SPACE IN KINSHIP

FRAMES OF REFERENCE AND KINSHIP TERMINOLOGY SYSTEMS

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The content of the spatial relationships module has been extensively studied and a fundamental part of such content is the concept of frame of reference; that is, a set of coordinates that generates an oriented space within which relationships between objects are established. There are three major types (and six subtypes) of frames of reference: the relative, the intrinsic, and the absolute. The content of the spatial relationships module has been proposed as being foundational to the development of both language and cognition. In this work I explore the possibility that the various types of frame of reference participate in the construction of the basic patterns of the kinship terminology systems: descriptive-Sudanese, bifurcate merging-Iroquois (also Crow and Omaha), classificatory and/or generational-Hawaiian (also classificatory-Dravidian), and lineal-Eskimo.

Introduction

The content of the spatial relationships module has been extensively studied and a fundamental part of such content is the concept of Frame of Reference (from now on, FoR), that is, a set of coordinates that generates an oriented space within which relationships between objects are established. There are three major types (and six subtypes) of FoR: the relative FoR, the intrinsic FoR, and the absolute FoR (Levinson, 2003; Bennardo, 2009). The content of the spatial relationships module has been proposed as being foundational to the development of both language and cognition (Clark, 2010; Mandler, 2008; Mix, Smith, and Gasser, 2010; Schubert and Maas, 2011; Tversky, 2010; Landau and Hoffman, 2012). In this work I explore the possibility that the various types of FoRs participate in the construction of the basic patterns of the kinship terminology systems (from now on, KTS): descriptive-Sudanese, bifurcate merging-Iroquois (also Crow and

Omaha), classificatory and/or generational-Hawaiian (also classificatory-Dravidian), and lineal-Eskimo.

Space in Mind

The role that space plays in cognitive architecture and development has been widely suggested (Gattis 2001; Jackendoff and Landau 1992; Jackendoff 2002; Lakoff 1987; Landau and Hoffman 2012; Levinson 2003; Mandler 2008; Mix, Smith, and Gasser 2010; Schubert and Maass 2011; Slobin, *et al*. 2010; Talmy 2000a, b; Tversky 2010). For example, Clark (2010) argues that space and language perform similar cognitive functions, namely, they both provide a means to reduce the complexity of environmental representations. Spatial relations ground language; Spivey, Richardson, and Zednik (2010) convincingly show how abstract verbs are understood in terms of spatial relations (2010: 33). In addition to the contribution of spatial information to the construction of language, the idea that "abstract concepts are connected to space at a deep, unconscious level—literally the product of neural juxtaposition"—(Mix, Smith, and Gasser 2010: 5) leads one to expect a very early reliance on spatial information in cognitive development. This is exactly what Mandler (2008) demonstrates in her research on cognitive development in pre-verbal children.

Following upon recognition that spatial relationships play a fundamental role in the development of cognition, in the formation of concepts (see also the relationship between space and time, e.g., Boroditsky 2000; Bender, Beller, and Bennardo 2010; Ramscar, Matlock, and Boroditsky 2010), and in the construction of language, researchers have focused on the role it plays in social cognition. "The results converge in the insight that much of social thinking builds upon spatial cognition" (Schubert and Maas 2011: 3). In other words, it is now being demonstrated that "space plays a role for thinking that goes far beyond a medium for communication. Indeed, it seems that it can become the medium of thinking itself, with spatial and social cognition being closely and intrinsically intertwined" (Schubert and Maas 2011: 3).

Another relevant finding in support of the role of space in mind is the one presented by Shimizu's (2000a, 2000b, 2011) work on the construction of self; i.e., proprioception. Shimizu shows how the cultural models of self in the US, Japan, and China reflect spatial features (e.g., focus on other-than-ego instead of on ego) in their structural compositions that correlate well with the way each of these groups represent spatial relationships (Shimizu 2009; see also Nisbett 2003; D'Andrade 2008). In addition, Bennardo (2009) showed how a Tongan preferential organization of the representation of spatial relationships is replicated in other domains of knowledge, including time, possession, kinship, and social relationships. He proposed that the way knowledge about space is organized; i.e., a foundational cultural model, contributes to the generation of cultural models in other domains (see also Shore 1996). The homology across different domains of knowledge—with space as the source domain—has by now not only been suggested but has been abundantly demonstrated.

Since space—and the relationships that constitute its representation—is a very early contributor to the development of cognition, concept formation, and language, and since the same perception-action couplings are at work in both spatial and social cognition (see Tversky 2010), then, it is plausible to expect that space may play a relevant role in the construction of other strictly related knowledge representations such as kinship

knowledge—an essential component of social cognition. Thus, it should be possible to find major characteristics of the spatial relationships cognitive module, e.g., FoRs, replicated in the construction of basic patterns of KTSs.

Typology of Frames of Reference (FoRs)

Fundamental to the content of the spatial relationship mental module (see Jackendoff, 2007) is the concept of Frame of Reference (FoR). A FoR is a coordinate system (three intersecting axes: vertical, sagittal, and transversal) used to construct an oriented space within which spatial relationships among objects are expressed. There are three major types of FoR: relative, intrinsic, and absolute (see Levinson, 2003; and Bennardo, 2009). A relative FoR is centered on a speaker and it remains centered on the speaker when the speaker moves; for example, when one says, "The ball is in front of me." An intrinsic FoR is centered on an object and it remains centered on the object when the object moves; e.g., "The ball is in front of the car." An absolute FoR uses fixed reference directions; e.g. north, south, east, west, as in "The town is south of the river."

I have modified Levinson's (2003) typology of FoRs and kept his terminology. The major difference between our typologies is the way we define the conceptual content of the relative FoR. Levinson (2003: 43) states:

> It [the relative FoR] presupposes a 'viewpoint' V (given by the location of a perceiver in any sensory modality), and a figure and a ground distinct from V. It thus offers a triangulation of three points, and utilizes coordinates fixed on V to assign directions to figure and ground. […] the 'viewer' [V or viewpoint] need not be ego and need not be a participant in the speech event.

Even though it is linguistically possible to express separation between ego and V—Levinson's (2003: 43) example is "Bill kicked the ball to the left of the goal"—both the research on the visual system (see Marr, 1982; Biederman, 1988; Hubel 1988) and on the developmental sequence (Clark 1970; Moore 1973; Liben, Patterson & Newcombe 1981; Stiles-Davis, Kritchevsky, & Bellugi 1983; Cohen 1985; Pick 1993) point towards the primacy of a stage in which viewer V and Ground G are conflated on ego. As a matter of fact, it is exactly the capacity to assign independent sets of coordinates to objects that marks one of the milestones of cognitive development (see also Piaget and Inhelder, 1956). Consequently, unlike Levinson, I define a relative FoR as anchored on ego/speaker/cognizer. Thus, in Levinson's example "Bill kicked the ball to the left of the goal", there are two possible interpretations: one, the stated "left of the goal" is the left of the speaker (thus, a relative FOR is used); or two, the stated "left of the goal" is that of the goal itself (thus, an intrinsic FOR is used).

The Relative FoR

A relative FoR is a system of coordinates centered on the speaker. From the speaker three axes are constructed, one vertically and two on the horizontal plane: the front-back, or sagittal, axis and the left-right, or transverse, axis. Any object in the space defined by these axes will have a location described in relation to the speaker. If the speaker moves in any direction, the axes will move accordingly, keeping their origin on the speaker. The speaker necessarily (ontogenetically) maps these axes onto him/herself. In other words, the speaker can be thought of as the point of origin for the space determined by these three axes. As such, the individual implies a field (space) around him/herself. This field

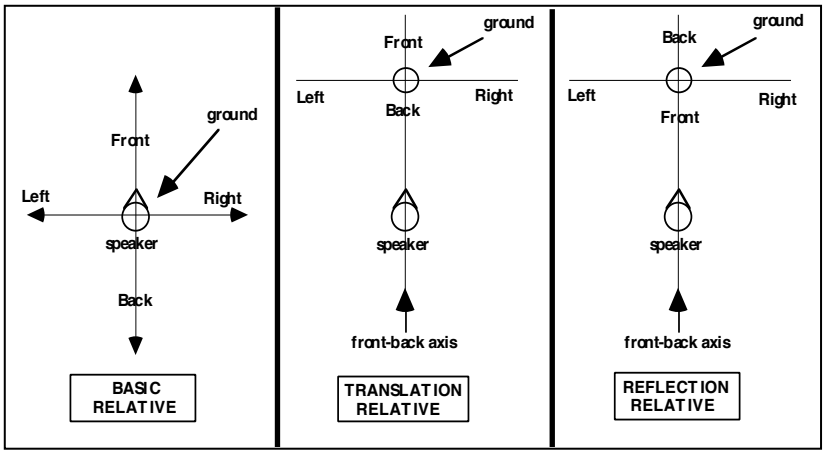

Figure 1: The 3 Subtypes of the relative FoR (from Bennardo 2009: 59).

will be oriented by the orientation of the three axes just mentioned with respect to the individual. The orientation process takes into consideration several body characteristics, both static (orientation of face, eyes, etc.) and ambulatory (habitual direction of movement).

The Translation and the Reflection Subtypes of the Relative FoR

The appearance of two objects in the field of the speaker creates the double possibility of treating both objects in direct relationship with the speaker, thus, continuing to map the axes to the speaker, or to relate one object to the other object. The latter case entails the possibility of assigning orienting axes (or a set of coordinates) to one of the objects. This object then assumes the same location function that the speaker has performed so far (this object is called the "ground", see Talmy 1983: 230). In a conservative fashion, the axes mapped onto this object (ground) are analogous to the corresponding axes that the speaker maps onto him/herself. In other words, the orientation of the field—which includes both the speaker and the object—has not changed. The other object (referred to as "figure", see Talmy 1983: 232) will then be described in relation to the, by now, oriented object.

However, something has changed in this process. The front or 'away' axis has been divided into two parts—one part between the speaker and the object and one part beyond the object—by the first object or ground (see Figure 1, middle). Then, two further possibilities are created. The ground's front-back axis can keep exactly the same orientation as the speaker's front-back axis. Thus, we get the 'translation' subtype of the relative FoR (see Figure 1, middle). Or, the front and back assignment can be flipped so that the front of the oriented object (or ground) faces the speaker, thus, yielding the 'reflection' subtype of the relative FoR (see Figure 1, right).

Speech communities commonly using the translation subtype of the relative FoR are extremely rare. To my knowledge, the only three documented cases of communities like this are the Hausa speaking people (Hill 1982), the Marquesans (Cablitz 2006), and the Tongans (Bennardo 2009).

In both ‘translation’ and ‘reflection’ subtypes, the assignments of the left and right sides remain congruent with those of the speaker. In other words, the oriented object or ground is not yet considered as a point with an oriented field of its own; rather, it is still tied to the field of the speaker. Notice, moreover, that it is not possible to construct the ‘translation’ and ‘reflection’ subtypes without first activating (consciously or unconsciously) a ‘basic’ relative FoR (see Figure 1, left). In fact, there would be no axis to ‘translate’ or ‘reflect’ without having already constructed such an axis in advance, which requires using a relative FoR. Figure 1 illustrates graphically the three subtypes of the relative FoR discussed so far: ‘basic’ relative, ‘translation’ relative, and ‘reflection’ relative.

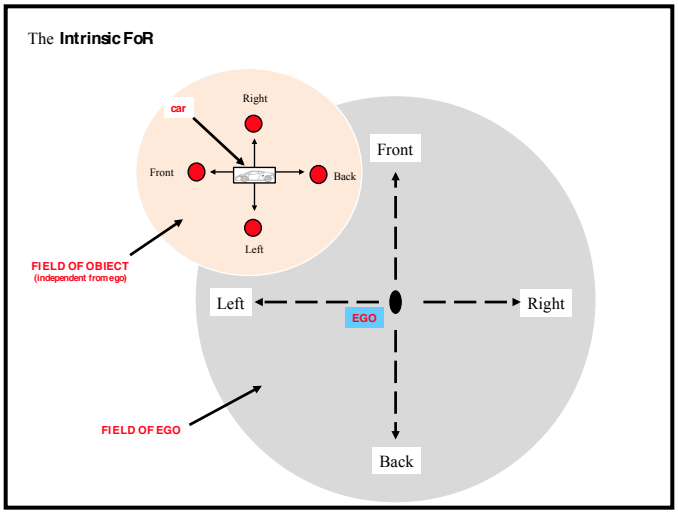

Figure 2: The intrinsic FoR.

The Intrinsic FoR

An intrinsic FoR is a system of coordinates centered on an object that is not the speaker. Like the relative system, but now from the object, three oriented axes are constructed, one vertically and two on the horizontal plane. Any object in the space whose location is defined by these axes is being described in relation to the oriented object from which the space was constructed. If the oriented object moves in any direction, the axes will move accordingly, keeping their origin and assigned orientation on it. The front of a car or animal, for example, is determined and addressed independently from the speaker and addressee's orientations.

What differentiates the relative and the intrinsic systems is that with the latter the axes are not centered on the speaker, but on an object. However, we have already seen that this also occurs with the ‘translation’ and ‘reflection’ subtypes of the relative FoR. So what is it that distinguishes these latter two subtypes of the relative FoR from the intrinsic FoR?

The difference lies in whether the oriented field that is constructed for the oriented object or ground is completely independent of the relative orientation based on the speaker. It is, in other words, a new field separate from the speaker’s field. This difference has

important consequences, the most relevant of which is that the description of the spatial relationship between two objects is freed from any necessary reference to the speaker. Thus, the hearer will not need to be present in the context of language production, or evenmore, will not need to know where the speaker was or is located at the time of language production, in order to fully interpret the linguistic expression. Figure 2 graphically illustrates the intrinsic FoR.

The Absolute FoR

An absolute FoR is a system of axes neither centered on the speaker nor on an object. First, the vertical axis is constructed in the same way as for the other two FoRs. Second, on the horizontal plane one or more objects (e.g., regions, points, landmarks) in the environment (or field) of the speaker are chosen as fixed (socially agreed on) orienting points. Third, either the location of speaker or any object in his/her field is put into relationship with these chosen objects or fixed points (see Figure 3, graphs with red nodes).

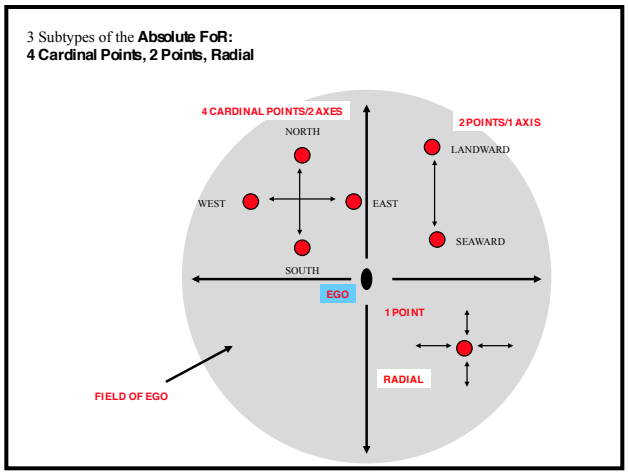

Figure 3: The 3 subtypes of the absolute FoR.

The first well-known subtype of the absolute FoR is the system that uses cardinal points, that is, the east-west-north-south system typical of many familiar Indo-European languages (and of many others). Another subtype uses only one axis, e.g., landward-seaward directions, typical of many Oceanic languages (Bennardo, 1996; Hill 1997; Ozanne-Riviere 1997; Wassmann and Dasen 1998; see also Haugen 1957, for an Icelandic example). In many non-Oceanic cases, the environmental features selected differ profoundly from land or sea, and may range from a mountain to a lake or from a river to a building. There is a third subtype of the absolute FoR that I have labeled 'radial' (see Bennardo 2009). When using a radial subtype of the absolute FoR, only one fixed point of reference is chosen in the field of ego and movement is expressed as being towards it (centripetally) or away from it (centrifugally).

A Minimal Typology of Cultural Models (CMs)

FoRs represent an organization of basic spatial concepts, e.g., point, axis, and direction (see Levinson 2003: 39; and Bennardo 2009: 179, for two similar proposals). Such a min-

imal type of mental knowledge construction is also called a mental model (Johnson-Laird 1983, 1999). When mental models are shared within a community, they are called cultural models (from now on, CM) (Holland and Quinn 1987; D'Andrade 1995; Bennardo and De Munck 2014).

An important distinction within CMs is that between a foundational CM and a molar CM. The former refers to simpler and more abstract CMs that organize only few bits of knowledge during the earliest stage of cognitive development, such as those within ontological domains; e.g., space (including FoRs), time, and quantity. They are out of conscious awareness and it is very difficult to bring them to consciousness. The latter refer to larger—in terms of quantity of knowledge and number of relationships—and less abstract CMs that may encompass knowledge from a variety of source domains—though, not necessarily.

Molar CMs are also mostly out of awareness, but can be brought to consciousness either by others (e.g., researchers) or on occasion by one's self. Importantly, in the same way in which foundational CMs participate in the construction of molar CMs, some of these latter can also act as building blocks for the construction of other molar CMs (see Holland and Quinn 1987; Strauss and Quinn 1997; Bennardo and De Munck 2014).

Radiality in Tongan Space and Kinship

In 2009, I suggested that a foundational CM named "radiality" represents a cognitive molecule that characterizes Tongan (Polynesia) cognition (Bennardo 2009: 173). Radiality implies an organization (centripetal or centrifugal) of knowledge around a point in the field of ego (other-than-ego) and with consequent back-grounding of ego and foregrounding of other-than-ego. I found radiality to be the preferred subtype of the absolute FoR and that it represents a major, albeit minimal, component of the Tongan spatial relationship module. Next, I showed how this preference is replicated in the construction of other Tongan molar CMs in a number of domains of knowledge, e.g., time, possession, and traditional religion. Consequently, I felt justified in proposing radiality as a Tongan foundational CM.

Importantly for the present work, and in collaboration with Dwight Read, I investigated the Tongan kinship terminology to see if the proposed Tongan foundational CM of radiality occurs in the Tongan KTS (Bennardo and Read 2007), and if so, in what capacity. According to standard kinship typologies, the latter is generally considered to be a Hawaiian kinship terminology system with some minor differences.

Bennardo and Read showed that the Tongan preference for organizing knowledge in a radial manner is replicated in the kinship domain. Lending support to considering radiality as a foundational CM in the Tongan KTS is that Tongan kinship relations and terms are constructed by starting from parent, sibling and self, not from parent and self as is the case for the way descriptive kinship terminological systems such as American are constructed (Read 2007).

Later, we demonstrated empirically that this structural organization of the Tongan kinship domain results in performances on kinship tasks that are more correct and faster when a task requires an individual to start reasoning from a sibling instead of from self/ego (Bennardo and Read 2011). The opposite finding characterizes the American subjects performing in the same tasks. We attributed the results to the use of the relative FoR by

Americans and to the use of the radial subtype of the absolute FoR for Tongans, that is, the use of the foundational CM of radiality.

Once this preferential way of organizing knowledge—specifically, the one rooted in the spatial relationships module such as radiality—is found replicated in the KTS that a specific cultural community uses, then it becomes possible to hypothesize that the domain of space—and its possible preferences for one or more FoRs—participates in the construction of the kinship domain, more precisely, the KTS.

Typology of Kinship Terminology Systems (KTSs)

Since Morgan and later Murdock and Lévi-Strauss, just to mention three 'fathers' of kinship studies, kinship terminologies have been classified in a number of types. These types have been refined and elaborated over the years and it is sometimes difficult to recognize them as they were originally proposed. Nonetheless, in order to investigate the possibility of a relationship between the content of the space module and that of the kinship domain, I find it useful and appropriate to use the widely accepted 'classical' typology of KTSs (but see Read 2013 for a substantially different typology based on the generative logic of kinship terminologies).

Sudanese Kinship Terminologies

These are the most descriptive system, distinguishing kin by genealogical distance, sex and kin type relation. Siblings are distinguished from cousins, and different terms are used for each type of cousin (i.e. father's brother's children, father's sister's children, mother's sister's children and mother's brother's children).

Dravidian/Iroquois Kinship Terminologies

Technically, these are bifurcate (maternal kin are terminologically distinguished from paternal kin) merging (father, father's brother, father's father'r brother' son, .. are all referred to by the same kin term; mother, mother's sister, mother's mother's sister's daughter, … are all referred to by the same kin term) terminologies. In addition to sex and generation, the terminologies also distinguish between siblings of the same or the opposite sex in the parental generation, and between their respective children. Children of a parent's same sex sibling are referred to as siblings, whereas the children of a parent's opposite sex sibling are referred to as cousins (technically, cross-cousins). In Dravidian terminologies, cross-cousins (biological or classificatory) are preferential marriage partners, if marriages all follow this preference, ego's mother's brother is ego's spouse's father and ego's father's sister is ego's spouse's mother.

Crow Kinship Terminologies

These are similar to Dravidian/Iroquois terminologies. In addition, they asymmetrically distinguish between mother's side and father's side. There are more terms for relatives on the mother's side of the family than on the father's side. Thus, a Crow kinship system is like a Dravidian/Iroquois system, with the addition that a number of relatives belonging to one's father's matrilineage are grouped together, ignoring generational differences, so that the same term is used for both one's father's sister and one's father's sister's daughter, etc.

Omaha Kinship Terminologies

Also similar to Dravidian/Iroquois terminologies. These are the opposite of Crow kinship terminologies.and so these terminologies distinguish between mother's side and father's side in an opposite way than does the Crow system. There are more terms for relatives on the mother's side of the family than for relatives on the father's side. Thus, Omaha kinship is also like Dravidian/Iroquois kinship, with the addition that a number of relatives belonging to one's mother's patrilineage are grouped together, ignoring generational differences, so that the same term is used for both one's mother's brother and one's mother's brother's son, etc.

Hawaiian Kinship Terminologies

The Hawaiian terminologies only distinguish among kin according to sex and generation. For example, the same term is used to refer to mother, mother's sister, and father's sister, whereas a different term is used to refer to father, father's brother, and mother's brother. In addition, the same term is used to refer to siblings and cousins.

Eskimo Kinship Terminologies

It has both classificatory and descriptive terms. In addition to sex and generation, these terminologies also distinguish between lineal relatives (those related directly by a line of descent) and collateral relatives (those related by blood, but not directly in the line of descent). Lineal relatives have highly descriptive terms. Collateral relatives have highly classificatory terms. Siblings are distinguished from cousins, while all types of cousins are grouped together.

Frames of Reference (FoRs) in Kinship Terminology Systems (KTSs)

I now examine the KTSs that I have just briefly described and will consider if, and how, the various types of FoR I introduced earlier participate in the construction of these basic patterns of KTSs. If this participation can be demonstrated, then, the suggestion of a fundamental homology between the two domains of space and kinship would be supported. This homology implies a generative role for FoRs that produce KTSs. Before starting the presentation of the analyses, I want to point out that a FoR represents what I have called a foundational CM in one of the ontological domains, i.e., space. A KTS instead stands for a molar CM. In fact, the latter stands for the organization of a large quantity of knowl-

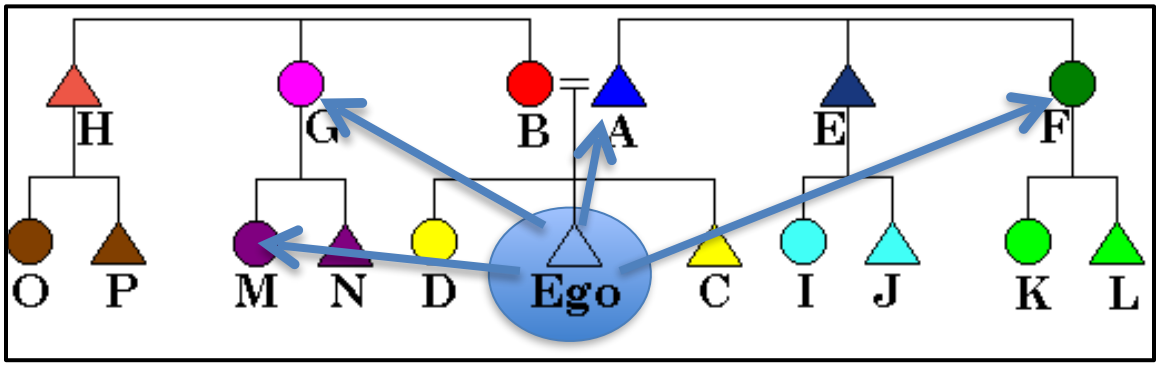

Figure 4: Sudanese kinship terminology system.

edge that includes (among other things) gender, age, generation, lineality, collaterality, and marriage.

Sudanese KTS

The way in which the Sudanese KTS assigns terms, i.e., lexemes/words, to members of one's kinship field/space highlights a keen focus on Ego (see Figure 4—I capitalize 'Ego' to distinguish between ego used in a spatial construction, i.e., FoR, and Ego used as part of a KTS [even though ego is necessarily the same, the two descriptions/analyses are not; one is about space and one is about kinship]). In fact, all members receive a specific term as their relationship with Ego changes, either horizontally, or up or down the generational ladder. Then, this KTS appears to share a fundamental feature with the relative FoR. This latter is centered on the speaker/viewer/cognizer, that is, ego, and orients the spatial aspects of the surrounding world according to body/ambulatory characteristics of ego's body.

The kinship environment (or field/space) is populated by individuals and each one is saliently described with a specific term that defines and specifies Ego's relationship with that individual. This coordinated structure moves with and remains constantly anchored to Ego. This is exactly what the use of a relative FoR implies and realizes. I feel confident, then, in suggesting that the root of the Sudanese KTS is nested within the relative FoR. Or, in other words, I hypothesize that the relative FoR participates constructively to the establishing of the Sudanese KTS.

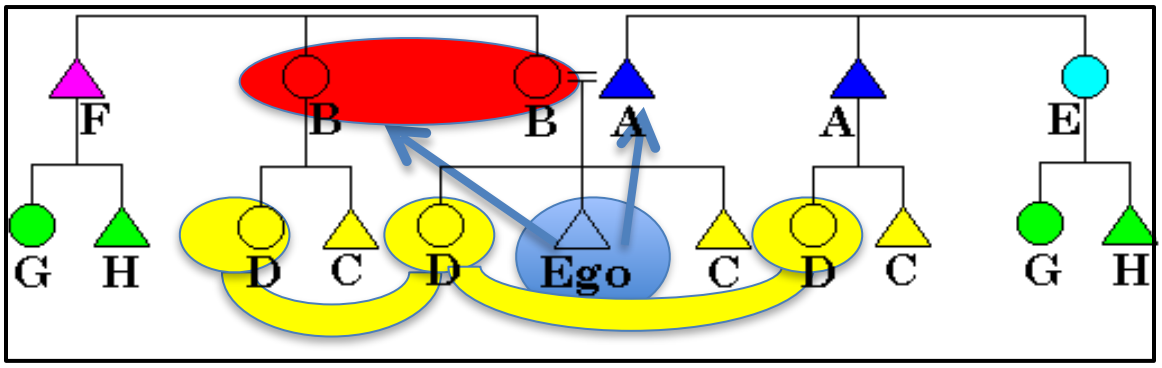

Figure 5: Iroquois kinship terminology system.

Iroquois KTS

The Iroquois KTS results from a different strategy in assigning memberships to various individuals in one's kinship environment or field/space. The first step in the process appears to be that of assigning terms to the closest members in one's first generation up, that is, parents and their siblings. Parents and parents' siblings are grouped by gender. This assignment modality is then transferred onto one's generation. Thus, siblings and cousins are consequently labeled by terms that correspond to groups sharing the same gender and not genealogical distance—such as sibling or cousin (see Figure 5).

The two steps process just indicated for this KTS resembles the process involved in the construction of the reflection subtype of the relative FoR. In fact, for this latter, ego focuses, first, on an object in its field and, then, from there, ego's front axis is conceived

and treated as reflected back toward ego (see Figure 1). Similarly, Ego operates in a specific way on its genealogical 'front,' i.e., parents and parents' siblings, and then it reflects back the results of that operation—it repeats the operation—on its own generational level, i.e., siblings and cousins. Thus, I feel also confident in suggesting that the root of the Iroquois KTS is nested within the reflection subtype of the relative FoR. Or, in other words, I hypothesize that the reflection subtype of the relative FoR participates constructively to the establishing of the Iroquois KTS.

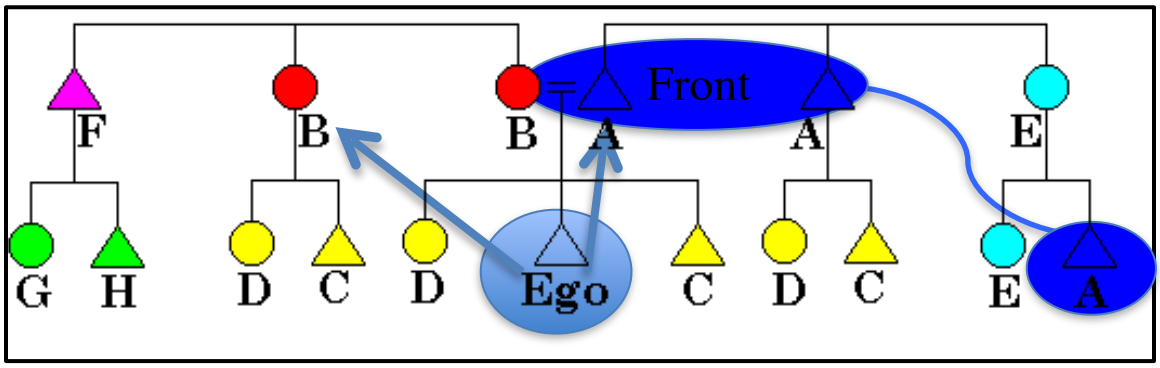

Figure 6: Crow kinship terminology system.

Crow KTS and Omaha KTS

I am collapsing here the analysis of the Crow KTS and the Omaha KTS because they represent a mirror image of each other. In both cases, the constructive process of the KTS implies an operation on the first generation up, i.e., parents and parents' siblings, in the same way as it takes place for the construction of the Iroquois KTS. Male or female parent is grouped together with his/her siblings. However, for these two KTSs, the group representing the 'front' that is obtained, is expanded by looking beyond its generational limits (one generation up). Now, it includes members in Ego's generation, but they should be outside Ego's close kinship space, i.e., it excludes siblings and father's brother's children for the Crow KTS (see Figure 6) and siblings and mother's sister's children for the Omaha KTS (see Figure 7). The added members are of the same gender.

The process that constructs the Crow and Omaha KTSs strictly resembles the one involved in the construction of the translation subtype of the relative FoR. In fact, for this

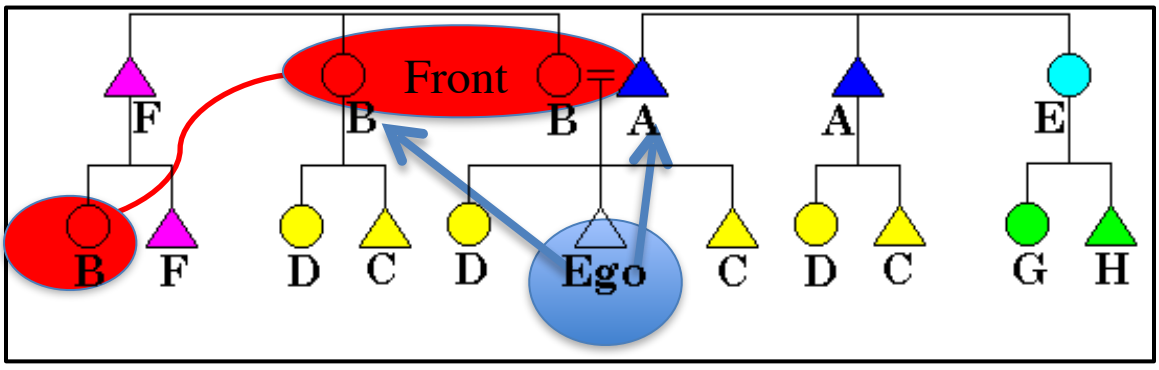

Figure 7: Omaha kinship terminology system.

latter subtype of FoR, once an object is chosen in the field of ego—in the two KTSs under analysis, Ego's parent and his/her siblings—another object 'beyond' ego's front is conceived as being located exactly and simultaneously in this front (see Figure 1). In the two KTSs, the member 'beyond' Ego's front is constructed as being 'in/at' this front by grouping it lexically in the same label. That is, father's sister's male child is assigned the same term as father and father's male siblings for the Crow KTS and mother's brother's female child is assigned the same term as mother and mother's female siblings for the Omaha KTS.

Then, I am inclined to suggest that the roots of both the Crow KTS and the Omaha KTS are nested within the translation subtype of the relative FoR. Or, in other words, I hypothesize that the translation subtype of the relative FoR participates constructively to the establishing of the Crow KTS and the Omaha KTS.

Hawaiian KTS (also Dravidian)

Since the Hawaiian KTS is the most classificatory, it groups members within Ego's kinship field/space according to only two parameters: sex and generation. In Ego's generation only two terms are used for siblings and cousins, and they distinguish two groups by gender. Relevantly, the sex of Ego is used to generate two sets of terms for Ego's generation, still based on gender, but also, repeatedly, on Ego's gender. The end product of such process is a system that generates a few groups of kins that allow Ego to use them as landmarks and orient himself/herself within his/her kinship field/space (see Figure 8).

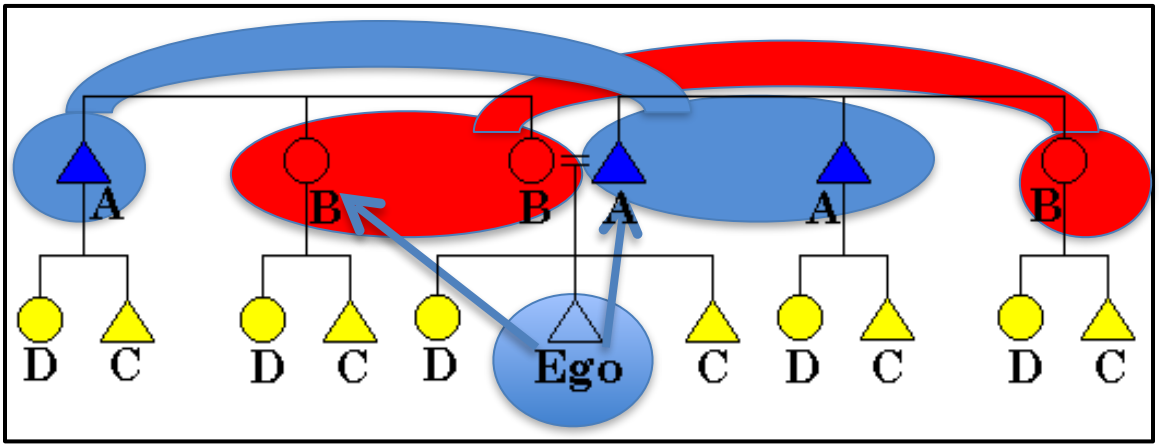

Figure 8: Hawaiian kinship terminology system.

The few characteristics outlined in the construction of the Hawaiian KTS dovetail with the construction and characteristics of an absolute FoR. Only few parameters, such as gender and generation, are used to construct groups in one's kinship field/space. Later, these 'groups-points-landmarks' are used to orient oneself in that same kinship field/space. In the same way, the construction of the absolute FoR, points like east/west/north/south or land/sea or only one point like a sacred mountain or place, e.g., Mecca, are used to build a system, i.e., a set of intersecting axes, that helps in the orientation process within a field/space.

In addition, I want to point out that in the Section titled "Radiality in Tongan Space and Kinship," I have already indicated that the radial subtype of the absolute FoR was empirically discovered as participating in the construction of the Tongan (Polynesian) kinship terminology, a type of Hawaiian KTS. Thus, I suggest that the roots of the Hawaiian KTS are nested within the absolute FoR. Or, in other words, I hypothesize that the absolute FoR participates constructively to the establishing of the Hawaiian KTS.

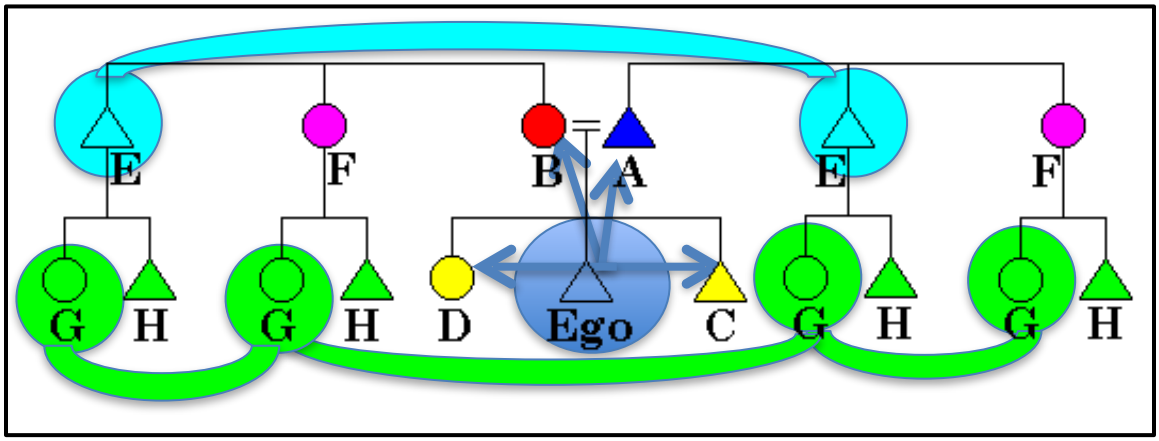

Figure 9: Eskimo kinship terminology system.

Eskimo KTS

This last type of KTS appears to highlight a strategy for membership that obtains a division of the kinship field/space into two independent areas. The first space is occupied by members of Ego's closest kins, that is, siblings and parents (or nuclear family). A second space is filled with collateral relatives, those related by blood, but not directly in the line of descent. Lineal relatives are assigned highly descriptive terms. Collateral relatives instead are assigned highly classificatory terms (see Figure 9).

Thus, the kinship area closest to Ego is constructed by an ego-centered strategy like the one we have attributed to the construction of the relative FoR (see the analysis of the Sudanese KTS). The second kinship area, that is further away from Ego in the genealogical space, is constructed by grouping members and assigning them classificatory terms. Then, it appears that a different strategy altogether is used, one that implies an orientation that is separate from Ego's co-ordinates. In fact, the new terms (those not in one's nuclear family) orient the kinship field/space independently from the previous close family space—by using exactly these different new terms for each group obtained within the collateral space (see Figure 9). These two divergent processes used to construct this KTS generate two independent kinship fields/spaces.

There is only one type of FoR that is constructed by using two fields, one is ego's field and one is the object's field. This FoR is the intrinsic one. Thus, I would argue that underlying the Eskimo KTS is a similar process to the one that contributes to the construction of a major characteristic of the intrinsic FoR. Or, in other words, I hypothesize that the intrinsic FoR participates constructively to the establishing of the Eskimo KTS.

Conclusion

Schneider (1984) argues about the 'arbitrariness' of kinship terminologies as they relate to genealogical spaces. This fundamental tenet is echoed in much writing about kinship. That is, kinship terminologies are seen as 'symbolically' related to the genealogical space they refer to. That is, the way in which terminologies organize and lexicalize that same space is arbitrary. I have tried to point out in this work a different perspective on the nature of kinship terminologies.

The ontological domain of space, and spatial relationships, has been widely suggested as foundational to the construction of larger and more complex cognitive structures, e.g., language. An essential component of the spatial mental module is represented by a number of FoRs. Given this availability and the very early necessity of articulating, i.e., communicating, genealogical relationships, it becomes plausible that those exact mental molecules, i.e., FoRs, are utilized for the construction of linguistic expressions such as kinship terminologies. The brief analyses I have presented in this work represent a first step in that direction, that is, attempting to show how KTSs can possibly be constructed by potentially pre-existing foundational mental organizations such as FoRs.

Preferences for a specific number of FoRs, typically two and rarely one, have been documented in communities all over the world (Levinson, 2003; Bennardo, 2009). Since I have indicated how specific processes might be shared between FoRs and KTS, thus suggesting that FoRs participate in the construction of KTSs, this has the potential of being a powerful predictive strategy . That is, when investigating a community, once the KTS used is determined or already known, it could be predicted which kind of FoRs may be preferred by most members of that community. Vice versa, if the preferred FoR is known, it could be predicted which kind of KTS may be used. Fascinating landscapes may be waiting in what I would call a 'new Renaissance' of kinship studies.

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