

The 2019 Conference on Asian Linguistic Anthropology

“Revitalization and Representation”

Conference Proceedings Papers

January 23-26, 2019

Royal Angkor Resort
Siem Reap, Cambodia

Hosted by
The Paññāsāstra University of Cambodia

The Conference on
ASIAN LINGUISTIC ANTHROPOLOGY
2019
Siem Reap, Cambodia
<https://cala2019.cala.asia>

The CALA 2019 Proceedings Paper 2 - 1

Language and Spatial and Temporal Frames, Paper 1

**Interpreting 'Front': Perception of Space in Bengali
and Kannada**

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Abstract

This paper is concerned with the nature of 'front' along the front/back axis. The languages taken up for the study are Bengali, a language belonging to Indo-Aryan language family, and Kannada, a language belonging to Dravidian language family. The terms for denoting 'front' for Bengali are 'samne' and 'aage' and for Kannada are 'yeduru' and 'munde'. Experience and embodiment of spatial arrangements play an important role in the spatial cognition, and language use takes into account the different points of view.

Many factors such as proximity, vantage point, specificity, etc. play an important role in describing a given situation. It is worth mentioning that the choice of the usages of the words for denoting 'front' as location or direction has been seen as different in some situations and overlapping in others. The data were collected using a questionnaire which aimed to elicit the expressions for 'front' for the entities, whose relationship is described in terms of Figure and Ground (Talmy, 1983; 2000), from the speakers of both the above mentioned languages, and then analysed for the factors involved.

Keywords: Space, Cognition, Embodiment, Perception, Figure and Ground

Introduction

Space and spatial perception involve a reckoning of where one is, navigating and route finding, tracking locations and travels in narratives, spatial reasoning, and mapping. Humans, in orienting themselves in space, use their bodies' inherent orientational properties, that is, along the up/down, left/right and front/back axes. Languages capture these basic distinctions by providing terms that reflect asymmetrical elements. In the spatial domain, languages have fundamentally different linguistic systems for representing spatial relations, reflecting different construals of the same bit of reality (Brown 2006). In other words, differences in perception have implications on the expressions construed for any particular situation.

Bengali belongs to the Indo-Aryan family of languages, while Kannada belongs to the South Dravidian group of the Dravidian language family. Typologically, both languages are free word-order languages with a default SOV (subject-object-verb) word order type. Both languages are post-positional in nature, where the location and direction are marked by postpositions or case markers.

Methodology and Data Collection

Participants in this study were shown a constituency of objects and were asked to put forward a description. The task can be fixed, in that productions were drawn from a limited set, or were open-ended, with no restrictions on their production. The data was elicited by using a questionnaire consisting of 22 pictures. Some of the pictures were obtained from the Internet, while others were self-drawn. The pictures were accompanied with sentences above each picture, and all of the sentences had blanks to fill. To prepare the questionnaire, a Google Form was used, and the data were recorded in a Google Sheet linked to the form. The contents of the questionnaire (other than the images) included detailed instruction, and the sentences were translated into both Bengali and Kannada. Three options were provided (two showing FRONT and one as none of the above) as ‘samne’, ‘age’ and ‘opor-er kono ta noe (None of the above)’ for Bengali and ‘munde’, ‘yeduru’ and ‘melina yavuvu alla (None of the above)’ in Kannada. These pictures were framed to depict simple situations, where all the pictures had either two objects and two humans, or one human and one object.

The spatial relations between the items (the object whose location is to be determined is the Figure and in reference to which the Figure’s location needs to be described as the Ground) form the core part of this paper. A total of 38 informants, that is, 19 informants from each language community, voluntarily participated for this study, most of whom were students. To analyse a linguistic representation, the sentences of Bengali and Kannada were written using the International Phonetic Alphabet (IPA) in this paper, but using the Roman script for informants.

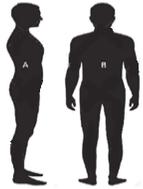
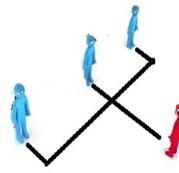
Literature Review

The literature here discusses work on interpreting the ‘front’ axial part of the ‘front-back’ axis. Scholars such as Talmy (1983; 2000), Langacker (1986), Landau and Jackendoff (1993), and Miller and Johnson-Laird (1976) have spoken on the spatial elements and the encoding of space along the axial parts and frames of reference. Levinson et. al. (1992, 1996), Bennardo (2000), and Danziger (2010) have performed experiments to present the encoding of space in terms of frames of reference, in several languages, finding influence from cultural and social experiences. Tyler and Evans (2003), Lindstromberg (2010), Coventry (1999), and Feist and Gentner (2003) have emphasized geometrical and functional aspects of the ground and figure.

Analysis

The analysis presented here takes two frames of reference (out of three prescribed by Levinson) into consideration, i.e., Relative and Intrinsic. Encoding space is not symmetrical in nature, a form which can be ascribed to a difference in perception leading to how the expressions for these situations are construed, as “an expression’s meaning is not just the conceptual content it evokes—equally important is how that content is construed” (Langacker, 2008). Construal is our ability to conceive and portray the same situation in alternative ways. Every lexical and grammatical element incorporates a certain way of construing the conceptual content evoked. In viewing a scene, what we see depends on how closely we examine it, what we choose to look at, which elements we pay most attention to, and where we view it from. One of the main components of this Construality is the vantage point, i.e. the viewing arrangement. The analysis in this paper is thus divided into three groups: Human and Human or Animate and Animate; Human/Animate and Object/ Inanimate; and Object/Inanimate and Object/Inanimate.

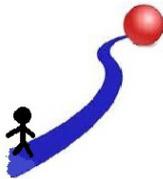
Human and Human or Animate and Animate

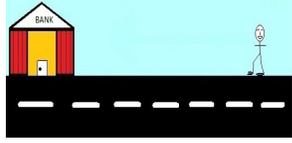
<p>1.</p>  <p>(Bengali) c^he le ṭa mēj ṭar _____ at^he (Kannada) huḍuganu huḍugija _____ idda:ne (English) The boy is at/in _____ of the girl.</p>	<p>2.</p>  <p>(Bengali) lal lok ṭa nil lok guloṛ _____ dārie ac^he (Kannada) kempu bōnnada vⁱakti ni:li bōnnada vⁱaktigaḷa _____ nintidda:ne (English) The red man is at/in _____ of blue men</p>	<p>3.</p>  <p>(Bengali) lal lok ṭa baki lok guloṛ _____ dārie ac^he (Kannada) kempu bōnnada vⁱakti bere vⁱaktigaḷa _____ iddane (English) The red man is at/in _____ of the rest</p>
<p>4.</p>  <p>(Bengali) ‘B’ lok ṭa ‘A’ lok ṭar _____ dārie ac^he (Kannada) ‘B’ vⁱaktiju ‘A’ vⁱaktija _____ iddane (English) ‘B’ person is at/in _____ of ‘A’ person.</p>	<p>5.</p>  <p>(Bengali) mohila ṭi lok ṭar _____ ac^he (Kannada) mōhileju puruḷana _____ iddaḷe (English) The woman is at/in _____ of the man</p>	<p>6.</p>  <p>(Bengali) lal manuḷ ṭa nil manuḷ guloṛ _____ dārie ac^he (Kannada) kempu bōnnada vⁱaktiju ni:li bōnnada vⁱaktigaḷa _____ nintiddane (English) The red man is standing at/in _____ of the blue men</p>
<p>7.</p>  <p>(Bengali) lok ṭi mohila ṭir _____ ac^he (Kannada) mōhileju puruḷana _____ iddaḷe (English) 18. The man is at/in _____ of the woman.</p>		

The Bengali responses showed that the scenes in pictures 1, 4, 6 and 7 have been majorly reported as the instances of ‘samne’ (IPA: samne). This can be ascribed to a mirror-image alignment in pictures 1, 6 and 7, as both the figure and ground (i.e. the humans) are facing each other. The mirror image alignment, according to Tyler and Evans (2003), becomes a realisation in the case of animate/human figures (here onwards F) to animate/human ground (here onwards G). In the case of picture 4, it takes into account the intrinsic presence of front denoted by the facial part of the body. In both the cases above, the intrinsic front of the human body plays a major role. In pictures 2 and 5, however, ‘aage’ (IPA: age) is reported as the leading response, though very bleak, and in picture 3, the responses for both ‘samne’ and ‘aage’ were equal, as ‘aage’ portrays the tandem alignment. The tandem alignment, according to Tyler and Evans (2003), shows the alignment of F in the further forward space of the movement or the visual field, showing a sequence. Hence the construction invokes a movement (even though it is fictive) towards the observer, involving a spatial aspect of being temporally ‘at the front.’

In Kannada, the response for pictures 1, 6 and 7 was the word ‘yeduru’ (IPA: jeduru), which depicts the same mirror-image alignment (discussed above) as what is shown by ‘samne’ in Bengali. For the remainder of the pictures, i.e. 2, 3, 4 and 5, the word ‘munde’ (IPA: munde) is depicting tandem alignment objects (as discussed above) such as ‘aage’ in Bengali. Here also in both the cases, the intrinsic front of the body plays a role in construing the scene.

Human/Animate and Object/ Inanimate

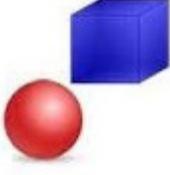
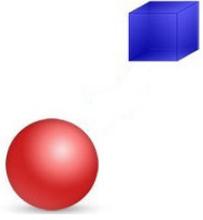
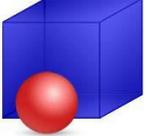
<p>8.</p>  <p>(Bengali) lal bōl ṭa manuṣ ṭar _____ ac^he (Kannada) kempu cenḍu vāktija _____ ide (English) The red ball is at/in _____ of the man</p>	<p>9.</p>  <p>(Bengali) lal golok ṭa lok ṭir _____ rak^ha ac^he (Kannada) kempu cenḍu vāktija _____ ide (English) The red ball is at/in _____ of the man</p>	<p>10.</p>  <p>(Bengali) puliṣ ṭa garir _____ dārie ac^he (Kannada) pulis karina _____ nintiddane (English) The policeman is standing at/in _____ of the car</p>
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<p>11.</p>  <p>(Bengali) lal golok ta lok tir ____ ac^he (Kannada) kempu cenḍu v̄aktija ____ ide (English) The ball is at/in _____ of the man</p>	<p>12.</p>  <p>(Bengali) lal golok ta lok tir ____ ac^he (Kannada) kempu cenḍu v̄aktija ____ ide (English) The ball is at/in _____ of the man</p>	<p>13.</p>  <p>(Bengali) bæṅk ta lok tar _____ ac^he (Kannada) bæṅk v̄aktija _____ ide (English) The bank is at/in _____ of the man</p>
<p>14.</p>  <p>(Bengali) c^hele ta garir ____ dārie ac^he (Kannada) huḍuganu vahanēda ____ nintiddane (English) The boy is standing at/in _____ of the vehicle.</p>	<p>15.</p>  <p>(Bengali) lokṭi gac^h tar ____ dārie ac^he (Kannada) v̄aktiju mārēda _____ iddane (English) The man is standing at/in _____ of the tree</p>	<p>16.</p>  <p>(Bengali) lok ta garir _____ dārie ac^he (Kannada) v̄aktiju ka:r na ____ nintiddane (English) The man is at/in _____ of the car</p>
<p>17.</p>  <p>(Bengali) m̄e ti gac^her _____ dārie ac^he (Kannada) huḍugiju mārēda _____ idda e (English) The girl is standing at/in _____ of the tree</p>	<p>18.</p>  <p>(Bengali) lokṭi gac^her _____ dārie ac^he (Kannada) v̄aktiju mārēda _____ iddane (English) The man is standing at/in _____ of the tree</p>	

In this category, in Bengali, the major response for picture 8 was ‘aage,’ as F is conceptualised as being an attempt to reach G, which is perceived as the goal of the scene and hence the image of further frontward movement. In pictures 9 to 17, the reply was mainly ‘samne’ and there are several reasons for that reply in these various cases. In pictures 9, 11, 12, 15, 17 in the human–object interaction in these pictures, it is worth noticing that the objects (either in the role of F or G) do not have any intrinsic segmented and dedicated axial part showing any front-back or left-right. Hence the property of the human body, which unlike the objects present here, have dedicated front-back or left-right aspects, which is being assigned on the object and also the nearness or proximity to the human. However, in the case of picture 11, some responses have also identified it as upward rather than front, giving a frame of vertical axis (up-down) rather than the horizontal one (front-back, left-right). In pictures 10, it is the functional aspect of the car (i.e. the side that moves forward) which is designated as the ‘front’ of the car, and the driver faces that way in which it moves. Hence the front of the car coincides with the front of the driver, thus giving out the intrinsic frame of reference in describing the picture. For picture 13, it shows that the functionally ‘front’ door (i.e. the door used as the entrance or exit for the bank) and the direction of human movement are towards each other and hence can be said to be in mirror image alignment, where both the intrinsic fronts (i.e. the functionally intrinsic front of the bank and the inherited intrinsic front of the human) are towards each other. In picture 14, the ‘samne’ or front is due to the relative frame of reference, since the front of the vehicle is towards the other side and the person’s front is actually reflective (i.e. the front of the figure is at the front of the viewer who is outside the scene. It can also be said that the F has a dedicated front). In picture 18, however, the prevalence of ‘opor er kono tai noe’ (none of the above) can be seen as a depiction of other spatial arrangements (e.g. (?)left-right axis). Here, the view does not conform to the front part of front-back axis.

In Kannada, for pictures 8, 9, 10, 12, 13, 15, 17, 18, the response was ‘munde’ as it encompassed various scenes. For pictures 8, 9, 10, 12, 13, 15, 17, it is either the intrinsic property of the human body being assigned to the object as in pictures 9, 12, 15, 17 or the functionally determined intrinsic property of the object as in picture 10, or the further frontward movement which actually invokes not only spatial but temporal ‘frontness’ as in pictures 8 and 13. In picture 18, ‘munde’ invokes a relative frame of reference with a translative property whereby the front region of the tree where the human figure can be located is away from the viewer and the back of the tree facing the viewer who is viewing from the outside (i.e. vantage point does not coincide with the position of either F or G). Figures in picture 11 and 14 were both marked as ‘melina yavuvu alla’ (none of these above), possibly due to the perception of the F being ‘upward’ rather than ‘front’ and of F being in the left-right axis rather than the front-back axis. In pictures 16, ‘yedru’ is given, possibly due to that both F and G are facing each other and hence forming a mirror-image alignment.

Object/Inanimate and Object/Inanimate

<p>19.</p>  <p>(Bengali) lal bōl ṭa bakṣer _____ rakḥa acḥe (Kannada) cenḍu bōksina _____ ide (English) The ball is at/in _____ of the box.</p>	<p>20.</p>  <p>(Bengali) gari ṭa barir _____ dārie acḥe (Kannada) ka:r maneja _____ ide (English) The car is at/in _____ of the house</p>	<p>21.</p>  <p>(Bengali) lal bōl ṭa nil bakṣer _____ rakḥa acḥe (kannada) kempu cenḍu ni:li bōksina _____ ide (English) The red ball is at/in _____ of blue the box</p>
<p>22.</p>  <p>(Bengali) lal bōl ṭa nil bakṣer _____ rakḥa acḥe (kannada) kempu cenḍu ni:li bōksina _____ ide (English) The red ball is at/in _____ of blue the box</p>		

In Bengali, in pictures 19 and 22, ‘samne’ shows the reflective aspect of a relative frame of reference and also the nearness or proximity to G. In picture 20, the functional intrinsic front of the house (i.e. the ‘front’ door) gives the usage of ‘samne,’ while in picture 21, the conceptualization that the ball has moved away from the box gives ‘aage’ as the response. It is interesting to note that in case of Kannada, only ‘munde’ is used to denote meaning as it encompasses the conceptual entities for denoting the spatial arrangement.

Observations

- The frame of reference is present in all situations since it is needed to present the spatial encoding of F and G incorporating the vantage point.
- Different frames of reference occur for one single image, and selecting one does not entail

the rejection of another or that the other does not exist. The most responded item is taken as the prevalent frame.

- While ‘samne’ and ‘yeduru’ incorporate a mirror image alignment, ‘aage’ and ‘munde’ incorporate tandem alignment.
- In the ‘Object/Inanimate and Object/Inanimate’ segment, ‘samne’ denotes the relative reflective and intrinsic frames of reference, and ‘aage’ is used to denote the tandem alignment which in turn also shows that the tandem alignment can happen in both animate as well as inanimate situations. While in Kannada, ‘munde’ does both the work of referring the frames of reference as well as tandem alignment. Here again, ‘yeduru’ is not used, as the mirror image alignment is not used in the case of two inanimate objects, though ‘samne’ is used yet not for denoting the mirror image alignment.
- The differences in responses for pictures in viewing F in relation to G provides a gateway to understanding a language-specific spatial worldview, and shows that embodied cognition is a socio-culturally situated phenomenon.
- The mirror image alignment does seem to include an intrinsic point of view, which seems to be clear in the cases of both F and G as animate entities and also where F, being inanimate, is being accessed in a particular way.
- The tandem alignment incorporates a sequence which gives it more of a temporal aspect even though it may have an origin set in a spatial aspect.

Language	Terms	Frame of Reference		Alignment	
		Relative	Intrinsic	Mirror-image	Tandem
Bengali	samne	+	+	+	
	aage		+		+
Kannada	yeduru		+	+	
	munde	+	+		+

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