DE GRUYTER MOUTON
DOI 10.1515/langcog-2013-0002 — Language and Cognition 2013; 5(1): 25–60

Mark Tutton

A new approach to analysing static locative expressions

Abstract: As speakers, we are frequently called upon to specify the locations of objects and landmarks in our environment. However, despite the considerable body of work on spatial cognition and semantics (i.e. Levinson 1992, 1996, 2003; Tyler and Evans 2003; Herskovits 1986; Vandeloise 1986), there has been almost no research on the expression of location from a multimodal viewpoint: that is, how do speakers use gesture, as well as speech, to express object location? This paper reports on a filmed study of 10 English speakers and 10 French speakers who were asked to express the locations of 28 objects in two spatial scenes. On the basis of our results we argue that a functional, as opposed to a grammatical, approach to the segmentation and analysis of these sorts of expressions is crucial. Such an approach reflects the fact that different Figures (i.e. objects to be located) can exist simultaneously across speech and gesture. Using filmed examples from our data set, we propose a new definition of static locative expressions and outline a multimodal approach for their analysis in oral discourse.

Keywords: speech, gesture, English, French, Figure, Ground, static locative expressions

Mark Tutton: Département d'Études Anglaises, Université de Nantes, France
E-mail: mark.tutton@univ-nantes.fr

1 Introduction

In recent years, a remarkable amount of research has been undertaken into the linguistic expression of spatial relationships. This has given rise to a considerable literature on the topic, much of which has focused on the semantics and uses of spatial prepositions (i.e. Ashley and Carlson 2007; Carlson and Covey 2005; Coventry and Garrod 2004; Franckel and Paillard 2007; Herskovits 1986; Tyler and Evans 2003; Tutton 2009, 2011; Vandeloise 1986, to name just a few). Leaving aside the question of prepositions for the moment, spatial relationships overall can be divided into two broad categories: those that express dynamic

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

motion events (for example, *John ran into the room*), and those that express static locative relationships (for example, *John is in the room*). As far as this dichotomy is concerned, there have been numerous studies dedicated to motion events, with many researchers undertaking a cross-linguistic analysis within the framework of Talmy's (1991, 2000) highly influential verb-framed/satellite-framed language typology (see Section 2.1. below). With this in mind, the current paper will focus on the less investigated half of the dichotomy: static locative relationships. As mentioned above, there has been a considerable amount of research into spatial prepositions and this has contributed substantially to our understanding of how speakers (notably of English) cognitively process and express locative semantic information. However, very few studies have actually considered the broader question of how speakers fashion and use the locative expressions in which such prepositions reside. The current paper responds to this gap in the literature by looking at how English and French speakers formulate such expressions. In keeping with this broader approach to the expression of location, we will take into account speakers' use of gesture in addition to their speech. Our aim is twofold. The first aim is to study how speakers talk about static locative configurations beyond the confines of a prepositional paradigm; the second one is to show that previous approaches to defining and separating locative expressions are inadequate once gesture is taken into account: this is because gestures help to mould new locative expressions and express locative semantic information that is not encoded in the co-occurring speech. Our data highlight the need for a new approach that is inclusive of the contributions of both speech and gesture: we develop this approach in the second half of the paper. It is this concern with constructing a new analytical framework that separates our paper from the very limited range of existing studies (i.e. Arik 2009; see also Coventry et al. 2009) that do consider gesture in the expression of static location. None of these earlier studies have considered how a gestural analysis may impact on our understanding of the different forms that static locative expressions may take, and how these expressions work. It is these fundamental, basic questions that are at the core of this study.

2 Locative relationships

We will begin our investigation by identifying the spatial concepts that underpin locative relationships. We will then explain why it is necessary to posit a division between locative relationships that describe an object in motion, and those that do not.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

2.1 Basic concepts in locative relationships

Locative relationships, broadly considered, establish the location of an object (or group of objects) in relation to one or more other objects. An ideal starting point for investigating the concepts underpinning locative relationships is the research of Leonard Talmy. Talmy's conceptual framework for spatial semantics, along with his work on how such information is encoded cross-linguistically, has fuelled intense discussion and been used as a springboard for countless further theoretical and practical investigations (i.e. Kopecka and Pourcel 2005; Kopecka 2006; Lemmens 2005; Slobin 2006, to name just a few). The first point to note is that Talmy considers static locative relationships a type of Motion event. That is, "we treat a situation containing motion and the continuation of a stationary location alike as a Motion event (with a capital M)" (Talmy 2000: 25). The object being located is known as the *Figure* and is described as "the salient moving or stationary object in a Motion event whose path or site is the relevant issue" (Talmy 2000: 153). The Figure's location is determined in relation to the *Ground*, "the reference object in a Motion event, with respect to which the Figure's path/site is characterized" (Talmy 2000: 154). The *Path* is "the variety of paths followed or sites occupied by the Figure object in a Motion event" (Talmy 2000: 154). In other words, the Path is the nature of the locative relationship that exists between the Figure and the Ground. The fourth central component of a Motion event is what Talmy terms 'Motion' itself: this encodes the existence of the event. These four concepts are highlighted in the following example.

(1)	*the tablecloth*	*is*	*on*	*the table*
	Figure	Motion	Path	Ground

In example (1) *the tablecloth* is the Figure, since it is the object whose location is at issue. *The table* is the reference object, and hence Ground. Linking the two syntactically are the copular verb *is*, which encodes Motion, and the preposition *on*, which lexicalises Path.

2.2 The sub-category of static locative relationships

As far the different types of locative relationships are concerned, Hendriks et al. (2004) propose three sub-categories: 'static general localisation',[1] 'dynamic

1 This is a translation from the original French "localisation générale statique". Translation: MT.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

general localisation'[2] and 'change of localisation'[3] events, each of which is explained below.

Static general localisation
(2) *Reskio est au bord du lac*
Reskio is at the edge of the lake

Dynamic general localisation
(3) *Reskio fait du patinage sur le lac*
Reskio skies/is skiing on the lake

Change of localisation
(4) *la petite fille sort de l'eau*
the little girl comes out/is coming out of the water
(Examples from Hendriks et al. 2004).

Example (2) is the only one in which the Figure is presented as a stationary entity. Here, the Figure (*Reskio*) is located in relation to the edge of the lake, and the locative relationship which holds between the Figure and Ground is presented as stable and unchanging: this is encoded by the inflected form of the verb *être* ('be'). Example (3) is similar to (2) in that the Figure remains within the boundaries of the Ground entity. The crucial difference, however, is the Figure's constant motion within these boundaries. This leads us to example (4), in which a boundary-crossing event does take place: the *little girl* is in the process of leaving one location (*the water*) to arrive in another (*out of the water*). Only locative relationships which fall into the category of 'static general localisation' will be of interest in the present work. Indeed, it is necessary to maintain a division between locative events in which the Figure is in motion and those in which it is not. This need for separation on the basis of whether the Figure is in motion or not is explained in the following section.

2.3 Separating static locative relationships from dynamic motion events

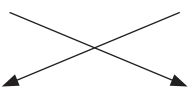
Talmy's approach to Motion events, which incorporates both dynamic motion events and static locative relationships, reflects the interconnectivity of the dy-

2 This is a translation from the original French "localisation générale dynamique". Translation: MT.
3 This is a translation from the original French "changement de localisation". Translation: MT.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

namic and static sub-domains of space. This interconnectivity is highlighted by Vandeloise (2006: 140), who reveals the deceptively dynamic nature of static location: "immobility is always the result of an equilibrium between two opposite forces." While this suggests the dynamic nature of all locative configurations, it is nevertheless necessary (as will soon become apparent) to separate *static* locative configurations from those that feature a Figure in motion. Talmy's (1991, 2000) approach posits that there are two types of languages, verb-framed and satellite-framed, which differ from each other in terms of how they lexicalise the 'core schema' of a Motion event. The core schema "is generally the Path alone in some languages, such as English" (Talmy 2000: 227). When a language conflates Path with Motion in the verb, the language is said to be a *verb-framed* language. When this conflation occurs in a satellite, understood as "any constituent other than a noun-phrase or prepositional-phrase complement that is in a sister relation to the verb root" (Talmy 2000: 102), it is termed a *satellite-framed* language. As far as dynamic motion events are concerned, English is a satellite-framed language while French is a verb-framed one.

(5) *l'homme* *est parti* *en courant*
the man (has) left in running
path (verb) *manner* (gerund)



the man *ran* *away*
manner (verb) *path* (satellite)

In example (5) the core schema of Path is lexicalised by the verb *partir* in French and the satellite *away* in English. Recent research however, as discussed by Beavers et al. (2010), has clearly indicated that the simple verb-framed/satellite-framed dichotomy is inadequate to fully account for how languages encode dynamic motion events. Kopecka (2004, 2006), for instance, shows that French not only encodes Path in verbs, but also in bound affixes which behave as satellites. She provides the example of the bound, path-encoding morpheme *em-* in verbs like *embouteiller* ('to bottle'), which affixes to the nominal root *bouteille* ('bottle'). In other work, Slobin (1997) points out that when a dynamic motion event does not involve boundary-crossing, verb-framed languages can encode manner of motion, as opposed to the core schema of Path, in the verb. This observation is echoed by Kopecka and Pourcel (2005) in their work on French. Hence, in an expression such as *il danse dans le salon* ('he dances/is dancing in the room'), Path is encoded by the preposition *dans* ('in') while the lexical verb conflates

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

Motion with manner of movement. Slobin calls further attention to the shortcomings of the verb-framed/satellite-framed dichotomy by proposing the third category of *equipollently-framed languages* (Slobin 2004: 9; Slobin 2006). These languages, such as Mandarin Chinese, lexicalise both manner and path components in verbal morphemes, thus distinguishing them from both verb- and satellite-framed categories. Beavers et al. (2010), however, argue that languages cannot be expected to fit into a two- or even three-way typology, given the range of lexical, morphological and syntactic combinatorial possibilities that exist cross-linguistically. Furthermore, these same researchers convincingly show that purported typological differences can exist intra-linguistically, which further weakens the case for a narrow typological account.

Although the goal of the present paper is not to investigate how languages encode dynamic motion events, it is important to realise that Talmy (2000) considers these events in the same category as static locative relationships: they are both 'Motion' events. Hence, English and French should differ typologically as far as the encoding of static locative relationships is concerned. That is, French should encode the nature of the locative relationship (the 'Path') in the verb, while English should encode it in a satellite. This is not the case, however. Example (6) below reuses an example from Talmy (2000: 55) to make this point.

(6) *the ball was in the box for three hours*

There is no satellite in this locative expression. Rather, it is the preposition *in* which encodes the semantic component of Path, and prepositions are not satellites: recall that Talmy defines satellites as "any constituent *other than a noun-phrase or prepositional-phrase complement* that is in a sister relation to the verb root" (Talmy 2000: 102, my emphasis). The problem of separating satellites and prepositions is discussed by Beavers et al. (2010), who recommend an inclusion of prepositions within the category of satellites. Also important is the fact that French does not lexicalise Path in the lexical verb, which is what we would expect of a verb-framed language.

(7)	*la balle*	*est*	*dans*	*la boîte*
	the ball	is	in	the box

In example (7), Path is encoded by the preposition *dans* ('in'). This is not an isolated case, because French habitually uses prepositions to encode the nature of static locative relationships (Borillo 1998: v). Hence, as pointed out by Lemmens and Slobin (2008), both verb-framed and satellite-framed lan-

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

guages use spatial prepositions to encode the Path component of locative relationships.

Including the sub-domain of static locative relationships in Talmy's Motion-event typology is therefore problematic. In fact, English and French show important similarities in their encoding of static location. Figure and Ground objects are typically lexicalised by nouns in English (Landau 2003); the same is true of French (Borillo 1998: 15). The existence of the locative relationship itself, or 'Motion' in Talmy's terminology, is generally encoded by a stative verb in both languages (see Hendriks et al. 2004; Ameka and Levinson 2007): this is the copula *be* in English and *être* in French. Manner of location may also be expressed in English and French verbs, although the frequency with which this occurs is greater in English than it is in French (Lemmens 2005). As far as the encoding of Path is concerned, the closed grammatical class of spatial prepositions plays a pivotal role in the two languages (Borillo 1998; Herskovits 1986; Vandeloise 1986; Landau and Jackendoff 1993). The role of nouns and spatial prepositions in English locative expressions is brought to light by Costello and Kelleher (2006: 1), who propose the following definition in their work on the preposition *near*: "A spatial locative expression consists of a locative prepositional phrase together with whatever the phrase modifies (noun, clause, etc.). In their simplest form, a locative expression consists of a prepositional phrase modifying a noun phrase, for example *the man near the desk*." These authors therefore define locative expressions in terms of particular lexical categories. This approach to the subject is also advocated by Hörberg (2007), who proposes that "In English and Swedish, locative expressions are constructed using a complement or adjunct prepositional phrase" (ibid.: 3–4). Approaches to locative expressions which target the category of spatial prepositions as the typical encoder of locative information are, however, deficient, since such information is also encoded by other lexical categories (Sinha and Kuteva 1995; Levinson and Meira 2003). As far as the identification and division of locative expressions are concerned, the citation from Costello and Kelleher above suggests the centrality of a phrase-based approach, a method also followed by Schober (1998) in his study. Naturally, different studies have different aims, and these approaches may be perfectly suited to the needs of the researchers undertaking them. However, such a grammatically driven approach is not always suitable where oral discourse is concerned. First of all, spoken discourse is, by its very nature, hard to break down into neatly defined grammatical boxes. Secondly, as far as the present study was concerned, the speaker's addressee was co-present and both parties had visual access to each other: this therefore made it possible to use gesture to express information. As such, a central focus of the following part of our investigation must be the following question: how

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

should we define and separate static locative expressions so that we can account for the contributions of both speech and gesture? This question has not been considered by any previous study in the literature. Before addressing it however, it is necessary to specify what we understand by the term 'gesture'.

3 Gesture

When speakers talk, they make movements of the hands, arms and head. These movements, or *gestures*, are inextricably related to the act of speech and help the speaker to achieve a communicative goal. They are not a mere by-product of the speech production process: they are a part of utterance itself (Kendon 2004) and are used to convey both semantic and pragmatic information to interlocutors. The speech/gesture relationship is complementary, as gestures frequently express semantic and pragmatic information that is not present in the co-occurring speech (McNeill 1992, 2005; Kendon 2004). Different types of gestures have been noted in the literature. Amongst the most well known are 'emblems' (Ekman and Friesen in Kendon 1994), which can actually occur without any accompanying speech at all: this is because they are self-contained parcels of meaning, complete signs in themselves. An example is the 'thumbs-up' emblem, which is used to signal a speaker's approval of an action or idea. The gestures of interest in our work are not emblems however, but rather what Kendon (1980) has termed *gesticulations*. According to McNeill (2005: 5), "Gesticulation is motion that embodies a meaning relatable to the accompanying speech." An example would be if I were to trace a circular shape with my index finger while describing a 'mirror'. In this case, my gesture would be describing the shape of the lexicalised referent. Another example would be if I made an arc-like movement of my arm out to the left when describing one object as being *next to* another. In this instance, my gesture would be related to the semantics of *next to* because it would be expressing the Figure's separate location to the Ground. However, the gesture would also be adding an unlexicalised layer of meaning by specifying that the Figure is to the left of the Ground (note that *next to* underspecifies directional information). Hence, the two modalities, speech and gesture, would be acting in a complementary manner as far as the expression of semantic information is concerned. The analysis that follows will focus on gesticulations but will exclude beat gestures, which are rhythmic movements of the finger(s) or hand. Beats, unlike other gesticulations, do not have representational properties and play the pragmatic role of highlighting the co-occurring speech as salient.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

3.1 An overview of previous research into spatial expression and gesture

Numerous studies have targeted the question of whether, and how, speakers gesture when they conceptualise and communicate spatial information. The results have convincingly shown that speakers gesture when talking about spatial topics (McNeill 2000; Emmorey and Casey 2001; Holler and Beattie 2002; Kita and Özyürek 2003; Beattie and Shovelton 2006; Gullerg 2011), with one paper also arguing that speakers gesture more frequently when talking about spatial topics as opposed to non-spatial ones (Rauscher et al. 1996). In terms of the types of spatial information expressed in gesture, Kita and Özyürek (2003) and Gullberg (2011) show language-specific patterns that reflect the semantic aspects of spatial events encoded by different languages. In the former study, the researchers examined the gestures of English, Japanese and Turkish speakers when they described a character's trajectory from one building to another in a cartoon stimulus film. The arc-like trajectory of the character is readily encoded by the English verb *swing*, but not by any lexical item in either Japanese or Turkish. This lexical difference led the researchers to hypothesize that English speakers would express the character's arc-like trajectory in gesture more frequently than Japanese or Turkish speakers. This was shown to be the case, thus prompting the researchers to conclude that there was "a linguistic effect on the gestural representation" (ibid.: 21). A different type of finding has been reported by McNeill (2000) however, who examined how English and Spanish speakers described motion events which they had viewed in a cartoon-film stimulus. English, a satellite-framed language, and Spanish, a verb-framed language, each accord different importance to the lexical encoding of manner of motion. Hence, this semantic feature is routinely encoded in English but not in Spanish (McNeill 2000; see also Section 2.3 above). McNeill found that Spanish speakers seemingly compensated for this by expressing manner in gesture alone. He termed this phenomenon a *manner fog*: "an entire description blanketed with repeated manner gestures in the total absence of manner in speech" (McNeill 2000: 53). McNeill's results therefore suggest that speakers attend to event features other than those prioritized by the language spoken.

As far as gesture use in locative descriptions is concerned, Striegnitz et al. (2009) look at how gestures express spatial perspective in discourse-based route descriptions. Their study differs to ours however, as our research does not concern route descriptions, nor does it examine the expression of perspective in gesture. Arik (2009) presents a large study that focuses on seven languages and spans three semantic domains: motion, location, and time. As far as location is concerned, he only briefly considers gesture in his analysis: it is not the subject of

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

an extensive examination. Secondly, Arik does not seek to identify the role of gesture in expressing locative information – a concern which is key to the current study.

On the basis of previous research, it is reasonable to hypothesise that speakers will gesture when describing static locative configurations. In terms of the information that speakers will express in gesture, we hypothesise that this will be semantically linked to the locative relationship encoded lexically, but that gestures will express additional unlexicalised information: this is based on the idea that speech and gesture are semantically complementary, non-redundant modalities of communication (McNeill 1992, 2005; Kendon 2004) and that speakers can express spatial information over and above that encoded in speech (McNeill 2000).

4 The present study

In order to investigate how speakers of English and French use both speech and gesture to create static locative expressions, we devised a study in which native speakers of each of these languages described two spatial scenes. These scenes depicted a lounge room and a street respectively (see Appendices A and B) and were drawn by a fourth-year university student in fine arts.[4] The idea behind the use of two pictures was that spatial language changes depending on the scale of space described (Lautenshütz et al. 2007). Hence, we may expect the language used to describe the smaller, internal area of the lounge room to be qualitatively different to that used in descriptions of the larger, external expanse of the street. Each of the visual stimuli was created to represent as wide a range of locative relationships as possible. Hence, in the lounge room scene the portrait and the mirror are *on* the wall, the book is *next to* the sofa and the rug is *in front of* the fireplace. The street scene, which also covers a large range of locative configurations, brings into play the salience of motion in the conceptualisation of location. This prompts for the use of spatial-temporal prepositions: for example, the telephone booth is *after* the pedestrian crossing while the post-office box is *before* it (from the speaker's viewpoint). The use of two scenes therefore allowed us to maximise the range of lexical spatial items in speakers' descriptions.

4 Drawings by Peta Dzubiel.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

4.1 Method

Prior to data collection, ethics approval was sought and obtained from the relevant body at the University of New South Wales. Participants were required to complete consent forms before beginning the experiment. The sample reported on in this paper is comprised of 20 native speakers of Australian English and 20 native speakers of metropolitan French. English-speaking participants were students at the University of New South Wales at the time of data collection, and each received $15 for their involvement. Each of the French-speaking participants was a student at the Université Charles de Gaulle (Lille 3) when filming took place. French participants were not paid, in accordance with university regulation. Instead, they were invited to choose from a range of gifts at the end of the experiment (this range included boxes of teas and chocolates).

There was an equal number of male and female speakers in each language group (10 males and 10 females). Male-female pairs were randomly established and participants assigned one of two roles: describer or receiver. There was an equal number of males and females assigned to these roles. The describer had the task of describing the two stimulus pictures to the receiver, who was seated opposite them in a studio. The first stimulus picture was placed on a music stand just to the left of the describer. Half of the describers began by describing the street scene, while the other half began with the lounge-room scene. The describer had five minutes to describe the first picture, during which time the receiver was told not to interrupt. Describers were told to concentrate on explaining the locations of 14 objects for each picture; these objects appeared on a list next to the picture. The order in which they appeared was determined randomly in Excel and differed for each pair. The receiver was given a list of these 14 items to hold. The experimental set-up is shown in the diagram below.

After the five minutes had elapsed, receivers were allowed to ask questions to clarify their understanding of the objects' location. A time limit of five minutes was also imposed for this section of the interaction. Following this discussion, receivers were required to identify the picture that had been described to them from four very similar versions of it. The three incorrect versions only differed from the original in the incorrect placement of a single object (this object was different in each of the incorrect pictures).

Data from the second, interactive part of the experiment in which the describer and receiver conversed have not been included in our analysis. This is due to the shift from a monological discursive context to a dialogical one. In order to ensure consistency across our data sample, we have decided to focus here on the describers' discourse in the first half of the experiment.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

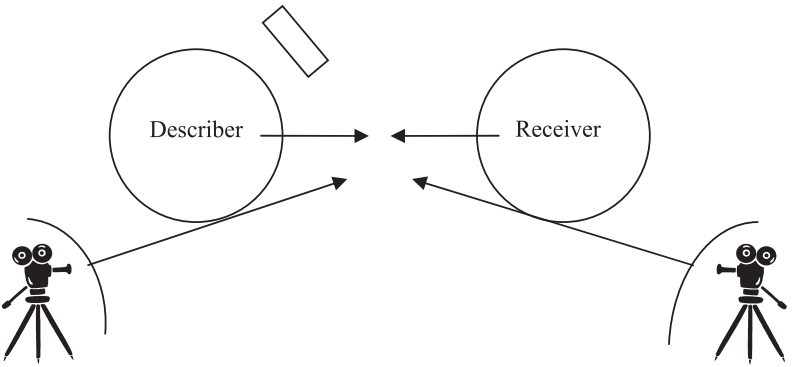


Fig. 1: Experimental setup

Furthermore, given the large amount of data recorded, we will focus on the first time each of the 14 items appears as a Figure in speakers' descriptions. There are several benefits to be gained from this approach. The most obvious is that a substantial amount of locative information is likely to be supplied when an object's location is described for the first time in discourse. This should favour a rich use of linguistic spatial items, such as prepositions. Furthermore, second and subsequent mentions of an object's location may involve the use of anaphoric strategies, such as pointing to a previously established location in space for the object concerned: this concerns a different level in the speaker's discourse. Therefore, in order to retain a degree of homogeneity across the data set, it was decided to focus on the first mention of each target object as a Figure.

The transcription code shown below will be used to present examples from our study.

underline	an underlined word or part thereof indicates co-occurrence with a gesture stroke
. .	two dots represent pauses of up to three seconds
[. . .]	indicates that the preceding or following part of the locative expression has not been included in the example provided
next to	bold is used to highlight salient spatial units

After each example from our data set there is a code that allows the speaker responsible for the locative expression to be identified. For example, the code 'EngDesc10' means that English describer number 10 uttered the expression,

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

while 'FrenDesc6' means that the example is attributed to French describer number 6.

5 Results

Our analysis brings to light a range of new findings that suggest the need to rethink our understanding of how speakers express static locative relationships. Firstly, we will address the question of how speakers of English and French lexically encode the Path element of these relationships. We will then identify the main ways in which speakers use co-speech gestures to express Path information. This leads to a finding which has major import for how we understand the expression of location: both English and French speakers can recruit different Figures and Grounds at the levels of speech and gesture. Hence, a speaker may express one Figure in speech while expressing another in gesture. The attribution of Figure/Ground semantic roles is therefore subject to cross-modal variation, meaning that capturing a speaker's full range of locative expressions requires the analysis of both modalities.

5.1 The expression of Path information

In Section 2.3 we saw that previous research identified the central role of noun phrases in encoding Figure and Ground entities, and of spatial prepositions in encoding the Path component. This lexicalisation pattern is reflected in our data.

(8) *the tablecloth* *is* *on* *the table* (EngDesc1)

(9) *l'oiseau* *est* *sur* *un* *arbre* (FrenDesc1)
the bird is on a tree

In example (8) the Figure is expressed by the noun phrase *the tablecloth*, the Ground by the noun phrase *the table*, and Path by the preposition *on*. The same pattern of lexical encoding is observed in French example (9): the Figure is expressed by *l'oiseau* ('the bird'), the Ground by *un arbre* ('a tree'), and Path by *sur* ('on'). However, while both English and French speakers in our study clearly favoured the use of prepositions to express Path information, they also made use of other grammatical categories to do so.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

(10) *and um a short distance away from the dog is the ball* (EngDesc4)

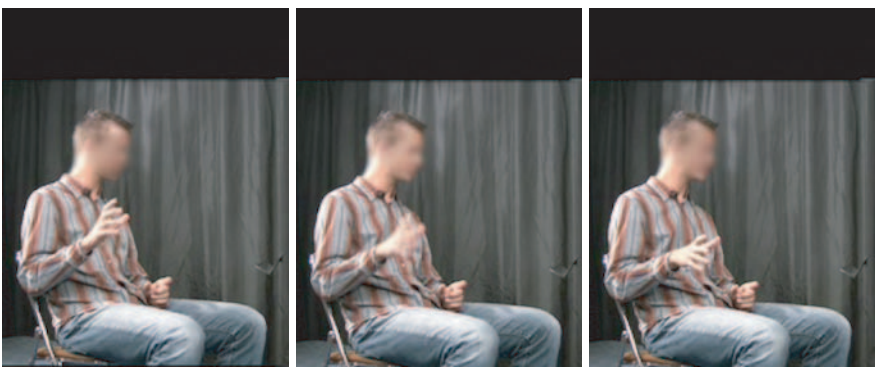
In example 10 the only preposition is *from*, which encodes departure from a point of origin. However, Path information is also encoded by the noun phrase *a short distance* and the adverb *away*: *away* expresses the locative separation of the Figure and Ground, while *a short distance* encodes their relative proximity.

Adverbs were used by French speakers when the Ground entity could be understood in context, thereby removing the need for a preposition to introduce a noun-phrase complement. The French adverbs in the following examples are in bold.

(11) ***en face**. . i' y a. . ah la télé (. . avec **en sous** le lecteur dvd)* (FrenDesc4)
opposite. . there's. . ah the TV (. . with underneath the DVD player)
'there's. . ah the TV opposite (. . with the DVD player underneath)'

(12) *tu as un lecteur dvd **dedans*** (FrenDesc3)
you have a DVD player inside

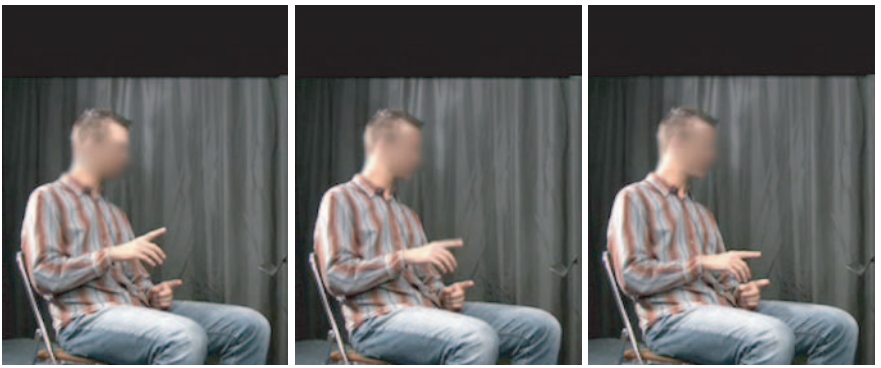
Both English and French speakers also recruited adjectives, such as the numerical encoders *premier* ('first') and *deuxième* ('second'), to express Path. An example of this occurs in the following locative expression.



(13) *à droite* *tout à droite* *t'as*
on the right right over on the right you've got
un premier bâtiment [. . .] (FrenDesc8)
a first building

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

Here, the speaker uses gesture to establish the starting point of the sequence encoded by premier ('first'). The execution of the gesture at a point close to the speaker's torso suggests the Figure's location in the foreground of the picture: the speech and gesture combination therefore expresses Path information that specifies the location of the Figure along the frontal axis. This sets the scene for a locative sequence that extends forward along the frontal axis defined by the intrinsically oriented speaker. The subsequent locative expression confirms this interpretation.

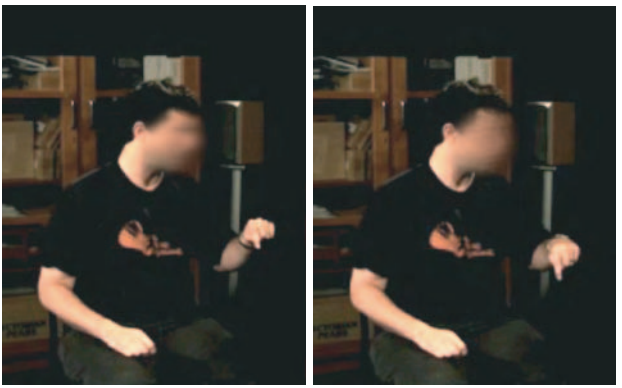


(14) *ensuite un restaurant* (FrenDesc8)
then a restaurant

The speaker recruits the adverb *ensuite* ('then') to encode a sequential progression, while simultaneously executing a pointing gesture (see stills above). This gesture expresses unlexicalised directional information by showing that the locative sequence extends forward in relation to the speaker's front. Hence, while the speaker encodes a sequential progression in speech, he expresses the directional nature of this progression in gesture. This example shows two main things. Firstly, Path information may be expressed through the use of a lexeme that encodes sequential progression, the directional nature of which is specified by gesture. Secondly, a locative expression can build upon the previous one in discourse, thereby leaving the Ground contextually implicit. Hence, the use of the sequential encoder *ensuite* in example 14 makes implicit reference to the previously located Figure in discourse, which now serves as Ground. Hence, a 'chain' of locative relationships that build upon each other can occur in continuous discourse.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

While variation is possible in terms of the lexical categories used to encode Path information, variation is also possible in terms of the modality used to express such information. That is, speakers may not convey any idea of a spatial relationship in speech, and leave this solely to the remit of gesture instead. The following example is not from our 'first mention' data pool, but is nevertheless important as it reveals how gesture alone may carry an entire locative semantic load.



(15) *cat* (EngDesc10)

In example (15), the speaker simply uses a noun with a pointing gesture to indicate the location of the Figure. The gesture stroke is executed close to the speaker on the left-hand side of gesture space: this reflects the location of the cat in the foreground of the picture, on the left-hand side of the street. No spatial linguistic item is employed, and gesture carries the entire locative semantic charge.[5] As far as our first-mention pool of data is concerned, speakers used gesture to express unlexicalised Path information that complemented the Path information encoded in speech. This finding confirms the complementary nature of the two modalities in the expression of semantic information (McNeill 1992, 2005; Kendon 2004).

5 This type of locative expression is typically used by speakers once the location of an individual object has already been presented in their discourse: it therefore serves an anaphoric function. Given that the present study focuses on the first mention of an object as Figure in a speaker's discourse, this type of gesture will not be very frequent. It is nevertheless important to acknowledge that location is expressed in this way when preparing a competent definition of static locative expressions.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press



(16) *and a ball. . a bit <u>further in front</u>* (EngDesc2)

In example (16) the speaker moves her hand forward and to the right in one continuous motion. In doing so she not only communicates the lexically encoded information that the ball is in front of the bone, but also that it is *to the right* of it. The two pieces of locative information are bound together in speech and in gesture: speech encodes location along the frontal axis, while gesture expresses this information as well as the Figure's location along the lateral axis. The upshot of this is that the speaker uses gesture to communicate a piece of unlexicalised locative information that has not been previously presented in discourse. This same type of use of speech and gesture is observed in the French data.



1 2 3

(17) *et à <u>côté du livre</u>. . il y a le chien* (FrenDesc2)
and <u>next to the book</u>. . there is the dog

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

In this example the speaker lexically encodes the adjacency of the Figure ('the dog') to the Ground ('the book'). However, the specific direction of the former object in relation to the latter is not encoded in speech: this information emerges solely in gesture. The speaker's left hand is initially in a post-stroke hold (still 1), having just marked the location of the *livre* ('book'). Her hand then rises and makes a clear movement to the right, finishing in a location where the left hand extends over the top of the right wrist (still 3). The hand's trajectory along the lateral axis is particularly noticeable when stills 1 and 3 are compared.

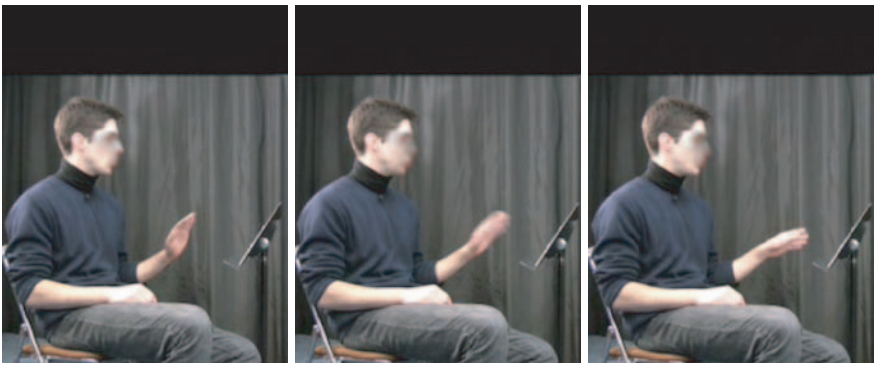
Both English and French speakers in our study frequently used gesture to provide such directional clarification for lexical spatial items. Hence, the expression of Path information was achieved through the use of both modalities. With this first observation in mind, it seems clear that a definition of locative expressions based upon the presence of prepositions, such as the one proposed by Costello and Kelleher (2006: 1) earlier on, is inadequate as far as a multimodal analysis of data is concerned. It is therefore preferable to adopt a more simplistic definition along the lines of Fillmore (1975: 18): "The typical kind of locating expression in a language is one which indicates the location of one object with respect to some other object." A certain amount of fine-tuning of this definition is nevertheless required. Fillmore defines locative expressions as locating 'one object' in relation to 'some other object'. However, our data reveal that locative expressions can indicate the location of *multiple* objects – as opposed to just one object – in relation to a Ground.

(18) *and on the right is a café youth hostel restaurant bank and a bar* (EngDesc1)

In example (18) the speaker locates a series of objects, all of which share the common spatial property of being located on the right-hand side of the street. Each of these objects relates back to the same Path and Ground (encoded by *on* and *the right* respectively), and they are presented as a single package: they are lexicalised in succession and are coordinated by a final *and*. This common dependency on the one Path and Ground unit, along with their successive syntactic distribution, encourages their construal as a collective Figure. Locative expressions may therefore locate a *group* of objects in relation to another object (see Lemmens 2005) as opposed to just *one* object in relation to another object. Just as it is feasible to have a Figure which is comprised of multiple objects, so too is it possible to have a multiple-object Ground. In an expression like "Joe stood opposite Jane and Mark" the Figure (*Joe*) is located in relation to a Ground which is comprised of two objects (*Jane* and *Mark*). These objects are presented as entities which share a common spatial area, thereby triggering their construal as a single Ground.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

The consideration of boundaries as far as locative expressions are concerned – that is, where does one start and another begin? – is another issue that requires attention. Our data suggest that locative expressions are best analysed as the continuous stream of information that a speaker provides about a Figure's location.



1 2 3



4 5 6

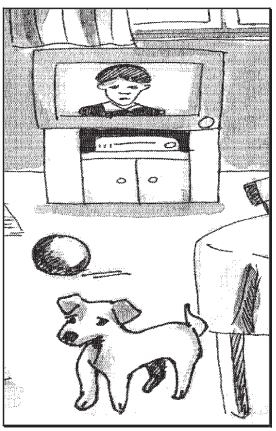
(19) *au-dessus du chat* *donc on retourne à gauche* [laughs] *il y a un portrait*
above the cat so we're going back to the left [laughs] there is a portrait
(1–3) (4–6)
(FrenDesc7)

In example (19) the speaker gestures across to the left (stills 1–3) while uttering *au-dessus de* ('above'). There is a contradiction between the directional information expressed in speech and gesture here: the speaker expresses

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

direction along the lateral (left-right) axis in gesture, while encoding location along the vertical (top-bottom) axis in speech. However, when the speaker presents the Figure, *un portrait* ('a portrait'), in speech, he gestures upwards (stills 4–6): this is the gestural partner of the earlier use of *au-dessus de*. The lexical spatial items and their corresponding gestures are therefore not aligned, but this temporal incongruity is not an issue if this whole example is understood as a single expression. This result suggests that locative expressions should be considered as the continuous stream of information concerning a Figure's location, because corresponding speech and gesture units may occur at non-synchronous points throughout this stream. Indeed, not only is there temporal non-alignment between *au-dessus de* and its representational gesture, such non-alignment is also noted for *à gauche* ('to the left') and its gestural affiliate. Here, the gesture to the left is executed at the very beginning of the expression, with the corresponding prepositional phrase occurring several words later.

A further reason for taking this function-based approach to locative expressions concerns the semantic interconnectivity of consecutive locative phrases or clauses that localise a common Figure. Often, a locative phrase or clause serves to clarify the directional information encoded by the previous one.



(20) *just behind the dog there's a ball on the floor. . so this is between the dog and the television* (EngDesc5)

This speaker begins by locating the Figure at a point along the frontal axis 'just behind the dog'. Two possible interpretations exist for this phrase. The first interpretation uses an 'intrinsic frame of reference' (Levinson 1996). An

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

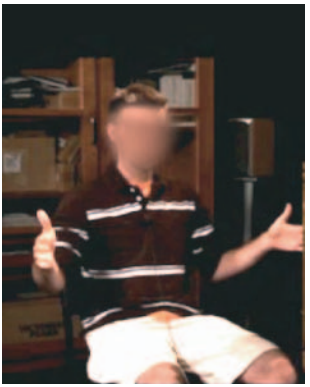
intrinsic frame of reference locates a Figure in relation to an intrinsic spatial property of the Ground (such as its front or back). In the case of example 20, we would therefore understand that 'behind the dog' means that the ball is located near the dog's intrinsic behind. The second interpretation uses a 'relative frame of reference' (Levinson 1996). In such cases a spatial property is not intrinsic to the Ground, but rather attributed to it by an observer. Hence, we can describe a ball as 'behind' a tree even though trees do not have intrinsic fronts and backs. Here, we would understand the back of the tree to be the part that is not facing us. As far as our current example is concerned, the provision of the locative information in the *between* phrase shows that the non-intrinsic interpretation of *behind* is the correct one. That is, the ball is not at the intrinsic 'behind' of the dog, but rather to the side of the dog that is not facing us. The ambiguity of the use of *behind* here, in terms of the frame of reference used, highlights just how important the *between* phrase is: it provides necessary clarification. With this in mind, it makes sense to keep the whole example as a single locative expression because both parts clearly work together to specify a single location.

A second reason against approaches that segment locative expressions at the level of phrases or clauses is that only the first mention of an object as Figure is considered in this study. The segmentation of examples such as the one above into two separate expressions would mean that the second clause would not be taken into account. This would be methodologically erroneous, since this second clause bears upon the first in providing clarification of how the speaker intends the location of the ball to be understood. Such a problem is avoided if both clauses are understood in terms of their common locative function of localising the same Figure, and therefore considered as a single expression.

5.2 Differences in lexical and gestural Figures and Grounds

While attending to the gestures that occur with locative expressions in the speech stream, a particular behaviour of English and French speakers was noted. This was the fact that speakers recurrently expressed a different Figure in gesture to that which was encoded in speech. This type of gesture-only Figure will be termed a 'gestural Figure'. The following example shows how such Figures occur.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press



(21) *in between. . um <u>the</u> couch <u>and the</u> table. . um there's a book and a a small dog* (EngDesc9)

The Figures of the lexical locative expression in (21) are *book* and *small dog*, which are located in relation to a lexical Ground, *the couch and the table*. It is the first time the speaker has localised the book and the dog, meaning that this expression falls into our first-mention data set. It should be pointed out, however, that the locations of both the Ground objects, the couch and the table, are given earlier in the speaker's discourse. Nevertheless, the speaker's gestural behaviour here is crucial for the impact it has on our understanding of how speakers create static locative expressions. The still image shows how the speaker uses his hands to mark the respective locations of the two Ground entities in gesture space. The speaker initially moves his left hand down to indicate that the couch is located on the left-hand side of the lounge room; this is followed by movement of the right hand down to mark the location of the table on the right-hand side. The space between the speaker's hands suggests the distance between the two objects. Two semantic roles are attributed to the couch and the table here: they are the Ground objects of the lexical expression, whilst also being the Figures of their own gestural locative expressions. They are Figures because the speaker establishes their location in space: this is precisely what constitutes a Figure in a locative expression. The Path and Ground components which round out these gestural locative expressions can be identified as follows: Path is expressed by the placement of the speaker's hands at the objects' isomorphic locations in gesture space, while the Ground is understood contextually, with the speaker's gesture space representing the space of the lounge room. Therefore, the placement of the speaker's left hand establishes the location of the couch on the left-hand side of the lounge room, while the placement of his right hand communicates the location of the

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

table on the right-hand side of the room. Importantly, gesture alone expresses the Path component in these two examples. These gestural expressions are secondary in nature, and attach to the lexically encoded Ground objects. They function in a similar way to a relative clause: they modify the nominal to which they are associated and cannot survive as 'stand-alone' expressions. The existence of these gestural Figures shows that there are multiple levels to locative expressions: in addition to the lexical Figure, there may be other Figures that emerge at the level of gesture. This shows that the semantic roles that speakers assign to objects can only be fully known when gesture is taken into consideration.

The second way in which gestural Figures occur is when multiple objects are lexically encoded as a group Figure. Gesture may signal division between these objects by showing differences in their respective locations. This is reflected in the following example.



1 2 3

(22) *[. . .] le livre l'os la balle. . qui sont les trois objets par terre [. . .]*
[. . .] the book the bone the ball. . which are the three objects on the floor [. . .]
(FrenDesc10)

The three stills show the end of three successive gesture stroke phases. The speaker lexically encodes a group Figure comprised of three objects: all three of these objects are bundled by the one verb form *sont* ('are') and are collectively located at the one point in space: *par terre* ('on the floor'). However, the information which the speaker's successive gestures provide captures individual differences in the location of each object that is part of the group Figure: the bone is gesturally depicted as being in front of the book (still 2, compared to still 1), while the ball is shown to be to the right of the bone (still 3, compared to still 2). This information can only be understood if the book is conceptualised as a

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

gestural Ground for the bone, and the bone a gestural Ground for the ball. The upshot of this is that the lexical group Figure is *not* a group Figure in gesture: gesture is expressing different, yet complementary, information to that encoded in speech. These gestures present the three objects as individual Figures whose spatial distribution relative to each other is at issue. As such, three gestural expressions of location emerge. These expressions attach to the nominals that encode each object; Path and Ground information for each expression is retrievable from gesture. Therefore, the combined consideration of the two modalities in this example reveals that the speaker is expressing far more than a lexically encoded topological relationship. In fact, he is also expressing the directional distribution of the objects that comprise the lexically encoded group Figure.

Examples (21) and (22) show how gesture can play a pivotal role in expressing locative information in both English and French. The key point to retain is that gesture adds *layers of meaning* to lexical expressions of location. It is not enough to consider speech alone: gesture provides information about Figure/Ground configurations that is not encoded in speech at all.

6 A new approach to analysing locative expressions

6.1 A definition of static locative expressions

The preceding section presented findings that clearly show the need for a new approach to defining and separating locative expressions that takes into account the contributions of both speech and gesture. The following is the new definition that we propose.

Static locative expressions: Static locative expressions communicate the fixed location of an object or group of objects (the 'Figure') in space.

The choice of the verb *communicate* in this definition is deliberate: it suggests that the expression of locative information is not modality specific, and therefore that both speech and gesture play a part in this expression. The definition is simple and unrestrictive, and aims to cover the complete variety of ways in which speakers communicate location. Although not explicitly stated, there are other semantic components, apart from the Figure, which are inherent to locative expressions. As discussed earlier, Talmy identifies these other components as Path, Ground, and Motion. Given that we do not agree that static locative expressions can be categorised as Motion events, we would instead refer to this last semantic

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

role as 'Location'. Taking into account the evidence presented in the previous section, it should also be stated that static locative expressions are comprised of the continuous stream of information which a speaker provides about a Figure's fixed location in space.

6.2 Segmenting static locative expressions in oral discourse

Aside from proposing a definition of static locative expressions, we need to specify how to separate such expressions in discourse. This is not as easy at it may seem. We suggest identifying boundaries by looking, first of all, at speech. This is because describers in the type of discourse-oriented task that we used must use speech in their descriptions: it is impossible not to do so. The same is not true of gesture, however: speakers may feasibly describe the locations of all of the objects in both scenes without gesturing at all. Identifying the boundaries of static locative expressions in speech also enables a framework for the interpretation of co-speech gestures to be established. In this way, the semantic interaction between the information encoded in speech and the information expressed in gesture can be explored. Speech, therefore, provides a logical starting point for retrieving locative expressions from the data pool.

However, it is not always enough to identify locative expressions on the basis of speech alone. As shown in example (15), speakers can communicate locative information in gesture even when no locative expression is present in speech. Therefore, those parts of a speaker's discourse which do not contain lexical locative expressions should also be examined for any location-expressing gestures. These gestures, along with their accompanying lexical segment (i.e. 'cat' in example 15), should also be coded as locative expressions.

As far as the speech stream is concerned, in many instances the separation of locative expressions is transparent. This is due to the clear change in the Figure being located, as shown in the following example.

(23) *le canapé. . en bas de l'image aussi dans le coin gauche*
the sofa. . at the bottom of the picture as well in the corner left
les rideaux. . euh dans le coin droit en haut (FrenDesc1)
the curtains. . uh in the corner right up the top
'the sofa. . at the bottom of the picture as well in the left corner the curtains. . uh in the right corner up the top'

In example (23) the locations of two different Figures are encoded. The second of the two Figures, *les rideaux* ('the curtains'), is located *dans le coin droit en*

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

haut ('in the right corner up the top') while the preceding Figure, *le canapé* ('the sofa'), is located *en bas de l'image aussi dans le coin gauche* ('at the bottom of the picture as well in the left corner'). The change in Path and Ground components from the first expression to the second signals the establishment of a new Figure in a new location, and hence a new locative expression is noted.

However, understanding when a new Figure comes into play is not always a transparent exercise. This is particularly the case when it is not clear whether a speaker intends multiple objects to be taken as a group Figure, or whether they are intended as individual Figures instead.

(24) *then for the buildings that are on the right hand side of the street. . there's a café. . there's a restaurant. . and a bar*
(EngDesc10)

In example (24) above, the existential phrases *there is* and *there are* separate the Figure objects *a café* and *a restaurant*. These phrases encode existence but not location: it is therefore feasible that *a café* and *a restaurant* should be taken as a single, group Figure. However, the fact that each object is prefaced by the existential *there's* suggests a division between them. Therefore, when the passage from one Figure to the next is not transparent, lexical markers may be taken as cues. Existential phrases such as *there is* and *there are* can therefore be markers of new locative expressions, as well as sequential items like *then*. Example (24) would therefore be divided into the following two expressions:

(25) *then for the buildings that are on the right hand side of the street. . there's a café. .*

(26) *there's a restaurant. . and a bar*
(EngDesc10)

In example (26) the Path (*on*) and Ground (*the right hand side of the street*) components are inferable from the preceding expression.

In many situations the separation of locative expressions is a transparent exercise: for example, when a speaker explicitly encodes a new Figure at a different point in space (e.g. example 23). However, in other instances there is room for doubt. In such cases, as mentioned above, division should be based on lexical cues. These cues are the existential phrases *there is*, *there are* and *il y a*, along with sequential markers such as *then* and *puis*. Such lexical phrases signal individuation between consecutive Figures. Note that Path and Ground components

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

may not always be explicitly encoded for each new locative expression (e.g. example 26). However, these components are immediately retrievable from the preceding context. It is simply a feature of oral discourse that elements which may be accessible contextually do not need repeating.

Another possibility would be to use pauses as signals for the end of a locative expression. However, this is not a reliable method because pauses do not necessarily suggest the passage from one piece of locative information to the next. Rather, pauses may reflect other phenomena, such as hesitation. Furthermore, if pauses are to be used, how long should a segmenting pause be? It therefore seems more solid to understand locative expressions in terms of the Figure and, where necessary, to use lexical markers as a segmenting device.

The key to separating static locative expressions is therefore the identification of the Figure. The object that assumes the role of Figure must always be lexicalised by the speaker. In contrast, Path and Ground components may be contextually inferable. Understanding what constitutes a new Figure depends on the guidelines laid down for the separation of locative expressions. In this study, speech is taken as the starting point. A locative expression is the stretch of speech which expresses the location of a Figure, irrespective of how many phrases or clauses this involves. A new locative expression begins when a new Figure is targeted. New Figures can be identified in one of two ways. Firstly, they may be entities that are located at a different location in space to the preceding Figure (e.g. example 23): this necessarily means a new locative expression. Secondly, they may be located at the same location in space as the Figure which precedes them, but the speaker signals a division between them: this involves the recruitment of a lexical divider, such as *there is*/*there are* or a sequential term like *then*.

6.2.1 Primary locative expressions and secondary locative expressions

Having established how to define and separate static locative expressions on the basis of our multimodal data, it is now necessary to introduce a final idea that is central to understanding how these expressions work. This is the idea that locative expressions are comprised of two sub-types of expression: *primary locative expressions* and *secondary locative expressions*. Primary locative expressions introduce a new Figure and can 'stand alone': they do not depend on another locative expression for existence. Secondary locative expressions, on the other hand, create a new Figure from (an) object(s) which is/are already engaged in a locative expression. The difference between these two types of locative expression is highlighted in the example below.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

(27) *and in the in just in the foreground of the supermarket* ***which is actually the first shop that you'll see on the left****. . there's a tree*
(EngDesc4)

This expression can be broken down into primary and secondary locatives as follows:
Primary locative: [and in the in just in the foreground of the supermarket. . there's a tree]
Secondary locative: [which is actually the first shop that you'll see on the left]

The Figure, *the tree* is located in relation to the Ground *the foreground of the supermarket*. This Ground, or rather part of it (*the supermarket*) is then described as 'the first shop that you'll see on the left'. The speaker therefore creates a new Figure from the existing Ground (*supermarket*), which means that this one object plays both Ground and Figure roles. The overall locative expression is comprised of the primary and secondary sub-parts. Definitions of these two types of locative expressions may be proposed as follows:

Primary locative expression (or 'primary locative'): A primary locative communicates the location of a new Figure.
Secondary locative expression (or 'secondary locative'): A secondary locative communicates the location of a new Figure. This is achieved by making use of a Figure or Ground entity which is already engaged in a locative expression.

Three of the main ways in which secondary locatives manifest themselves are as follows.

– Relative subordination
Relativisation is used to assign a second role to an existing Figure or Ground entity.

(28) *in front of her to the right like in front of the book* ***which is next to the sofa*** *there's a bone* (EngDesc2)

In this example, the relative pronoun *which* allows the secondary role of Figure to be assigned to the existing Ground 'book'. We also find *-ing* participial clauses, as in the following example.

(29) *[. . .] there's a cat. . which is directly under the bird* ***sitting in the tree***
(EngDesc5)

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

The *-ing* participial clause *sitting in the tree* encodes the location of the lexical Ground *the bird*.

– Embedding
A clause or phrase, detailing the location of an object, is inserted within the primary locative.

(30) *um on top of the hotel* ***so that was the second shop*** *there's a satellite dish*
(EngDesc3)

The clause *so that was the second shop* is inserted into the primary locative expression immediately after the Ground object *hotel*. This allows for the location of the Ground to be revealed: *hotel* is now also a secondary Figure. The Path in this expression is encoded by the sequential term *second*: this indicates that the hotel is the shop *after* the one closest to the observer's perspective. The Ground is therefore contextually inferable as the *first shop*. This example shows how juxtaposition can be used to create a secondary locative expression within the structure of a primary, matrix expression.

– Gesture
A speaker may provide the location of a lexicalised Ground object in gesture alone: this creates a gestural Figure. This object is therefore a lexical Ground and a gestural Figure simultaneously (see example 21). The respective locations of individual entities which collectively comprise a lexical Group Figure may also be given in gesture (see example 22): this then establishes these entities as individual gestural Figures.

Finally, speakers sometime use pre-head modifiers in noun phrases to provide information about a Ground's location.

(31) *on the* ***left hand*** *side of the road past the trolley. . is a phone box*
(EngDesc8)

In example (31) the modifying noun phrase *left hand* identifies the location of the Ground *side of the road*. However, it also serves the purpose of disambiguating this particular side of the road from the other one (i.e. the right-hand side). The use of such pre-head modifiers occurs in our data when there is more than one of the same Ground (for example, sides of a road). We do not consider that they serve the same purpose as the linguistic and gestural phenomena identified above, which express the locations of unique Grounds in our stimulus pictures. Rather, these modifiers, as used in our study, serve the purpose of

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

disambiguating between multiple Grounds of the same nature. Therefore, we do not consider them as secondary locative expressions.

6.2.2 Overall locative expressions

The crucial difference between primary and secondary locatives relates to the notion of dependency. A secondary locative attaches to, or is embedded within, a primary locative (or even another secondary locative). Crucially, it creates a Figure from an object that is already engaged in a Figure or Ground role. In contrast, a primary locative does not have this same relationship of dependency, and does not assign another semantic role to an object that is already engaged in a locative expression.

One of the advantages of secondary locative expressions is the ease and economy with which they allow speakers to describe new locative configurations. Crucially, these expressions attach to primary locatives and are designed to be considered alongside them. Hence, we propose the term *overall locative expression* to designate the combination of a primary with any secondary locative expressions.

7 Summary

The expression of location is, above all, a semantic concern. Certain researchers analyse locative expressions in terms of phrases (i.e. Schober 1998; Costello and Kelleher 2006). However, this approach is insuffient as far as multimodal discursive accounts are concerned, for two reasons. Firstly, such a grammatically based approach fails to capture the idea that the location of a Figure is often expressed across successive phrases or clauses. The individual phrases and clauses within this overall stretch of information do not operate independently: they are linked functionally and semantically, and cannot be considered in isolation from each other. Secondly, speakers use gesture to communicate Path information that is unlexicalised elsewhere in the locative expression. This information may pertain to the lexically encoded Figure (example 14, 16 and 17), or alternatively it may create a gestural Figure out of a lexical Ground (example 21) or a group lexical Figure (example 22). The observation that a lexical Ground can simultaneously be a gestural Figure is crucial: it reveals that speakers localise objects other than those which are specifically marked as Figures in speech. It also shows that speakers can present multiple locative relationships simultaneously, and that productive use is made of both speech and gesture to express such relationships. Hence, not all locative expressions are merely lexical phrases or clauses.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

As far as the segmentation of locative expressions in oral discourse is concerned, locative expressions should firstly be identified in the speech stream. The complete, uninterrupted stretch of information provided about a Figure's location should be counted as an expression. This expression may include dependent parts which we have termed *secondary locatives*. When the separation of Figures is not transparent, lexical cues such as *there is* and *then* may be taken as signs of Figure individuation. Co-speech gestures are then identified and analysed. This allows for the identification of gestural Figures and hence the coding of another type of secondary locative. The parts of a speaker's discourse which do not contain lexical locative expressions must also be analysed for any gestural expressions of location.

Overall, this definition and approach to the separation of static locative expressions seeks to account for the maximum amount of ways in which speakers communicate location across the two modalities. This paper has aimed to show in depth the complexity of static locative expressions and their different realisations across speech and gesture. Our data have shown that the two modalities are highly complicit in the expression of locative semantic information and that there can be no justified dissociation of one modality from the other. Furthermore, identifying the object(s) that a speaker conceptualises as a Figure requires attending to a speaker's gestures in addition to their speech: this is because different Figures can emerge simultaneously across the two modalities. A Figure in gesture may be a lexically encoded Ground (see example 21) or an element in a group Figure in speech (see example 22). As such, listeners may only be able to apprehend the range of item(s) that a speaker is trying to locate by attending to their gestures as well as to their speech. Furthermore, as far as spatial conceptualisation is concerned, we may only know the semantic role(s) that a speaker assigns an object by taking into account their gestural behaviour. Further research, in the form of a new, quantitatively oriented study, is required to investigate the findings that have been described qualitatively in this paper. For example, do gestural Figures tend to occur when speakers use prepositions that licence multiple Ground objects (i.e. *between*/*entre*, *among*/*parmi*)? Do speakers use gesture in this manner because it is a communicatively efficient way to express multiple locations simultaneously? Or do they do so because they wish to specify the spatial axis along which a spatial relationship plays out? For example, the prepositions *between* and *entre* can encode location along any horizontal axis: that is, an object might be *between* two other objects along a left/right axis in front of a speaker, or it may be *between* two objects that are lined up along a frontal axis, one behind the other. Future studies are therefore necessary to build upon the findings reported in this paper, and to help us better understand the role of gesture in static locative expressions.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

References

Ameka, F. K. & S. C. Levinson. 2007. Introduction. The typology and semantics of locative predicates: posturals, positionals, and other beasts. *Linguistics* 45(5). 847–872.

Arik, E. 2009. *Spatial language: Insights from sign and spoken languages*. West Lafayette, Indiana: Purdue University doctoral dissertation.

Ashley, A. & L. A. Carlson. 2007. Encoding direction when interpreting proximal terms. *Language and Cognitive Processes* 22(7). 1021–1024.

Beattie, G. & H. Shovelton. 2006. When size really matters: How a single semantic feature is represented in the speech and gesture modalities. *Gesture* 6(1). 63–84.

Beavers, J., B. Levin & S. W. Tham. 2010. The typology of motion expressions revisited. *Journal of Linguistics* 46. 331–377.

Borillo, A. 1998. *L'espace et son expression en français*. Paris: Editions Ophrys.

Carlson, L. A. & E. S. Covey. 2005. How far is *near*? Inferring distance from spatial descriptions. *Language and Cognitive Processes* 20. 617–631.

Costello, F. J. & J. D. Kelleher. 2006. Spatial prepositions in context: The semantics of *near* in the presence of distractor objects. In B. Arsenijevic, T. Baldwin & B. Trawinski (eds.), *Proceedings of the Third ACL-SIGSEM Workshop on Prepositions*, 1–8. Stroudsburg, PA: Association for Computational Linguistics.

Coventry, K. R. & S. C. Garrod. 2004. *Saying, seeing, and acting: The psychological semantics of spatial prepositions*. Hove: Psychology Press.

Coventry, K. R., T. Tenbrink & J. Bateman (eds.) 2009. *Spatial language and dialogue*. Oxford: Oxford University Press.

Emmorey, K. & S. Casey. 2001. Gesture, thought and spatial language. *Gesture* 1(1). 35–50.

Fillmore, C. J. 1975. *Santa Cruz lectures on deixis 1971*. Indiana: Indiana University Linguistics Club.

Franckel, J. -J. & D. Paillard. 2007. *Grammaire des prépositions: Tome 1*. Paris: Éditions Ophrys.

Gullberg, M. 2011. Language-specific encoding of placement events in gestures. In J. Bohnemeyer & E. Pederson (eds.), *Event representation in language and cognition*, 166–188. New York: Cambridge University Press.

Hendriks, H., M. Watorek & P. Giuliano. 2004. L'expression de la localisation et du mouvement dans les descriptions et les récits en L1 et L2. *Langage* 155. 106–126.

Herskovits, A. 1986. *Language and spatial cognition: An interdisciplinary study of the prepositions in English*. Cambridge: Cambridge University Press.

Holler, J. & G. Beattie. 2002. A micro-analytic investigation of how iconic gestures and speech represent core semantic features in talk. *Semiotica* 142. 31–69.

Hörberg, T. 2007. *Influences of form and function on spatial relations: Establishing functional and geometric influences on projective prepositions in Swedish*. Stockholm: Stockholm University MA dissertation.

Kendon, A. 1980. Gesticulation and speech: Two aspects of the process of utterance. In M. -R. Key (ed.), *The relationship of verbal and nonverbal communication*, 207–227. The Hague: Mouton de Gruyter.

Kendon, A. 1994. Do gestures communicate?: A review. *Research on Language and Social Interaction* 27(3). 175–200.

Kendon, A. 2004. *Gesture: Visible action as utterance*. Cambridge: Cambridge University Press.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

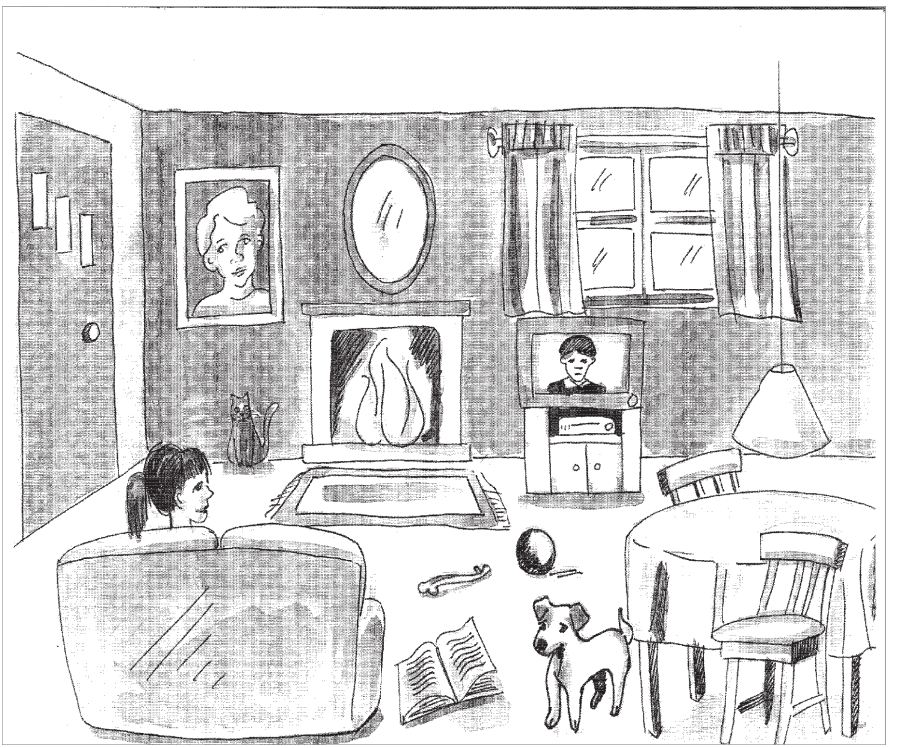
Kita, S. & T. S. Davies. 2009. Competing conceptual representations trigger co-speech representational gestures. *Language and Cognitive Processes* 24(5). 761–775.
Kita, S. & A. Özyürek. 2003. What does cross-linguistic variation in semantic coordination of speech and gesture reveal?: Evidence for an interface representation of spatial thinking and speaking. *Journal of Memory and Language* 48. 16–32.
Kopecka, A. 2004. *Etude typologique de l'expression de l'espace: Localisation et déplacement en français et en polonais*. Lyon: Université Lumière Lyon 2 doctoral dissertation.
Kopecka, A. 2006. The semantic structure of motion verbs in French: Typological perspectives. In M. Hickmann & S. Robert (eds.), *Space in languages: Linguistic systems and cognitive categories*, 83–101. Amsterdam: John Benjamins.
Kopecka, A. & S. Pourcel. 2005. Motion expressions in French: Typological diversity. *Durham and Newcastle Working Papers in Linguistics* 11. 139–153.
Landau, B. 2003. Axes and direction in spatial language and spatial cognition. In E. van der Zee & J. Slack (eds.), *Representing direction in language and space*, 18–38. Oxford: Oxford University Press.
Landau, B. & R. Jackendoff. 1993. "What" and "Where" in spatial language and spatial cognition. *Behavioral and Brain Sciences* 16. 217–265.
Lautenschütz, A.-K., C. Davies, M. Raubal, A. Schwering & E. Pederson. 2007. The influence of scale, context and spatial preposition in linguistic topology. In T. Barkowsky, M. Knauff, G. Ligozat & D. R. Montello (eds.), *Spatial cognition V, LNAI 4387*, 439–452. Berlin: Springer-Verlag.
Lemmens, M. 2005. Motion and location: Toward a cognitive typology. In G. Girard-Gillet (ed.), *Parcours linguistiques: Domaine anglais* [CIEREC Travaux 122], 223–244. Saint-Etienne: Publications de l'Université St.-Etienne.
Lemmens, M. & D. I. Slobin. 2008. Positie- en bewegingswerkwoorden in het Nederlands, het Engels en het Frans [Position and movement verbs in Dutch, English and French]. In P. Hiligsmann (ed.), *Verslagen en Medelingen van de Handelingen van de Koninklijke Academie voor Taal- en letterkunde [Reports and Communications of the Acts of the Royal Academy for Linguistics and Literature]*. [Special issue] 118(1). 17–32.
Levinson, S. C. 1992. Primer for the field investigation of spatial description and conception. *Pragmatics* 2(1). 5–47.
Levinson, S. C. 1996. Language and space. *Annual Review of Anthropology* 25. 353–382.
Levinson, S. C. 2003. *Space in language and cognition: Explorations in cognitive diversity*. Cambridge: Cambridge University Press.
Levinson, S. & S. Meira. 2003. 'Natural concepts' in the spatial topological domain – adpositional meanings in crosslinguistic perspective: An exercise in semantic typology. *Language* 79(3). 485–516.
McNeill, D. 1992. *Hand and mind. What the hands reveal about thought*. Chicago: University of Chicago Press.
McNeill, D. 2000. Analogic/analytic representations and cross-linguistic differences in thinking for speaking. *Cognitive Linguistics* 11(1/2). 43–60.
McNeill, D. 2005. *Gesture and thought*. Chicago: University of Chicago Press.
Rauscher, F., R. Krauss & Y. Chen. 1996. Gesture, speech and lexical access. *Psychological Science* 7(4). 226–230.
Schober, M. F. 1998. How addressees affect spatial perspective choice in dialogue. In P. Oliver & K. -P. Gapp (eds.), *Representation and processing of spatial expressions*, 231–245. Mahwah NJ: Lawrence Erlbaum Associates.

https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

Sinha, C. & T. Kuteva. 1995. Distributed spatial semantics. *Nordic Journal of Linguistics* 18. 167–199.
Slobin, D. I. 1997. Mind, code, and text. In J. Bybee, J. Haiman & S. A. Thompson (eds.), *Essays on language function and language type*, 437–465. Amsterdam: John Benjamins.
Slobin, D. I. 2004. The many ways to search for a frog: Linguistic typology and the expression of motion events. In S. Stromqvist & L. Verhoeven (eds.), *Relating events in narrative: Topological & contextual perspectives*, 219–257. Mahwah, NJ: LEA Publishers.
Slobin, D. I. 2006. What makes manner of motion salient? Explorations in linguistic typology, discourse, and cognition. In M. Hickmann & S. Robert (eds.), *Space in languages: Linguistic systems and cognitive categories*, 59–81. Amsterdam: John Benjamins.
Striegnitz, K., P. Tepper, A. Lovett & J. Cassell. 2009. Knowledge representation for generating locating gestures in route descriptions. In K. R. Coventry, T. Tenbrink & J. Bateman (eds.), *Spatial language and dialogue*, 147–165. Oxford: Oxford University Press.
Talmy, L. 1991. Path to realization: A typology of event conflation. In L. A. Sutton, C. Johnson & R. Shields (eds.), *Proceedings of the seventeenth annual meeting of the Berkeley Linguistics Society*, 480–520. Berkeley: Berkeley Linguistics Society.
Talmy, L. 2000. *Toward a cognitive semantics*. Cambridge MA: MIT Press.
Tutton, M. 2009. When *in* means *into*: Towards an understanding of boundary-crossing *in*. *Journal of English Linguistics* 37(1). 5–27.
Tutton, M. 2011. How speakers gesture when encoding location with English *on* and French *sur*. *Journal of Pragmatics* 43. 3431–3454.
Tyler, A. & V. Evans. 2003. *The semantics of English prepositions*. Cambridge: Cambridge University Press.
Vandeloise, C. 1986. *L'espace en français*. Paris: Éditions du Seuil.
Vandeloise, C. 2006. Are there spatial prepositions? In M. Hickmann & S. Robert (eds.), *Space in languages: Linguistic systems and cognitive categories*, 139–154. Amsterdam: John Benjamins.

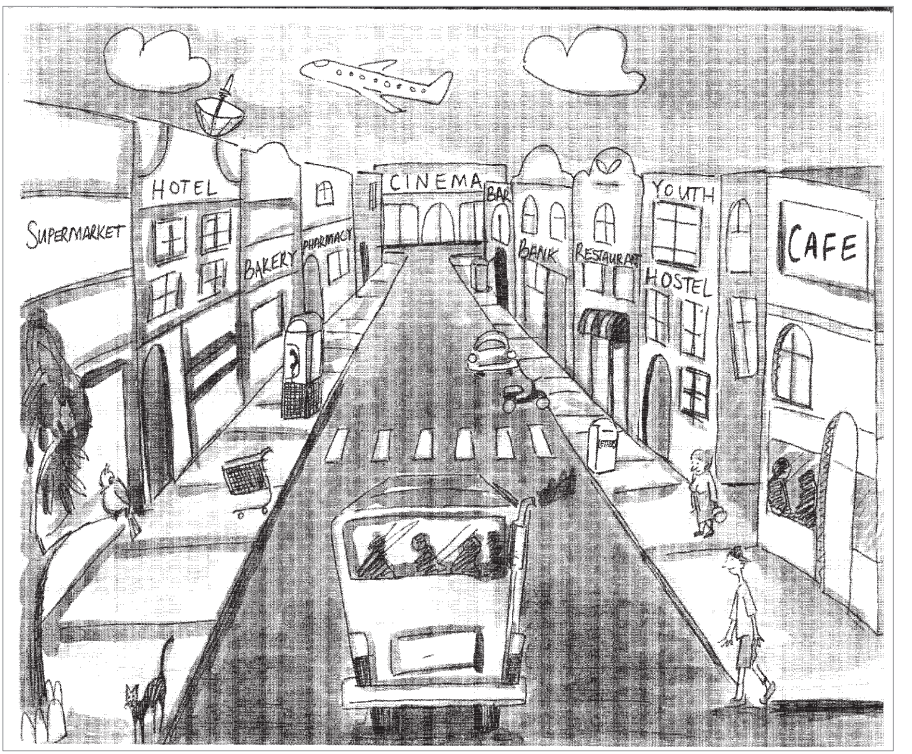
https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

Appendix A – Lounge-room scene



https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press

Appendix B – Street scene



https://doi.org/10.1515/langcog-2013-0002 Published online by Cambridge University Press