

Ego-perspective and field-based frames of reference: temporal meanings of FRONT in Japanese, Wolof, and Aymara

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Abstract

This article analyzes temporal frames of reference that are metaphorically related to experiences of movement and location. Two path-configured temporal frames of reference are distinguished, both of which employ a metaphorical FRONT/BEHIND contrast: **field-based** (perspective neutral) and **ego-perspective** (perspective specific). Claims are illustrated with data from Wolof (Niger-Congo, West Africa), Japanese, and Aymara (Jaqi, South America). The paper focuses on a field-based analysis (akin to *absolute*) of deictically neutral uses of FRONT/BEHIND terms, and defends it against a possible analysis as intrinsic. FRONT in the field-based frame of reference maps onto ‘earlier’, and BEHIND maps onto ‘later’. The ego-perspective frame of reference has the opposite orientation so that FRONT maps onto ‘future’ and BEHIND maps onto ‘past’. Both of these patterns seem to be crosslinguistically typical. However, there is one well-documented case of ego facing the past — that of Aymara. I argue that in the Aymara system, ego’s orientation is aligned with that of a field-based frame of reference: in Aymara the past is metaphorically in front of ego because it is a special case of earlier times being metaphorically in front of later times.

Keywords: Space, time, metaphor, deixis, perspective, Wolof, Aymara, Japanese

1. Introduction

Frames of reference are fundamental to spatial conceptualizations (see Carlson, Regier & Covey 2003; Levinson 2003; Talmy 2000), and are therefore presumably fundamental where

temporal phenomena are construed in spatial terms. In fact, scholars have begun to characterize the frames of reference involved in spatial construals of time (e.g., Kranjec 2006; Moore 2004, 2006; Tenbrink, this volume, 2007; Zinken in press). The frames of reference that are the topic of this paper are metaphorical (in the sense of Lakoff & Johnson 1980) because they construe one thing (temporal experience) in terms of another (spatial experience). Although these metaphorical frames of reference are derived from spatial experience, they are not simply spatial frames of reference imported to time. Rather, these frames of reference involve specific experiences that play out in space and have a temporal component. This paper offers hypotheses on what the relevant “spatial” experiences might be and how they relate to temporal experience. This is not a matter of the abstract domains SPACE and TIME, but of more nuanced analyses of experience, as we shall see.

This paper characterizes two types of frame of reference that are relevant to spatial construals of time. Both of them are path-configured; i.e. involve a series of positions in one dimension in the source domain. The first type is an **ego-perspective** frame of reference, the structure of which depends in some crucial way on the perspective of a persona (called *ego*) who is linguistically represented as having an experience of space and/or time. This frame of reference does not correspond to any of Levinson’s (2003) three major types. The second type is a **field-based** frame of reference which includes Levinson’s (2003) *absolute*, and is itself a subtype of Talmy’s (2000: 213) field-based.¹ (An absolute frame of reference is a field-based frame of reference that can be expressed with compass bearings.)

A field-based frame of reference, as I use the term, is structured by some characteristic of the described scene that is a property of the entire scene, and does not change with changing perspective. An example is the cardinal direction system with North, East, South, and West (Levinson 2003). Another example is a queue of people waiting in line. This paper develops the idea of temporal ego-perspective and field-based frames of reference that was introduced in Moore (2004, 2006), paying particular attention to the field based type.²

The specific case that this paper examines is that of FRONT and BACK/BEHIND terms in Wolof (Niger-Congo, West Africa), Japanese, and Aymara (Jaqi, South America). These three languages exhibit three patterns in the temporal signification of FRONT and BACK/BEHIND terms

¹ Hill & Allen (1979) also use the term *field-based* in a similar way. Tenbrink’s (this volume) *absolute* is equivalent to my *field-based*.

² The *ego-perspective* frame of reference was called “ego-based” in Moore (2006).

that are revealing with regard to frames of reference. Ultimately, the paper emphasizes a comparison of FRONT terms among Japanese, Wolof, and Aymara. FRONT terms are chosen because it is in this area that comparable data can be found in the three languages.

The data are analyzed in terms of Figure-Ground structure (Talmy 2000). The Figure is something whose location or time is being determined relative to a reference point (RP), called the Ground. Thus, to use a spatial example, in *The Ford is next to the Garage*, the Ford is the Figure, and *the garage* is the Ground. Temporal relations have their own Figure-Ground structure that does not necessarily have anything to do with space. For example, in *The Fandango started later than the Game*, the starting time of the fandango is the Figure and the (starting time of the) game is the Ground.

The temporal FRONT/BEHIND opposition is interesting because each member of this opposition may have contrasting meaning depending on which frame of reference it is interpreted in. (See Moore 2000, 2001, 2004, 2006; cf. Boroditsky 2000; Clark 1973; Fillmore 1997; Fleischman 1982; Lakoff & Johnson 1980, 1999; Traugott 1975 among others.) For example, a Figure that is “IN FRONT” of a Ground can be either earlier than or later than the Ground. This can be exemplified using the word *ahead* which has the spatial meaning ‘in front of something that is moving or potentially moving’ (Fillmore 1997).³ The sentences below show us that if the Ground is ego’s “now”, the Figure of *ahead* is a future time (i.e. a time that is later than “now”) as in (1a); otherwise, the Figure of *ahead* is a time that is earlier than the Ground as in (1b) (cf. Clark 1973: 51). Example (1a) means that cooler air and less fire peril are expected in the immediate future. The present time, metaphorically construed as ego’s location, is the Ground (not linguistically represented in this example). The future, metaphorically construed as the space in front of a moving ego, is the Figure.

- 1) a. Cooler air, less fire peril ahead. [*Oakland Tribune*, 29 Sept 1999 (headline)]
b. Polls show a widening lead for democrats ahead of next month’s elections. [27 October 2006, Amy Goodman, KPFA radio]

In (1b) the Figure is the time at which polls show a lead for Democrats, and the Ground is the time of the elections. The sentence is about the relation between the time of the polls and the

³ Note that the word *ahead* does not mean the same as *in front*: the word *ahead* is used when the Ground is a Mover in a motion scenario (though not necessarily moving at topic time). Thus, a picture of Frederick Street (Figure) is in front of me (Ground) as I sit, but not *ahead* of me.

time of the elections. The fact that the polls roughly coincide with the time of utterance is not crucial to understanding this relation. In other words, the concept “now” is not needed for understanding the temporal relation coded by *ahead* in (1b).

Example (1a), in which the Ground is ego’s “now”, is structured by an ego-perspective (path-configured) frame of reference. Example (1b) is structured by a *field-based* (path-configured) frame of reference, as will be argued in Section 4 below. Metaphor systems that represent the future on the front-back axis usually place it in front of ego (and the past behind ego). The only well-documented exception is Aymara, whose speakers are shown by Núñez & Sweetser (2006) to construe the *past* as metaphorically *in front* of them.⁴ Núñez & Sweetser analyze the Aymara data as being structured by an ego-perspective metaphor based on vision. I add to this analysis by proposing that ego and her past-looking perspective are situated within a field-based frame of reference. The purpose of the paper is to argue for that particular analysis as well as to show that the proposed frames of reference are useful theoretical constructs for describing spatial construals of time.

The remainder of the paper is organized in the following sections. In Section 2, I provide some necessary background on the ego-perspective frame of reference. Section 3 begins by reviewing the ego-perspective/field-based distinction, and then discusses the field-based frame of reference in detail, using Japanese as an example. While the basics of the Japanese case were presented in Moore (2006), the current paper goes into further detail. Section 4 justifies the analysis of the data as instantiating a field-based rather than intrinsic frame of reference. Section 5 applies the concepts developed throughout the paper to the Aymara case. Section 6 presents conclusions.

⁴ Examples of languages and works that report the future in front are English: Clark 1973; American Sign Language: Emmorey 2001; Chagga: Emanatian 1992; Chinese: Yu 1998; Danish Sign Language (and other signed languages): Engberg-Pedersen 1999; Japanese: Shinohara 1999; Romance: Fleishman 1982; Wolof: Moore 2000. On various languages see Haspelmath 1997; Radden 2001; and Traugott 1978. Some works that report the past in front and the future behind (but lack convincing linguistic data) are Dahl 1995 (Malagasy), Klein 1987 (Toba), Thornton 1987 (Maori).

2. The ego-perspective path-configured frame of reference

2.1. *The Moving Ego metaphor*

For convenience, the ego-perspective path-configured frame of reference will be called simply *ego-perspective* in this section. This frame of reference is described here using the well-known conceptual metaphor Moving Ego as an example. First, let me review a little background on conceptual metaphor and explain the approach taken here. We have seen an instance of the Moving Ego metaphor in (1a) above, and another example is given below. (The metaphor is stated in terms of *frame* rather than *domain*, as discussed further below.)

- 2) Source-frame and target-frame examples for Moving Ego.
 - a. We [ego, FIGURE] are approaching a traffic light [GROUND]. (Source frame)
 - b. We [ego, FIGURE] are approaching Christmas [GROUND]. (Target frame)

Examples such as (1a) and (2b) are *metaphorical expressions* that instantiate conceptual metaphors. In a metaphorical expression, one kind of experience is talked about as if it were another. In the case of (2b), the increasing imminence of a future time as talked about as if it were an experience of motion. The conceptual metaphor is the set of conceptual correspondences, or mappings, that underlie the expression. These are given in Table 1 for the Moving Ego metaphor. In the table, the arrow is read “maps onto”. The expression *occurrence of a time* is a technical term that gives us a way of talking about the change of state that results in our being able to say that it is, was, or will be a certain time. For example, speaking of a situation in which one could say “it is lunchtime”, I would say, in the terminology of this paper, that lunchtime “occurred”. *Co-location* means ‘location at the same place’.

[INSERT TABLE 1 ABOUT HERE]

The fact that a wide variety of expressions conform to the logic of the above mapping is evidence for its existence⁵, because the mapping is what expresses how all the sentences are

⁵ The fact that speakers can understand new metaphorical expressions that are based on a conventional mapping is evidence that they know the mapping in some sense (Grady 1997). I am not making claims

semantically related. Examples from English are given in (3). Work on this metaphor in various languages may be found in, for example Clark (1973); Emanatian (1992); Emmorey (2001); Fleischman (1982); Haspelmath (1997); Moore (2000); Radden (2001); Shinohara (1999); Taub (2001); Traugott (1978); Yu (1998).

3) The weeks ahead should be interesting. We are approaching/getting close to the end of the semester. We have arrived at the end of the week. We have reached June already (Lakoff & Johnson 1999: 146). We have passed the deadline.

I will use the term *spatiotemporal* metaphor to talk about what is usually talked about as a mapping “from space to time”. The term will be used as a short expression for spatiotemporal metaphors that can be used to say *when* an event happens or a state obtains, or to talk about the duration of an event or state (as opposed to metaphors that treat time as a resource). I define the count noun *time* as ‘when something happens or could happen’.

It is convenient to speak of spatiotemporal metaphors as mappings from the domain of SPACE to the domain of TIME, but it is important to remember that the data do not actually contain the abstractions SPACE and TIME. Instead, there are mappings between specific concepts such as the mapping from *a place ahead of ego* to *a time in the future* in the Moving Ego metaphor. Notice also that the source-domain experience of many temporal metaphors involves motion, which involves time (Engberg-Pedersen 1999; Galton this volume). Thus we cannot really speak of spatiotemporal metaphors as mappings from the domain of SPACE to the domain of TIME. Instead, I will speak of metaphors as mappings across (Fillmorean) conceptual frames. (This use of the term *frame* is different from that in *frame of reference*.) The claim that metaphors are mappings across frames rather than domains is argued at length in Moore (2006), but a brief summary is given below, using Moving Ego as an example.

A *frame* is a structured configuration of semantic roles that constitutes cultural or world knowledge (Fillmore 1985; Fillmore et al. 2004; Lakoff 1987, 2007). The source frame of Moving Ego is RELATIVE MOTION, and the target frame is EGO-CENTERED TIME. Both frames are stated below.

about the exact form this knowledge takes. See e.g. Boroditsky (2000); Gentner (2001); Gentner et al. (2001); Kranjec & McDonough (this volume) for discussions of this issue.

- The frame of RELATIVE MOTION: A physical Figure moves relative to a physical Ground.
- The frame of EGO-CENTERED TIME: There is relative change between the present and the future and the past.

The frame of RELATIVE MOTION and the frame of EGO-CENTERED TIME are easily distinguished from each other because they have different semantic roles. The semantic roles in the frame of relative motion are physical entities. The semantic roles in EGO-CENTERED TIME are times. So, for example, when we use an expression like (2b) (*We are approaching Christmas*), we are talking about Ego-centered time as if it were relative motion. Because the semantic roles are different, the fact that time is involved in motion is not a problem for this formulation. Thus rather than being a mapping from space to time, a spatiotemporal metaphor is a mapping from a particular type of experience that is played out in space and time (the source frame) to another type of experience (the target frame) which lacks the spatial roles of the source frame. This formulation is a simple refinement that preserves the original insights of conceptual metaphor theory (e.g. Lakoff & Johnson 1980).

The role of temporal concepts in the source frames of spatiotemporal metaphors can be highlighted through a discussion of *experiential motivation* or *experiential grounding* (Grady 1997; C. Johnson 1999; Lakoff & Johnson 1980, 1999; Moore 2006; Núñez & Sweetser 2006). An experiential motivation motivates a metaphorical mapping via correlations in experience between key source-frame concepts and key target-frame concepts. For example, in the experiential motivation of Moving Ego, ego's location correlates with her present time (i.e. her "now"). As ego moves forward and the present moment gets later, each location that she has passed will correlate in experience with a past moment, and each location ahead of her correlates with a future moment, which will become present. Ego's changing location in the source frame maps onto the "now" that is constantly getting later (cf. Brockelman 1985; Husserl 1999; see Núñez & Sweetser 2006 for a complete characterization of the experiential motivation of Moving Ego). Thus ego's experience of moving along a spatial path contains the fundamental temporal elements of the Moving Ego metaphor. When a temporal experience that does not involve movement on a path is talked about in terms of the path experience, we have a metaphor.

The Moving Ego source-frame and its application to the metaphor are suggested in Diagram 1. In the diagram, the circles under ego represent places-as-times. The circle labeled *G* is the Ground, and any other circle could be Figure.

[INSERT DIAGRAM 1 ABOUT HERE]

Example (4) below from Wolof, as well as its English translation, can refer to either a physical experience of movement on a path (RELATIVE MOTION) or a temporal experience. This ambiguity is evidence for the experiential motivation discussed above and thus for the temporal characteristics of the source frame that make it appropriate for the mapping. In the example, under the morpheme-by-morpheme gloss, a couple of approximately word-for-word translations are given in double quotes. Under that, a free translation is given in single quotes. This format for translations is adopted throughout the paper where appropriate.

- 4) *Buñ demee ba ci kanam*
 when.1.PL.SUBJ go:ANT to.the.point.of LOCPREP face/front/ahead
dinga gis.
 FUT.2 see
 “When we have gone until at front, you will see.” “When we get farther ahead, you will see.”
 ‘When we get farther down the road, you will see.’ ‘Later, at a future point in time, you will see.’ (E.g., the addressee will see that what the speaker had been saying is true.)
 [Wolof. Moore 2000. (AK, Ba:211)]⁶
- b. *Juróom-fukki at sa gannaaw la woon.*
 fifty:PD.PL year LOCPREP:DIST back NONSUBJ.FOC.3 PAST
 “It was fifty years at back.”
 ‘It was fifty years ago.’ (The forms *si* and *sa* are variants of the locative preposition *ci/ca*.)
 See Robert 1997, 2006 on *ci/ca*.
 [Wolof. Moore 2000 [att.] (d K, An:6)]

⁶ The following abbreviations are used in the paper. ACC accusative; ANT anterior; att. ‘attested’; COP copula; DAT dative; DIST; distal; FOC focus; FUT future; GEN genitive; LOCPREP locative preposition; NOM nominative; NONSUBJ nonsubject; PD possessed; PL plural; TOP topic.

The words *kanam* ‘front’ and *gannaaw* ‘back’ are typical in Wolof expressions that are used to talk about the future or past. As is always the case in the Moving Ego metaphor, FRONT maps onto ‘future’ and BACK/BEHIND maps onto ‘past’.

2.2. Summary of the ego-perspective path-configured frame of reference

The definition of *ego-perspective path-configured frame of reference* is given below.

- **Definition:** An ego-perspective path-configured frame of reference is one in which ego is, or is associated with, Figure or Ground, and this fact plays a crucial role in structuring the frame of reference. A path-configured frame of reference is one in which all entities in the frame of reference are on a single path.

The ego-perspective frame of reference has to do with sequence, since different positions on a path map onto different times. This frame of reference also has to do with duration, which is depicted metaphorically as motion (see Moore 2006, especially Section 3.3.1.).

Given that people generally face the direction in which they are heading, the motion-scenario of Moving Ego motivates a frame of reference where locations toward which ego is moving are in front of her and those which she has passed are behind her (Núñez & Sweetser 2006). The notion of FRONT that is relevant to Moving Ego is the perceptual-interactive front. This concept of FRONT has to do with an ego who is interacting agentively with the world, who has intentions and expectations. (Cf. Allan 1995; Brockelman 1985; Evans 2003; Husserl 1999; Guyau 1988; Vandeloise 1991.) In Section 3 below we will see a contrasting notion of FRONT, one which has little to do with agentivity.

3. The field-based path-configured frame of reference

Unlike the ego-perspective case, the field-based frame of reference does not involve a privileged point of view. This contrast is exemplified in (1) in Section 1 above, and again below.

- 5) a. Summer is behind us. (Ego-perspective frame of reference)
- b. Summer follows spring. (Field-based frame of reference)

In (5a), above, *summer* is the Figure, and the moment of speaking (represented as *us*) is the Ground. This sentence is only interpretable as a statement about a relationship between a past and a present (real or imagined). The frame of reference is thus *ego perspective*. In (5b), *summer* is again the Figure, but in this case the Ground is *spring*. The temporal relation in this sentence is between two times that are presented as independent of the present moment, and the frame of reference is thus *field-based*. This distinction is described in Traugott (1975) as a contrast between *tense* and *sequencing*. The ego-perspective vs. field-based temporal contrast is recognized in philosophy as the contrast between A-series (ego-perspective) and B-series (field-based) time (Gell 1992; McTaggart 1993; Tenbrink, this volume). A-series temporal relations are constantly changing as the temporal value of “now” changes. B-series temporal relations are unchanging. For example, the fact that summer precedes fall does not change. Hereafter, *A-series* or *B-series* will be used to refer to these two types of temporal relation when a term is needed that is neutral regarding metaphor and frame of reference.⁷ Here is a definition of the field-based frame of reference:

- **Definition:** In a field-based frame of reference, the relationship between Figure and Ground is understood in terms of a cognitive structure (e.g. a coordinate system) that encompasses all of the entities in the frame of reference. The frame of reference determines the relationship between Figure and Ground independently of the perspective from which they are perceived/conceptualized.

3.1. A field-based frame of reference in Japanese

This section illustrates how a field-based frame of reference is instantiated in Japanese with the metaphor SEQUENCE IS RELATIVE POSITION ON A PATH. Although motion per se does not map onto anything in the metaphor, positions on a path of motion map onto times. After we see how the metaphor works with *tuzuite* ‘following’, we will see it instantiated with FRONT/BEHIND

⁷ Haspelmath (1997: 32) discusses perspective-neutral temporal relations in terms of the *anterior* and *posterior* semantic functions.

vocabulary. In Section 4 below, I will defend the claim that the frame of reference in question is field-based.

In Japanese, earlier times can be talked about as being farther in the direction of motion than later times. That is, earlier times precede and later times follow, as in English (cf. 5b above). A Japanese example is given below.

- 6) a. Ziroo no supiiiti wa Taroo no supiiiti ni tuzuite atta
Ziro GEN speech TOP Taro GEN speech DAT following took.place
“Ziro’s speech took place, following Taro’s speech.”
‘Ziro’s speech followed Taro’s.’ [Japanese. Yukio Hirose]

Example (6a) instantiates the conceptual metaphor SEQUENCE IS RELATIVE POSITION ON A PATH. In the example Ziro’s speech is the Figure, and Taro’s speech is the Ground, since the time of Ziro’s speech is determined relative to that of Taro’s speech. The source frame is ORDERED MOTION, characterized below.

- The frame of ORDERED MOTION: Two or more entities move relative to an unmentioned background, but not necessarily relative to each other. For any pair of entities, one is ahead of the other.

The next example suggests a scene that is structured by the frame of ORDERED MOTION.

- 6) b. Kodomotati wa oya ni tuzuite itta
children TOP parent DAT following went
“[The] children went, following [their] parents.”
‘The children followed their parents.’ [Japanese. Yukio Hirose]

In the example, the children are the Figure, and the parents are the Ground, since the position of the children is determined relative to the position of the parents. The frame of ordered motion is represented graphically in Diagram 2.

[INSERT DIAGRAM 2 ABOUT HERE]

SEQUENCE IS RELATIVE POSITION ON A PATH is a mapping from the frame of ORDERED MOTION to the frame of SEQUENCE. The frame of SEQUENCE is given below.

- The frame of SEQUENCE: Times occur earlier or later than other times.

The mapping for SEQUENCE IS RELATIVE POSITION ON A PATH is given in Table 2.⁸

[INSERT TABLE 2 ABOUT HERE]

The experiential motivation for SEQUENCE IS RELATIVE POSITION ON A PATH is that for any pair of entities that are traveling on the same path, the one that is *ahead* arrives at any given goal *first*. This experiential motivation has a salient temporal component, namely a sequence of arrivals. As is typical with metaphors, not all aspects of the source frame are relevant to the metaphor (Lakoff & Johnson 1980; Sweetser 1990). In particular, the experience of duration involved in perceiving or thinking about the two arrivals is not relevant. Accordingly, SEQUENCE IS RELATIVE POSITION ON A PATH depicts sequence and not duration. Also not mapped is the Goal of motion. Given a source- and target-frame pair, what is mapped vs. what is not mapped is primarily constrained according to structure that both frames share. In the cases we are concerned with here, this shared structure is temporal (cf. Fauconnier & Turner 2002 on *generic space*; Gentner 2001; Lakoff 1990; Sullivan 2007). Deciding which elements do or do not map is a matter of empirical observation.

3.1.1. A field-based frame of reference with FRONT/BEHIND organization

⁸ The data that I analyze in terms of SEQUENCE IS RELATIVE POSITION ON A PATH are usually analyzed as instantiating Moving Time (e.g. Clark 1973, Lakoff & Johnson 1999). In the SEQUENCE IS RELATIVE POSITION ON A PATH data, times are metaphorically located relative to other times. By contrast, typical cases of Moving Time are those in which a time moves relative to ego (e.g. *Christmas is coming*). I have renamed the metaphor that subsumes these typical Moving Time cases *Ego-centered Moving Time* (Moore 2006). Ego-centered Moving Time is not discussed in this paper because it is not directly relevant to the meaning of FRONT/BEHIND terms.

Now let us see how this discussion of temporal ‘preceding’ and ‘following’ is relevant to FRONT/BEHIND vocabulary. Even if the Ground has no front or back of its own, words for ‘front’ and ‘behind’ can be used to describe the ‘ahead/behind’ relation in a scenario that instantiates the frame of ORDERED MOTION (Fillmore 1997; Tenbrink, this volume). Imagine a scenario in which poles are floating in a stream. In this scenario the pole that is farther in the direction of motion can be said to be *in front* (and the one that is less far can be said to be *behind*). This is exemplified below. (Although Japanese *mae* ‘front’ has a range of uses in the domain of space, only the ordered-motion use is exemplified here. While *mae* has the gloss ‘front’, *ato* does not have a complementary gloss as ‘back’. Rather, *ato* means something like ‘the space behind a moving entity’.)

7) a. (Imanotokoro) Harriet no pooru ga
 (at the moment) Harriet GEN pole NOM
 Harry no pooru yori mae desu
 Harry GEN pole from front COP.POLITE
 “(At the moment) Harriet’s pole is more front than Harry’s pole.” ‘(At the moment) Harriet’s pole is ahead of Harry’s pole.’ [Japanese. Yukio Hirose 4 April 1996.]

b. (Imanotokoro) Harry no pooru ga
 (at the moment) Harry GEN pole NOM
 Harriet no pooru yori ato desu
 Harriet GEN pole from space.behind.moving.entity COP.POLITE
 “(At the moment) Harry’s pole is more behind than Harriet’s pole.”
 ‘(At the moment) Harry’s pole is behind Harriet’s pole.”
 [Japanese. Yukio Hirose]

Both *mae* and *ato* are used in SEQUENCE IS RELATIVE POSITION ON A PATH, as seen in (7c-d) below.

c. Satoo o ire-ru yori mae ni sio o ire-ru
 sugar ACC put.in-NONPAST from front LOC salt ACC put.in-NONPAST

‘Before putting in sugar, I put salt.’ [Japanese. Kyoko Hirose Ohara]

- d. Syokuzi no ato de ha o migaita
meal GEN space.behind.moving.entity LOC teeth ACC brush:PAST
‘After a meal, [I] brushed my teeth.’ (Almost anything could be said to happen after a meal with this construction.) [Japanese. Katsuya Kinjo]

Temporal *mae* ‘front’ and *ato* ‘space behind a moving entity’ do not require deictic anchoring to be used felicitously, as the above examples show. Such expressions are thus said to be *deictically neutral*. Since the FRONT-BEHIND orientation imparted by motion is not dependent on a viewer’s perspective, a motion scenario is a good experiential motivation for a metaphor that structures deictically neutral temporal FRONT-BEHIND terms (Moore 2006; Tenbrink, this volume). Though expressions with *mae* or *ato* do not require deictic anchoring, they are nonetheless compatible with it, as the next example shows for *mae*.

- 8) Mae ni asonda koto ga aru.
front LOC play:PAST fact NOM exist/have
“(We) have the fact that (we) played at front.”
‘We have played before.’ [Japanese. Yukio Hirose]

To sum up, we have seen that the Japanese words *mae* and *ato* instantiate SEQUENCE IS RELATIVE POSITION ON A PATH. This metaphor portrays unchanging temporal relationships as static spatial relationships against a background of motion. Thus a time that metaphorically follows another time (e.g. *New Year’s follows Christmas*) does not get metaphorically “closer” to it or “farther” from it. By the same token, in Japanese, times are not said to become “more *mae*” (i.e. “more front”) of other times. By contrast, Moving Ego portrays dynamic temporal relationships as motion.

The (source-frame) notion of FRONT that is relevant to SEQUENCE IS RELATIVE POSITION ON A PATH is derived from direction of motion. Let us call it *derived FRONT*. This concept of FRONT is highly schematic, consisting of just the notion of a facet that is oriented in the direction of motion. This contrasts with the source-frame concept of FRONT involved in Moving Ego,

which, as we have seen, is also schematic but richer, involving perception and interaction as well as direction of motion.

SEQUENCE IS RELATIVE POSITION ON A PATH presupposes a field-based frame of reference. In this frame of reference, times are ordered relative to each other, but not necessarily relative to ego's "now". Although ego's perspective does not play a role in structuring the frame of reference, the frame of reference is compatible with ego as Ground. Thus, the frame of reference is said to be *perspective neutral*.

4. Field-based versus intrinsic frames of reference

Let us examine in detail why the frame of reference presupposed by SEQUENCE IS RELATIVE POSITION ON A PATH is field based and not intrinsic. (This contrasts with Zinken in press [pp. 12-13] where analogous data is analyzed as involving or possibly involving an intrinsic frame of reference.) Examples of the source frame of SEQUENCE IS RELATIVE POSITION ON A PATH are runners in a race, or a queue (Talmy 2000: 203; cf. Hutchins 2005). Who is in front (or *ahead*) of who in a queue is determined relative to the directedness of the queue rather than the bodily asymmetries of the people involved. Thus the queue is what Talmy (2000: 203) calls an *encompassive secondary reference object* — it encompasses the Figure and Ground and imposes directedness on the Ground, in this case FRONT/BEHIND orientation.⁹ The secondary reference object structures the frame of reference. What makes the frame of reference field-based is that this directedness is a shared property of all the entities involved (see Section 3).

By contrast, an intrinsic frame of reference depends exclusively on properties of the Ground. If the Ground rotates, the frame of reference rotates with it. In cases in which the entire array is moving along a path and the FRONT-BEHIND relation is derived from this movement, the relation does not depend on any property that the Ground has as an individual.

The example of the race or the queue is analogous to the temporal situation, except that in the temporal situation, the ordered times that make up the metaphorical line constitute the entire universe in question. The order is not a property of individual times, but a relation that obtains

⁹ Talmy and Levinson use the terms "secondary" and "primary" in opposite ways when describing frames of reference. I follow Talmy's usage in which the "primary" Ground is the one that most directly locates the Figure. Typically this is the one that is named in a predication (e.g. *Flavia* [Figure] is in front of *Godzilla* [primary Ground]).

among them. Consider the Japanese example in (10) below, in which *getuyoobi* ‘Monday’(Figure) is metaphorically in front of *kayoobi* ‘Tuesday’ (Ground) (i.e., Monday is earlier than Tuesday). The “front part” of *kayoobi* ‘Tuesday’ is a property of the sequential relation that *kayoobi* has with other days of the week. Thus it is not possible to change the metaphorical FRONT/BEHIND orientation of *kayoobi* in a way that would be analogous to, say, rotating a person in a queue.

- 10) Kayoobi no mae no hi wa getuyoobi da.
Tuesday GEN front GEN day TOP Monday COP
“The day in front of Tuesday is Monday.”
‘The day before Tuesday is Monday.’
[Japanese. Yukio Hirose]

Thus we see that both the spatial and temporal cases have characteristics of a field-based system. These characteristics motivate logical properties involving transitivity and converseness that Levinson identifies as being associated with absolute frames of reference but not with intrinsic ones.¹⁰ We will see that sequence also has these logical properties. Levinson describes the contrast as follows:

... absolute and intrinsic are distinguished in that absolute relators define asymmetric transitive relations (if F1 is north of G, and F2 is north of F1, then F2 is north of G), where converses can be inferred (if F is north of G, G is south of F). The same does not hold for intrinsic relators, which hardly support any spatial inferences at all without further assumptions. (2003: 51)

The “earlier-than” relation, which is what FRONT terms are used to talk about in B-series contexts, has the property of defining asymmetric transitive relations (if Moses was born before Jesus and Jesus was born before Muhammad, then Moses was born before Muhammad) (cf. Lakoff 1993). Similarly, a converse can be inferred from the “earlier-than” relation (with certain restrictions, see footnote 11); e.g., if Jesus was born before Muhammad, then Muhammad was born after Jesus.

¹⁰ Some of the points made here are subject to certain restrictions when applied to temporal relations. See Anscombe 1964 on the logical properties of *before* and *after*.

To summarize, the frame of reference presupposed by SEQUENCE IS RELATIVE POSITION ON A PATH is field-based rather than intrinsic because the relations between any given Figure and Ground depend on properties of the system as a whole. On crucial points, the logical properties of the frame of reference are those of a field-based system rather than an intrinsic one.

5. Ego in a field-based frame of reference

I have argued for the existence of a field-based frame of reference in which FRONT corresponds to ‘earlier’ and BEHIND corresponds to ‘later’ for deictically neutral expressions. In fact there is evidence that this pattern constitutes a crosslinguistically robust tendency (Moore 2006). In addition to Japanese, the pattern is exemplified by Mandarin *qián* ‘in-front/earlier’ and *hòu* ‘behind/later’. Here are some additional expressions that exemplify this tendency (from Haspelmath 1997: 57), listed in the order ‘in-front/earlier’—‘behind/later’: Latin *ante*—*post*; Albanian *para*—*pas*; Tamil *munnaale*—*pinnaale*; and Maori *mua*—*muri*. Additionally, Haspelmath (1997: 61) cites cases in which languages have expressions with this semantic pattern in which the FRONT meaning is diachronically related to the ‘earlier’ meaning and the BEHIND meaning is related to the ‘later’ meaning, as in the case of English *before* and *after*. In what follows we will see how the existence of this tendency is relevant to the analysis of a system that places the past in front of ego.

5.1. Looking forward to the past: the case of Aymara

In Aymara, a Jaqi language of South America whose temporal FRONT/BEHIND structure is analyzed by Núñez & Sweetser (2006), the past is construed as being in front of ego and the future behind. Such a system is noteworthy because for all other thoroughly-described systems in which the future and past are metaphorically located on ego’s front/back axis, the future is in front and the past is behind.¹¹ The Aymara data raise interesting questions about the nature of the metaphor that motivates people to talk about the past as if it were in front of them and the frame

¹¹ Toba, a South American language discussed in Klein (1987), may also have a system in which the past is in front and the future is behind ego.

of reference within which the metaphor is understood. In this section I will suggest an analysis involving a field-based frame of reference.

In the Aymara data below FRONT maps onto ‘earlier/past’ and BEHIND maps onto ‘later/future’. Note that the past is a special case of ‘earlier’ — i.e. ‘earlier than “now”’, and the future is a special case of ‘later’.

11) Aymara *nayra* ‘eye/sight/front’ and *qhipa* ‘back/behind’ in temporal uses (from Núñez & Sweetser 2006)

- | | | | | | |
|----|-----------------|--------------|-----------------------------------|-------------------------|----------|
| a. | nayra | mara | | | |
| | eye/sight/front | year | ‘last year’ | [Not ‘the year before’] | [p. 415] |
| b. | qhipa | uru-na | | | |
| | back/behind | day-in/on/at | ‘on the next day/on a future day’ | | [p. 417] |
| c. | nayra | sata | | | |
| | eye/sight/front | planting | ‘first planting’ | | [p. 417] |

The metaphoric placement of the past in front of the present could in principle just be a case of an earlier time in front of a later time. I.e., it is not necessarily the case that this relation involves ego’s perceptive-interactive FRONT (Núñez & Sweetser 2006: 413). However, Núñez & Sweetser have shown with gestural data that the past unequivocally *is* in front of ego for the Aymara: Speakers gesture to the front when speaking of the past and to the back when speaking of the future.

Núñez & Sweetser argue that the gestural system of Aymara speakers together with the Aymara language provide evidence for two metaphors that map a physical Figure located in front of a physical Ground onto a time which is earlier than another time (and a Figure which is behind a Ground onto a time which is later). One of these is the *Time-Reference-Point* (Time-RP) metaphor. Instances of this metaphor refer to relationships between different times, independently of ego’s ‘now’ — i.e. the concepts ‘past’ and ‘future’ are not involved. Linguistic examples of the Aymara Time-RP metaphor are (11b) when it is interpreted as ‘on the next day’,

and (11c) above. I will use the term (*Aymara*) *Time-RP metaphor* specifically to refer the Aymara Time-RP metaphor as it employs the concepts FRONT (*nayra*) and BACK/BEHIND (*qhipa*). (For convenience, *nayra* will be glossed simply as ‘front’, even though its full gloss is ‘eye/sight/front’.)

5.2. *Nayra* ‘front’ and *qhipa* ‘behind’ instantiate SEQUENCE IS RELATIVE POSITION ON A PATH

The data that I have on uses of *nayra* ‘front’ and *qhipa* ‘back/behind’ suggest that the Aymara Time-RP metaphor is equivalent to SEQUENCE IS RELATIVE POSITION ON A PATH. Consider example (12) below.

- 12) Mama Maruja-x yana-p-iri-naka-mpi-w sar-k-i,
 ‘Maruja goes ahead with the helpers’

chacha-x qhipa-t-rak sara-ni
 husband-TOP back/behind-from-also go-FUTURE

‘Her husband from behind will also go.’ ‘Her husband will go later/after.’

[Aymara. Hardman, Vásquez, & Yapita 1988: 132]¹²

Crucially, the second line of example (12) (*chachax qhipatrak sarani*) can also be translated ‘Her husband will go behind (her)’ (Justino Llanque Chana, personal communication, 25 August 2008). This is evidence for the experiential motivation of SEQUENCE IS RELATIVE POSITION ON A PATH in Aymara — an entity that is *behind* another entity on a path is also an entity that arrives *later*. The sentence in (13) below confirms that (a derived form of) *nayra* means ‘in front’ on a path.

- 13) k'ullk'u thaki-w; nayra-qat sar-ma
 narrow road-AFFIRMATIVE in.front go-IMPERATIVE

¹² The original Spanish word-for-word translation is ‘Sra. Maruja ayudantes con se adelanta esposo desde atrás irá’ (Hardman et al. 1988: 132). The free translation is ‘Maruja se adelanta con las ayudantes. Su esposo irá después’ (*ibid*: 136). I (KEM) am responsible for translations from Spanish to English throughout this paper.

‘The road is narrow, so you go in front of me.’

[Justino Llanque Chana, personal communication 25 August 08.]¹³

Further (suggestive) evidence that a motion scenario functions as a motivation for the ‘earlier’ use of *nayra* ‘front’ is the fact that *nayra* is also the ordinal number ‘first’ (Núñez & Sweetser 2006: 415); see example (11c). (Recall that in the frame of ORDERED MOTION, the entity that is *in front* arrives *first*.) According to Ebbing (1981: 42), “there is only one exception [to the regular pattern for deriving ordinals from cardinals - KEM] which is the number FIRST, which is translated by *nayra* [‘front’] in Aymara”. (“*Hay una sola excepción que es el numero PRIMERO, que en el Aimara se traduce por naira*” [original spelling and emphasis].)

To summarize briefly: *nayra* ‘front’ and *qhipa* ‘back/behind’ appear to instantiate SEQUENCE IS RELATIVE POSITION ON A PATH in at least some of their temporal uses.

5.3. KNOWLEDGE IS VISION and the Aymara Ego-RP metaphor

In addition to Time-RP, the other metaphor posited by Núñez & Sweetser is the *Ego-reference-point* (Ego-RP) metaphor. In this metaphor, ego is the Ground, and expressions that instantiate this metaphor are used to talk about the past or future. Examples are (11a) above, and (11b) when it means ‘on a future day’.

Núñez & Sweetser (2006) suggest that the Ego-RP metaphor is motivated by KNOWLEDGE IS VISION, a crosslinguistically common metaphor in which *seen entities* map onto *known entities* (C. Johnson 1999; Lakoff & Johnson 1980; Sweetser 1990).

As Núñez & Cornejo (to appear) explain:

According to Núñez and Sweetser, the relevance of visual experience in Aymara profiles what is in front of Ego as what is seen, and therefore known, and what is behind Ego as what is not seen and therefore, unknown. The Aymara Ego-RP mapping thus characterizes future (unknown times) as being behind Ego and past (known times) as being in front of Ego. Núñez and Sweetser

¹³ *Nayra-qata* (appearing as *nayra-qat* in [13]) is glossed as ‘*al frente*’ (‘to the front’) on page 200 of Hardman, Vásquez & Yapita (1988); it is also glossed as *delante* ‘in front, ahead’ on page 303. According to Hardman, Vásquez & Yapita (*ibid*), the suffix *-qata* appears only in *nayraqata*.

suggested that the relevance of visual experience was a necessary, but not sufficient, condition for the bodily orientation observed in the Aymara Ego-RP mapping

The intent of my current proposal then, in accordance with recent work by Núñez & Cornejo (to appear), is to account for aspects of the Aymara Ego-RP metaphor that are not accounted for in terms of motivation by KNOWLEDGE IS VISION alone. One thing that an analysis of the Ego-RP metaphor must account for is the distinction between the present and the past, which the explanation in terms of vision does not distinguish, since present and past are both known and therefore in front of ego. The distinction between present and past is made in Aymara gesture (Núñez & Sweetser 2006: 415). More generally, what has to be motivated is a mapping of linear order onto sequence. For example, the gestural data show a mapping of different degrees of distance in front of ego onto different degrees of pastness, as Núñez & Sweetser explain:

Locations in front and closer to the speaker are more recent past times, whereas locations in front and farther from the speaker are less recent times: Speakers contrast “last year” with “this year” by pointing downward first at a more distant point and then at a nearer one. (2006: 437-38; see also pp. 429ff.)

The following proposal will attempt to account for these observations regarding the Aymara Ego-RP metaphor.

5.4. Facing the front of the frame of reference

Let us explore the possibility that ego is aligned with the independently existing frame of reference which is presupposed by SEQUENCE IS RELATIVE POSITION ON A PATH. This hypothesis is plausible because it relies only on conceptual structure that the Aymara are already assumed to have, plus conceptual operations that are standardly assumed in cognitive linguistics. My hypothesis, then, is that the Aymara Ego-RP metaphor has essentially the same structure as the Aymara Time-RP metaphor, plus structure that is added by the alignment of ego’s FRONT/BEHIND orientation with the Aymara Time-RP metaphor, and structure that is added by a version of KNOWLEDGE IS VISION.

A preliminary argument that the Aymara Time-RP and Ego-RP metaphors are related involves ambiguous expressions like that in (11b) (*qhipa uruna* “on the/a behind day”) above. The two meanings of (11b) (‘on the next day’/‘on a future day’) are very similar and could be explained by the operation of one metaphor. This metaphor would map an entity that is behind another entity onto a later time.

Let us pause to take note of one reason why this discussion is interesting: if the Ego-RP metaphor is in part a version of SEQUENCE IS RELATIVE POSITION ON A PATH, then in Aymara we may have a novel variant of a crosslinguistically common metaphor. If on the other hand, the Ego-RP metaphor is unrelated to SEQUENCE IS RELATIVE POSITION ON A PATH, then we may have a case that is entirely unique among well-described cases of spatiotemporal metaphor. Thus one aspect of the overall question addressed in this paper is whether the Aymara system is related to those of previously-studied languages, and if so, how.

In order to show how my hypothesis is plausible, I will show that it is reasonable to posit ego’s location as Ground in a field-based frame of reference. Then I will explain how a static metaphor that depicts sequence as position can be related to SEQUENCE IS RELATIVE POSITION ON A PATH (whose source frame is dynamic).

Although the ego-perspective frame of reference discussed in Section 2 above is partially defined in terms of ego’s role in it, the mere fact of ego’s being associated with the Ground does not define a frame of reference. Specifically, ego can be (associated with) the Ground in a field-based frame of reference (recall that Levinson’s *absolute* is a special case of field-based). In (14a) below, ego’s location is the Ground; in (14b), ego is the Ground.

- 14) a. Mount Shasta is north of here.
- b. Build the campfire to the north of me.

The structure of a temporal sentence like (15) below (repeated from 8) is analogous to that of the sentences in (14) immediately above in that the frame of reference is field-based even though the Ground of the FRONT relation, by virtue of being the moment of speech, is associated with ego.

- 15) Mae ni asonda koto ga aru.
front LOC play:PAST fact NOM exist/have
 “(We) have the fact that (we) played at front.”
 ‘We have played before.’ [Japanese. Yukio Hirose]

In (15), “in front of now” means ‘earlier than now’. Crucially, the past is metaphorically in front of the present, not in front of ego’s body. By hypothesis, the relevant notion is *derived FRONT*, not *perceptive-interactive FRONT*. The data in (16) below provide evidence that when ego is explicitly coded as Ground, *mae* ‘front’ indicates ego’s future — the opposite of the scenario in (15). Another indication that *mae* in (15) does not mean ‘in front of ego’ is that a gesture to the back would be appropriate accompanying (15) rather than a gesture to the front (Kazuko Shinohara personal communication February 1999).

- 16) Kurisumasu wa moo me no mae da.
 Christmas TOP now eye GEN front COP
 “Christmas is now in front of the eye.”
 ‘Christmas is close at hand.’ [I.e., in the near future.] [Japanese. Yukio Hirose]

Since (15) exemplifies the special case in which the Ground is ‘now’, *earlier* is equivalent to *past* in that example. However, even though the expression is deictic, it does not evoke an ego-perspective frame of reference (cf. Fillmore 1997; Yu 1998). The frame of reference in (15) is the same as in the nondeictic cases: earlier times are ‘in front’ of later times, and the times do not ‘move’ relative to each other. The orientation of ego’s metaphoric FRONT is opposite to that of the points or periods of time. This situation is represented in Diagram 3.

[INSERT DIAGRAM 3 ABOUT HERE]

To summarize, we have seen that ego can be associated with the Ground in a field-based frame of reference, and that deictic usage is not necessarily evidence for an ego-perspective frame of reference. Whereas Japanese *mae* ‘front’ participates in ego-perspective as well as field-

based frames of reference, Aymara *nayra* ‘front’ participates only in field-based frames of reference (in temporal uses).

5.5. SEQUENCE IS RELATIVE POSITION ON A PATH as a static system

Let us see how the Aymara Ego-RP metaphor, which is static, can be related to SEQUENCE IS RELATIVE POSITION ON A PATH. The key idea is that SEQUENCE IS RELATIVE POSITION ON A PATH maps positions, not motion (Section 3.1.1). Even though it presupposes a scenario of motion, SEQUENCE IS RELATIVE POSITION ON A PATH can construe temporal relations as static because two levels of Figure-Ground organization are involved in its source frame (ORDERED MOTION). Talmy (2000: 336) explains:

... [C]onsider the sentence *The lion chased the gazelle through the forest*. In the first instance here, the lion functions as Figure with respect to the gazelle as Ground. If they both run at the same speed, then in fact this particular Figure-Ground relation is static. Further, however, the pair of animals together functions as a composite Figure with respect to the forest as Ground. In this case the Figure moves with respect to the Ground. Here, then, the gazelle functions as the Ground with respect to the lion, but it also functions as part of the composite Figure with respect to the forest.

The composite Figure that Talmy describes can be regarded as an *encompassive secondary reference object* (see the beginning of Section 4 above). Thus, the elements of the composite Figure have a front/back relation to each other that is based on the direction of motion of the composite Figure as a whole. This is the situation that we saw in the discussion of Japanese in Section 3.1.1 and in the description of the field-based frame of reference in Section 4. Example (17) below, which instantiates the Aymara Time-RP metaphor (= SEQUENCE IS RELATIVE POSITION ON A PATH), is parallel to the Japanese example in (7c) in Section 3.1.1 above (‘Before putting in sugar, I put salt’). (I have kept the original orthography from Ebbing 1981. *Naira* is an alternate spelling of *nayra* ‘front’.)

- 17) Jutatapat naira ñia mankkantanwa
his:coming front already we:had:eaten

‘Before his coming we had already eaten.’ (‘Antes de su venida ya habíamos comido’.)
[Aymara. Ebbing 1981: 98; Aymara spelling as in original]

In example (17) above, *mankkantanwa* ‘we had eaten’ is the Figure, and *jutatapat* ‘his coming’ is the Ground. Like (7c), this is a good example of SEQUENCE IS RELATIVE POSITION ON A PATH because there is no typical order that we would expect the arrival and the eating to occur in — and thus no typical point of view from which the temporal relation is considered. Diagram 4 is a schematic representation of the semantics coded by *naira* (= *nayra*) ‘front’ in example (17). In the diagram, the rectangle represents the encompassive secondary reference object (which is also a composite Figure). In this case the secondary reference object constitutes the frame of reference. The arrow represents the “direction” of metaphorical motion, which endows the objects in the frame of reference with front/back relations, though within the frame of reference the objects are static.

[INSERT DIAGRAM 4 ABOUT HERE]

This analysis has shown how an unchanging temporal relationship can be depicted metaphorically as a static front-back relationship by means of a metaphor that ultimately derives the front/back relation from a scenario of translational motion. As described above in Section 3.1.1 for Japanese and in Section 4, this configuration is an instance of a field-based frame of reference.

In the Aymara Ego-RP case, I am proposing that ego is located within (and oriented to) the field-based frame of reference just described. This configuration is represented in Diagram 5. The expression in (18) (in addition to the other Aymara examples that talk about past or future) instantiates this conceptual structure. In this example, the moment of speech is the Ground and some previous time is the Figure.

- 18) *ancha* *nayra* *pacha-na* ‘a long time ago’
 a.lot eye/sight/front time/epoch/world-in/on/at
 [Aymara. Núñez & Sweetser 2008: 415 (Gloss altered - KEM)]

[INSERT DIAGRAM 5 ABOUT HERE]

To summarize, this section has argued that a single principle structures both the Time-RP metaphor and the Ego-RP metaphor in Aymara. This principle is that earlier times are metaphorically in front of later times (and later times are behind earlier times). Thus, the past in front of ego in Aymara is a special case of an earlier time being in front of a later time. One ramification of this claim is that the Ego-RP and time-RP metaphors both presuppose the same field-based frame of reference. In the Ego-RP metaphor, ego and this frame of reference are in alignment.

5.6. *A spatial field-based frame of reference in Aymara.*

Indirect support for the hypothesis that the Ego-RP metaphor presupposes a field-based frame of reference comes from a spatial field-based frame of reference in Aymara built on an opposition between *nayra* ‘front’ and *qhipa* ‘back/behind’. As described in Núñez & Cornejo (to appear), *nayra* ‘front’ can mean roughly ‘east’ (i.e. where the sun rises), and *qhipa* ‘back’ can refer to the opposite direction. For example,

a physical entity *A* (e.g., a town, a person, or a house) located east of an entity *B* is said to be *nayra* (literally “front,” “sight,” “eye”) of *B*, and location *B* is said to be *qhipa* (literally, “back,” “behind,”) *A*. If two persons are chatting, the one who is more east is described as being *nayra* while the one who is more west is described as being *qhipa*. ... East locations are “ahead” of people (and objects) and west locations are “behind” them. This suggests that things and people are conceived as having an underlying canonical orientation facing the east. [Núñez & Cornejo *ibid*: 3].

Being roughly equivalent to ‘east’ and ‘west’ respectively, these uses of *nayra* ‘front’ and *qhipa* ‘back/behind’ presuppose an absolute frame of reference (Núñez & Cornejo to appear: 3). As discussed by Núñez & Cornejo and also reported by van Kessel (1996a,b), Aymara houses are oriented toward the east (where the sun rises). Discussing ritual practices, van Kessel writes that “*La orientación es siempre hacia el oriente (‘delante’), que es hacia el origen del agua y la vida.*” “Orientation is always toward the east (‘front’), which is toward the origin of water and

life” (1996b: 172-73). Additionally, funeral ceremonies go toward the west (‘back/behind’) (1996a: 62-3), and the west (‘back/behind’) is the direction in which the dead go (1996b: 173).

Speakers sometimes fictively align the front/behind axis of their bodies and the east/west axis in such a way that front corresponds to east and behind to west. Núñez & Cornejo (to appear: 12ff) describe a case in which a woman is located about 250 meters to the north of her house, and is talking about the houses in the immediate vicinity of hers.¹⁴ Some of her gestures are veridical; e.g., she points west when she mentions a house that is located to the west of her house. Later in the same session, however, she begins to gesture along the front/back axis of her body when she is talking about the houses to the east and west of her house. She uses a frontward gesture to represent ‘east’, even though she is facing north. As Núñez & Cornejo observe (p. 14) “At this point she has now re-positioned the absolute east-west cardinal points with the east-is-ahead and west-is-behind Aymara canonical orientation of the body.” In my terms, the cardinal points and the front/behind axis of the body are in fictive alignment. This alignment is precisely analogous to the fictive alignment that I hypothesize obtains between the body and the ‘earlier/later’ temporal dimension, depicted metaphorically as a front/behind axis where FRONT maps onto ‘earlier/past’ and BEHIND maps onto ‘later/future’.

5.6.1. *The DAY ORIENTATION frame*

The FRONT=east/BACK=west frame of reference just discussed has temporal properties of its own that could motivate a spatiotemporal metaphor independently of the frame of ORDERED MOTION. One of these properties is that the destination of the dead is located behind ego’s living arrangements, and death is in every person’s future.

More systematically, if the daylight period of the day is taken as frame of reference (cf. Zinken in press), sunrise is in the earliest part of the day and sunset is in the latest. This could motivate the mapping of FRONT onto ‘earlier’ and BACK onto ‘later’ in a field-based frame of reference. Also, each successive position of the sun is farther “back” than the previous one, and this could be a motivation for mapping SEQUENCE onto RELATIVE POSITION ON A PATH. For the sake of clarity, let us note two aspects of the experience of the sun that would *not* be involved in

¹⁴ The data in Núñez & Cornejo (to appear) are mostly from *Castellano Andino*, a Spanish-lexified creole of the Andes which has features which presumably reflect influence from the Aymara substrate. Much of the data in Núñez & Sweetser (2006) also involve *Castellano Andino*.

motivating a spatiotemporal metaphor. First, the movement of the sun from the “front” towards ego would have to be ignored because that would suggest that the past becomes the present. Additionally, the actual position of the sun relative to ego would have to be ignored because that would suggest that the sun is in the past when it rises and the future when it sets. These stipulations are not a problem for the hypothesis because metaphor mappings are typically selective. But let me emphasize that what we have evidence for is a motivation for a metaphor that depicts relationships between times and other times, but does not involve ego’s “now”. This metaphor maps positions onto times in a way similar to what we have seen in the case of SEQUENCE IS RELATIVE POSITION ON A PATH, and is thus plausibly an instance of the same metaphor, though its motivation is different from the ORDERED MOTION motivation discussed above (Section 3.1).

Indirect support for the plausibility of the hypothesis that the different positions of the sun motivate SEQUENCE IS RELATIVE POSITION ON A PATH in Aymara comes from the observation that the Aymara pay attention to the positions of the sun during the day and use them to tell time. (I am not claiming that the Aymara are special in this regard.) According to Grebe (1990: 72), the sun is a “dominant and central symbol in the Aymara conception of time, religion, and cosmology”.¹⁵ The Aymara name eleven times in the diurnal cycle, six of which correspond to positions of the sun (beginning with sunrise and ending with sunset). These times, which I have translated from Spanish, are the following: dawn, sunrise, midmorning or high sun, midday or zenith, big afternoon (first part of the afternoon), little afternoon (second part of the afternoon), sunset, dusk, darkness (first part of the night), midnight, after midnight (first rooster call and second part of the night) (*ibid*: 68). According to Grebe, quoting one of her consultants, “the sun and morning/evening stars are ‘like hands of a clock It’s how to see the time’” (“*Tanto el sol como los luceros son ‘como punteros o minutereros de reloj ... Es como ver la hora’*” *ibid*: 67).

To summarize, SEQUENCE IS RELATIVE POSITION ON A PATH is a mapping between positions and sequence. Earlier I proposed that the FRONT-BEHIND orientation of this metaphor is motivated by direction of motion and sequence of arrival. We have just seen that for the Aymara

¹⁵ Grebe writes of “... la importancia del sol como símbolo dominante y central en la concepción del tiempo, religión y cosmología aymara” (1990: 72).

there is a completely different scenario that motivates the same orientation. We can call the essential aspects of this scenario the Aymara DAY ORIENTATION frame.

5.6.2. *Do we still need ORDERED MOTION?*

SEQUENCE IS RELATIVE POSITION ON A PATH is potentially motivated by two different source frames in Aymara — ORDERED MOTION and the DAY ORIENTATION frame. With the currently available data, we cannot know for sure which motivation accounts for the metaphorical expressions that place earlier ‘in front’ and later ‘behind’. However, since the two motivations do not conflict, we can accept both of them as likely.

It may seem that the DAY ORIENTATION frame is a more pertinent analogy to the particular case of Aymara, so it will be worthwhile to point out why ORDERED MOTION should remain under consideration as a motivation. The key reason is that ORDERED MOTION is a better experiential motivation for a metaphor of sequence because this frame involves actual instances of sequence (see Section 3.1 above; Moore 2006). By contrast, the DAY ORIENTATION frame does not contain salient sequences (though it is possible to point at imagined successive solar positions in the sky). A closely related point is that ORDERED MOTION offers a richer mapping in that this frame has two (or more) physical entities in a FRONT/BEHIND relation that map onto two (or more) times in a precedence relation. By contrast, as we have seen, the DAY ORIENTATION frame has only one moving object, the sun.

5.7. *KNOWLEDGE IS VISION and SEQUENCE IS RELATIVE POSITION ON A PATH*

A combination of SEQUENCE IS RELATIVE POSITION ON A PATH with a version of KNOWLEDGE IS VISION would account for the observations that have been made so far relevant to the Aymara Ego-RP metaphor.¹⁶ A version of KNOWLEDGE IS VISION that explicitly deals with temporal experience can be called EGO-CENTERED TIME IS VISUAL PERSPECTIVE; the mapping is given in Table 3.

[INSERT TABLE 3 ABOUT HERE]

¹⁶ The process of combination involves conceptual blending. See Fauconnier & Turner (2002); Grady (1997).

Because the Ego-RP metaphor does not involve motion, it is appropriate at this point to state an explicitly static version of SEQUENCE IS RELATIVE POSITION ON A PATH. This is done in Table 4, which states a highly schematic mapping from positions to sequence. Moreover the *path* in SEQUENCE IS RELATIVE POSITION ON A PATH does not have to be a path over which entities move; it could be a visually scanned path on which ego scrutinizes various positions relative to her own. Such a path would involve subjective motion Langacker (1987: 172), or something akin to fictive motion (Matlock, Ramscar, and Boroditsky 2005; Talmy 2000).

[INSERT TABLE 4 ABOUT HERE]

The combination of EGO-CENTERED TIME IS VISUAL PERSPECTIVE and the schematic version of SEQUENCE IS RELATIVE POSITION ON A PATH is given in Table 5. This metaphor can be called EGO CENTERED TIME IS POSITION RELATIVE TO EGO'S LOCATION. It is my proposal for the structure of the Aymara Ego-RP metaphor.

[INSERT TABLE 5 ABOUT HERE]

In EGO-CENTERED TIME IS POSITION RELATIVE TO EGO'S LOCATION, the metaphor SEQUENCE IS RELATIVE POSITION ON A PATH provides the fundamental mapping of places onto times, and EGO-CENTERED TIME IS VISUAL PERSPECTIVE depicts ego's orientation relative to that construal.

6. Conclusion

If it is assumed that the frame of reference involved in the Aymara Ego-RP metaphor is projected from ego, it is hard to understand why a vision metaphor would emerge instead of path metaphor, since a path scenario yields all the right inferences and a vision scenario fails to yield some crucial inferences. For example, as Núñez & Sweetser (2006) observe, if a location is in front of ego on a path, it can be inferred that ego will arrive there in the future, but a vision metaphor does not yield such inferences. The hypothesis that ego aligns herself with a field-

based frame of reference solves the problem of how the Aymara Ego-RP metaphor gets its rich spatial organization, in which places that are increasingly distant in front of ego map onto times that are increasingly less recent. The notion of FRONT that structures the field-based frame of reference is a highly schematic notion of orientation in a particular direction (“derived FRONT”, see section 3.1.1). This contrasts with the “perceptual-interactive FRONT” that structures Moving Ego in languages like English and Wolof (see Section 2.2). The details of how KNOWLEDGE IS VISION is relevant to EGO-CENTERED TIME IS POSITION RELATIVE TO EGO have not been explored; perhaps the notion of FRONT that is relevant here is perceptual but not interactive.

I have stressed that the spatial frames of reference that emerge in spatiotemporal construals of time are not the same as any of the major frames of reference that Levinson (2003) proposes for the world’s languages. This is not surprising, since temporal relations obtain in only one dimension. Nonetheless, there are robust analogies between Levinson’s spatial frames of reference and their temporal counterparts. A good example of such an analogy involves the contrast between the temporal field-based (path-configured) and the ego-perspective (path configured) frames of reference, within English for example (see Section 3). This contrast is analogous to the spatial contrast between absolute and relative. The temporal field-based frame of reference is analogous to its spatial counterpart (absolute), in that they are both structured by aspects of experience that are invariant relative to ego’s point of view. The ego-perspective frame of reference is analogous to the relative frame of reference in that they are both point-of-view dependent. And the contrast between the two frames of reference in spatial experience is analogous to the contrast between their counterparts in temporal experience.

The field-based type of temporal frame of reference proposed here for the Aymara Ego-RP metaphor has not been previously studied. The analogous absolute type of spatial frame of reference has been studied, for example in Guugu Yimithirr and Tzeltal by Levinson (2003) and in Belhare by Bickel (2000). In linguistic communities where absolute frames of reference are in use, speakers have been shown to maintain a constant awareness of cardinal directions or their equivalent in that community, and to orient themselves to the cardinal directions when they gesture. Núñez & Cornejo (to appear) have described a fascinating variant in which speaker and environment are sometimes fictively co-oriented in such a way that east is fictively in front of the speaker-gesturer. It is an open question whether the speaker is aligned with the environment or the environment is aligned with the speaker (cf. Bühler 1990; Hanks 2005). My suggestion is

that the Aymara Ego-RP metaphor involves an analogous co-orientation of ego and the temporal “environment”. At this point our data on spatiotemporal metaphor systems like the Aymara system are quite limited, but the work that has been done so far suggests the possibility of developing a typology of spatially-derived temporal frames of reference that is analogous to Levinson’s (2003) or Talmy’s (2000) typology of spatial frames of reference.

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TABLES

SOURCE FRAME		TARGET FRAME
RELATIVE MOTION		EGO-CENTERED TIME
Space ahead of ego	→	Ego's future
Ego's 'here'	→	Ego's 'now'
Ego's arrival at a place	→	Occurrence of a time
Co-location	→	Simultaneity
Space behind ego	→	Ego's past
Change in degree of proximity	→	Change in degree of immediacy of the expected or remembered time

Table 1: The Moving Ego metaphor (Moore 2006; cf. Clark 1973; Moving Observer in Lakoff and Johnson 1999 Chapter 10; Núñez 1999; Núñez & Sweetser 2006; Sweetser 1988).

SOURCE FRAME		TARGET FRAME
ORDERED MOTION		SEQUENCE
Moving entities at different points on a (one-dimensional) path	□	Times in sequence
An entity that is ahead of another entity	□	A time that is earlier than another time
An entity that is behind another entity	□	A time that is later than another time

Table 2: SEQUENCE IS RELATIVE POSITION ON A PATH (Moore 2006).

SOURCE FRAME

TARGET FRAME

EGO'S VISUAL PERSPECTIVE

EGO-CENTERED TIME

Visible space.	→	Present and past.
Nonvisible space.	→	Future

Table 3 EGO-CENTERED TIME IS VISUAL PERSPECTIVE

SOURCE FRAME

TARGET FRAME

RELATIVE POSITIONS ON A PATH

SEQUENCE

Entities at different points on a (one-dimensional) path.	→	Times in sequence.
A position that is in front of another position.	→	A time that is earlier than another time.
A position that is behind another position.	→	A time that is later than another time.

Table 4: SEQUENCE IS RELATIVE POSITION ON A PATH (schematic version)

SOURCE FRAMES

TARGET FRAMES

EGO'S VISUAL PERSPECTIVE

EGO'S TEMPORAL PERSPECTIVE

RELATIVE POSITIONS ON A PATH

SEQUENCE

Ego's location.	→	The present.
Near locations in front of ego.	→	The recent past.
Distant locations in front of ego.	→	The nonrecent past.
Locations behind ego.	→	The future.

Table 5 The Aymara Ego-RP metaphor stated as a combination of EGO-CENTERED TIME IS VISUAL PERSPECTIVE and SEQUENCE IS RELATIVE POSITION ON A PATH. I.e., EGO-CENTERED TIME IS POSITION RELATIVE TO EGO'S LOCATION.

DIAGRAMS

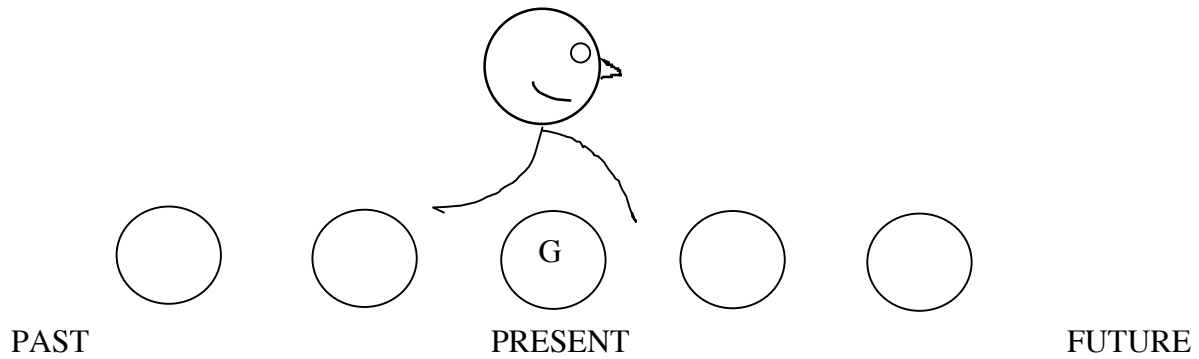


Diagram 1: The Moving Ego Metaphor. G stands for 'Ground'.

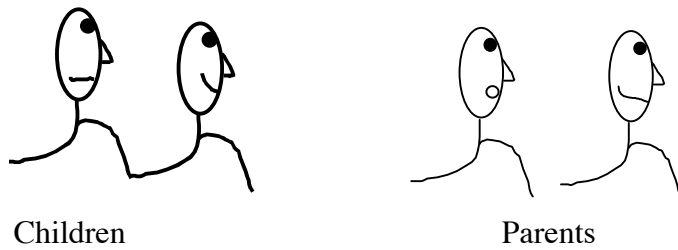


Diagram 2: The frame of ORDERED MOTION. Example: The children followed their parents.

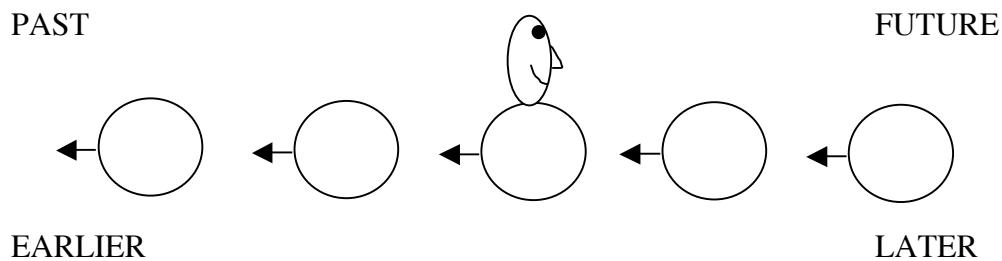


Diagram 3: In Japanese, ego's orientation is opposite to that of points or periods in time (cf. Fillmore 1997; Yu 1998).

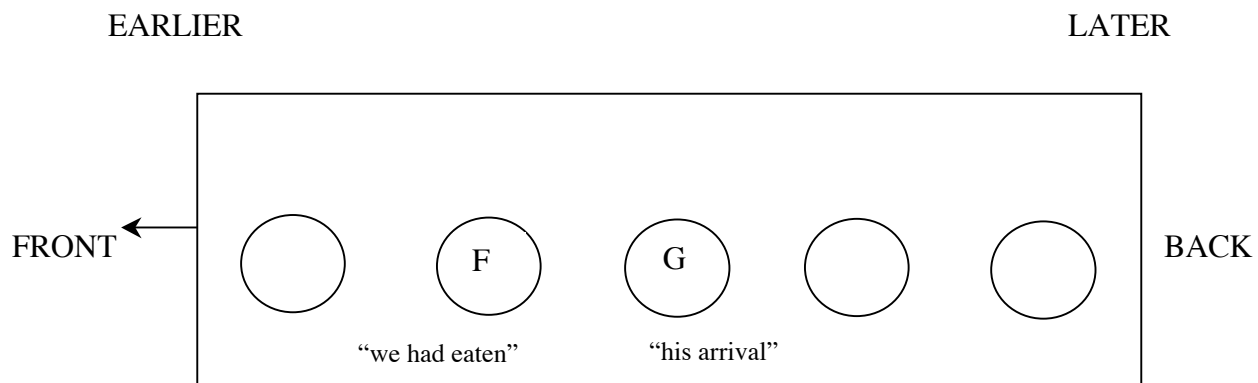


Diagram 4: The Aymara Time-RP metaphor analyzed as SEQUENCE IS RELATIVE POSITION ON A PATH. F stands for Figure and G stands for Ground.

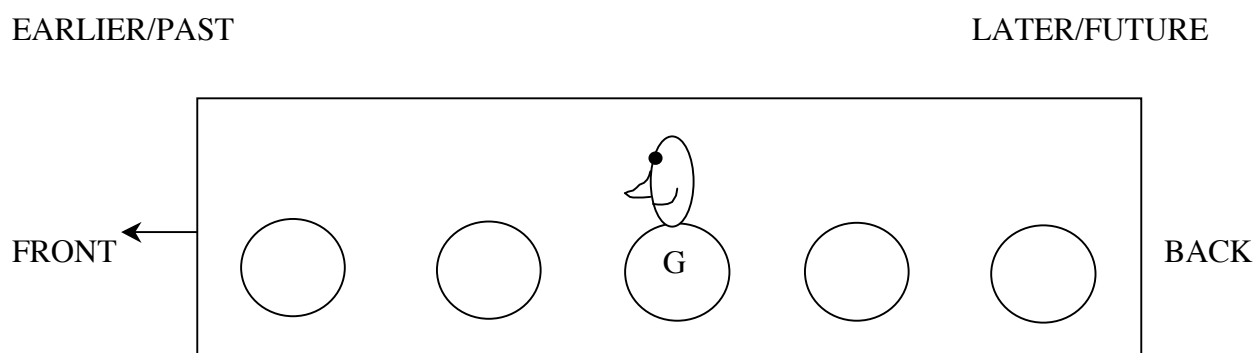


Diagram 5: The Aymara Ego-RP metaphor analyzed as a case of ego being aligned with a field-based frame of reference. In the diagram, the circle marked "G" is the Ground, and any other circle could be Figure.