A Comparative Study of Topological Relation Markers in Two Gur Languages: Gurɛnɛ and Chakali

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1. Background

This paper explores from a comparative perspective the strategies employed for the coding of topological relations in two Gur languages, Gurɛnɛ and Chakali. It identifies the similarities and differences in the coding of semantic concepts that describe topological relations and examines the lexical semantics of locative predicate relations. Our interest in a comparative approach towards lexical semantic variation in the spatial domain is motivated by recent works on the topic (Levinson & Meira, 2003; Levinson, 2003; Levinson & Wilkins, 2006a,b; Ameka & Essegbey, 2006; Ameka & Levinson, 2007). This approach describes the typological diversity of spatial systems and emphasises on the use of standard elicitation stimuli to allow for control and to maximise the reliability and comparability of cross-linguistic results. The paper is a contribution to the phenomenon in these two under-described Gur languages, and to the typology of locative predication presented in Table 1. This typology classifies languages according to the number of contrastive verbs they use in the basic locative construction (BLC). In this paper, we outline the kind of variation one finds within genetically closely related languages (Gurɛnɛ and Chakali), and within languages classified as Type III in the typology below.

Table 1: Types of locative predication (verbal component) in the basic locative construction (BLC). Reproduction and adaptation of Ameka & Levinson (2007: 863-864)

Type 0		No verb in BLC (Saliba)
Type I		Single locative verb (or suppletion under grammatical conditioning)
	Ia	Copula (English, Tamil, Chukchi, Tiriyó)
	Ib	Locative (+Existential) verb (Japanese, Ewe, Yukatek, Lavukaleve)
Type II		A small contrastive set of locative verbs (3-7 verbs)
	IIa	Postural verbs (Arrernte, Dutch, Goemai)
	IIb	Ground space indicating verbs (Tidore)
Type III		Multiverb Positional verbs (a large set of dispositional verbs, 9-100 verbs) (Tzeltal, Zapotec, German, Laz, Sɛkpɛle)

1.1. The languages and linguistic features

Gurɛnɛ (ISO 639-3: gur. Western Oti-Volta) and Chakali (ISO 639-3: cli. Western Grusi) belong to the Gur (Niger-Congo) language cluster. Geographically the two languages are spoken in northern Ghana, Gurɛnɛ in the Upper East Region and Chakali in the Upper West Region. There are approximately 650,000 Gurene speakers and 3,500 Chakali speakers. Areal features include

various types of (lexical and grammatical) tone system, vowel harmony, noun class system, and verb serialisation. Both languages have a canonical SVO word order and use extensively various types of multiverb constructions (Dakubu, 2009; Brindle, 2011; Atintono, 2011). Despite their relative proximity (about 150 km apart), Gurɛnɛ and Chakali are non-interacting languages. That is, speakers do not have common social or economic situations where intensive language contact could take place, at least enough to influence speech or grammar.

1.2. Method and data

The data collection relied on a method which consists of having a number of native speakers (four consultants for Chakali and ten consultants for Gurɛnɛ) observing and describing pictures/illustrations and providing expressions for the various scenes depicted (i.e. staged communicative events in the sense of Lüpke, 2009). All scenes in the stimuli are intended to describe "situations where figure and ground are in contiguity or close proximity" (Levinson & Wilkins, 2006b: 514), with some of the scenes targeting more precise distinctions. For the purpose of this paper, we relied on stimuli designed by the Language and Cognition Group of the Max Planck Institute for Psycholinguistics (MPI) in Nijmegen.[1] The Topological Relations Picture Series (TRPS) (Bowerman & Pederson, 1993) is a set of 71 illustrations depicting various locative relations. The Picture Series for Positional Verbs (PSPV) (Ameka et al., 1999) consists of 68 pictures in which nine different figure objects (stick, ribbon, cloth, rope, cassava, bottle, ball, beans, pot) are placed in relation to seven different grounds (table, tree branch, tree stump, tree trunk, basket, rock, earth) in various canonical and non-canonical positions (Ameka & Levinson, 2007: 861). The Containment Picture Series (CPS) (Meira & Levinson, 2001a), explores further the notion of containment. It consists of 41 pictures representing configurations such as "full and partial containment, containment in a fluid and granular medium, containment in matter and hollow space, and 'functional' and 'geometrical' containment are depicted" (Meira & Levinson, 2001a: 33). Finally, the Support Picture Series (SPS) (Meira & Levinson, 2001b), consists of 47 scenes specifically targeting the notions of contact, support, adhesion, and attachment.[2]

2. Topological relation markers in Gurɛnɛ and Chakali
2.1. Basic locative construction

The basic locative construction (BLC) is said to be the non-elliptical, unmarked, and default response of a consultant to the question 'where is an entity X' when presented with a visual stimulus (Levinson & Wilkins, 2006b: 9-11; Ameka & Levinson, 2007: 852). The response describes the location of a target entity x, which is called the figure, with respect to a site of localisation y, called the ground (see Talmy, 1985). In Gurɛnɛ and Chakali, a BLC consists of a noun phrase in subject position representing the figure, a verbal predicate (existential, postural or positional verb), followed by an oblique position made up of a noun phrase that designates the ground and an optional postposition marking the search domain. The examples in (1) illustrate the BLC in the two languages. These expressions were used to characterise the picture scene of a cloth neatly folded on a table.[3]

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[1] We are grateful to the Language and Cognition Group for allowing us to use their material. The stimuli are accessible at MPI's website (http://fieldmanuals.mpi.nl/ - Accessed on 11/11/11).

[2] The advantages and shortcomings of this method in comparative work have long been acknowledged in the literature (see Levinson & Meira, 2003; Matthewson, 2004; Koptjevskaya-Tamm et al., 2007; Lüpke, 2009; Hellwig, 2010). The details are beyond the scope of this paper.

[3] The free translation in (1) captures the general meaning of the scene 'cloth on (top of) table', depicted by the picture number 4 in the Picture Series for Positional Verbs (PSPV) (Ameka et al., 1999). Even though the pictures/illustrations are not provided, references are given for the readers interested in this line of inquiry.

(1) a. [FIGURE]   TRM   [GROUND + TRM]
         [SUBJ]   PRED [OBL   ]

    gur. fúó lá   pàgì là   kúká lá   zúò
         N   (DEF) V   FOC   N   (DEF) (POSTP)

    cli. à   gár ságá   à   téébùl ɲúù   nì
       (DEF) N   V   (DEF) N   (POSTP) POSTP

    'The cloth is on top of the table.' (PSPV 4)

The majority of the utterances in the dataset resemble the constructions given in (1).[4] Chakali *gar* 'cloth' in (1) functions as the figure, and so does Gurenɛ *fuo* 'cloth'. Similarly, *kuka* in Gurenɛ and *teebul* in Chakali function as the ground. We adopt the term topological relation marker (TRM) following Levinson & Meira (2003: 486), who define it as any linguistic expression used for encoding topological relations. In this respect, the relational nominal predicates, which are called postpositions (POSTP) for the sake of this paper (discussed in section 2.2) and the verbal predicates (discussed in section 2.3) represent the TRMs in (1). The postposition designates the search domain (i.e. precise place of location of the figure on the ground), and thus depends on the reference entity of the ground, whereas the verbal predicate expresses the topological relation and the configuration of the figure. Notice in (1cli) Chakali has another type of postposition; the postposition *nɪ* in Chakali has no other function than to signal the oblique object.[5]

2.2. Postpositions' semantics

Gurenɛ and Chakali use body part terms in relational functions to signal spatial information. They can be used as full-fledged nouns, as stems in compound words, and as constituents in appositional phrases. In this latter role, they combine with nominals to express part-whole spatial relations, specifically a region in contact with or detached from an object, and narrow down the search domain of the localisation (see gur. *zuo* and cli. *ɲuu* in (1)). They form a closed class of lexical items; between 12-18 body part terms are identified in this relational function in Gurenɛ and Chakali, although in the current dataset 10 were used. Table 2 displays the body part terms found in the data which convey spatial meaning. Notice that postpositions are not exclusively derived from body part terms. In Gurenɛ the landscape term *tiŋa* 'land' can be used to express 'under' or 'below'.[6]

2.3. Verbs' semantics
2.3.1. Existential predicate

A characteristic shared by languages of Type II and Type III in Table 1 is the presence of one more general verb which can be used "if none of the more specific positional verbs is relevant" (Ameka & Levinson, 2007: 858). Gurenɛ *boi* and Chakali *dʊa* are existential predicates which play exactly this role. They are the general locative verbs in both languages and convey the meaning of the existence of

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[4] The data for each language follows its respective ISO 639-3 code: gur. (Gurenɛ) and cli. (Chakali). Abbreviations: DEF = definite article, EXIST = existential predicate, FOC = focus particle, OBL = oblique, PL = plural, POSTP = postposition, PRED = verbal predicate, SUBJ = subject, and TRM = topological relation marker. The convention for marking surface tone is (´) for high-, (¯) for mid-, and (`) for low tone.

[5] The focus strategies in both languages will not be discussed in the present paper, but they should be acknowledged. The majority of Gurenɛ expressions in the dataset require the discourse particle *la* to follow their main predicate, while Chakali consultants rarely use the post-nominal focus particle. The pragmatic function of the particle *la* in Gurenɛ locative expressions is believed to reflect that the speaker wishes to show that (s)he has observed the locative scene directly. It is marginally used or almost absent in locative expressions that speakers describe without direct observation. The various functions of the particle *la* in Gurenɛ are analysed in Dakubu (2000). The glossing convention therein is followed. Focus strategies in Chakali are discussed in Brindle (2011).

[6] Table 2 does not treat the full range of meaning of body part terms in relational functions. For instance gur. *nuurɛ* and cli. *nʊā* has a range of meanings that include 'entrance', 'edge', 'rim' or 'brim' depending on the type of ground entity.

the figure at some place without any precise indication of its location. They can also be used to indicate that the figure and the ground occupy the same relative space, or merges, as in (2).

Table 2: Spatial nominal relations and body part nouns

Spatial relation	PoS: POSTP		Body part and landscape term
	Gurenɛ	Chakali	
TOP	zúò	ɲúù	head
CONTAINMENT	púaǹ, púúré	pàtʃígíí	stomach
SIDE	lùgèrè (náʔárè)	lógún (nầằ)	flank (leg)
ENTRANCE	núúré	nòẫ	mouth
UNDER	tíŋà$^\alpha$	múŋ$^\beta$	land$^\alpha$/arse$^\beta$
BODY	ínyà	bár	body
LEFT	góbégá	néŋgâĺ	left hand
RIGHT	zúɔ́	néndûĺ	right hand
BACK	póóré	gàntál	dorsum
FRONT	néŋá	súú	front

Definition 2.1 x be.at y : a Figure entity x occupies the same relative position or area in space as a Ground entity y.

(2) gur.   víregá là   bóí   lá   fúò   lá   ínyà
           hole   DEF be.at FOC cloth DEF body

     cli.   bừà   dúá   à   gàɼ   nī
           hole be.at DEF cloth POSTP

           'A hole exists in the shirt.' (TRPS 18)

Gurenɛ *boi* and Chakali *dʋa* are verbs used by the majority to describe encirclement (house within fence, TRPS 15), negative space (hole in shirt, TRPS 18), body part-whole (nose on face, SPS 12) and clothing/adornment (letters on shirt, TRPS 68) scenes. In section 2.3.4 it is shown that these existential predicates act as default verbal components in characterising containment relations.

2.3.2. Postural predicates

It is assumed in the typology of locative descriptions that the basic meanings of postural predicates describe human postures before they are used to code the location of other entities (Newman, 2002; Lemmens & Perez, 2010). Three human posture predicates, 'sit', 'stand' and 'lie', are given in Table 3.

Table 3: Human posture predicates and animacy compatibilities.

	Gurenɛ	Chakali	Animacy of figure entity
sit	zǐ̀	sáŋá	HUM
stand	zè?	tʃíŋá	HUM, ANIM, CONC
lie	gầ	tʃừà	HUM, ANIM, CONC

Example (3) shows that the 'sit' predicates are restricted to human entities in both Gurenɛ and Chakali. However the 'stand' and 'lie' predicates can be used with human as well as with non-human entities, as shown in (4) and (5).

(3) gur.   *wáné / *nííŋẫ / bíà / pɔ́ká   zì   lá   kúká   lá   zúó
           calabash bird   child woman sit FOC bench DEF head

     cli.   *fàlá /   *zár / bìé / hấằŋ   sáŋá   à   kór   nī
           calabash bird   child woman sit   DEF bench POSTP

           'A *bowl/*bird/child/woman sits on the bench.'

(4) gur. kópí lá zèʔ lèm là téébúlè là náʔárè
      cup DEF stand be.near FOC table DEF leg

    cli. bónsò tʃíŋá téébùl lógún nì
       cup stand table side POSTP

    'The cup is standing near the leg of the table.' (SPS 6)

(5) gur. bíʔá lá gã̀ là fúò là tíŋà
      ladle DEF lie FOC cloth DEF land

    cli. à dʒɔ̀gtíé tʃúá à gàr múŋ nī
      DEF spoon lie DEF cloth arse POSTP

    'The ladle/spoon is lying under the cloth.' (TRPS 24)

Posture predicates selecting for a non-human figure entity make finer semantic distinctions in Gurenɛ than in Chakali. The Chakali expression *saga* 'be on' can correspond to the extension of at least three Gurenɛ verbs, as shown in the pairs of sentences in (6) to (8).

Definition 2.2 x be.on$_1$ y : a Figure entity x is supported by an elevated Ground entity y; entity x has a base and rests on it. Stereotypical figures: bowl, cup, pot. Marginal figure: ball.

(6) gur. láá lá yàgì là téébúlè là zúò
      bowl DEF be.on FOC table DEF head

    cli. hèná súgúlí/ságá à téébùl ɲúù nì
      bowl be.on DEF table head POSTP

    'The bowl is on top of the table.' (SPS 2)

Definition 2.3 x be.on$_2$ y : a Figure entity x is supported by an elevated Ground entity y; entity x has no base-like attribute, is flat, light and flexible. Stereotypical figures: rope, cloth, skin, book.

(7) gur. fúò là pàgì là téébúlè là zúò
      cloth DEF be.on FOC table DEF head

    cli. à gár ságá à téébùl ɲúù nì
      DEF cloth be.on DEF table head POSTP

    'The cloth is on top of the table.' (PSPV 4)

Definition 2.4 x be.on$_3$ y : a Figure entity x is supported by an elevated Ground entity y; entity x has an uneven or unstable base. Stereotypical figures: ball, bottle, non-flat elongated object such as rope or stick.

(8) gur. bɔ́ɔ́lá lá dɔ̀gì là téébúlè là zúò
      ball DEF be.on FOC table DEF head

    cli. bɔ́ɔ̀l ságá téébùl ɲúù nì
      ball be.on table head POSTP

    'The ball is on top of the table.' (PSPV 21)

Examples (6)-(8) show that selectional restriction requirements in Gurenɛ and Chakali rely on the degree of stability of a non-human figure entity. The shape of the figure entity is the key factor in these

examples; the predicate gur. *yagi* in (6) selects for a figure entity which possesses a base-like attribute that supports and stabilises its structure, the predicate gur. *pagi* in (7) requires the figure entity's shape to be flat with no base-like attribute, and the predicate gur. *dɔgi* in (8) selects for a figure entity whose base is uneven or unstable. The choice of the predicate is thus dependent on how one construes a figure entity. For instance, an elongated object such as a rope or stick may be treated by a Gurenɛ speaker as lacking a base or having an unstable one, i.e. a choice between *pagi* and *dɔgi* respectively.

While the definitions above make good predictions, cli. *suguli* in (6) cannot be systematically equated with gur. *yagi*. On the one hand, both gur. *dugi* (different from gur. *dɔgi*) and cli. *suguli* characterise primarily the support relation of a pot on the common three-stone stove. Also, gur. *yagi* may be used to express the presence of a man standing on top of a roof (TRPS 34), while cli. *suguli* obligatorily selects for non-human entities as arguments. Further, while cli. *suguli* is preferred in (6), the alternative cli. *saga* is not only accepted, but interchangeable according to the majority of the consultants. The predicate *saga* is believed to have a wider coverage than *suguli*, yet (9) shows that restrictions exist.[7]

(9) cli. ŋmɛŋ / daa / *vii / bɪɪ saga teebul ɲuu nɪ
    rope stick pot stone be.on table head POSTP
    'X is on top of the table.'

  cli. *ŋmɛŋ / *daa / vii / bɪɪ suguli teebul ɲuu nɪ
    rope stick pot stone be.on table head POSTP
    'X is on top of the table.'

The verbs used in examples (6)-(8) also have a strict meaning to implicate that the figure is located on an elevated ground, like tabletop, rooftop, tree branch, etc. When the ground entity is the floor or bare ground, Gurenɛ and Chakali constrain spatial configurations to be expressed with one of the postural predicates, generally gur. *gã* and cli. *tʃʊa* 'lie'. Consequently, as the degree of stability of the figure entity is ignored (i.e. its base-like attribute), the nature of the ground entity becomes the most salient. The responses to two contrasting scenes, 'ball on earth' (PSPV 7) and 'ball on table' (PSPV 21), show that when the balls are localised on an elevated surface (as in 8), they collocate with gur. *dɔgi* and cli. *saga*, but when they are localised on bare ground (as in 10), they collocate with gur. *gã* and cli. *tʃʊa*.

Definition 2.5 x be.on$_4$ y : a non-human Figure entity x is on a Ground entity y; entity y is the floor or earth.

(10) gur. bɔɔ́l-á lá gã̀ là tíɲà
    ball-PL DEF lie FOC earth

  cli. bɔɔ̀l-sá tʃʊ́à hàɣlîî nì
    ball-PL lie earth POSTP

    'Balls are lying on the ground' (PSPV 39)

The predicates used to describe the scenes where a pot is turned face down on a tree stump (PSPV 12) or on a branch of a tree (PSPV 29), and where a bottle is turned upside down in a basket (PSPV 67), are gur. *kpabi* and cli. *tʃige*.[8] What all these scenes have in common is the existence of a salient part of the figure object, this part being the opening or 'mouth' of the object, facing a ground entity. Examples (11) and (12) show that the verbal component depends on the orientation of the mouth of the figure entity.

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[7] The verb cli. *saga* may on occasion collocate with nouns referring to birds, but never with nouns referring to humans.

[8] There is a dialectal distinctions in Gurenɛ: Bolgatonga variant being *kpabi* while other dialects (e.g. Bongo and Nankani) use *vugi*.

Definition 2.6 x be.face.down.on y : a Figure entity x is face down on a Ground entity y, x is conceived as having an orientation and an opening (i.e. a 'mouth'), and x's orientation is the reverse of its conventional orientation.

(11)   gur.   dúkɔ́ lá   kpàbì   là   tíà yílé   zúò
              pot   DEF be.face.down.on FOC tree branch head

       cli.   à   víí tʃígé   à   dáá ɲúù nì
              DEF pot be.face.down.on DEF tree head POSTP

       'A pot is face down on top of the tree.' (PSPV 29)

(12)   gur.   dúkɔ́ lá   yàgì   là   tíà yílé   zúò
              pot   DEF be.on FOC tree branch head

       cli.   à   víí ságá   à   dáá ɲúù nì
              DEF pot be.on DEF tree head POSTP

       'A pot is on top of the tree.' (PSPV 48)

2.3.3. Distribution and dispersion

The verbs of distribution and dispersion are members of a broad category which includes verbs with meanings equivalent to English 'cover', 'heap', 'spread', etc. The verbs encode specifically the manner of configuration of the figure-ground relation and the nature of the figure entity. A relation where a cloth-like object fully covers a ground object, as (13) illustrates, is described with gur. *pī* and cli. *tɔ* by most consultants. The verb cli. *tɔ* never co-occurs with the postposition *nɪ*, a fact which suggests that the verb *tɔ* takes a direct object and not an oblique one.

Definition 2.7 x cover y : a Figure entity x is in contact with, is over and covers a Ground entity y.

(13)   gur.   fúò   là   pī̀   là   téébúlè là   zúò
              cloth DEF cover FOC table   DEF head

       cli.   gár   tɔ́   téébùl
              cloth cover table

       'A cloth covers a table' or 'The cloth covers the table' (TRPS 29, PSPV 30)

The verb *tɔ* is also used to characterise locative relations in which the figure obstructs or blocks an aperture, hole, or entrance of the ground entity, e.g. 'cork on bottle' (TRPS 62). In Gurenɛ such locative relations are described with gur. *li*.

Definition 2.8 x obstruct y : a Figure entity x is in contact with, blocks and obstructs the entrance or aperture of a Ground entity y.

(14)   gur.   líŋá lá   lì   là   kɔ́lébá lá   núúrɛ́
              cork DEF obstruct FOC bottle DEF mouth

       cli.   à   dáà̀   tɔ́   kɔ́lbāā nʊ́ã̀
              DEF wood obstruct bottle mouth

       'A cork obstructs (is on) the bottle mouth.' (TRPS 62)

The verbs gur. *yɛregɛ* and cli. *jaarɪ* 'spread' are used to characterise grains spread on the ground (PSPV 11) or on a table (PSPV 25), although some Gurenɛ consultants used gur. *yɛregɛ* to describe a

partial cloth-covering state. Thus, tentatively we posit that Gurenε speakers convey the meaning 'cover the figure's surface completely by a cloth' with *pĩ* and 'cover partially with cloth or spread of seeds' with *yɛregɛ*, while Chakali speakers convey 'cover' and 'obstruct' with *tɔ* and 'spread of seeds' with *jaarι*.

2.3.4. Containment

So far postpositions were presented as optional expressions, their role being to narrow down the search domain established by the verb, while the verbal component was presented as compulsory as it carries the bulk of spatial information and other semantic features, such as orientation, shape, animacy, etc. Containment is the only concept which obligatorily relies on two TRMs in both languages. The notion of containment in Gurenε and Chakali is typically encoded as a collocation of the existential predicate and a postposition (i.e the body part term stomach).

Definition 2.9 x be.in y : a Figure entity x is contained in a Ground entity y; x is located internal to an entity y, and y is conceived as having an interior ; x coincides with y.

(15) gur. mɔ́nkɔ́ lá bòì lá láá lá púàn
             mango DEF EXIST FOC bowl DEF stomach

      cli. dáánɔ́n dùá fàlá pàtʃígíí nī
            fruit EXIST calabash stomach POSTP

      'The mango/fruit is in the bowl.' (CPS 1)

A figure entity being surrounded, fenced or enclosed by a ground entity, for instance a fence around a house (TRPS 15) or a house enclosed by a fence (TRPS 60) is described with gur. *kaɛ* and cli. *goro*.

2.3.5. Attachment

The concept of attachment is expressed with hanging, adhesion, grip and insertion predicates. Gurenε *labi* 'adhere to' denotes adhesion, but usually weak adhesion. Scenes such as an insect on a wall (TRPS 7, 52), a bandage on a leg (TRPS 35) and a paper on a pole (SPS 42) are described with this predicate. Gurenε *tabi* 'adhere to' express firm attachment caused by mastic adhesion. It is used to describe sticking scenes, e.g objects fasten by glue or gum (SPS 9). Chakali *mara* captures both meanings.

Definition 2.10 x adhere.to$_1$ y: a Figure entity x is in contact with a Ground entity y; x and y are perceived as naturally or artifically attached; x and y stick or hold together and resist separation.

(16) gur. váléŋá lá làbì là síílín lá zúò
             spider DEF adhere.to FOC ceiling DEF head

      cli. ŋméŋtél márá à sàpétíè ɲúù nì
            spider adhere.to DEF ceiling head POSTP

      'The spider is on the ceiling.' (TRPS 7)

Definition 2.11 x adhere.to$_2$ y : a Figure entity x is in contact with a Ground entity y, x and y are perceived as artifically attached, x and y are fasten by glue- or gum-like substance; x and y stick or hold together and resist separation.

(17) gur. láá lá tàbì là téébúlè là zúò
bowl DEF adhere.to FOC table DEF head

cli. bónsó márá à téébùl ɲúù nì
cup adhere.to DEF table head POSTP

'The bowl adheres to the table.' (SPS 9)

A relation where the figure entity fastens (or secures) and surrounds the ground entity with a rope, string, cloth or hairband may be expressed with the two predicates gur. *vili* and gur. *luʔ* in Gurenɛ: cli. *vɔwa* translates the meanings of the two predicates in Chakali. Among the scenes showing the highest consensus on the use of gur. *vili* and cli. *vɔwa* we find 'rope around stump or stone' (PSPV 15, 36, TRPS 55). The predicates gur. *luʔ* and cli. *vɔwa* are associated with 'hairband around head' (SPS 18), 'balloon to a stick' (TRPS 20), 'piece of cloth tied around candle' (TRPS 4) and 'flag tied to pole' (TRPS 56). Establishing a meaning difference between gur. *vili* and *luʔ* would rely on the manner of attachment and the nature of the entities involved: the predicate *luʔ* primarily calls for firm rope-like attachment, but *vili* the round shape of the ground entity.[9]

Definition 2.12 x tie$_1$ y : a Figure entity x is in contact with a Ground entity y, x artificially encircles and is tied around y. Ground entity y is typically round.

(18) gur. míʔá lá vìlì là dɔ́gíʔá lá tílé
rope DEF tie FOC stump DEF tree.base

cli. à ŋméɲ vɔ́wá à dààkpútíi mùɲ nī
DEF rope tie DEF stump arse POSTP

'The rope is tied to the bottom of the stump.' (TRPS 55)

Definition 2.13 x tie$_2$ y : a Figure entity x is in contact with a Ground entity y, x ties y firmly.

(19) gur. táné lá lùʔ là kándílí lá tíɲàsúká
cloth DEF tie FOC candle DEF land.middle

cli. ŋméŋ vɔ́wà à tʃándìl nì
rope tie DEF candle POSTP

'A ruban is tied around a candle.' (TRPS 4)

Chakali makes a distinction between two 'pierce' predicates; the literal and primary sense of cli. *pɔ* is that the figure entity inserts the ground entity, and the one of *tūū* is that the figure entity pierces through the ground entity. The equivalent senses are captured in Gurenɛ with *firi* and *tū* respectively. An instance of each is presented in (20) and (21). The former scene depicts a bottle in a standing position pressed or planted into the ground, and the latter a scene where a skewer is through a fruit.

Definition 2.14 x pierce$_1$ y : a Figure entity x inserts a Ground entity y; x passes into y; x is fixed or set securely or deeply into y; x is put, planted or introduced into y.

(20) gur. túà là fìrì là tíɲà
bottle DEF pierce FOC land

cli. kɔ́lbá pɔ̄ hàɣlîi nì
bottle pierce land POSTP

'The bottles are in the ground.' (PVPS 58)

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[9] The 'attachment' predicate gur. *luʔ* is homophonous with a 'pierce' predicate, which is introduced later in this section.

Definition 2.15 x pierce₂ y : a Figure entity x penetrates or pierces through a Ground entity y; x corks y, x blocks y, x passes into or through y, often by overcoming resistance.

(21) gur. léémú lá   tṵ̀   bɔ̀nà là   káné lá   púàn
          orange DEF pierce exist FOC spear DEF stomach

      cli. hèmbí tṵ̄ṵ̄   à   dáánɔ̀n nì
          nail   pierce DEF fruit   POSTP

      'The fruit is pierced by/on a spike.' (TRPS 70)

Notice that the object interpreted as figure in the sentences in (21) can function as the ground object as well. The figure-ground reverse, i.e. gur. *káné lá tṵ̀ bɔ̀nà là léemú lá púàn*, lit. 'spear pierces orange', and cli. *dáánɔ́n tṵ̄ṵ̄ à hèmbí nī*, lit. 'fruit pierces the nail', is possible to describe the same scene in both languages. So cli. *tūū* and gur. *tū* may be treated as symmetric predicates, the only cases in our dataset.[10]

2.3.6. Suspension

The predicates gur. *yuli* / cli. *laga* typically describe a hanging or suspension relation between two entities which are in contact. The figure entity is seen as having a point of suspension and the ground entity is the point of suspension.

Definition 2.16 x hang₁ y : a Figure entity x and a Ground entity y are in contact; the relation involves a point of suspension; y is the point of suspension.

(22) gur. míʔá lá   yùlì là   yìlè
          rope   DEF hang FOC branch

      cli. ŋméŋ lágá dáánã̀ã̀ nì
          rope   hang branch   POSTP

      'The rope is hanging from a branch.' (PVPS 33)

Although the illustration depicting a cloud over the mountain has no point of suspension, consultants use gur. *yuli* and cli. *laga*. This raises the question as to whether the definition of x hang₁ y above is too strict in stipulating that there must be a point of suspension, or whether clouds are conceived as hanging from a point of suspension. Despite the extensive use of gur. *yuli* and cli. *laga* to express the concepts of hanging and suspension, there exists other predicates in each language used to convey similar meanings, and there are also slight meaning differences which cannot be captured by the pair gur. *yuli* / cli. *laga*. In section 2.3.2, gur. *yagi* was presented as a predicate localising a figure entity with base-like attribute in contact with and supported by a ground entity. The predicate *yagi* in Gurene can also be interpreted with a hang-meaning. Scenes where a coat hangs on a hook on a wall (TRPS 9) or where a picture hangs on a wall (TRPS 44) are described with *yagi* in Gurene (and *laga* in Chakali). Perhaps gur. *yagi* indicates a sort of vertical support as well, as the body of the figure object may be seen as leaning against the body of a vertical ground object.

Further, Chakali consultants prefer *gaalı* to *laga* to express a 'suspend over' relation, but with in addition an intention of covering partially. They also opt for the predicate *kagalɛ*, instead of *laga* or *saga*, when the figure entity is seen as held back from entering or hanging at the entrance of an intended space. The predicate *kagalɛ* is used to describe scenes where a stick or cloth lies across a basket (PSPV 43, 24), among others. Scenes described with cli. *kagalɛ* are described with support predicates in Gurene, i.e. gur. *yagi*, *dɔgi* or *pagi*, the selection being entirely dependent on the base-like attributes of the figure entity, and implicates a location on an elevated ground, as pointed out in section 2.3.2.

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[10] The same scene is described with a similar verb in Tiriyó (Cariban subbranch, Amazonia (Meira, 2006: 333-334)).

2.3.7. Inclination

Leaning situations, which typically depict locative relations where the figure is inclined with contact at a point on a vertical ground, and is supported on a horizontal ground, are encoded by gur. *tĩ* and cli. *tele*. Scenes such as 'stick against tree' (PSPV 1), 'stick against basket' (PSPV 13), 'stick against stump' (PSPV 31), 'cassavas against stump' (PSPV 65), 'ladder against wall' (TRPS 58) and 'stick in bowl against side' (CPS 36) are described with these predicate.

Definition 2.17 x lean.on y : a Figure entity x and a Ground entity y are in contact; x is inclined and relies on y for vertical support.

(23)   gur.   dɔɔ́   lá   tĩ̀   là   dɔ̀gíʔá   lá
             wood   DEF   lean.on   FOC   stump   DEF

      cli.   à   dáá   télè   dáá   nì
             DEF   wood   lean.on   tree   POSTP

      'The wood is leaning on the stump.' (PSPV 31)

Gurenɛ and Chakali also have 'lean on' predicates which select exclusively for human figure entities, i.e. *lali* and *deli* repectively. No picture or illustration targets this animacy feature thus the expressions are not found in the dataset.

2.3.8. Propinquity

Despite being sporadic, the predicates gur. *lɛm* and cli. *dʊgʊlɪ* 'be near' clearly establish a locative relation between a figure and a ground: they are predicates expressing a propinquity relation. The existence of locative verbs which allow more precise characterisation, together with the design of the stimuli, may contribute to the scarcity of gur. *lɛm* and cli. *dʊgʊlɪ* in the dataset (as compared to gur. *boi* and cli. *dʊa* in section 2.3.1).

Definition 2.18 x be.near y : a Figure entity x and a Ground entity y are near and not in contact.

(24)   gur.   báá   lá   dɔ̀bì   lèm   là   déó   lá   síà
             dog   DEF   squat   be.near   FOC   house   DEF   waist

      cli.   váá   dūgūlī   à   dìà   nī
             dog   be.near   DEF   house   POSTP

      'The dog is (squatting) near the (side of the) kennel.' (TRPS 6)

2.4. Areal typology: a look at Sɛkpɛle

In this section, we compare Gurenɛ and Chakali with Sɛkpɛle (ISO 639-3: lip, Ghana-Togo Mountain, Kwa) mainly in the context of identifying areal typological features in the topological domain. The coding of topological relations in Sɛkpɛle is analysed in Ameka (2007). Sɛkpɛle shows strong resemblance with Chakali and Gurenɛ in describing the TRPS and PSPV illustrations; Sɛkpɛle speakers would typically use (i) a set of predicates (15 in total) concerned with the overall configuration figure-ground, (ii) one general locative preposition and (iii) a set of 12 postpositions which are argued to be grammaticalised spatial nominals (Ameka, 2007: 1066).

Although the three Ghanaian languages are assigned Type III in the typology presented in Table 1, variations are important to distinguish. First, like Chakali, but unlike Gurenɛ, Sɛkpɛle has a vacuous adposition; a preposition which has no other function than to signal that the locative phrase is an oblique object. Yet unlike Chakali, in Sɛkpɛle this vacuous adposition is omittable if the conceptual ground denoted by the noun is inherently locational. For instance, it is reported that reference to 'in the house'

or 'at school' is more readily utter without the preposition *lí (~ lɔ́)* in the oblique phrase (Ameka, 2007: 1098). Secondly, unlike Chakali and Gurenɛ, which prototypically use an existential predicate and a (spatial nominal) postposition derived from 'stomach', Sɛkpɛle encodes containment in the locative verb *kpé*. Thus the notion of containment is expressed by a single verb in Sɛkpɛle but by the combination of a verb, often the existential predicate, and a postposition in Chakali and Gurenɛ. The illustration 'fruit in the bowl' (TRPS 2) may be given the representation in (25).

(25) gur. X boi Y   puan
    Figure EXIST Ground stomach

  cli. X dʋa Y   patʃɪgɪɪ nɪ
    Figure EXIST Ground stomach POSTP

  lik. X kpe li Y
    Figure be.in PREP Ground

However, Sɛkpɛle's locative verb *kpé* functions exactly like Chakali's existential verb *dʋa* in characterising part-whole and clothing/adornment relations. Illustrations displaying 'ring in finger' (TRPS 10), 'shoe on foot' (TRPS 21), 'cigarette in mouth' (TRPS 39) and 'necklace on neck' (TRPS 54) are described using the locative verb *kpé* in Sɛkpɛle and *dʋa* in Chakali. Example (26) presents the conventional answers for 'ring in finger' (TRPS 10) in the three languages.

(26) gur. nùtúà là pìre là nùdíbélá
    ring DEF wear FOC finger

    'The ring wear a finger'

  cli. néŋgbíŋ dúá à nébíí nī
    ring   EXIST DEF finger POSTP

    Lit. 'A ring exists at the finger'

  lik. le-súkpɛ kpé wə li lɔ́-nimí   (Ameka, 2007: 1081)
    CM-ring be.in 3SG LOC CM-finger

    Lit. 'A ring is on her/him at a finger'

Another point of variation is how the languages express plain topological coincidence. Chakali *dʋa* and Gurenɛ *boi* were argued to be the least specific locative verbs. In that function the verb *tɔ́* in Sɛkpɛle translates to Ckalali *dʋa* and Gurenɛ *boi*, but *tɔ́* is also the verb which captures the sort of scenarios where the figure entity is located on the earth or bare ground. Recall that illustrations 'ball(s) on ground' (PSPV 7, 39) and 'pot on ground near stump' (PSPV 40) were depicted with *tʃʋa* in Chakali and *gã* in Gurenɛ, forms which otherwise characterise elongated figure in a horizontal position.

3. Conclusion

In the preceding sections, the meanings of the relevant topological relation markers were presented and discussed. In order to identify the similarities and differences in the two languages in a principled way, we offered statements conveying the fundamental semantic characterisations of the predicates involved. Although, undoubtedly, the definitions are partial and require further research, it was shown that (i) some of the BLC's main predicates have selectional restriction requirements, i.e. they classify their subject nominal concepts by semantic criteria, and (ii) some code the overall configuration of the figure-ground relation. Gurenɛ and Chakali employ at least nine verbs in their BLC and thus can be said to belong to Type III of the BLC typology in Table 1. Gurenɛ and Chakali offer a wider variety of verbs describing figure-ground configurations than Type IIa languages (i.e. Arrernte, Dutch and Goemai), and, unlike the main strategy of Type II languages, Gurenɛ and Chakali do not merely 'reassign' their human-selecting posture predicates to other animate and inanimate entities. Gurenɛ and Chakali are Type III languages, like Sɛkpɛle, but unlike Tzeltal, a language which codes dispositional properties in more than a hundred verbal roots.

As can be seen from this summary and the simple comparison to Sɛkpɛle, further research in this line of inquiry is needed in order to elaborate a continuum of type III languages. Yet the paper offer cases of variation which contribute to our understanding of lexicalisation patterns and typological diversity of a specific area.

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