This paper presents an analysis of the use of locative and orientation descriptions in Tarascan, a language isolate spoken in Michoacán, Mexico. The article describes the use of topological relations and spatial frames of reference (FoRs) in Tarascan, as well as the speakers' preferences regarding FoR types when describing spatial configurations. The data show that relative FoRs are not preferred. Despite the existence of variation among speakers, it is attested that speakers of Tarascan, in addition to object-centered FoRs, favor geomorphic and/or landmark-based FoRs in locative descriptions. However, in orientation descriptions the direct FoR is dominant under specific conditions.

1. Introduction

The aim of this article is to analyze the descriptions used in Tarascan for encoding locative and orientation relations, which are either “perspective-free” (topological) or “projective” (involving a perspective or frame of reference), and their frequencies in discourse. In these static relations an entity (figure) is either located or oriented by reference to another entity (ground), which defines a search domain for the interpretation of the spatial description (cf. Talmy, 1983). The data presented here allows us to establish the spatial frames of reference (FoRs) available in this language. Frames of reference (FoRs) are coordinate systems that can be employed to define spatial regions that serve as search domains for the location and orientation of objects (Jackendoff, 1983; Levinson, 1996, 2003; Pederson et al., 1998; Majid et al., 2004). It is worth noting that the main linguistic means for coding topological relations and coordinate systems in Tarascan discourse have not been explored until now. The analysis of the data reveals that topological descriptions—where proximity is the core notion—can be distinguished from projective ones, which require some lexical item that introduces a coordinate system. Contrary to what can be understood from the Tarascan data discussed by Friedrich (1971a), I offer evidence to support the following argument: spatial suffixes are excluded from object-centered FoRs, therefore body part suffixes, which are a subgroup of the spatial suffixes, are not involved in such projective descriptions.

In this paper the analysis of the use of FoRs in orientation and locative descriptions of objects located in tabletop space is based on the classification used in the NSF-funded project Spatial Language and Cognition in Mesoamerica, MesoSpace for short (PI J. Bohnemeyer), of which this research is a part (see Bohnemeyer, this issue; O’Meara and Pérez Báez, this issue). It is shown that Tarascan speakers make little use of the relative FoR, both in orientation and locative descriptions. Even though, there is not an absolute FoR available to Tarascan speakers, a geomorphic one is commonly used by most speakers in spatial descriptions. In order to analyze the different strategies employed by Tarascan speakers in spatial descriptions, I will...
consider two aspects: first, the percentage of use of each FoR in orientation and locative descriptions produced by native speakers that participated in the Ball & Chair task, which is explained in Section 3; and second, the variation among speakers with respect to their use of different FoRs. The data show that Tarascan speakers favor object-centered, geomorphic and/or landmark-based FoRs in locative descriptions. Meanwhile, in orientation descriptions the direct FoR is dominant under certain conditions. The data regarding FoR preferences is in line with a central hypothesis of the MesoSpace project, which predicts that languages, which make pervasive use of meronyms (object part terms), as is the case of Mesoamerican languages, show a lack of preference for relative FoRs in spatial descriptions. The idea supporting this hypothesis is that in employing relative FoRs speakers must ignore the geometry of the ground on which meronyms are based (see Bohnemeyer, this issue; O’Meara and Pérez Bález, this issue).

The article is organized as follows: Section 2 provides relevant information about Tarascan and its speakers. In Section 3, I present the methodology and tasks used to collect the data and the FoR classification adopted in interpreting it. In Section 4, a general overview of how locative and orientation relations are encoded in Tarascan is presented. Section 5 contains the discussion of the results regarding FoRs in discourse. Finally, Section 6 summarizes the findings of this research and offers some concluding remarks.

2. Tarascan and its speakers

Tarascan or p’orhépecha is a language isolate spoken by nearly 100,000 people in the state of Michoacán, Mexico. The region where Tarascan is spoken is situated in three main areas: the lacustrine zone of Pátzcuaro Lake, the western mountains (Sierra or Meseta Tarasca), and a small valley at the north of the Sierra, known as La Cañada de los Once Pueblos. Dialectal variation is found across villages, nevertheless there is a high degree of intelligibility among Tarascan speakers (see Friedrich, 1971b, 1975).

Tarascan is a completely suffixing, agglutinative language, highly inflecting and dependent-marking. It has a case system: subjects are unmarked, -ni is the suffix for objects of transitive and ditransitive clauses, -nkuni marks comitative, -mpu marks instrumental, -eri/-iri marks genitive and -rtu marks locative (this last suffix conveys information about any location or direction ‘to’, ‘at’, ‘in’, ‘by’, ‘on’, etc.). Morphologically related to the instrumental case, there is a postposition ximpó, which can convey different meanings including a locative one. The ordering of phrases within a sentence is pragmatically determined and does not convey basic grammatical information. Verbal arguments are marked in what is typically identified as a morphological nominative/accusative pattern and there are no verbal pronominal suffixes to reference them. Verb inflection includes morphemes of tense, aspect and mode. In the indicative mode the third person subject (3IND) is differentiated from first/second (‘ka 1/2IND’), while in the interrogative and subjunctive modes person is not differentiated. Nonfinite verb forms are marked by the suffix -ni. Verbs so inflected are commonly used as main predicates within a narrative context; otherwise they exhibit infinitive and gerundive functions. Moreover, this suffix (-ni) occurs in forms that have been considered subject participles (cf. Foster, 1969, pp. 57, 83; Wares, 1974), mainly with verbal themes including the stative suffix -rti-ti (in dialectal variation with -re/-te). Some of these participial forms are used as heads of postpositional phrases, like wératin ‘away from’ (wérani ‘to go out’). The language has an essive copula as well as a verb that codes location and existence (nompë xarháni ‘there is nothing’, ishó xarháni ‘to be here’), xarháni. This verb can also function as an auxiliary signaling atelicity or as a stage level predicate in complex verb forms: washákani xarháni ‘to be sitting down’, washákatini xarháni ‘to be seated down’ (washákani ‘to sit down’).

In order to understand spatial constructions in Tarascan, it is important to consider certain morphosyntactic characteristics of verbal stems in this language. The most extensive paradigm of Tarascan’s verbal suffixes is the set of more than 40 spatial or locative morphemes, whose basic function is to locate the event expressed by the verb (see Foster, 1969; Friedrich, 1971a; Monzón, 2004). These morphemes that are widespread in the language can be considered lexical affixes in many ways similar to those of the Salishan languages (Anderson, 1985; Bach, 1993; Mithun, 1997; Gerdtts, 2003). As is the case in Salishan languages, the space or area that Tarascan spatial morphemes refer to can be environmental, such as a yard, road, and water, or a part of a larger whole, as in the so-called body part suffixes. In any case, there is no formal relationship between the spatial suffixes and the nominal terms with similar meanings; for example, compare -ni ‘liquid, water’ and -ts’t ‘head, top’ with the nouns itsi ‘water’ and ép’u ‘head’. With most of the body part suffixes the area denoted is always limited to the body of the predicate’s subject (kwakátsíini ‘to wet one’s head’). In these cases, in order to transfer the locus of the action to the body of another participant, further suffixation is required: the suffixes -ku and -ta,—in Foster’s terms “locative expansions”, fulfill this function (kwakátsíkumi ‘to wet another head’). These body part suffixes form a productive set of meronyms or object part morphemes assigned on the basis of the geometry of the object and the shape of its parts.

The last relevant fact about Tarascan verbs, for the topic at hand, is the existence of a set of verbal roots, usually called classificatory roots. These morphemes exhibit specific meanings that convey shape, configuration, orientation, and other properties mainly related to the shape and/or disposition of entities (see Foster, 1969; Friedrich, 1970). Such roots seem to fit into the type of “dispositionals” discussed by Ameka and Levinson (2007), consisting of a set of more than 25 members

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1 There are two more mono-morphemic postpositions: sinkóni, which is a free variant of the comitative case, and anépu, whose main function is to indicate the place a person or thing are from.

2 An important characteristic of the language is the fact that most of Tarascan’s lexical roots are verbal, from which words with diverse syntactic functions are constructed or derived.
Like other Tarascan verb roots, dispositionals must take a suffix in order to form a verbal theme, but this suffix must be, with very few exceptions, a spatial one. The function of these verbal forms is to predicate the location of an entity (the figure whose shape/orientation is indicated by the verb root) in some particular space (the ground or part of it codified by the locative suffix), e.g., *apórunci* means ‘a large and thick object lying horizontally on the road’ (*-ru* ‘road’), and *kirámukuni* ‘a round object (in canonical position) is on/near the edge of something’ (*-mu* ‘edge, mouth, lips’).

### 3. Data collection, methods, and coding

The research reported here was conducted in the fall of 2008 in Santa Fe de la Laguna, a village of about 5000 inhabitants located on the north shore of the Pátzcuaro Lake in the municipal district of Quiroga, Michoacán. About 30% of Santa Fe’s population is monolingual or with very low proficiency in Spanish (mostly women 50 years old or older). Tarascan is the everyday language in the community and, although Spanish is the official language at school, it is still learned as the first language by children. The main economic activities in Santa Fe are pottery, trade, and masonry. The community has telephone and internet services, and is located very near to the urban town of Quiroga, which is the main trade center of the region.

In Section 3.1, I present the methodology and tasks used to collect the data, and in 3.2 the FoR classification on which this study is based.

#### 3.1. Methods and data collection

The data for this research were collected using the Ball & Chair (B&C) referential communication task, developed by the MesoSpace team (Bohnemeyer, 2008), conducted with five pairs of speakers. The instructions were given to participants in Tarascan by a native speaker, previously trained, who assisted me in conducting the task. The goal of the B&C task is to obtain spatial descriptions from the conversation between two speakers (a director and a matcher), seated side by side and screened-off from one another. The speakers were asked to match photographs from four sets of twelve photographs showing a chair and a ball in different spatial configurations (see O’Meara and Pérez Báez, this issue). After the director described a set of photographs, the matcher would assume the role of director for the subsequent trial. Each trial was video recorded; the dialogs were transcribed with the help of my native speaker assistant who evaluated the adequacy of each description (forms considered as errors were not coded).

Participants in this research were selected from a wide range of age brackets, both genders, and from monolingual as well as bilingual speakers. For the B&C task we looked for pairs of the same gender, more or less of a similar age group, and well acquainted with each other (relatives or friends), in order to facilitate the verbal communication necessary to describe the pictures. Table 1 summarizes the characteristics of the native speaker consultants that participated in the B&C task.

The B&C task was conducted in the patio of a house, with participants facing east. This layout was arbitrarily chosen, but was constant across all of the sessions.

#### 3.2. Frames of reference classification

The data collected with the B&C task was coded according to the FoR classification used in the MesoSpace project (see Section 1), which offers a more fine-grained classification of FoRs than the one elaborated by Levinson (1996, 2003), who established three major FoRs: intrinsic, relative and absolute.

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For example, the sentence *kétsemani eráaxati pelóte* ‘the ball is facing the descent’ was not coded as a description of the location of the ball because, in this case, the director was referring to the orientation of the chair, and then he corrected himself.

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Table 1

<table>
<thead>
<tr>
<th>Dyad number</th>
<th>Gender</th>
<th>Age group</th>
<th>Literacy</th>
<th>Proficiency in Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyad 1</td>
<td>Female</td>
<td>&gt;45</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Dyad 2</td>
<td>Female</td>
<td>&gt;45</td>
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<td>Very low</td>
</tr>
<tr>
<td>Dyad 3</td>
<td>Male</td>
<td>25–35</td>
<td>Yes</td>
<td>Good</td>
</tr>
<tr>
<td>Dyad 3</td>
<td>Male</td>
<td>&lt;25</td>
<td>Yes</td>
<td>Good</td>
</tr>
<tr>
<td>Dyad 4</td>
<td>Female</td>
<td>&gt;45</td>
<td>No</td>
<td>Good</td>
</tr>
<tr>
<td>Dyad 5</td>
<td>Female</td>
<td>35–45</td>
<td>No</td>
<td>Good</td>
</tr>
<tr>
<td>Dyad 5</td>
<td>Female</td>
<td>25–35</td>
<td>Yes</td>
<td>Good</td>
</tr>
</tbody>
</table>

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The updated classification of FoRs adopted here is based on the notions of anchor “an entity, or a featured entity, that serves as the basis for the definition of one or more axes of the FoR”, and origin “the ground or reference entity in locative and motion descriptions and the figure or theme in orientation descriptions” (cf. Levinson, 2003, pp. 39–55). In this way, the identification of particular relations between the anchor and the origin makes it possible to distinguish different types of coordinate systems (FoRs). A summary of the types of frames that exist in the horizontal plane as established by Bohnemeyer (this issue) is given next:

- **Relative:** In this FoR, the anchor is distinct from the ground. The axes of the FoR are projected from those of the anchor, which corresponds to the axes of the observer’s body (typically speaker and/or addressee), onto an external ground. The truth conditions of spatial representations interpreted in this FoR depend on the orientation of the anchor. Examples of this type of FoR include, *The ball is in front of the chair*, in the observer-dependent sense of *in front of*, and *The chair is facing left*.

- **Object-centered:** The anchor is the ground in this FoR. The axes of the FoR are projected from those of the ground, which is an entity distinct from the body of the observer. The truth conditions of spatial representations interpreted in this FoR depend on the orientation of the anchor/ground. Example: *The ball is in front of the chair* (in the observer-independent sense of *in front of*).

- **Direct:** The anchor is the body of the observer in the direct FoR. For example, in *The ball is in front of me/you*, the anchor is the same entity as the ground (cf. Danziger, 2010). The FoR can also be defined by a vector pointing toward the anchor, as in an orientation description, e.g. *The chair is facing you/us*, or in the case of an external ground that is distinct from the anchor, e.g. *The ball is toward me from the chair*. In the first case, the truth conditions of representations interpreted with a direct FoR depend on the orientation of the observer; and in the second and third cases, they depend on the location of the observer.

- **Absolute:** The anchor is some entity or feature of the environment. One or more axes of the FoR are abstracted from the anchor such that the directions in which they point are exactly the same regardless of the actual location of the ground, or the observer, vis-à-vis the anchor. For example, *The ball is north of the chair*, *The ball is uphill of the chair*, in case the direction denoted by *uphill* remains the same regardless of which side of the mountain (range) the ground (or the observer) is on.

- **Landmark-based:** The anchor is some (natural or human-made) entity or feature of the environment. One or more axes of the FoR are defined as vectors pointing toward the anchor. The truth-conditions of spatial representations interpreted in this FoR depend on the location of the anchor (the landmark). Examples: *The ball is seaward of the chair*, *The chair is facing the door*.

- **Geomorphic:** The anchor is some entity or feature of the environment. One or more axes of the FoR are projected from an axis or gradient of the anchor onto the ground. The truth conditions of spatial representations interpreted in this FoR depend on the orientation of the anchor, but not (in first approximation) on its location. Examples of geomorphic FoRs include *The ball is upriver of the chair* and *The chair is facing downhill*.

As Bohnemeyer (this issue) points out, direct, object-centered, geomorphic and landmark-based FoRs are subsumed under the broad “intrinsic” category of Levinson (1996, 2003) in such a way that relevant information about the variation conveyed in different strategies can be lost. This is the case when it comes to the Tarascan data. Lastly, the absolute FoR in the vertical (see Levinson, 2003, p. 75), where the Earth’s field of gravity is the anchor, was coded under the label *vertical*.

In addition to descriptions containing FoRs, non-projective locative descriptions conveying relations such as contact, proximity and containment were coded as topological following Piaget and Inhelder (1956).

### 4. Structure of Tarascan locative and orientation predications

This section presents a general overview of how locative and orientation relations are encoded in Tarascan. The examples given below were collected from descriptions obtained with the B&C task. Section 4.1 focuses on topological relations and Section 4.2 on descriptions involving FoRs.

#### 4.1. Topological descriptions

The most general or non-specific topological description in Tarascan is a predication with the verb *xarháni* ‘to exist/to be located’ and an oblique phrase marked with the locative suffix -*rhu* signaling the ground or a specific part of it, with respect...
to which the figure is located. When a part-whole relation is involved and the whole has been clearly identified, it is common to omit the overt expression of the latter. A noun with locative case usually encodes the part or region of the ground, or even a sub-region of the part, allowing constructions where more than one noun in oblique case can be found. Given an antecedent in the discourse, the occurrence of the existential verb, in all types of locative expressions (topological or not), can be excluded. Examples in (1) and (2) show topological descriptions produced as descriptions of the B&C pictures 3.5 and 2.4, respectively (see Figs. 1 and 2):

(1)    Inté  méra  ximíni  eskína-rhu  xarhá-s-Ø-ti
        just  there  corner-LOC  be-PRF-PRS-3IND
'This [the ball] is just there on the corner [of the chair].’ (dyad 2, B&C 3.5)

(2)    Pelóta  eskína-rhu  siyéta-rhu
        ball  corner-LOC  chair-LOC
'The ball [is] near the corner of the chair.’ (dyad 3, B&C 2.4)

In (1) and (2) the part of the chair that appears with a locative case marker (eskína ‘corner’) is used to describe different topological configurations of the ball and the chair. The same phenomenon can be observed in examples (3), (4) and (5), corresponding to descriptions of pictures 1.6, 1.9 and 1.2, respectively, where terúk’ani makes reference to the middle region of the chair (see Figs. 3–5):

(3)    Xantsíri-itu-empa-rhu  terúk’ani-rhu  xarhá-s-Ø-ti
        leg-DIM-3POSS-LOC  middle-LOC  be-PRF-PRS-3IND
'(The ball) is in the middle of its little leg.’ (dyad 2, B&C 1.6)

(4)    Ximíni  koméski  terúk’ani-rhu-empa  xarhá-ni  pi-t’a-ku-ni
        there  almost  middle-LOC-3POSS  be-NF  approach-side-LOC.EXP-NF
'There [the ball] is almost at its middle [of the chair], approaching its side.’
(dyad 2, B&C 1.9)

(5)    Pelóta  terúk’ani-rhu  xarhá-s-Ø-ti  siyéta-rhu
        ball  middle-LOC  be-PRF-PRS-3IND  chair-LOC
'The ball is in the middle of the chair.’ (dyad 3, B&C 1.2)

Examples (1)–(5) show that the locative marker does not specify the exact nature of the relation between the figure and ground; it is generally general and can be used in configurations of contact, proximity, and even of containment. As Wilkins (2006, p. 30) asserts about Arrernte, in such circumstances the central notion carried by the locative marker seems to be: “the figure is statically located at the same place as the ground”, without distinguishing different kinds of topological relations. In order to code more specific topological information, Tarascan speakers use a variety of constructions. The most common ones are verbal themes with spatial affixes referring to body/object parts (usually with nonfinite inflection). When these suffixes refer to a part–region they convey information about the relation that holds between the figure and the ground. Four major types of such constructions can be recognized according to the meaning conveyed by the verbal root: (a) The only available interpretation is one meaning ‘in contact with’; (b) the only available interpretation is one of ‘separated from’, near but without contact; (c) the central notion is one of ‘close to’ and generally in ‘contact with’, but it does not exclude relations
not involving contact; (d) the basic notion is one of containment (inside the region denoted by the spatial suffix), but can also signal proximity to this region. What is shared by all topological descriptions is the notion of proximity/contiguity or overlap between the spatial regions of the figure and the ground, and a coordinate system is not necessary in order to interpret them (cf. Levinson, 2006, p. 157).
The first type is constrained to some verbs of attachment and to dispositional roots. For example, the sentence in (6) was produced to describe pictures 3.5 and 1.6 (see above Figs. 1 and 3).

(6)  
Inté  kirá-ts'ï-ku-ni  siyéta-rhu
this  round.object-top-LOC.EXP-NF  chair-LOC
'This [the ball] is on the top of the chair (in actual position, as opposed to its inherent top).’ (dyad 1, B&C 3.5,1.6)

The second type is exemplified in (7), which is a description of picture 2.8 (see Fig. 6):

(7)  
Xarhá-ntu-ku-Ø-ti  ximíni  terúk'ani-rhu
separate-lower.leg-LOC.EXP  there  middle-LOC
'There [the ball] is separated from the middle of the legs [of the chair] (lit. the ball is separated from the legs, there in the middle [of the chair]).’ (dyad 5, B&C 2.8)

The third type is coded by verbs of approach. It is exemplified with the verb piréni ‘to get close to’ in (8). This description, corresponding to picture 1.10, which is shown in Fig. 7, is an example of what seems to be the most common use of these constructions, that is, when there is a contact relation between the figure and the ground. Nevertheless, note that the non-finite verbal form pít'akuni in (4) was used in describing a configuration where there is no contact between the figure and the ground.

(8)  
Pelóte  ximíni  xarhá- ni  pí-ts'ì-ku- ni  p'erá-parha-kwa-rhu
ball  there  be-NF  approach-top-LOC.EXP-NF  rest-back-NMLZ-LOC
'There the ball is approaching the top of the backrest.’ (dyad 1, B&C 1.10)
The fourth type conveys the notion of containment or inclusion, and it is generally encoded in verbal forms constructed from *incháni* ‘to enter’. The core meaning of such forms is to indicate that the figure is located inside the region denoted by the spatial suffixes, as is shown in (9). However, it is not unusual to find such forms in descriptions of the B&C task when the figure is close enough to the area denoted by the spatial morpheme. Compare the sentence in (10), a description of picture 1.2 (see Fig. 5), with the one in (11), corresponding to picture 2.8 (Fig. 6), produced by the same pair of speakers.

(9)  
\[\text{Sentábu kúračha-rhu \text{*inchá-chu-ku-re-ni* xarhá-s-Ø-ti}} \]
\[\text{coin fish-LOC enter-throat-LOC.EXP-STA-NF be-PRF-PRS-3IND} \]
\[\text{‘The coin is inside of (lit. entered) the fish’s mouth.’}^6 \]

(10)  
\[\text{Siyéta-rhu \text{*inchá-chu-ku-re-ni* xarhá-ni}} \]
\[\text{chair-LOC enter-bottom-LOC.EXP-STA-NF be-NF} \]
\[\text{‘(The ball) is inside (lit. entered) the bottom region of the chair.’} \text{(dyad 1, B&C 1.2)} \]

(11)  
\[\text{Pelóte ximíni \text{*inchá-chu-ku-re-ni* xarhá-s-Ø-ti}} \]
\[\text{ball there be-PRF-PRS-3IND enter-bottom-LOC.EXP-STA-NF} \]
\[\text{‘There the ball is inside (lit. entered) the bottom region of the chair.’} \text{(dyad 1, B&C 2.8)} \]

^6 This example was given by one of the native speaker consultants who participated in the B&C task, but it comes from elicitation using other illustrations as stimuli.

The previous examples illustrate that there is a lack of specificity conveyed by constructions with verbs of approach or with *incháni* ‘to enter’ with regard to the expression of a proximity relation between figure and ground or one of contact or inclusion. This lack of specificity sometimes leads speakers to use those constructions in negative descriptions when
the figure is close to the ground. Nevertheless, as can be noted in (12) and (13), this can result in descriptions where using an affirmative predicate indicates that proximity is involved. The next examples are descriptions of picture 3.7, which is illustrated in Fig. 8.

(12) *Pi-ts’i-ku-ni, no inchá-ch’u-ku-ni*
    approach-top-LOC.EXP-NF not enter-bottom-LOC.EXP-NF
    ‘The ball is approaching the top [of the chair], not inside (lit. entered) the region of its bottom.’ (dyad 1, B&C 3.7)

(13) *Inchá-a-ku-ni, péro no pi-ts’i-ku-ni*
    enter-central.region-LOC.EXP-NF but not approach-top-LOC.EXP-NF
    ‘The ball is inside (lit. entered) its central region [of the chair], but not approaching its top.’ (dyad 2, B&C 3.7)

To summarize this section, I wish to point out the following facts about topological descriptions in Tarascan used to locate a figure in relation to a ground: (a) they signal that the figure is at the same place/region as the ground coded with the locative case; (b) verb forms with spatial suffixes (that refer to a part/area of the ground) convey more specific information about the configuration of the figure and ground; (c) dispositional roots are only employed when there is contact between the figure and the ground; (d) spatial suffixes are widespread in topological descriptions and, as I show below, they are not used in descriptions of projective relationships.

4.2. Frames of Reference in Tarascan discourse

Tarascan speakers make use of five FoRs when describing objects located in the horizontal plane: geomorphic, landmark-based, object-centered, direct and relative. The vertical FoR is also available, but this FoR type is only discussed briefly here. This section focuses on the means employed in Tarascan to encode these projective systems.

The object-centered FoR in Tarascan is mainly based on the identification of facets of a featured ground: front, back and sides (cf. Pederson et al., 1998). The lexical items coding the projected regions from these facets are: (a) *urhépani* and *frénte* both encoding an ‘in front of’ relation; (b) *tátsepani* with the meaning of ‘behind’, and (c) *máladu* ‘at the side of’. *Urhépani* and *tátsepani* are non-finite verb forms (the meaning of the first is ‘to go ahead’, while the second means ‘to go behind’), which in locative descriptions function as nominal adverbs in combination with the existential-locative verb *xarháni*. The lexical items *frénte* and *máladu* come from Spanish loans, and they are not used in Tarascan as body part terms. Although Tarascan has a well-established term for the right hand and a less common one for the left hand, these were not used in the descriptions of B&C pictures. The sentences in (14)–(17) are examples of object-centered descriptions where the ground, if expressed, is encoded in a locative phrase.

(14) *Siyá-rhu*  
    chair-LOC  
    ‘The ball [is] behind the chair.’ (dyad 5, B&C 3.2)

(15) *Pelóte*  
    ball  
    ‘The ball is in front [of the chair].’ (dyad 1, B&C 4.9)

(16) *Máladu*  
    one.side  
    ‘The ball is at the side [of the chair].’ (dyad 4, B&C 2.2)

(17) *Xiníani*  
    thither  
    ‘It (is) thither, in front of the chair.’ (dyad 5, B&C 2.3)

In contrast with topological descriptions, the verbal forms *urhépani* and *tátsepani* cannot take spatial suffixes. If one wants to say something like *behind its legs* in Tarascan, it is necessary to use a construction with *tátsepani* and the noun *leg* in locative case. In contrast to what could be understood from the Tarascan data discussed by Friedrich (1971a), body part suffixes are excluded from object-centered FoRs, the parts or areas of an object they denote are not projected in such a way to define a search domain where a figure could be located, as Levinson (2003, p. 79) suggests by making reference to Friedrich’s study. On the other hand, the use of body part nouns in locative descriptions seems to be

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7 The term *máladu* (lit. ‘one-side’) can be used to refer to a region of an inanimate entity that is not the center of the object, but it does not name a part or geometric feature of this object.

8 Younger speakers sometimes express the ground as the dependent of a genitive phrase, for example: *siyá-eri frénte* ‘in front of the chair’ (*eri* marks genitive case). Compare this genitive phrase with those given in (18) and (19). Instead of coding the ground in a locative phrase, it is possible to add the applicative suffix to the existential verb, hence to code the ground as an object, as is the case in: *pelóta frénte xalási* *siyéjani* ‘the ball is in front of the chair’ (*xa* is the root of the existential verbal, -*ku* is the applicative morpheme for third person, and -*ni* marks objects).

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restricted to topological relations, contrary to the tendency proposed by Svorou (1994) and Heine (1997) regarding grammaticalization from body part terms to projective expressions involving intrinsic FoRs. Even the body part noun pēshu ‘back’, in contrast to what is common in other languages (see Levinson, 2003, p. 106), is rarely used in what could be considered a projective description (e.g., when the ball is on the floor behind the chair). In the very scarce cases when it occurs in such descriptions (only twice in my sample) they were considered non-felicitous by my native speaker consultant. The use of pēshu in locative descriptions, unlike tātsepani, requires the locative case and it is not possible to use it to refer to a large spatial area for which the part-term gives a direction. Compare the sentence in (18), an answer to the question Where is the dog? which comes from spontaneous speech, with (19), a sentence offered to native speakers for its interpretation.9

(18) Wíchu Pédru-eri tātsepani xarhá-s-Ø-ti
dog Peter-GEN behind be-PRS-3IND
‘The dog is behind Peter.’

(19) Wíchu Pédru-eri pēshu-(empa)-rhu xarhá-s-Ø-ti
dog Peter-GEN back-LOC be-PRS-3IND
‘The dog is near/in contact with Peter’s back.’

While in (18) the interpretation of tātsepani describes a projected region where the dog can be located even though it is neither in contact nor in contiguity with the ground, in (19) this is not the case. According to explanations provided by native speaker consultants, when pēshu ‘back’ is used, the figure must be very near to the ground’s back (as is the case in topological descriptions); hence (19) cannot be used to locate a dog lying on the floor with respect to a non-contiguous ground (Peter standing) whose back is the reference point. More research is needed in order to clarify if constructions with pēshurhu have a projective interpretation, but it is evident that they are not usually employed to encode the notion ‘behind’ and thus a projective relation, but rather a topological one, as is the case with all of the other body part terms marked with locative case.

With featured grounds the expressions máladu and urhépani can be used in the context of a relative FoR, while the use of tātsepani with a relative FoR seems to be restricted to grounds that lack an inherent front-back axis, e.g., trees. On the other hand, frénte is not used in descriptions involving a relative FoR, but is common in descriptions involving direct FoRs, as is the case in the description of picture 4.3 (see Fig. 9) in (20) (see Footnote 8).

(20) Pelóta ishōeni frénte-ts’ini xa-ché-ni
ball hither in.front.of=1 PL.OBJ be-1/2APPL-NF
‘The ball is hither, in front of us.’ (dyad 2, B&C 4.3)

Another way of coding a direct FoR is by means of a locative relative phrase headed by a deictic directional adverb plus the relative suffix. This construction is common in describing figure-ground configurations when speakers try to refer to a specific side of the ground. The example in (21) was produced to describe picture 2.8 (see Fig. 6), which shows the same configuration as picture 4.3, which is shown in Fig. 9.

9 In Tarascan, when the head of the phrase is a noun denoting a human being, it cannot take locative case; so in (18) and (19) Pédru must take the genitive case, and therefore it is the dependent member of the phrase that defines the search domain for the location of the figure.
Landmark-based FoRs are very common in locating a figure with respect to a ground; either local places (for example other towns) or entities within sight (for example a wall or a person) may be the anchor in landmark-based FoRs in Tarascan. The entity functioning as the anchor can be introduced by: (a) the subject participle form erákuteni, derived from eráani ‘to see’, which has been lexicalized as a postposition with the meaning of ‘toward’; (b) the particle ísï, which signals a region and usually co-ocurs with a deictic directional adverb (see (21)); or (c) the combination of ísï and the postposition.

(22) Tatá Cristo-o erákuteni kirá-nte-s-Ø-ti=ni pelóta,
father Jesus-place toward round.object-ground- PRF-PRS-3IND=EXPL ball
‘Toward Jesus’ place (Ziriate mountain) the ball is on the floor, toward the region of the mountain.’ (dyad 1, B&C 3.12)

(23) Pelóte xiníani xwáta-rhu ísï xarhá-s-Ø-ti=ni
ball thither mountain-LOC region be- PRF-PRS-3IND=EXPL
‘The ball is thither in the region of the mountain.’ (dyad 1, B&C 4.11)

Besides the constructions shown in (22) and (23), the anchor of a landmark-based FoR can be coded by a locative relative phrase, as is exemplified in (21), when it is an entity within sight. This construction is required when the anchors are human beings, as in (24):

(24) Xiníani-ki ísï ts’ímá xa-Ø-Ø-ká
thither-REL region those be- PRF-PRS-SBJV
ishóeni kétsemani ísï
hither the.descent region
‘Thither where they are, thither is the ball.’ (dyad 4, B&C 4.4)

Another FoR used in B&C descriptions was a geomorphic FoR. The anchor of the geomorphic FoR is a topographic feature of the terrain where the town is located. Santa Fe de la Laguna is located near the shore of the Pátzcuaro Lake, which extends to the southwest of the town. The community is settled in a small plain that has a higher altitude in the northeastern area where an upward slope to the Ziriate Mountain (which is approximately 4 km from the town) begins. The non-finite verb form kétsemani ‘descend in going some place’ is the term used to indicate the descent to the lake; karhárani ‘ascend in going some place’ refers to the opposite end of the town where the terrain starts going up toward the next village. These topographic features work as a well-established system for providing directions inside the town. Nonetheless, such directions are not abstracted from the environmental gradient. They cannot be used outside of the town, as is the case in absolute systems (cf. Levinson, 1996, p. 203; Levinson et al., 2002). The east–west axis is specified by landmarks, one referring to the exit of the town named wéramani (from the verb wérani ‘to exit’), and to a ravine named inchách’ukuni (lit. ‘to enter into the bottom’) located at the west end of the town. In descriptions employing geomorphic FoRs the anchor is introduced by the same means used by speakers when using a landmark-based FoR, as was exemplified in (22) and (23).

(25) Pelóte ishóeni kétsemani erákuteni xarhá-s-Ø-ti=ni
ball hither the.descent erákuteni toward-PRF-PRS-3IND=EXPL
‘The ball is hither toward the descent.’ (dyad 1, B&C 4.8)

(26) Pelóte ishóeni kétsemani ísï xarhá-s-Ø-ti=ni
ball hither the.descent region xarhá-s-Ø-ti=ni
‘The ball is on the hither side, hither in the region of the descent.’ (dyad 1, B&C 2.1)

Speakers using descriptions such as those provided in (25) and (26) frequently alternate the terms kétsemani and karhárani with the forms kétsekwa ‘down’ and karhákwa ‘up’, which are derived from the same verbs as the first ones: kétsei ‘to descend’ and karhári ‘to ascend’ (see also (34) below).

It is worth noting that the above-mentioned FoRs are also used to convey information about the orientation of the figure. In these cases the most common predicate is the verb eráani ‘to see’ as in (27), while constructions with xarháni are scarce.

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(the opposite situation holds in locative descriptions). In this context, the Spanish loan pára is usually introduced in order to indicate the orientation or facing direction, as is exemplified in (28) and (29).

(27) Karhámani eráa-ni xwáta-rhu isí
upwards see-NF mountain-LOC region

‘[The chair] is facing upwards (the upwards slope), the region of the mountain.’
(dyad 1, B&C 3.2)

(28) Pára ishóeni eráa-sha-Ø-ti ishóen-ki xí xa-Ø-Ø-ká
toward hither see-PRG-PRS-3IND hither-REL 1SG.SBJ be-PRF-PRS-SBJV

‘The chair] is facing hither, hither where I am.’ (dyad 3, B&C 2.8)

(29) Máteru siyéta pára xíní eráa-s-Ø-ti=ni Purhénchekwarhu isí,
another chair toward there see-PRF-PRS-3IND=EXPL San Jerónimo region
ka péshu-empa pára xíní xarhá-s-Ø-ti Quiróga isí,
and back-3 POSS toward there be-PRF-PRS-3IND Quiroga region

‘Another chair toward there, San Jerónimo’s region is facing, and its back is toward there, the Quiroga region.’
(dyad 1, B&C 2.12)

The last FoR that was coded in the B&C task was the **vertical** one. The terms karhákwa ‘up’ and kétsekwa ‘down’, when occur without further specification, encode vertical relations, and they are generally used in an absolute way. The utterances in (30) and (31) are examples describing pictures 1.6 (see Fig. 10) and 4.6 (see Fig. 11), respectively.
In spite of the fact that descriptions such as those in (30) and (31) show a more extended use of the ‘up’ and ‘down’ terms, the example in (32) seems to violate the ‘Principle of Canonical orientation’ of Levelt (1996), as suggested in Bohnemeyer (this issue) for Yucatec. According to this Principle, the use of an object-centered FoR requires the ground to be in canonical vertical orientation from the perspective of the observer. The example in (32) is another description of picture 1.6 (see Fig. 10), where kétsekwa has an object-centered interpretation, but the ground is not in canonical vertical orientation (see Fig. 11).

5. Results and discussion: preferred frames of reference in Tarascan discourse

The results of the Ball & Chair task are presented in this section. Section 5.1 focuses on the frequency of each type of FoR available to Tarascan speakers in orientation descriptions. Section 5.2 addresses the use of FoRs in describing the location of the ball vis-à-vis the chair.

5.1. Frames of reference in orientation descriptions

Considering all of the orientation descriptions in the horizontal plane that were produced by the five pairs of speakers, landmark-based FoRs were used in 39.5% of the cases, geomorphic ones in 33.9%, and direct ones in 25.6%; the missing 1% corresponds to descriptions involving relative FoRs. According to these data when expressing orientation descriptions, Tarascan speakers rely frequently on landmark-based and geomorphic FoRs. Nevertheless, these data do not show relevant information about: (a) the existence of variation among speakers; (b) the preference of certain strategies depending on the orientation of the figure vis-à-vis the perspective of observers. The first phenomenon becomes evident in Fig. 12, which summarizes the distribution of strategies produced by each pair in orientation descriptions.

On the whole, the chart shows that landmark-based and geomorphic FoRs are dominant for all speakers. Nonetheless, we can distinguish two groups of speakers: those who employ mostly the geomorphic FoR (dyads 1, 2, and 4), and those who do not use this FoR at all (dyad 3) or used it only once (dyad 5). The second group only used ad hoc landmarks that were within sight, clearly contrasting with dyad 1 (which consisted of older monolingual women), who never used this kind of landmark.

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10 In orientation descriptions the vertical FoR is restricted to information about the orientation of a part of the chair, as was shown in (30).
Not unrelated to this contrast is the fact that dyad 1 made negligible use of direct FoRs, while dyads 3 and 5 exhibited a high percentage of them. Dyads 2 and 4 show a mixed behavior; they used the geomorphic FoR with markedly higher frequency, but they made little use of landmark-based FoRs. When they employed this type of FoR, they mostly made reference to entities within sight, and this fact coincides with a higher percentage of direct descriptions than that shown by dyad 1. These facts suggest a possible correlation between using the geomorphic FoR and not using landmarks within sight at all, and high percentage of use of direct FoRs. A hypothesis to be explored could be that speakers showing this behavior rely more heavily on local fixed anchors that they cannot see (geomorphic or geographic) which require that speakers keep in mind the actual location of these reference points, as opposed to entities that are available in the scene of the speech situation. This shows an opposite strategy to the one employed by pairs 3 and 5. The striking contrast between speakers frequently using the geomorphic FoR and those employing only landmarks that are within sight could be related to age, considering that the youngest dyad, which was dyad 3 (20 and 21 years old), did not make use of geomorphic FoRs. In order to support this hypothesis, a larger sample would be needed, mainly because dyad 5 behaved in a similar way to dyad 3. Nevertheless, in the case of dyad 5 (mother and daughter), the mother used the geomorphic FoR once at the beginning of the task, while her 25-year-old daughter (raised in Mexico City until age 14) clearly did not feel at ease using this FoR.

The second phenomenon refers to the preference of certain strategies depending on the orientation of the figure with respect to the observer’s perspective. In order to understand this phenomenon, we split the stimulus into two groups of pictures: (1) those where the chair is facing the right or left, with respect to the observer’s point of view; (2) those where the chair is facing the observer or in the opposite direction of the observer. It is important to highlight that this research was conducted with the speakers facing east, hence the geomorphic FoR (north–south axis) is only available for the orientation of the figure when describing the first group of pictures (which is by far larger than the second). Figs. 13 and 14 show the same data presented in Fig. 12 but split the results in order to show different strategies used by speakers depending on the orientation of the figure.

As is shown in Fig. 13, of the dyads that used the geomorphic FoR, only dyad 1 made extensive use of local landmarks (Ziriate Mountain and the road) that are located in the same axis as the geomorphic FoR. In this context, FoR types where the anchor is not the observer’s body are dominant for all pairs. A different situation arises when the figure is oriented along the east–west axis. As the chart in Fig. 14 shows, only dyad 1 employed local landmarks (the towns of Quiroga to the east and San Jerónimo to the west) as a dominant strategy, although they frequently confused the actual location of the towns they used as reference points. For all other pairs, the direct FoR is by far the dominant one, followed by FoRs involving landmarks that are within sight—dyad 4 only used a landmark that was out of sight (the town’s square) once, and only 10% of the

![Fig. 13. FoR types by dyads and percentage of use in B&C orientation descriptions when the figure is facing north or south.](image1)

![Fig. 14. FoR types by dyads and by percentage of use in B&C orientation descriptions when the figure is facing east or west.](image2)
landmarks employed by dyad 2 were out of sight (the exit of the town). Even in the data from dyad 1 direct FoRs occur in these types of descriptions contrasting with the lack of this FoR as is shown in Fig. 13.

5.2. Frames of reference in locative descriptions

Locative descriptions in the horizontal plane produced by the five pairs of speakers generated the following results: in 41% of the cases an object-centered FoR is used, landmark-based FoRs occur in 23% of descriptions, geomorphic ones in 18%, direct FoRs in 11%, and relative FoRs in 4%. The lower percentage of geomorphic, landmark-based and direct FoRs compared to the results in orientation descriptions is not unexpected due to the fact that object-centered FoRs cannot be used in such descriptions of orientation. Even though the relative FoR is infrequent in locative descriptions, it is more frequent here than in orientation descriptions. More specific information about the variation in the percentage of FoRs in each pair of speakers is given in Fig. 15, where topological information is included.

The chart in Fig. 15 shows that topological descriptions were very recurrent. With respect to FoRs, with the exception of dyad 3, the intrinsic FoR is dominant, while the direct one was favored by dyads 3 and 5. Let us look at, as we did in Section 5.1, the results if we separate those pictures where the figure can be located at the side of the chair from the observer’s point of view (north–south axis), from those where it cannot. The distribution of the strategies employed in each situation is shown in Figs. 16 and 17, where the global results offered in Fig. 15 are split.

![Fig. 15. FoR types by percentage of use in B&C locative descriptions by dyad of speakers.](image)

![Fig. 16. FoR types by dyads of speakers and by percentage of use in B&C locative descriptions when the figure could be located on the north–south axis.](image)

![Fig. 17. FoR types by dyads of speakers and by percentage of use in B&C locative descriptions when north–south axis is not available for locating the figure.](image)
Comparing charts in Figs. 16 and 17, we notice that those pairs using only landmarks within sight and not the geomorphic FoR exhibit a similar behavior in both contexts. For dyad 3 (males) landmark-based FoRs are by far dominant, while for dyad 5 (females), the dominant FoR (above 55%) is the object-centered one. Both dyads, contrary to those using the geomorphic FoR, produced direct descriptions in the two contexts reported in Figs. 16 and 17. For dyads who employ the geomorphic FoR when available, it appears to be slightly more frequent than the object-centered one. But if the geomorphic FoR is not available, the object-centered FoR is dominant for the female dyads 1 and 4; in this context the percentages of use of object-centered and landmark-based FoRs by dyad 4 are similar to those of dyad 5 (females). In contrast, when the geomorphic FoR cannot be employed, male dyads 2 and 3 exhibit a similar behavior: the percentage of landmark-based FoRs overrides by far that of the object-centered FoRs (50% of the landmarks used by dyad 2 were within sight and 50% were not, instead speakers used the term *weramani*, which refers to the exit of the town). Whether gender is a factor related to the preference for object-centered FoRs over landmark-based FoRs is a matter of speculation. However, it is important to note that topological descriptions also reach higher percentages for the female dyads (see the chart in Fig. 15).

The percentages of the relative frequency of topological descriptions deserve some comments. First, most of the topological descriptions occur in configurations where there is contact or when the figure is located with respect to the underneath part of the chair (see Fig. 5, B&C 1.2, and Fig. 8, B&C 3.7), motivating all dyads to produce topological descriptions. In fact, all speakers produced topological descriptions in at least eleven of the twelve pictures showing contact between the figure and the ground. The other cases of topological descriptions are frequently combined with one of the FoRs, in what seems to be a way to specify the location of the figure. This is exemplified in (33) and (34):

(33) **Siyéta**  
chair  
*aná-nte-ti-sha-Ø-ti*  
kètsémani  
eráa-s-Ø-ti,  
*ka*  
*télú*  
*xarhá-ntu-kú-re-ni*  
sáni  
'separate-low.leg-LOC.EXP-NF a.little'  
'The chair is standing on the floor, and is facing the descent, and the ball is behind, slightly separated from its legs [of the chair].' (dyad 1, B&C 2.11)

(34) **Pelóte**  
ball  
*máludu*  
*xarhá-s-Ø-ti, intè-t’u*  
k̏árhákwa  
*ëríkuteni*  
*pelóte, ball*  
*no*  
*inchá-ch’u-kú-re-ni*  
*sínó*  
máludu  
*xarhá-ntu-kú-re-ni*  
*wařakwa*  
*leg-LOC.EXP-STA-NF*  
'the ball is at the side [of the chair], this also [is] in an upward direction, the ball, is not inside the bottom [of the chair], but is at its side, outside.' (dyad 1, B&C 1.8)

Example (34) shows the use of more than one FoR in a single locative description. This style of use of FoRs was found in 28% of locative descriptions employing FoRs in the horizontal.11 59.2% of such descriptions exhibit the term *máludu* ‘one side’ combined with a landmark-based or geomorphic FoR, or as in (34), or with a direct FoR, as is the case in (35).

(35) **Siyéta**  
chair  
*aná-nte-ti-sha-Ø-ti*  
kètsémani  
eráa-sha-Ø-ti,  
*ka*  
*pára xíni*  
*pára xíni*  
*xarhá-s-Ø-ti, intè-t’u*  
*kärhákwa  
*ëríkuteni*  
*pelóte, one.side*  
*no*  
*inchá-ch’u-kú-re-ni*  
*sínó*  
máludu  
*xarhá-ntu-kú-re-ni*  
*wařakwa*  
*leg-LOC.EXP-STA-NF*  
'the chair is standing on the floor, and is facing toward the descent, and the ball is hither at the side [of the chair], hither where we are, there is the ball, in the middle [of the chair].' (dyad 4, B&C 2.8)

The common mix of FoRs, shown in (34) and (35), seems to be implemented in order to specify which side (either in an object-centered or relative use) speakers are talking about. In fact 77% of the occurrences of *máludu* in the B&C task follow this pattern for all speakers. Example (36) is another case of the combination of multiple FoRs (geomorphic and object-centered) where the term *máludu* is not involved:

Example (36) shows the use of more than one FoR in a single locative description. This style of use of FoRs was found in 28% of locative descriptions employing FoRs in the horizontal. This style of use of FoRs was found in 28% of locative descriptions employing FoRs in the horizontal.11 59.2% of such descriptions exhibit the term *máludu* ‘one side’ combined with a landmark-based or geomorphic FoR, or as in (34), or with a direct FoR, as is the case in (35).

11 In the case of orientation descriptions, only 3% present combinations of FoRs.

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The use of three FoRs in a single locative description was scarce in the Tarascan data. This kind of mixing of FoRs was attested in only 3% of descriptions combining FoRs. The example in (37) illustrates this type of description.

(37) Pelóta xiníani ládu-sí xa-Ø-Ø-tí kómo xinían-ki ísi eskálera-echa ball thither side=FOC be-PRF-PRS-3IND like thither-REL region stair-PL
xa-Ø-Ø-ká, xantisí-empa-rhu, urhépani pérú chéeti ládu, be-PRF-PRS-SBJV low.leg-POSS-LOC in.front.of but 2SG.POSS side
xiníai ládu xiníani-ki t’á xa-Ø-Ø-ká thither side thither-REL 2SG.SBJ be-PRF-PRS-SBJV

'The ball is on the thither side, thither where the stairs are, at its legs (of the chair), in front [of the chair], but on your side, thither side, thither were you are.' (dyad 5, B&C 2.5)

Tarascan data can be compared with a style of "referential promiscuity", as described by Bohnemeyer (this issue) for Yucatec, in which all major types of FoRs available are mixed in discourse in a single spatial description. The author asserts that it should be expected that, like Yucatec speakers, speakers of intrinsic languages (in the broad Levinsonian sense) frequently switch between different types of FoRs in the same discourse context and combine them in a single spatial description, but without the availability of absolute and relative FoRs. According to Bohnemeyer's proposal, since in absolute and relative FoRs the anchor stays the same across speech situations, discourse context, and referents, these FoRs can be turned into habitual default perspectives, as is the case in predominantly relative or absolute languages. In contrast, in intrinsic only languages there is no default type due to the fact that the intrinsic FoRs are localized—they only work for particular speech situations or contexts, and with particular grounds—hence speakers of such languages have to switch strategies, exhibiting greater variability than those who can rely on a default (absolute or relative) perspective. Due to the scarce use of the relative FoR in Tarascan, it seems evident that this FoR is not a default perspective for Tarascan speakers, therefore a similar referential style as the one predicted for intrinsic only languages would be expected.

The FoRs classification adopted here allows us to recognize in Tarascan different projective strategies which are conflated under the intrinsic FoR in the broad Levinsonian sense. It is worth noting that spatial descriptions documented in the B&C task show that relative FoRs are not preferred to a large extent in Tarascan. This fact aligns with the MesoSpace project's hypothesis that languages with a rich system of meronyms or object part morphemes in spatial descriptions (see Sections 1, 2 and 4.1) disfavor the use of relative FoRs.

6. Summary and conclusions

The purpose of this paper is to describe the main linguistic means for coding locative and orientation relations and the FoRs available in Tarascan. For the first time, this subject is investigated in Tarascan, providing, up until now, undocumented data. The research was conducted using a linguistic elicitation task elaborated by the MesoSpace project, and was based on the FoR classification adopted by this project. It was shown that topological descriptions, where proximity is the core notion, could be distinguished from projective ones, which require some lexical item that introduces a coordinate system. I provide evidence supporting the fact that, contrary to what can be understood from the Tarascan data discussed by Friedrich (1971a), spatial suffixes are excluded from object-centered FoRs, so body part suffixes are not used in these types of projective descriptions.

The global results of the linguistic task show that landmark-based and/or geomorphic FoRs are dominant for all speakers tested, both in orientation and locative descriptions. The scarce use of relative FoRs found in the data aligns with the MesoSpace project's hypothesis that languages with a rich system of meronyms (object part morphemes) disfavor the use of these types of FoRs. Despite the global results, the analysis of FoRs in discourse reveals the existence of variation among Tarascan speakers. The most striking contrast is the fact that from five dyads of speakers studied, only two used landmarks that are located within sight but never local landmarks or the geomorphic FoR, which contrasts with the monolingual women who participated in the task as well. The lack of reference to anchors that are out of sight seems to induce a more extended use of the direct FoR in locative descriptions. In the same vain, the data show a correlation between the use of a geomorphic FoR and landmarks that are not within sight at all, and a minor use of the direct FoR in orientation and locative descriptions. I argued that both the orientation of the figure and of the observer are important factors to determining the use of some strategies, particularly when the axis of the geomorphic FoR is not available. This is evident in orientation

12 I must mention that if we consider not only a single description, but also the discourse context in describing one picture, we find that in 39% of pictures where FoRs were used, the FOReS in horizontal were employed in locative descriptions, speakers used more than one FoR. Nevertheless, even in this case the use of three FoRs made up only 11%.
descriptions. In fact, for all dyads geomorphic or landmark-based FoRs were dominant when the chair was oriented along the north–south axis (with participants facing east). However, when the chair was oriented in the opposite direction, most participants mainly relied on the direct FoR. In locative descriptions, the availability of the geomorphic FoR is a determining factor for the preferred strategies of speakers using this FoR. For pairs who employed the geomorphic FoR when available, it is dominant and slightly overrides the object-centered one. On the other hand, when the geomorphic FoR is not available for locating the figure, the object-centered FoR is dominant for the female dyads, while for men the percentage of landmark-based FoRs overrides by far that of the object-centered FoRs. Those pairs using landmarks that are within sight and not the geomorphic FoR presented a similar behavior in both contexts. For dyad 3 (males), the landmark-based FoRs are always significantly dominant, while for dyad 5 (females) the dominant FoR is the object-centered one. In my view, it is important to pay attention to these variables because the general results of orientation and locative descriptions could be quite different if speakers were oriented facing north.

The FoR classification adopted here, in contrast with the three-way Levinsonian classification, allows us to consider Tarascan as a language that permits different strategies for coding projective relations, including a marginal use of the relative FoR. Using this classification also allowed the observation of speaker variation with respect to their use of FoRs. At the same time, we can observe the level at which speakers combine different FoRs in locative descriptions.

Some final remarks are due with regard to the stimulus employed in the linguistic task. As an anonymous reviewer of this paper pointed out, the kind of stimuli used in this research—the same figure and the same ground displaying different configurations, some of which are non-canonical or even hardly possible in real life—could impact the linguistic strategies used by speakers as well as the specificity of descriptions. Further research is needed in order to clarify this important matter and be able to compare the data presented here to descriptions of everyday spatial locations and orientations in spontaneous speech. Nevertheless, it seems evident that the necessity to differentiate among several spatial configurations that hold between the same objects leads speakers to provide more detailed descriptions than they might otherwise provide in daily discourse. In particular, as it pertains to the B&C pictures, a less granular description is adequate to describe more than one of the configurations shown in the pictures that participants have in front of them. Nevertheless, the stimulus employed and the data collected from said stimulus allowed not only the collection of relevant information about spatial descriptions, but adequate data for further dialectal and cross-linguistic comparisons.

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