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## AUTHOR'S NOTE

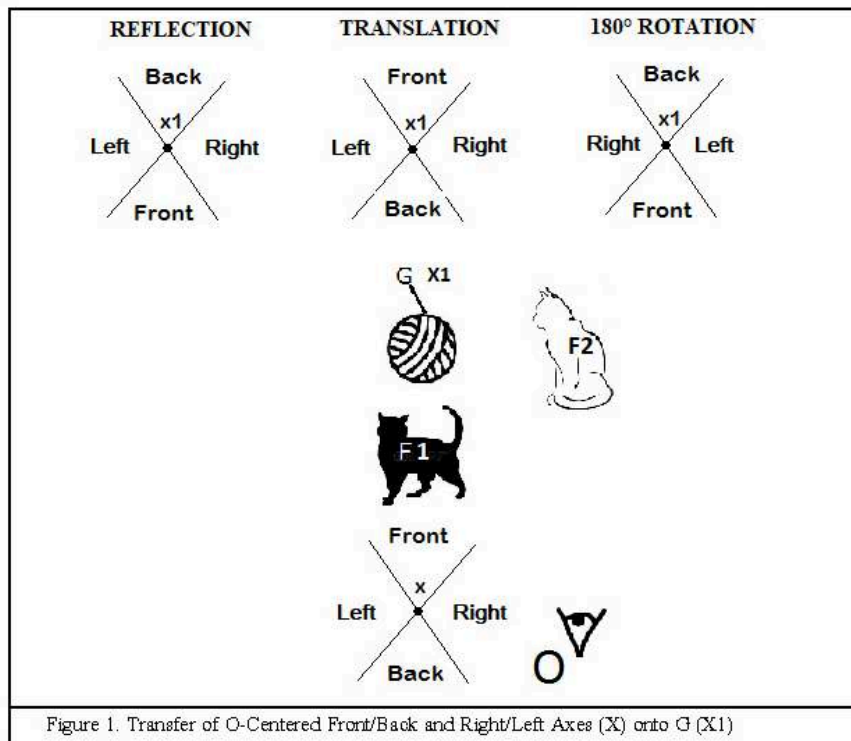
**Abbreviations in Figures:** E=East; L=Letizia; N=North; S=South; W=West

## 1. Linguistic Change and Spatial Representations in aş-Şāni‘ Arabic

- This work describes linguistic changes that occurred in the domain of spatial representations in the last seventy years in aş-Şāni‘ Arabic (Cerqueglini 2015), a tribal variety of Negev Arabic (Blanc 1970; Henkin 2010). I experimentally surveyed the spatial language of aş-Şāni‘ community members, from elders (Traditional aş-Şāni‘ Arabic, TAA) to teens (New aş-Şāni‘ Arabic, NAA). By spatial language, I mean the linguistic descriptions of the relations between objects in space, such: 1. “The cat is inside the car” and 2. “The child is in front of the house.” The object to be located is Figure (F) and the object in relation to which F is located is Ground (G) (Levinson 2003). Here “the cat” and “the child” are Fs, “the car” and “the house” are Gs, and the prepositions “inside” and “in front” represent the relations. In sentence 1, FG coincide in space, as G contains F. This is a topological relation. In sentence 2, FG are separated in space and speakers need axial information to detect the search domain of F in relation to G, i.e. this spatial relation requires the projection of a coordinate system to establish G’s front/back and right/left axes. This is a projective relation. Coordinate systems in human languages are called frames of reference (FoRs) (Carlson-Radvansky & Irwin 1993; Levinson 2003). Scholars classify FoRs differently by number and type. I follow Levinson’s classification of three FoRs: Intrinsic, Relative, and Absolute (Levinson 2003).

### 1.1. The Frames of Reference

- 2 In the **Intrinsic FoR**, the coordinate system radiates from G. “Marc is in front of the house” means that F-Marc is in the region projected from the part of G-house that is seen as G’s inherent front. In order to become the center of the coordinate system, some inherent functional or geometric asymmetry of G on the front/back axis must be recognized by speakers. Thus, a house is generally conceptualized as having an inherent front, where the front door is located. This can be seen as its “face,” whereas “faceless” objects, such as ball/stone/pole, are generally less eligible for the Intrinsic strategy and more likely to prime one of the other FoRs. The coordinate system of the **Absolute FoR** is derived from some environmental feature, such as the four cardinal directions or a known landmark that provides a fixed bearing in space, e.g. “Marc(F) is north of the house(G).” In the **Relative FoR**, the body of the observer (O) is the origin of the coordinate system. “The cat is in front of the ball of wool” means that F-cat is in a region of space contiguous to that part of the G-ball of wool where O projects his front. This FoR can easily be primed by faceless Gs such as ball/tree/stone/pole, which lack intrinsic salient asymmetry, so that some salient asymmetry must be mapped onto them from an external source. According to Levinson (2003: 86–88), Relative FoR is applied according to different strategies: Reflection, Translation and 180° Rotation:



- 3 In Figure 1, the black cat is F1, the white cat F2 and the wool ball G. Reflection and 180° Rotation transfer the front/back axis from O (X) to G-wool ball (X1), so in Figure 1 “F1-black cat is in front of G-wool ball.” Translation treats the X1 axial system as a direct replica of X, so “F1-black cat is behind G-wool ball.” Reflection and Translation keep the right/left axis from X to X1 unchanged, so “F2-white cat is right of G-wool ball”; according to 180° Rotation “F2-cat is left of G-wool ball.”

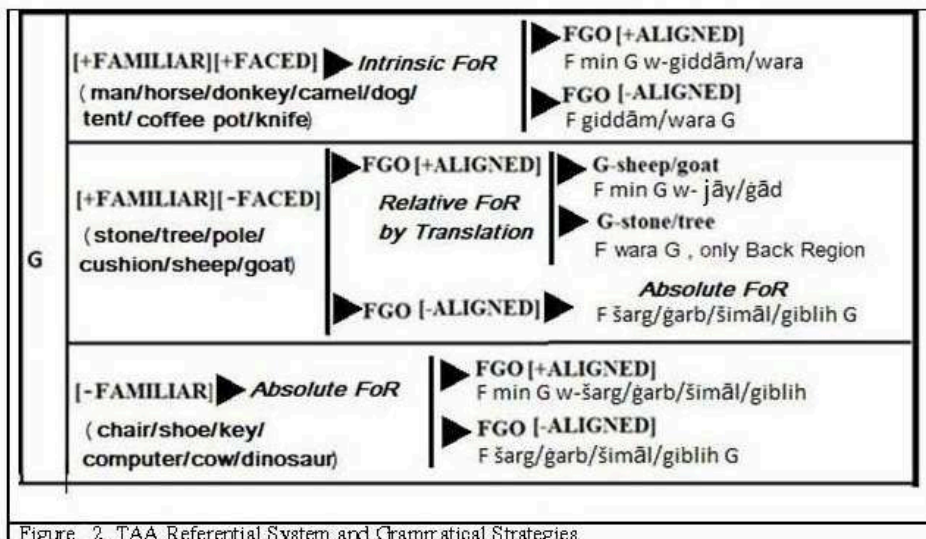
## 1.2. The Speakers' Community

- 4 The aṣ-Ṣāni' tribe traditionally inhabits the northern Negev. The elders were seminomadic shepherds prior to 1948, when the aṣ-Ṣāni' were temporarily relocated. Later, they moved back into a sector of their original land, where they built the village of Al-Ligiyih, the site of my fieldwork. Some elderly men still perform short-distance migrations with flocks. Their education consisted, at most, of some rudimentary Classical Arabic acquired by memorizing the Koran and some arithmetic. Women TAA speakers were mainly illiterate and monolingual in their tribal dialect, socially more inhibited, and thus less exposed to the outside world. Beginning in the 1950s, the Negev Bedouin underwent modernization, abandoning nomadism and acquiring formal education, while women became more mobile (Marx & Shmueli 1984; Kressel 1996). In the new, sedentary lifestyle, NAA speakers have been born and raised in contact with Hebrew, standard Arabic, and koineized Palestinian Arabic. After the establishment of Israel, the aṣ-Ṣāni' rapidly became familiar with the western lifestyle. NAA speakers are largely literate in Arabic and Hebrew. Many people now in their fifties and early sixties became professionals, educators, activists, politicians, and opinion-makers in Israel and abroad. Socio-cultural changes within the community, make the aṣ-Ṣāni' a particularly interesting case to study. Tribal language, especially spatial language, changed dramatically, often preventing mutual understanding between TAA and NAA speakers.
- 5 One of the most evident cross-generational differences is NAA's lack of cardinal directions, used widely in TAA, in small-scale descriptions (Cerqueglini 2015). When a TAA speaker asks an NAA speaker to look for something *ḡuwwa l-Ḥazānih, ḡarb*, "inside the locker, west," for example, the latter has difficulty processing this request, even in a familiar space. The situation is different for aṣ-Ṣāni' people aged 35 to 66, who still understand TAA spatial language, yet no longer use it actively. So, I consider all speakers younger than 67 as one NAA group in the current analysis.

## 2. Background Research and Study Scope

- 6 This study compares TAA and NAA strategies of linguistic representation of projective spatial relations. The parameters of change analyzed are prepositions and FoRs. Projective relations between FG on the horizontal plane occur on both the front/back and the right/left axis, as in "Marc is behind me" and "I am left of the car." The right/left axis is absent from TAA (Cerqueglini 2015). As Cerqueglini & Henkin (2017) state, TAA speakers distinguish right and left exclusively in relation to human hands. Right and left hands have high cultural and ritual importance, representing respectively positive and negative values. But right and left are not grammaticalized in TAA as spatial prepositions, and when any F is located laterally to any G, the relation is expressed by cardinal directions in accordance with the Absolute FoR. The prepositional use of "right" and "left" occurs in NAA, in accordance with the Relative FoR.
- 7 This description is rooted in previous studies (Cerqueglini 2015, 2016) on the spatial system of TAA. Tribal elders currently over 67 years old share a culture-specific system of prepositions and FoRs hardly predictable outside their age group. TAA selects for small-scale location from among the three FoRs according to a complex system of semantic properties culturally attributed to Gs and some axial distinctions. Distinctive

features of Gs are largely based on a domain- and culture-specific ontology in which Gs are classified more according to cultural saliency in the traditional world [FAMILIARITY] than to other metric and formal features, such as [FACEDNESS], i.e. [-SYMMETRY] along the front/back axis. In brief, right/left distinction is not used and lateral representations are processed in the Absolute FoR with all types of Gs. Intrinsic and Relative FoRs are exclusively applied to the front/back axis according to neatly distinguished sets of prepositions for each (“the FoR-based prepositional split.” See Cerqueglini 2016). The Intrinsic FoR is primed by [+FAMILIAR] [+FACED] Gs (man/horse/camel/coffee-pot/tent). Speakers do not recognize the front/back axis of [-FAMILIAR] Gs (chair/shoe/computer/cow/dinosaur), i.e. these Gs attract the use of the Absolute FoR independently of their axial asymmetries due to shape and/or function. The front/back axis of [+FAMILIAR][-FACED] Gs (tree/stone/sheep/goat/pole) is processed according to the Relative FoR by Translation when they are in the middle of O’s visual field, i.e. FGO [+ALIGNED], while they prime the Absolute FoR in every other position, i.e. FGO [-ALIGNED]. Intrinsic and Absolute FoRs show two sub-types, distinguished by the parameter FGO [+/- ALIGNED]. Figure 2 presents a graphic sketch of TAA referential practices:



- 8 The cultural dimension of the TAA referential system appears in the treatment of G-animals, whose anatomical partition is less relevant than their cultural saliency. So, unlike G-horse/camel/donkey, G-sheep/goat never attracts the Intrinsic FoR, but is treated according to the Relative and Absolute FoR, like G-stone/tree/pole/cushion, while G-dinosaur/cow, which is [-FAMILIAR], always primes the Absolute FoR. Furthermore, TAA has two sub-types for Intrinsic and Absolute FoRs: one is the basic strategy and the other marks O’s position in relation to FG array and is represented by the *min*-chain. The reported TAA strategies are illustrated in detail below in comparison to NAA responses to the same arrays.
- 9 The broad range of world-wide explorations of FoRs focuses primarily on establishing their typology and the relationship between linguistic FoRs, cognitive structures, and neural correlates (O’Keefe 1996). A cross-generational change in FoRs allows us to observe why or, at least, how a language changes and what happens to its speakers’ mind. This work is the first experimental description of the parameters of FoRs’ cross-

generational change within a genetically, culturally, and linguistically conservative Arab community. I focus on the comparison of linguistic spatial representations in TAA and NAA, leaving out cognitive results.

### 3. Methodology

- 10 The fieldwork took place between 2014 and 2017. Approximately 12,000 people from different tribes inhabit Al-Ligiyyih, among them some 300 aṣ-Ṣāni'. I planned an extensive cross-generational survey of spatial strategies, interviewing about 70 people, male and female, from elders to teenagers. Although I filmed the experiments, the informants forbade me to show their faces to the public. The experiments were inspired by *Man and Tree* pictures (Levinson *et al.* 1992) and *Ball and Chair* pictures (Bohnenmeyer 2008). Since the “director-matcher” modality and picture stimuli did not produce relevant responses, I adjusted the methodology, testing each informant separately, showing FG arrays of real and toy objects. Danziger & Gaskins (1993) found that in some languages people use different FoRs for real and toy objects. TAA speakers recognize toy objects as representing the original entities. I placed a series of FG arrays before the informants, asking *wīn F min G?*, “where (is) F in relation to G?” for each. Before every session, I agreed with the informants on the words designating the objects. Every session was divided into thematic sequences to test specific semantic categories ([FACEDNESS], [MOBILITY], [ANIMACY], etc.). FG were constantly changed to avoid responses that contained sequential topological information such as “F has come closer to/gone away from/moved to the other side of G.” The same questions on given arrays were repeated several times, not consecutively, while I changed my position. I minimized the presence of additional people or objects around the array. The camera was on my chest, moving with me, to avoid it becoming an external reference. The same arrays were tested in the informant’s house, in a traditional tent, and in an open space outside the village. Objects of testing were: spatial language pertaining to different categories of Gs; the effect of the axial conditions of F in relation to G; and of G and F in relation to the middle of O’s visual field, with various Gs and arrays. Thus, various Gs were set in different orientations and positions relative to O’s visual field: [+ALIGNED] to the center of O’s visual field or [-ALIGNED], e.g. perpendicular, so as to be seen by O from the side or set outside of the center of O’s visual field. In order to test Absolute representations, informants were individually transported by car to two different places, at least 30 kilometers apart, one for each cardinal axis (NS and EW). There, I asked them about the relative location of cities, villages, rivers, and mountains, aligned both to the speaker’s location along the same cardinal axis and along the other one. The landmark task was also performed at the informants’ homes and investigated the criterion FGO [+/-ALIGNED] in Absolute representations. This double check served to disambiguate the possibility that the layout of the village could prime O’s perspective. As TAA has been already extensively studied, here it is considered the control group.

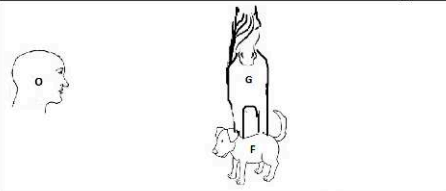
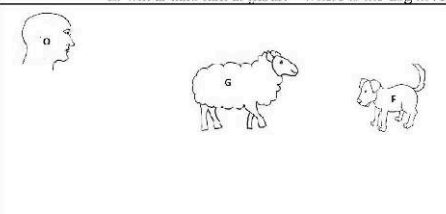
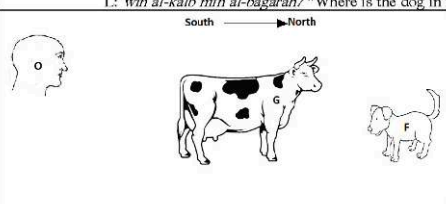
### 4. Data

- 11 I show a sequence of stimuli. Each stimulus represents a semantic category identified in the TAA control group and is shown together with two concrete responses that

represent the dominant responses given by TAA and NAA, respectively, for immediate comparison. Responses deviating from the average presented here were close to zero in TAA and scant in NAA. Their significance will be discussed in a separate study.

### 4.1. Animal Gs

- 12 In TAA, not all animal Gs have the same semantic properties in spatial representations. Prepositions and FoRs depend on two criteria: [+/-FAMILIARITY] and [+/-MOTOR INTELLIGENCE]. Unlike G-horse/donkey/camel/sheep/goat, G-cow/dinosaur are [-FAMILIAR], so they prime the Absolute FoR in all axial conditions, as anatomical partition of [-FAMILIAR] animals does not affect TAA spatial semantics. Unlike G-dinosaur, G-cow is known to TAA speakers, yet not culturally salient, as cows symbolize sedentary people. Within [+FAMILIAR] animal Gs, TAA speakers further distinguish [+MOTOR INTELLIGENT] G-horse/donkey/camel (including human G) from [-MOTOR INTELLIGENT] G-sheep/goat. The former prime the Intrinsic FoR in all axial conditions, while the latter are treated according to the Relative FoR by Translation when FGO [+ALIGNED] and according to the Absolute FoR when FGO [-ALIGNED]. In NAA, all animal Gs are treated according to the Intrinsic FoR, without axial conditions. Figure 3 shows cross-generational differences:

G-Horse L: <i>win al-kalb min al-faras?</i> "Where is the dog in relation to the horse?"	
	TAA O: <i>al-kalb giddām al-faras.</i> "The dog is in front of the horse." (Intrinsic FoR)
	NAA O: <i>al-kalb giddām al-faras.</i> "The dog is in front of the horse." (Intrinsic FoR)
G-Sheep L: <i>win al-kalb min al-ḥurūf?</i> "Where is the dog in relation to the sheep?"	
	TAA O: <i>al-kalb min al-ḥurūf w-ḡād.</i> "The dog is from the sheep and away" ("The dog is beyond the sheep"). (Relative FoR)
	NAA O: <i>al-kalb giddām al-ḥurūf.</i> "The dog is in front of the sheep." (Intrinsic FoR)
G-Cow L: <i>win al-kalb min al-bagarah?</i> "Where is the dog in relation to the cow?"	
	TAA O: <i>al-kalb šimāl al-bagarah.</i> "The dog is north of the cow." (Absolute FoR)
	NAA O: <i>al-kalb giddām al-bagarah.</i> "The dog is in front of the cow." (Intrinsic FoR)
Figure 3. Treatment of Different Animal Gs in TAA and NAA	

- 13 In NAA, the intrinsic value of anatomical partition prevails on the criterion of [+/-FAMILIARITY], strongly affecting TAA.

### 4.2. G-stone/tree/pole/cushion

- 14 G-stone/tree/pole/cushion are treated in TAA according to the Relative FoR by Translation when FGO [+ALIGNED] and according to the Absolute FoR when FGO [-ALIGNED], like G-sheep/goat. In NAA, all [-FACED] Gs, independently of [+/-

FAMILIARITY], prime the Relative FoR by Reflection on the front/back axis and by Translation on the right/left axis:

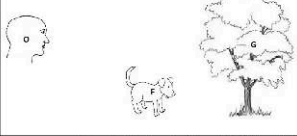
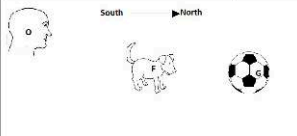
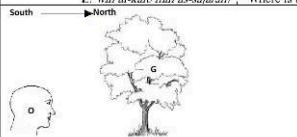

Front-Back Axis	
T: <i>wīn al-kaṭb min al-ṣajarah?</i> "Where is the dog in relation to the tree?" 	
TAA O: <i>al-kaṭb wara al-ṣajarah.</i> "The dog is behind the tree." (Relative FoR by Translation)	NAA O: <i>al-kaṭb giddām al-ṣajarah.</i> "The dog is in front of the tree." (Relative FoR by Reflection)
T: <i>wīn al-kaṭb min al-kurah?</i> "Where is the dog in relation to the ball?" 	
TAA O: <i>al-kaṭb gabil al-kurah.</i> "The dog is south of the ball." (Absolute FoR)	NAA O: <i>al-kaṭb giddām al-kurah.</i> "The dog is in front of the ball." (Relative FoR by Reflection)
Lateral Axis	
T: <i>wīn al-kaṭb min al-ṣajarah?</i> "Where is the dog in relation to the tree?" 	
TAA O: <i>al-kaṭb ṣarg al-ṣajarah.</i> "The dog is east of the tree." (Absolute FoR)	NAA O: <i>al-kaṭb yamin al-ṣajarah.</i> "The dog is to the right of the tree." (Relative FoR by Translation)
T: <i>wīn al-kaṭb min al-kurah?</i> "Where is the dog in relation to the ball?" 	
TAA O: <i>al-kaṭb ṣarg al-kurah.</i> "The dog is east of the ball." (Absolute FoR)	NAA O: <i>al-kaṭb yamin al-kurah.</i> "The dog is to the right of the ball." (Relative FoR by Translation)

Figure 4. Treatment of [-FACED] Gs in TAA and NAA

- 15 In Figure 4, we notice the absence of the criteria of [+/- FAMILIARITY] from the NAA system and the presence of two types of Relative FoR, namely Reflection for the front/back axis and Translation for the right/left axis, that are also recognized for [-FACED] Gs. Unlike TAA, NAA uses *giddām* in the Relative FoR applied by Reflection.

### 4.3. [+FACED] [+/- FACING-EACH-OTHER] FG

- 16 The front region of the Intrinsic FoR, i.e. of [+FAMILIAR][+FACED] Gs (man/horse/camel/tent/coffee-pot), is a culturally salient space in TAA represented by a set of prepositions: *gabl* when FG [+FACING-EACH-OTHER], *giddām* when FG [-FACING-EACH-OTHER], (*a*)*wijh* when F is not prototypically and inappropriately too close to G's front. In NAA, the function of (*a*)*wijh* remains unchanged, while the distinction between *gabl* and *giddām* works differently. *gabl* is no longer used with all [+FAMILIAR][+FACED] Gs when FG [+FACING-EACH-OTHER], but only with FG [+HUMAN][+FACING-EACH-OTHER], while *giddām* is applied in all other cases, as shown in Figure 5:



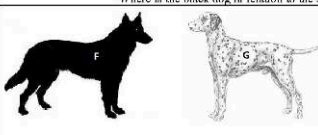
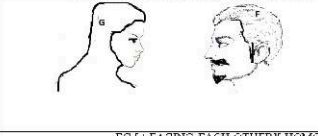

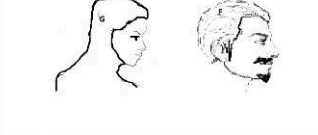
FG [+FACING-EACH-OTHER][+HOMOGENEOUS]	
l: <i>win al-kalb al-aswad min al-kalb al-abraq?</i> "Where is the black dog in relation to the spotted dog?"	
	TAA O: <i>al-kalb al-aswad gabi al-kalb al-abraq.</i> "The black dog is in front of the spotted dog." NAA O: <i>al-kalb al-aswad giddām al-kalb al-abraq.</i> "The black dog is in front of the spotted dog."
l: <i>win az-zalamah min al-bint?</i> "Where is the man in relation to the girl?"	
	TAA O: <i>az-zalamah gabi al-bint.</i> "The man is in front of the girl." NAA O: <i>az-zalamah gabi al-bint.</i> "The man is in front of the girl." (FG [+HUMAN])
FG [+FACING-EACH-OTHER][HOMOGENEOUS]	
l: <i>win al-kalb min az-zalamah?</i> "Where is the dog in relation to the man?"	
	TAA O: <i>al-kalb giddām az-zalamah.</i> "The dog is in front of the man." NAA O: <i>al-kalb giddām az-zalamah.</i> "The dog is in front of the man."
FG [+FACING-EACH-OTHER]	
l: <i>win az-zalamah min al-bint?</i> "Where is the man in relation to the girl?"	
	TAA O: <i>az-zalamah giddām al-bint.</i> "The man is in front of the girl." NAA O: <i>az-zalamah giddām al-bint.</i> "The man is in front of the girl."

Figure 5. *giddām* and *gabi* in TAA and NAA

- 17 As shown by its use of *gabi*, NAA has a finer sensitivity to F's importance in selecting FoR and prepositions. Indeed, *gabi* is used in NAA only when FG face each other and are both [+HUMAN]. NAA distinguishes the special criterion [+HUMAN] among other [+FACED] Gs, such as animals. Furthermore, the use of *giddām* within both Intrinsic and Relative FoRs indicates that the prepositional split is absent from NAA, while in TAA each preposition is used exclusively with one FoR, except *wara*, which is applied in both Intrinsic and Relative FoRs; *giddām* is used only in the Intrinsic FoR.

#### 4.4. FGO [+/- ALIGNED]: Intrinsic and Absolute Sub-Types in TAA

- 18 TAA applies Intrinsic and Absolute FoRs by means of two distinct grammatical strategies, i.e. "basic strategy" and "min-chain":
- a. Intrinsic: "The dog is in front of the horse"  
basic strategy: *al-kalb giddām al-faras*; min-chain: *al-kalb min al-faras w-giddām*;
  - b. Absolute: "Kseyfe is east of Beer Sheva"  
basic strategy: *Ksīfih šarg Bir Sabi'*; min-chain: *Ksīfih min Bir Sabi' w-šarg*.
- 19 In a. and b., the English translation of both strategies is the same, as English cannot encode the distinction entailed in the use of basic strategy vs. min-chain, namely the axial condition of alignment between O and the array, i.e. FGO [+/-ALIGNED]. The cases above are represented in Figure 6:

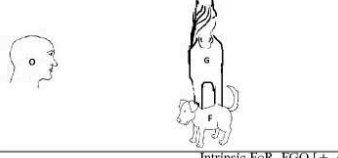
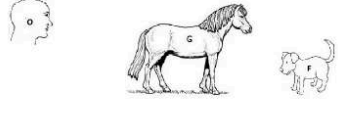
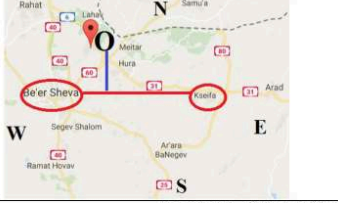

Intrinsic FoR, FGO [-ALIGNED]	
L: <i>wīn al-kalb min al-faras?</i> , "Where is the dog in relation to the horse?"	
	<p style="text-align: center;">TAA</p> <p>O: <i>al-kalb gidāim al-faras.</i> "The dog is in front of the horse."</p>
	<p style="text-align: center;">NAA</p> <p>O: <i>al-kalb gidāim al-faras.</i> "The dog is in front of the horse."</p>
Intrinsic FoR, FGO [+ ALIGNED]	
	<p style="text-align: center;">TAA</p> <p>O: <i>al-kalb min al-faras w-gidāim.</i> "The dog is from the horse and in front" ("The dog is in front of the horse").</p>
	<p style="text-align: center;">NAA</p> <p>O: <i>al-kalb gidāim al-faras.</i> "The dog is in front of the horse."</p>
Absolute FoR, FGO [-ALIGNED] (O is in Al-Liglyyih)	
L: <i>wīn Kṣīfih min Bir Sabīf?</i> , "Where is Kseyfe in relation to Beer Sheva?"	
	<p style="text-align: center;">TAA</p> <p>O: <i>Kṣīfih šārg Bir Sabīf.</i> "Kseyfe is east of Beer Sheva."</p>
	<p style="text-align: center;">NAA</p> <p>O: <i>Kṣīfih šārg Bir Sabīf.</i> "Kseyfe is east of Beer Sheva."</p>
Absolute FoR, FGO [+ ALIGNED] (O is in Arad)	
	<p style="text-align: center;">TAA</p> <p>O: <i>Kṣīfih min Bir Sabīf w-šārg.</i> "Kseyfe is from Beer Sheva and east", ("Kseyfe is east of Beer Sheva").</p>
	<p style="text-align: center;">NAA</p> <p>O: <i>Kṣīfih šārg Bir Sabīf.</i> "Kseyfe is east of Beer Sheva."</p>

Figure 6. Intrinsic and Absolute FoRs: Distribution of Basic Strategies vs. Min-Chains

- 20 TAA’s rich referential system includes O’s perspective even in Intrinsic and Absolute FoRs considered O-independent strategies (Levinson 2003). *Min*-chains are absent from NAA, which does not apply the criterion FGO [+/-ALIGNED].

#### 4.5. Absence of Absolute FoR and Use of Right/Left in NAA

- 21 NAA uses the Absolute FoR exclusively on a large scale, like modern European languages. In TAA the Absolute FoR can be considered the default strategy that solves all problematic cases of [-FAMILIAR] Gs and non-prototypical axial conditions, as in Figures 3 and 4. One of the basic applications of the Absolute FoR in TAA is the representation of the lateral axis of all Gs, a practice unknown in NAA, which uses the prepositions “right” and “left.” As Figure 4 shows, “right” and “left” are projected by NAA speakers onto Gs according to the Relative FoR by Translation, even when Gs are inherently asymmetric along the right/left axis, as in Figure 7:

G [+ FACED] Looking toward O L: <i>wīn al-kalb min az-zalamah?</i> , "Where is the dog in relation to the man?"	
	TAA O: <i>al-kalb šarg az-zalamah.</i> "The dog is east of the man." (Absolute FoR)
	NAA O: <i>al-kalb yamīn az-zalamah.</i> "The dog is to the right of the man." (Relative FoR by Translation)
G [- FACED] L: <i>wīn al-kalb min aš-šajarah?</i> , "Where is the dog with respect to the tree?"	
	TAA O: <i>al-kalb šarg aš-šajarah.</i> "The dog is east of the tree." (Absolute FoR)
	NAA O: <i>al-kalb yamīn aš-šajarah.</i> "The dog is to the right of the tree." (Relative FoR by Translation)
Figure 7. NAA Projection of the Right/Left Axis onto [+ FACED] and [- FACED] Gs and TAA Solutions in the Same Cases	

- 22 The lack of the criterion [+/- FAMILIARITY] and the use of right/left distinction determine the absence of the Absolute FoR from NAA's referential system.

## 5. Discussion and Conclusion

- 23 The differences between TAA and NAA described here can be summarized as follows: TAA uses the Absolute FoR in small-scale descriptions in problematic cases of [- FAMILIAR] Gs, in non-prototypical axial conditions, and to supply the lateral axis. NAA uses the Absolute FoR only on a geographic scale: the criterion of [+/- FAMILIARITY] is not applied and the right/left distinction is fully grammaticalized. In particular, the right/left axis is projected in NAA according to the Relative FoR by Translation and, when G [- FACED], the front/back axis according to Reflection. TAA applies the Relative FoR only by Translation to [+FAMILIAR][- FACED] Gs. The prepositional split that characterizes TAA is absent in NAA, where the selection of prepositions works according to different criteria (Figure 5). In particular, NAA distinguishes [+HUMAN] Gs within the set of [+FAMILIAR][+MOTOR INTELLIGENT] Gs where they were fully included in TAA. Intrinsic and Absolute referential sub-types entailing O's perspective (*min*-chains) identified in TAA are absent in NAA (Figure 6).
- 24 Factors that trigger changes in spatial representations within the same genetic and linguistic group are multiple. Cognitive linguistic studies (Li & Gleitman 2002) stress that the acquisition of writing practices can significantly enhance the right/left distinction, as can driving cars and moving within the geometric paths of urban spaces instead of moving freely along individual trajectories. The impact of linguistic contact on spatial representations is clear. After 1948, aṣ-Šāni' people gradually became becoming multilingual in Standard Arabic, Palestinian koineised Arabic, Hebrew, and European languages such as English, German, or Italian, whose semantic features are

similar to those shown here for NAA. The transition to a sedentary lifestyle also contributed to these changes. According to Brown (2006), the acquisition of specific spatial linguistic (and cognitive) strategies is greatly influenced by a consistent cultural organization of space in every aspect of life. The abandonment of traditional garments with their right/left symmetric decorative patterns and interaction with new technologies, telephones, computers, cars, and electrical appliances have primed the extension of the Intrinsic FoR from a restricted set of Gs, as in TAA, to a more generalized and intensive use in NAA. Ultimately, while TAA referential and prepositional strategies are based more on cultural criteria than on geometric and metric features, the opposite is true for NAA, which is similar to most modern languages spoken in the globalized world.

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## ABSTRACTS

I compare linguistic representations of projective spatial relations in two varieties of aṣ-Ṣāni' Arabic: Traditional aṣ-Ṣāni' Arabic (TAA), spoken by those over age 67, and New aṣ-Ṣāni' Arabic (NAA), spoken by the rest of the tribe. My comparison pertains to spatial prepositions and Frames of Reference (FoRs). FoRs – Intrinsic/Relative/Absolute – are semantic strategies used to project coordinate systems onto spatial arrays in order to locate an object F (figure) in relation to another object G (ground) (Levinson 2003). TAA selects the appropriate FoR in context in accordance with Gs' cultural properties and axial constraints: Intrinsic FoR applies only to [+FAMILIAR][+SHAPED] Gs (man/horse/camel/tent/coffee-pot) with prepositions *giddām/gabl/('a)wijh*, while ('a)wijh/gabl serve when FG [+FACING-EACH-OTHER] and *giddām* when FG [-FACING-EACH-OTHER]. Relative FoR is applied via Translation to [+FAMILIAR][-SHAPED] Gs (stone/tree/pole/pillow); Absolute FoR is used with [-FAMILIAR] Gs (cow/dinosaur/shoe/chair). Relative and Absolute FoRs are represented by two grammatical strategies: basic prepositions (F *wara/šarg* G) and "min-chains" (F *min* G *w-ḡāy/gād/šarg*) following Gs and axial distinctions. Each FoR correlates exclusively to certain prepositions (prepositional split). NAA loses traditional ontology of Gs and axial oppositions; prepositional split regresses: *gabl* applies only when FG [+HUMAN] [+FACING-EACH-OTHER]; *giddām/('a)wijh* serve Intrinsic and Relative FoRs, on all Gs, without axial constraints; Absolute FoR is used only on geographic scale; Relative FoR is applied via Translation and Reflection; the opposition between basic prepositions vs. *min*-chains in Absolute and Relative FoRs disappears, as *min*-chains vanish. Beginning with the establishment of the State of Israel and through the early 1950s, the generational gap between TAA and NAA shows how material culture, formal education, language contact, and life style modify the semantics of space and its experience.

## INDEX

**Keywords:** Spatial Frames of Reference; Spatial Prepositions; Bedouin Arabic; Cross-Generational Semantic Change; Cultural Ontologies

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