which is even commonly referred to as ‘temporal space’.”

### INTRODUCTION

Space seems to be generally accepted as a source for the expression and even conceptualization of time. Typological studies have shown that there is indeed a general tendency to use the same words for both domains, with evidence in most cases that these words originally had ‘spatial’ meaning (e.g. Haspelmath 1997). Space/time interdependence is recognized even at the neurobiological level, with ‘spatial’ neurons used to retrieve temporal information (Jakubowicz Batóreo 2000: 238), cf. Imbert (1983: 190) “There are in the visual system neurons which are activated specifically by an element which moves at a certain speed in space. These neurons are, in a way, time detectors”.

Note, however, that according to Brøndal (1950), space and time are so much interwoven that it is actually impossible to distinguish between the two (and thus, to say that there is such a thing as Space > Time transfer...). Besides, time is, in the terms of Jackendoff (1985), a unidimensional pseudo-space; we may well conceive of time as a line just like Newton (1687) in his *Principia mathematica*, “although the space we live in is 3-dimensional and we perceive it as such” (Ašić 2008: 24-25). For this reason, the projection of space onto time implies either a conflation of three dimensions into one, or the choice of one axis. The typical axes we can define for human beings – sagittal, vertical, lateral – are thus in theory available for temporal projections. We shall see below, however, that the main axis involved in temporal uses is the sagittal axis. The vertical axis is rarely used, though it is found, for instance in Chinese and Austronesian languages (ibid: 25), while the lateral axis seems (almost) excluded for temporal projections.

#### VI.2.1. THE FRONT / BACK AXIS AND ANTERIORITY / POSTERIORITY

This axis is the main source of lexicalization of temporal anteriority and posteriority. Haspelmath suggests that “the reason why speakers of human languages so consistently choose the frontal axis for expressing sequential location is of course that the passing of time is conceived of in the same way as movement through space” (1997: 22; cf. also Pottier 1962, Traugott 1975).

This explains why the **time-as-space metaphor** of Clark (1973: 50) is built exclusively along this axis: “Time can be viewed as a highway consisting of a succession of discrete events. We humans are seen in one of two ways with respect to this highway: either (1) we are moving along it, with future time ahead of us and the past behind us; or (2) the highway is moving past us from front to back. These two metaphors might be called the *moving ego* and *moving time* metaphors, respectively.”

**Moving time:** future events are coming, cf. *noon crept up on us, Friday arrived before we knew, time flew by* etc. The moving time metaphor is the source for the equation frontward = pastward and backward = futureward (*John left before noon, ahead of noon: noon has a front and moves toward ego*)

**Moving ego:** front = future, back = past (*trouble lies ahead, the worst of it is behind us*).

[it is unclear whether *before* reflects the moving time metaphor rather than the moving ego metaphor: what lies ahead of a moving ego comes first]

cf. Boroditsky & Ramscar (2002): people were asked to 1. imagine themselves moving toward an object or 2. to imagine an object moving toward them, then asked to answer the question “Next Wednesday’s meeting has been moved forward two days. What day is the meeting now that it has been rescheduled?” 1. → Friday / 2. → Monday. Besides, Matlock, Ramscar & Bodoritsky (2004) found similar results with fictive motion (i.e. people are asked 1. to draw ‘The road runs along the coast’ or 2. to draw ‘The road is next to the coast’).

In both cases, at any rate, the Future is in front, the Past in back (! *behind* has various possible interpretations, though, see below the *tandem* model).

- Lakoff & Johnson (1980: 41-5), who apparently ignore Clark (1973), claim that the front / back structure of time is compatible with two “metaphors” (= two “conceptualizations”), one in which time moves toward us (the following weeks, in the weeks ahead of us) and one in which time is stationary and we move through it (we are approaching the end of the year). Lakoff & Johnson do differentiate anteriority (*preceding / following*) from static orientation with respect to an Observer (*the weeks ahead of / behind us*) but assign both to the Moving Time metaphor (although *following week* means that what comes ‘behind the present’ (looking forward) is future and *behind us* means that what is ‘behind me’ (still looking forward) is past).

Lakoff & Johnson also point out that both metaphors are coherent insofar as they confer the same front / back organization to temporal sequences.

- Lakoff & Johnson (1999): the space-to-time mapping involves 3 “metaphors”, and this time, they distinguish Time Orientation from Moving Time:

**Time Orientation** (static, present is where we are, future is ahead, past is behind).

**Moving Observer** (now is what we are moving by, we move towards the future, the past is what we moved past).

**Moving Time** (the present is moving by us, the future is moving towards us, the past has moved by us).

Numerous examples of lexicalization of before / after by means of front / back markers (Haspelmath 1997: 57 & 61, modified):

Languages with identical spatial and temporal sequential adpositions		
	‘before’ = ‘in front’	‘after’ = ‘behind’
German	<i>vor</i>	
Latin	<i>ante</i>	<i>post</i>
Russian	<i>pered</i>	
Polish	<i>przed</i>	( <i>za</i> )
Albanian	<i>para</i>	<i>pas</i>
Hungarian	<i>előtt</i>	( <i>után</i> )
Lithuanian	<i>prieš</i>	(?)
Basque	<i>zurream</i>	(?)
Lezgian	<i>wilik</i>	<i>q’uluq<sup>h</sup></i>
Hebrew	<i>lifney</i>	
Maltese		<i>wara</i>
Hausa		<i>baayan</i>

Japanese	<i>mae ni</i>	
Tamil	<i>munnaale</i>	<i>pinnaale</i>
Maori	<i>mua</i>	<i>muri</i>
Greenlandic	<i>siurn-a-</i>	<i>kingurn-a-</i>
Chechen	<i>ħalxz</i>	
Nanay	<i>žulieleni</i>	
Urdmut	<i>ázyn</i>	

<b>Languages with related spatial and temporal sequential adpositions</b>		
English	<i>before</i> <i>after</i>	< ‘in front’ < ‘behind’
Swedish	<i>före</i> <i>efter</i>	< ‘before’ < ‘infront’ < ‘after’ < ‘behind’
French	<i>avant</i> <i>après</i>	< * <i>ab-ante</i> , OF <i>avant lui</i> ‘infront of him’ < ‘behind’ < * <i>ad-pressum</i> ‘at close’
Italian	<i>dopo</i>	< * <i>de-post</i> , Latin <i>post</i> ‘behind, after’
Bulgarian	<i>predi</i>	cf. <i>pred</i> ‘in front’
Turkish	<i>önce</i>	cf. <i>ön</i> ‘front’ (- <i>ce</i> adverbial suffix)
Lezgian	<i>güčüniz</i>	cf. <i>güčüna</i> ‘behind’
Udmurt	<i>bere</i>	cf. <i>beryn</i> ‘behind’
Hebrew	<i>ʔaħarey</i>	cf. <i>me ʔaħorey</i> ‘behind’
Abkhaz	- <i>štax-g’ə</i>	cf. - <i>štax</i> ‘behind’
Chinese	<i>qián</i> <i>hòu</i>	cf. <i>qiánbian</i> ‘in front’ cf. <i>hòubian</i> ‘behind’

Now, what is the “metaphor” involved in the lexicalization of temporal anteriority?

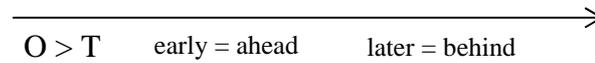
Regarding the lexicalization of ANTERIOR / POSTERIOR, Haspelmath observes that the Moving Observer metaphor and the Moving Time metaphor make the same prediction for future situations: what lies ahead comes earlier, whether the Observer is moving or Time is moving. He argues, however, that past situations are a different matter: in the Moving Observer model, an Observer looking back at past situations would find the most recently encountered situations *in front*, and remote situations *behind*. But there seems to be no language in which *in front* means earlier for future times but *later* for past times (and vice versa for *behind*). Haspelmath concludes that it is the Moving Time metaphor that is responsible for the use of *front* / *behind* as markers of anteriority / posteriority.

It might be objected that the whole point of the Moving Observer metaphor was that it was patterned after motion in space: a Figure which moves through space encounters first what lies ahead and later what lies behind. A Figure “turning back” to look at past situations would reverse the front / back order and this is impossible because past situations are by definition already sequentially ordered along the front / back axis.

Therefore, the Moving Time metaphor makes exactly the same mapping as the Moving Observer metaphor. Since they both map *front* to *early* and *back* to *late*, they are both possible explanations for the lexicalization of *before* and *after*.

To make things clearer, let us distinguish the spatial model which is at the root of the conceptualization of anteriority / posteriority, and, on the other hand, metaphors like *Christmas is approaching* (Moving Time) or *we are approaching Christmas* (Moving Observer).

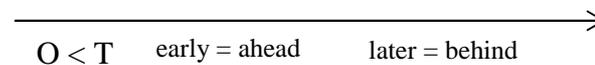
The Moving Observer and Moving Time metaphors both map to the Relative Mirror Model. The Relative Mirror Model underlies the mapping of *front* to *early* and *behind* to *late*.



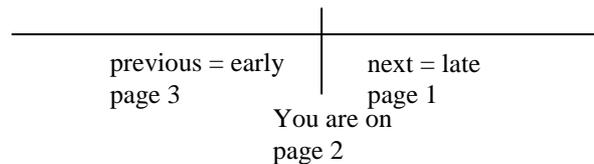
**Relative Mirror Model**

**o(bserver) > T(ime)**

The Relative Mirror Model underlies the lexicalization of anteriority / posteriority and is independent from the fact that an observer, a Figure or a Reference time are metaphorically pictured in a sentence as moving or static. In *Easter will come before Christmas*, *Easter* is pictured as moving (Moving Time metaphor) but this does not mean that *before* reflects the Moving Time metaphor too (as Lakoff & Johnson would have it, 1999: 143):

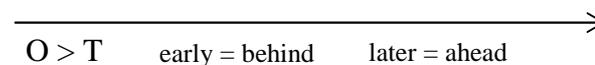


Note that *previous* / *next* date things with respect to the time when they were created (or positioned somewhere) or according to the time when an observer encountered them. In both cases, we are in the Relative Mirror Model (*previous* means ‘early’). Suppose you are on internet: *previous* means ‘created first’:



**Preexisting Relative Mirror Model**

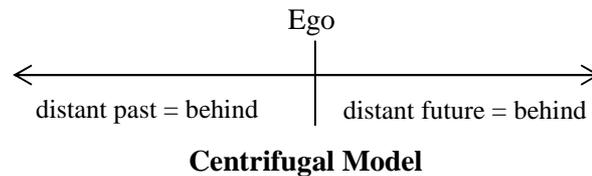
Another kind of Relative Model is the temporal counterpart of the in-tandem perspective: Hill (1978) notes that Hausa speakers structure time along the in-tandem perspective adopted for spatial relations:



**Relative In-Tandem Model**

The time further away from the *hic et nunc* is ‘ahead’, while the time at its back (hence earlier) is ‘behind’. Since behind means earlier, the day before yesterday is described as in the ‘back of yesterday’.

In relation to the front / back axis, Radden (2004) mentions yet another system which assumes an egocentric position of the observer and a centrifugal time flow away from Ego and toward both the past and the future (Radden calls this model the *egocentric perspective*):

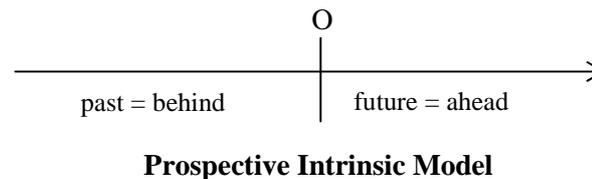


Cf. French, which views the third generation from Ego as behind the second: *arrière-petit-fils* / *arrière-grand-mère* (back-grandson / back-grandmother); cf. also *devant* 'in front' which could, in Old French, refer to the past (23) or the future (24):

(23) (...) *si com lo moient li mesage qui devant i orent esté* 'he rides straight towards the city) following the messengers who have already gone *ahead/before*' (*Enéas* 705, in Sävborg 1941: 239)

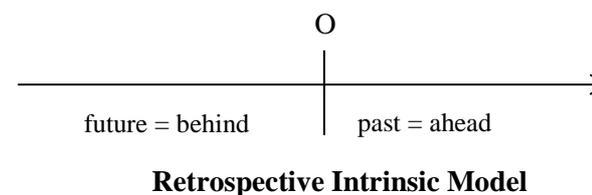
(24) *Et cil qui après moi venront, Ca devant grant preu i avront.* 'And those who will follow me will find *there/in the future* a great profit' (Tobler-Lommatzch, *ibid.*: 240; in Sävborg 1941).

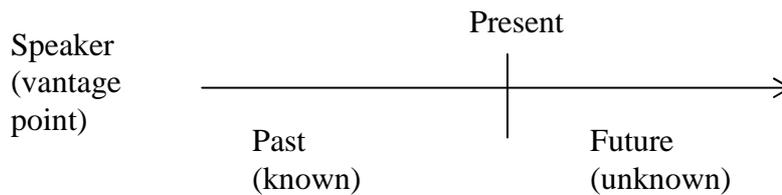
The Intrinsic Model corresponds to the Time Orientation metaphor of Lakoff & Johnson and underlies the use of the front / back axis in sentences like *there are problems ahead* and *that's all behind us now* (cf. also Givón 1973 and Traugott 1975, who speak of "tense deixis").



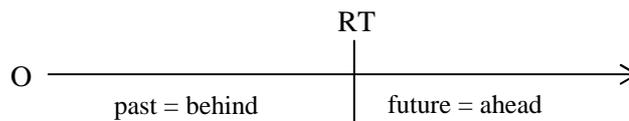
Lakoff & Johnson (1999: 141) observe that in Aymara the reverse mapping obtains: the past is in front and the future behind. According to them, the explanation for this mapping lies in "the experience of being able to see the results of what you have just done in front of you". Cf. also Dahl (1995: 198) on Malagasy: "In Madagascar what occurs in the past is expressed by notions such as *taloha* or *teo aloha* (before, in front), while present events are denoted by *izao*, which is demonstrative: "this". Future events are designated by *aoriana*, *any aoriana* (after, behind), or *any afara* (last)." Heine & Kuteva also mention Chinese (2002: 142):

(25) *qian san nian.*  
 front three years  
 'The last three years.'





The Intrinsic Model can be shifted to a Reference Time distinct from the Observer’s time. In *let’s move the meeting ahead a week* when *move ahead* means ‘future relative to the date previously set’ i.e. ‘postpone’ (ap. Lakoff & Johnson 1999; in this case, the Prospective Intrinsic Model):



**Shifted Prospective Intrinsic Model**

Compare to the use of *put back the time* in the example below:

(26) “*I felt no doubt that the Professor had kindly put back the time for me, to the exact point at which I had gone to sleep*” (Lewis Carroll).

Here, *back* is to be understood with respect to the time it really was.

**VI.2.2. OTHER AXES**

**VI.2.2.1 THE UP / DOWN AXIS**

In Mandarin, besides the front / back axis<sup>3</sup>, the up / down axis is commonly used for conceptualizing time: *hànyuè* (up.month) means ‘last month’ and *xiàyuè* (down.month) means ‘next month’ (Radden 2004). Earlier events are *shàng* ‘up’ and later events are *xià* ‘down’. This conceptualization might reflect a “River Model”, in which later situations are viewed as being down from a viewpoint situated up. Cf. also in English, *this tradition has been passed down from generation to generation*. English also exemplifies a rival Upsurge Model, in which earlier situations are down and ‘come up’: *The new year is coming up*. Lastly, *what’s up?* or *that’s up in the future*, where *up* is future may be associated with yet another metaphor which binds up potentiality and suspension (*that’s up in the air*; Radden 2004).<sup>4</sup>

Hawaiian *a’e* ‘up, sideways, obliquely, to and fro’ and *iho* ‘down’ are both used to indicate the (near) future:

(27) ‘O      wai      hou      a’e?  
       NOM    who    new    up

‘Who’s next?’ (cf. English who’s up?) (William Cook 1996; example from the *Hawaiian dictionary*, Pukui & Elbert, 1986)

<sup>3</sup> Namely, *qián* ‘in front, before’ and *hòu* ‘behind, after’.

<sup>4</sup> According to Traugott (1975), this mapping merely reflects the fact that canonical locations in space are assigned to canonical locations in time (i.e. *up* is mapped to *early* because both are “unmarked”).

They can also be used to refer to the (near) past:

- (28) *Ua hana iho nei 'o ia i ke kope.*  
 PERF make down last NOM he ACC the coffee  
 'He just made the coffee.'

However, the existence of a [vertical space > time] mapping is not clear, since these particles simply indicate proximity (or, in Elbert & Pukui's terms, 'visible space'), in (structural) opposition with *aku* 'away from the speaker', which in its temporal uses always indicate distance, i.e. distant future and distant past (William Cook 1996: 457-458). An element confirming this proximal vs distal account of the space > time projection for directional particles is the fact that, in Maori, a language close to Hawaiian, similar particles also indicate degrees of temporal remoteness, but "do not appear to be specialized, however, in terms of whether they indicate futurity or pastness" (William Cook 1996: 463). However, in Rarotongan, there is a future vs past specialization, with *io* (cognate of *iho*) meaning "hitherto, just now, lately" (ibid., quoting Savage, *A Dictionary of the Maori Language of Rarotonga*, 1980).

In European languages, we have already given a few indications as to the possible temporal extensions of 'above' and 'below'. A few others will illustrate the fact that the semantics seem quite complex. For instance, very close words can have opposed temporal outcomes; the same root can thus be transposed in both past and future: Latin *supra* 'above' > 'before' (*supra hanc memoriam* 'before our time'; Fagard 2006: 238) is based on Latin *super* 'above', which has a very different temporal meaning: 'during, after (+ ABL.)'. Besides, the temporal meaning 'before' expressed by *supra* 'above' can also be found for Italian *fra* (< *infra* 'under') or *sotto* 'below' (*sotto Natale* 'before Christmas') and French *sous* 'under' (*fra due mesi / sous deux mois* 'in two months')... Finally, adpositions meaning *above* or *on* can also yield very different temporal meanings:

- English *upon*: "Once upon a time..." / "I suffered greatly in my mind, for a reason connected with my time of life. I was just *upon* eleven" (Robertson Davies, *The Deptford Trilogy*, 1970); English *on*: *on* the spur of the moment;
- German *über*: *dass ich über einige Wochen mich ausserhalb der Politik halten werde* "[I hereby announce] that I will stay away from politics for a few weeks" (News, 1<sup>st</sup> channel, August 23<sup>rd</sup> 2010);
- French *sur* 'around, after' (*sur les huit heures* 'at around 8', *sur le coup* 'at the moment');
- Italian *su* 'at round, for around' (*vediamoci sul mezzogiorno* 'let us see each other around noon'; *ho lavorato sulle tre ore* 'I have worked for around three hours').

#### VI.2.2.2 THE "LATERAL" AXIS

It seems that *on the left of Sunday* is universally inappropriate. A possible exception: Traugott (1975) mentions that 'left' and 'right' can express approximate time in Chinese. At any rate, it is clearly rare, and Haspelmath (1997) found no instance of SPACE > TIME extensions along the lateral axis. This weak metaphorization of the lateral axis is not only found in the temporal, but also in the metatextual domain (Nöth 1996: 605).

In Romance, none of the prepositions / adverbs referring to the lateral axis (for ex. in OF *jouste*, *lez*, *coste* etc. which all code laterality) gave rise to temporal markers (Fagard 2010). The only exception is French Creole *koté*. However, it is not really a counter-example, because it first became a general marker of proximity, losing the laterality feature. The extension is thus not "to the side of" > "around" but "to the side of" > "near" > "around (temporal)":

In some French-based Creoles, *kot(é)* (< *côté* 'side' or < *du côté de*, *à côté de* "from/on/at the side of") has lost its lateral meaning. For instance, in Seychelles Creole, *kot* is highly polysemous, meaning "at the house/home of, to, in towards, at the side of":

(29)	<i>i</i>	<i>al</i>	<i>kot</i>	<i>lerua</i>		
	he	go	to	king		
	“he goes to the king’s place”					
(30)	<i>i</i>	<i>ti</i>	<i>ariv</i>	<i>kot</i>	<i>kaso</i>	<i>pul</i>
	he	PST	arrive	to	house	hen
	“He came up to the hen-house” (both examples from Corne 1977: 126).					
Same thing in Louisiana French:						
(31)	<i>Li</i>	<i>kouri</i>	<i>kote</i>	<i>TULANE,</i>	<i>NEW ORLEANS</i>	
	he	run	to	Tulane	New Orleans	
	“He went to Tulane (University), in New Orleans.”					
(32)	<i>To</i>	<i>hal</i>	<i>li</i>	<i>kote</i>	<i>derik</i>	
	you	haul	it	to	derrick	
	“You haul it to the derrick.”					
	(both examples from Klingler 2003: 360).					
This might explain why there are instances of Creole <i>kot(é)</i> with a temporal meaning (of approximation, like English <i>around</i> ). Note however that the existence of other adpositions meaning “in front” and “behind” can bring the speaker to restrict the use of <i>côté</i> to the sides, when the landmark has sides.						

### VI.2.2.3 OTHER SPACE > TIME METAPHORS

#### FROM / TO

These markers often evolve into anterior-durative (‘until’) and posterior-durative markers (‘since’) (Haspelmath’s terms, 1997). Cf. German *ab* (*ab nächster Woche gilt der neue Tarif* ‘the new fare will apply starting next week’) and *bis* (< *bei zu*).

According to Haspelmath (1997: 67), this evolution rests on two semantic shifts: (1) *from / to* are used to describe spatial *extents* (*the highway goes all the way to the Artic Sea*), by a mental operation that Langacker has characterized as “subjectification”. (2) situations in time are conceptualized as occupying a temporal extent and are scanned from their earliest part to their latest part (Moving Observer metaphor).

Perhaps we could just say that motion is spatio-temporal and therefore that localizing a Figure at a point is equivalent to localizing it at a time:

(33) *I wasn’t able to sleep during the trip because some people kept making phone calls from Paris to Lyon / from 2 to 4.*

Anterior-durative and posterior-durative functions are also lexicalized from N with a spatio-temporal meaning like *begin / leave / start / end / limit / goal*. Cf. English *till* < Old Norse *til* (< *til* ‘goal’), Tagalog *hangang sa* ‘up to’ (< *hangan* ‘limit’) (Haspelmath *ibid*).

#### OUT OF

Adpositions with the meaning of spatial exteriority (‘out of’) seem not to develop temporal senses.

### THE RELATIVE IMPORTANCE OF DIFFERENT AXES

maybe the greater (/more universal) importance of the sagittal axis can be explained by Fillmore’s remark (1982: 37) that the left/right axis is “essentially egocentric (in that we recognize the distinction in the first instance in our own bodies)”, the front/back axis “anthropocentric (in that we first learn to deal with it in terms of the bodies of the humans in our environment)”, and the up/down axis “founded on relations existing in the environment independently of ourselves.”

### VI.2.3. TEMPORAL DISTANCE AND PROXIMITY

#### VI.2.3.1. The front / back axis

Haspelmath (1997) observes that markers of anteriority and posteriority ('before' and 'after') derived from spatial markers are often recruited for expressing distance in the past or in the future ('one month ago', 'in one month'). German *vor* is a case in point: *vor einem Monat* 'one month ago'.

According to Haspelmath, this conflation rests on two distinct patterns. In the case of 'ago', the first pattern is one in which 'X time units ago' is rendered as 'X time units before (this time)', for ex. in Turkish:

- (34) *bun-dan on dört yıl önce.*  
this-ABL ten four year before  
'fourteen years ago' (lit. 'fourteen years before this')

The other pattern is exemplified by languages where 'X time units ago' is expressed by a construction meaning 'before X time units'. By implicature, this construction is interpreted as meaning 'immediately before X time units', and in some cases the implicature has become part of the meaning of the distance marker: cf. German: *\*Das Tiananmen-Massaker war vor fünf Jahren, genau gesagt schon 1989.* [the implicature cannot be canceled, and is part of the meaning of *vor* in this construction]

#### VI.2.3.2. The concept of *inclusion* and temporal distance

In a number of languages, IN expresses distance in the future (Haspelmath 1997: 90):

- (35) *Je reviendrai dans deux heures.*  
I come\_back.FUT.1SG in two hour.PL  
'I will come back in two hours.'

Finnish

- (36) *palaa-n kahde-ssa tunni-ssa.*  
return.1SG two-INESS hours-INESS

Imbabura Quechua

- (37) *ishkay uras-pi tigramu-sha/*  
two hours-in return-FUT.1SG  
'I will return in two hours.'

Sardinian

- (38) *App'a ghirare in tres dies*  
have.1sg-to return in three day.PL  
'I will return in three days' (Jones 1993: 194)

According to Haspelmath, the DISTANCE-FUTURE issues from contexts which establish a bridge between bounded duration and distance in the future:

- (39) *Bob will make 77 cookies within one hour* (duration, but also means that Bob will have made 77 cookies in one hour, i.e. close to a DISTANCE-FUTURE sense).

(40) *The bomb will explode within an hour* (since it can explode only once, it may explode in one hour and not before)

(41) *We will work within a month* (takes on an inceptive reading: we will start working in a month).

Note that this pragmatic extension from interiority to distance-future is found also for *inside*:

(42) *And inside a week the aunt came, and we haven't seen hide nor hair of them since.* (Roberston Davies, *The Deptford Trilogy*, 1970: 103)

It may be added that there would be no point for a speaker to locate a punctual event *in two hours* if the speaker intended to leave any time before the two-hour delay has elapsed (say, in one hour). A pragmatic principle seems to be at play here: do not provide a piece of information more precise than is necessary.

However, the ‘distance-future’ meaning of adpositions which have a spatial meaning of interiority is only one possible extension. In some language, adpositions meaning ‘in, inside’ develop a meaning in which they indicate the duration of a process. This is the case of English *in*, French *en*, etc.; also, of Polish *w* (Kochańska 1996: 497):

(43) *Przed zebraniem Piotr (zawsze) w 10 minut porządkował*  
before meeting.I Peter.N always in 10 minute.G.PL IMP.sort.PST.M

*swoje notatki*  
his.A.M.PL note.A.PL

‘Before a meeting Piotr (always) sorted out his notes in 10 minutes.’

This ‘duration’ meaning might even be considered the starting-point of the ‘distance-future’ meaning.

### VI.2.3.3 Temporal proximity

#### Around

The use of adpositions with a proximal spatial meaning for the expression of temporal proximity is quite frequent: English *around*, etc. An example can be found in Louisiana French *otour* ‘around’:

(44) *Ka mounn se fini rantré tou rekòt, antour,*  
when people be finish bring\_in all harvest around

*sept— otour oktob, ALL RIGHT.*  
Sept— around October all right

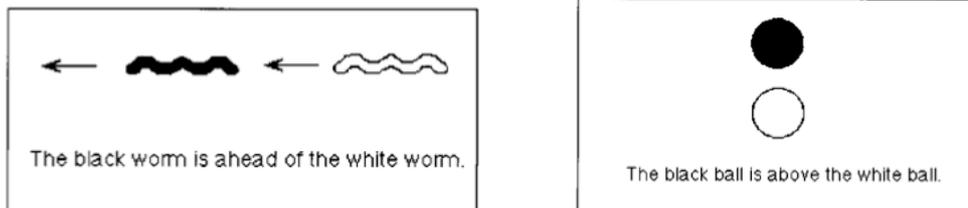
‘When people finished bringing in the harvest, around Sept- around October. All right.’ (Klingler 2003: 357)

### VI.2.4 COGNITIVE CORRELATES OF THE LINGUISTIC STRUCTURING OF TIME

Boroditsky (2001) reasons that if language influences thinking, Mandarin subjects should think of time as structured on a vertical axis more than English subjects do.

Her experimental design is as follows:

1<sup>st</sup> task: subjects view a picture showing two objects and must verify a statement on the spatial relation that holds between these objects. The display is either vertically or horizontally oriented:



Two primes used in Boroditsky (2001): subjects had to answer ‘true’ or ‘false’.

These stimuli are intended to prime the mental representation of, resp., the horizontal and the vertical axis.

2<sup>nd</sup> task: subjects must verify statements like “March comes before / earlier than April”. Response time is the dependent variable.

The results show that for all speakers responses are fastest when the prime is horizontal. However, when answering questions phrased in purely temporal *earlier / later* terms, Mandarin speakers were faster after vertical primes than after horizontal primes. Further, this vertical bias was stronger for subjects who had started learning English later in life.

Conclusion (ibid.: 20): “It appears that acquiring abstract concepts requires experience with language and that the eventual form of these concepts is largely shaped by the language experience.”

### VI.2.5. DEICTICS FROM SPACE TO TIME

Temporal uses are found for different types of deictics in many languages; examples abound, for instance in Estonian (Pajusalu 2006: 251), Romance, Slavic, Germanic languages, etc. (a few examples below). The axis on which these mappings take place seems hard to determine. Besides, this does not mean that all deictics can have temporal uses. One obvious generalization is the use of proximals to mean ‘now’ and distals for distant past or future; however, even this does not seem to be universal, since Polish *tu* (proximal, ‘here’) can be used for (probably not distant) past or future events, while *tam* (distal, ‘over there’) does not seem to have temporal uses.

Temporal uses: Botha (1996:220) *hier* ‘here’ “is very often used to refer to time”; id. *hierdie* and *daardie* (ibid: 221)

(45)	<i>Ek</i>	<i>het</i>	<i>hulle</i>	<i>tot</i>	<i>hiertoe (= nou)</i>	<i>grootgemaak.</i>
	I.SUBJ	have.PRES.1SG	they	up_to	here_to	grow.PAST

‘I have raised them up to here (= now).’

The space > time mappings are also attested for deictics; there seems to be a (very logical) general correspondence between proximals and present (now/already), distals and past or future:

(46) *Aquí se acaba la historia.*  
here REFL finish.PRES.3SG the.F story

“The story ends here/already.”

(48) *Allí lo dije claramente.*  
there it.O say.PST.1SG clearly

“I said it clearly then.” (Carbonero Cano 1979: 91)

The transposition of motion deixis to time is attested in Slavic (e.g. Polish *dotąd* ‘up to now’, Serbian *ovamo* id., etc.), also in Spanish:

(49) *desde un par de siglos acá*  
since a pair of century.PL to-here

“Since a couple of centuries.”

(50) *desde los bárbaros para acá*  
since the.M.PL barbarians towards to-here

“Since the barbarians.” (Schmidely 1975: 247).

## CONCLUSION – EXCEPTIONS TO THE SPACE > TIME TRANSFER

At issue here is whether lexicalization always proceeds from space to time, and never goes in the reverse direction.

According to Haspelmath (1997: 142) French *depuis* may furnish a counterexample: Lat. *postea* / *\*postius* > *puis* ‘after’ > *depuis* + mention of a temporal final boundary (14<sup>th</sup> century), both in a POSTERIOR-DURATIVE sense (‘since his death’) and DISTANCE-POSTERIOR sense (‘since three days ago’), with more and more occurrences of DISTANCE-POSTERIOR uses and, concomitantly occurrences with mention of a spatial final boundary (*depuis l’estable jusques à la rue* ‘from the stable up to the street’; Fagard 2006: 356) > enumerative use (‘from X to Y’) > fictive motion (modern French: *il a tout vu depuis sa fenêtre* ‘he saw everything from his window’). This evolution appears to have been triggered by the prefixing of *de-* to *puis*, and *de* has a spatial meaning. Further, according to Fagard (2006), the fact that the first uses of *depuis* were temporal and spatial goes against the view that the spatial sense of *depuis* would have evolved from its temporal meaning. Finally, *puis* did evolve a spatial sense, but this evolution seems to have been consecutive to the “spatialization” of *depuis*, and would be, therefore, a side-effect.

Generally speaking, temporal uses of spatial adpositions do not seem excluded, as we can see with such examples as *turn right 100 meters after the church*. However, they are restricted to specific contexts and do not seem to become lexicalized meanings.

### VI.3 FROM SPACE TO ABSTRACT MEANINGS?

Temporal relations are of course far from being the only relations conceptualized and lexicalized in spatial terms. Heine and Kuteva (2002) provide a wealth of data on other domains for which lexicalization has drawn on the resources of spatial markers; we saw a few examples as we went along, in sections I through V. The explanation, for locationists, is that spatial expressions are more basic from a grammatical and semantic point of view, than non-spatial expressions (Lyons 1972, 1980), i.e. we use spatial figures to conceive of abstract notions – all events and states of conceptual structure being organized along a very limited set of principles generally having their origin in the conceptualization of space (Gruber 1976, Jackendoff 1985: 209).

Both the fact that spatial words are not to be understood as geometric or even topological (cf. Part IV.3 ‘The semantics of adpositions...’) and the fact that they lead to non-spatial uses, be these temporal or notional (“people regularly use motion language to describe all sorts of things which have little or nothing to do with physical movement”, Matlock, Ramsar & Boroditsky 2004: 45), thus seem to be a factor of man’s perceptual apparatus.

### EVIDENCE OF SPACE > ABSTRACT EXTENSIONS

There is overwhelming evidence for these transfers. What is more, there is not only typological evidence – i.e. sometimes ‘reconstructed’ evidence – but also diachronic (‘hard’) evidence that these transfers really do go from space to time and other meanings. How can we be so sure of that? By looking at the evolution of languages which have a long history, for instance Romance (Germanic, Slavic, and of course Chinese would do as well or better, but let us stick to Romance for now). Though it is not always possible to retrace the first steps of the space > time change (e.g. French *après*, Fagard 2004), Romance adpositions illustrate various semantic chains which have been claimed to exist more or less universally:

- Italian *da*, Romanian *de*: ablative/origin > cause > agent (cf. German *von*);
- Romance *à/a*: goal > effect > patient;
- Romance *par/per/por*: path > instrument/means (Andersen 1971);
- French *pardevers*, Italian *presso*: location > existence/possession (Lyons 1972), because the existence or possession of something can be claimed only once we situate it in space & time – this also explains the existential use of deictics (Carbonero Cano 1979: 96);
- Romance *in/en*: from space to ‘states’, cf. the claim that “the use of *in*, *at* and *on* to encode a ‘state’ meaning [as in *we are in love/shock/pain*, *at war/variance... on alert/best behaviour...*] is motivated, deriving from historically earlier, and synchronically, perhaps, more primary ‘spatial’ senses” (Evans 2010b: 216).

There are different possible meanings at the root of a same notional meaning; besides, a notional meaning can stem both from spatial and notional meanings. For instance, European languages generally “rely on the companion metaphor (...) and use prepositions that correspond to English *with*” for the encoding of instrument, whereas outside Europe “the use of the same case or preposition to denote instrument and location is frequent”, meaning that the container schema is used for the encoding of instrument (Luraghi 2004: 26).

The reverse path, i.e. from notional uses to spatial uses, seems at least very exceptional. There is very little evidence for adpositions (see Dendale & De Mulder 1998 for a few possible examples), and it seems rare even for other word classes. An example would be French *quitter*, English *leave*, but it is quite clear that these verbs are not prototypically spatial verbs.

## ABSTRACT MEANINGS OF DEICTICS

If we accept the idea that there is an initial stage in which deictics are ‘purely spatial’, we can agree with Senft (1997:8-9): “The more the (...) formations assume discourse functions – i.e., the more they refer not to points in concrete space but to items previously mentioned in the linguistic context – the more they lose their potential for pointing to those things which are truly ‘up there’ or ‘down there’.”

A sure thing is that deictics can have many non-spatial uses. They can for instance, as said above, come to have **possessive or existential uses**, as *hier/daar* in Afrikaans (Botha 1996: 218):

(51) *Daar is Olifante (in Afrika).*  
there be.PRES.3SG elephants in Africa

‘There are elephants [= elephants exist] (in Africa).’

There is also a possible **extension from spatial to social deixis**, cf. Cook’s (1996) hypothesis that “a Japanese honorific form is an indicator of distance”, with *-masu* having an encoded meaning as distance marker:

(52) *Dooshite soo yatte gatan gatan suru n desu ka?*  
why so do rattle rattle do NOM COP INT

‘Why are you shaking the table?’

(53) *Tatehiza ikemasen*  
erect knee no good

‘Don’t draw up your knees.’

“The use of *masu* [*desu* = copula form of *masu*, *-masen* = negative form of *masu*] in example (2) does not index politeness. It can be explained by the analysis that the *masu* form indexes distance between the speaker and the addressee.” The author analyzes this as psychological distance, considering after Haiman (1983:800) that “physical distance is an obvious metaphor for social distance” (Cook 1996: 6).

**Anaphoric and ‘textual’ uses** of deictics are widely attested, cf. Slavic *tu/tut...*, French *là*, ... Sardinian *(in)ibe*, for instance, “refers back to some place which has been mentioned in preceding discourse” (Jones 1993: 195).

**Temporal and causal uses** are also attested (see above German *da*).

Clark (1974) notes that *come* can express movement towards a normal state (in good part) while *go* tends to express movement towards an abnormal state: *go mad / come true; go blind / come back to one’s senses*. However, there are numerous counter-examples: *go better, go fine / come to grief, come expensive* etc. (Ricca 1993).

A possible counter-example to the spatial > notional trend is noted by Marchello-Nizia (2006), who shows how deixis changed from personal in Latin to subjective in Old French and finally spatial in Middle French.

## CONCLUSION

### The question of ‘spatial’ universals in language

The multiple links between space and language which Jean-Michel and I have discussed in these two weeks can thus receive various interpretations. It remains to be seen whether they are the result of the fact that language structures space or whether, as claimed e.g. by Casati & Varzi (1995:188), the structure of space is itself reflected in language. Hickmann (2007: 207)<sup>5</sup> describes as follows the two main positions found in the literature:

“This debate presently opposes different approaches that disagree with respect to the role they attribute to language in structuring human cognition. According to one position, language has wide-ranging implications for human cognition. As a semiotic system it is a major tool mediating our cognitive processes and structuring children’s inferences about the world during cognitive development (Gentner 2003; Vygotsky 1962). In addition, language-specific properties affect our linguistic and non-linguistic representations throughout development (e.g., Bowerman 1996a, 1996b; Bowerman & Choi 2001, 2003; Levinson 1996, 1997, 2003; Slobin 1996, 2003, 2006). In contrast, although other views might acknowledge the possible role of language on some aspects of our linguistic behaviors, they argue that language has no significant impact on our non-linguistic cognition (e.g., Clark 2003; Munnich & Landau 2003).”

Does the child construct its spatial categories independently of language (Piaget), whether these are the result of innate capacities (Spelke 2003) or of “an active and precocious process of perception” (Lécuyer et al. 2007, Mandler 1988, 1992)? Or does this process reflect, even in infants, the “particular properties of their language” (Bowerman, Choi, Slobin)?

The explorations we proposed into spatial language, its variation across languages and semantic domains only highlight the absence of a simple answer to these questions. One thing seems certain: answers will not come from a single scientific field, and one needs to combine data from psychology, psycholinguistics, diachrony, typology and yet other fields, in order to achieve a better understanding of the relation between language and space.

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<sup>5</sup> “All languages provide means of expressing location and motion. (...) However, languages also show striking variation in this domain. For example, they vary in the extent to which they lexicalize or grammaticalize different types of information concerning changes of location. (...) This variability has begun to cast doubts on the existence of some previously postulated universals, raising some fundamental questions concerning the relation between language and thought (cf. Hickmann 2003a, for a review).” (Ibid: 206-207).