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Familiar Space in Social Memory

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## **1. Introduction.**

In 1988, Weller and Romney suggested the use of free-listing activities as one of the ways to isolate a domain as well as to discover its defining boundaries (1988:9-10). Besides, Ross (2004) adds that a free-listing activity can primarily obtain “a list of culturally relevant items on which most of the informants agree” (2004:90). In other words, when investigating a domain of knowledge, by using a free-listing activity, one can discover if the domain is culturally salient, what its linguistic and cognitive boundaries are, and which units/members are themselves more salient than others.

For some years now, I have suggested that a foundational cultural model I named “radiality” underlies a number of Tongan knowledge domains, including spatial relationships, temporal relationships, grammatical possession, ritual action, traditional Polynesian navigation practices, pre-contact religious beliefs, and kinship terminology (Bennardo, 2002a, 2002b, 2004; Bennardo, Bender, and Beller, 2005; Bennardo and Read, 2007). A conspicuous number of ethnographic observations made me focus recently on Tongan social relationships. Namely, I have hypothesized that Tongan mental representations of social relationships share with all of the above domains a similar generative engine, radiality.

Inspired by Weller and Romney (1988) and Ross (2004), I decided to use a free-listing activity to isolate the domain of social relationships and to discover its inherent boundaries. Basically, I was interested in finding out what are the fundamental principles underlying the mental representations of social relationships in Tongan. My hypothesis was that radiality would be the most salient structural characteristic of these representations.

Since my field site consists of a small village whose adult population is limited to 95 individuals, I decided to ask all adult villagers about everybody else. In other words, I asked all the adult villagers to tell me the name of the residents of the village they could remember. In such a way, a consistent part of their social world would be touched upon by this memory task. Of course, other individuals residing in other places could also be part of their social world, as I know they are. Nonetheless, for the majority of them the village is the social and spatial unit within which their social life unfolds

In this article, I report on the results of the free-listing activity. Among the socially salient individuals, e.g., the local chief, the town officer, and elders, only very few appeared in a prominent position, i.e., at the top of the list, when the lists were aggregated. This led me to look elsewhere to extract the meaning/s that those lists may have encoded. I noticed that the majority of people that appeared to be remembered first were also residing in the same part of the village, i.e., the front. Then, I produced memory routes for each list obtained and aggregated these results. The results of these analyses conducted on these newly obtained data show that a spatial bias congruent with that already documented for spatial relationships (Bennardo, 2000a, 2002a, 2003) is also present in these data about social relationships. The consequences of such a finding for a preferential way of representing knowledge by Tongans, i.e., the radiality foundational cultural model, are discussed in the closing section of this work.

## **2. The “Radiality” Foundational Cultural Model in Tongan Knowledge Domains.**

In the last decade I have accumulated evidence for a specific way in which various domains of knowledge are organized mentally by Tongans (Bennardo, 1996, 2002b; Bennardo and Read, 2005, 2007; Bennardo, Bender, and Beller, 2005). “Radial” is the term I used to describe this

common cross-domain organization. “Radiality” is the term I chose to label the Tongan ‘foundational’ cultural model I hypothesized.

My choice of wording is motivated by proposals made by Lakoff (1987), Holland and Quinn (1987), and Shore (1996). Lakoff suggested and elaborated the concept of “image-schema”<sup>1</sup> defined as: A way of thinking about one’s experience in the world derived from “relatively simple structures that constantly recur in our everyday bodily experience: CONTAINERS, PATHS, LINKS, FORCES, BALANCE, and in various orientations and relations: UP-DOWN, FRONT-BACK, PART-WHOLE, CENTER-PERIPHERY, etc.” (1987:267). Holland and Quinn argue that a “thematic effect arises from the availability of a small number of very general-purpose cultural models that are repeatedly incorporated into other cultural models” (p. 11). And Shore states: “Foundational schemas organize or link up a ‘family’ of related models.” (p. 53).

I define radiality as a ‘mental’ model, because in Johnson-Laird’s (1999) words “A crucial feature [of mental models] is that their structure corresponds to the structure of what they represent.” (p. 525). I call it a ‘cultural model’ because in D’Andrade’s (1989) words it is “a cognitive schema that is intersubjectively shared by a social group.” (p. 809). Finally, I choose to term it ‘foundational’ because it is shared by a number of knowledge domains in various cognitive modules (Shore, 1996). The cultural model also entails that this cross-domain organization is shared among members of a community (see Holland and Quinn, 1987; D’Andrade, 1989; D’Andrade and Straus, 1992; Shore, 1996; Kronenfeld, 1996; Strauss and Quinn, 1997; Quinn, 2005), in this case, Tongans.<sup>2</sup>

For space, thinking radially to locate objects implies looking for a fixed point of reference (other than ego) and describing the object to be identified as positioned from/toward that point (Bennardo, 2004) (see Figure 1). My proposal for a Tongan foundational cultural model entails that a number of knowledge domains are organized in a similar way: a point is chosen in the field (i.e., domain of knowledge) of an individual and relationships are expressed as toward or away from that point.

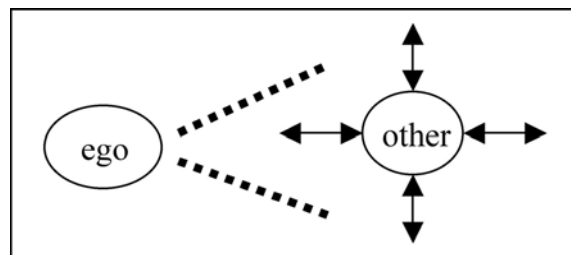


Figure 1: Radiality

The domains of knowledge already providing evidence of radiality include the following: knowledge related to spatial relationships (Bennardo, 1996, 2000a, 2002b); knowledge related to temporal relationships (Bennardo, Bender, and Beller, 2005); knowledge related to grammaticalization of possession (Bennardo, 2000b); knowledge related to ritual action (Bennardo, 1996); knowledge related to kinship, specifically the Tongan kinship terminology (Bennardo and Read, 2005, 2007); knowledge related to Polynesian navigation practices

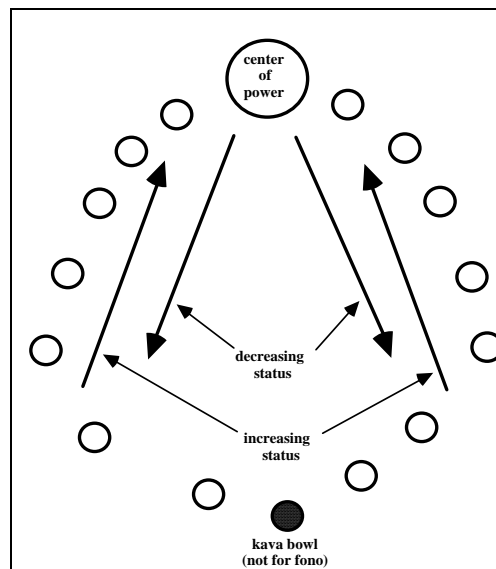
<sup>1</sup> See Mandler (2004) for a similar more recent proposal in developmental psychology.

<sup>2</sup> Around 70% of the Tongan population lives in villages similar to the one investigated. And even that part of the population living in towns, do think of themselves as belonging to the specific part of town they live in. Typically, these parts of towns were villages in the past. This is why I consider appropriate to apply my results to ‘Tongans.’

(Gladwin, 1970; Feinberg, 1988; Hutchins, 1995); and knowledge related to pre-contact religious beliefs (Williamson, 1933; Hogbin, 1936; Keesing, 1984; Shore, 1989). These last two domains, navigation and religion, are rooted in Tongan and Polynesian history and, although not practiced or explicitly believed any more, still provide important evidence for structural connections among knowledge domains.<sup>3</sup>

Keeping all the above evidence in consideration, I decided to posit “radiality” as a Tongan foundational cultural model (see Figure 1), and to look for such an organizational principle in the mental representations of social relationships. This decision was also influenced by three other factors: 1) a body of literature containing a variety of proposals suggesting radiality in many aspects of Eastern<sup>4</sup> (e.g., Nisbett, 2003), South-East Asian (e.g., Kuipers, 1998), Micronesian (e.g., Ross, 1973), and other Polynesian societies (e.g., Shore, 1996; Herdrich and Lehman, 2002); 2) a body of literature containing current ideas about the content of a “cultural” component-module of the mind (e.g., Jackendoff, 1992, 1994; Pinker, 1997; Talmy, 2000) that is orchestrated around the mental representations of social relationships (i.e., kinship, group membership, dominance); 3) a number of ethnographic observations.

Tongans often position themselves socially in a distinctive way. In everyday conversations when trying to define their position in the social hierarchy, Tongans habitually make initial reference to a high status person as a fixed point of reference. They then trace their personal position from that person/point. Similarly, in a *fono* ‘official meeting’ and in a *kava* ceremony, an individual's status is indicated and determined by the “distance”—calculated in units represented by intervening individuals—from the highest status person present, for example, the local village chief, a noble, or the king (Bott, 1972; Marcus, 1980). This is true at the village, island, and national levels.



**Figure 2:** Power in *Kava* Ceremony and *Fono*  
(from Bennardo, 1996:278)

<sup>3</sup> While these domains share a common structure, they do not share the same content and possible emergent properties. Thus, they need to be considered as separate.

<sup>4</sup> "Their universe was a continuous medium or matrix within which interactions of things took place, not by the clash of atoms, but by radiating influences." (Needham, 1962:14, cited in Nisbett, 2003:18). This quote by Needham is about China and it is generally accepted that the migration of the people who became Polynesian started from southeast China (Groube, 1971; Green and Pawley, 1973; Howe, 1984; Terrell, 1986; Kirch, 1990).

The flow of power seems to be conceptualized from a “higher” focus point down to the “lower” position of the individual. In contrast, in democracy—at least in the popular notions of the term I am familiar with—the flow of power is conceptualized as going from the individual to the “higher” elected representative. Moreover, the Tongan vertical hierarchy is transposed on the horizontal plane and rendered as physical “distance” from a chosen focus person as in the seating arrangements in the *fono* (see Figure 2, and Gifford, 1929; Bott, 1972; Marcus, 1980). This conceptualization of social hierarchy and social relationships I term “radial.” Thinking radially to locate objects in space implies looking for a fixed point of reference and describing the object to be identified as positioned from/toward that point. It must be noticed that the specific way in which Tongans position themselves socially and the official arrangement of people in the *fono* represent a sub-case of radiality as instantiated in a single vector, away from one point or toward it.

### 3. Methodology.

Faced with the task of investigating the way in which social relationships are mentally represented by Tongans, I decided to use a free-listing activity. Basically, I asked individuals to list the number of co-villagers they could remember. The lists provided were written down while being produced. The main hypothesis was that people first mentioned would be the more salient, and consequently, those better remembered by all interviewees would be the most salient individuals in the domain of social relationships, i.e., referential points out-of and to which social relationships are established radially.

With the help of three assistants, over a period of three weeks, I interviewed all the adults of the village: 88 individuals out of 95 possible ones (seven individuals were not in the village when the task was administered). Each individual in a list was ranked and a value for each person remembered was calculated using the following formula:

$$(\# \text{ of people remembered} - \text{memory rank} + 1) / \# \text{ of people remembered}$$

This formula produced standardized values from .01 to 1.00 for all people ranked. Aggregate numbers (sum of all values) for each individual were also calculated and an overall rank for each person was determined using the following formula:

$$\text{aggregate} / \text{total \# of people in study}$$

Thus, a lower rank<sup>5</sup> meant ‘less remembered’ (less salient) and a higher rank meant ‘better remembered’ (more salient). Since I administered the activity to the village where I have conducted extensive field work during the last fifteen years, I had a clear picture of the social structure/composition of the population involved. The most salient individuals in the village are the local chief, the *m<sup>4</sup>pule* ‘talking chief,’ the *ofisa kolo* ‘town officer,’ several ‘*ulumotu*’a or ‘head of extended family and/or household,’ and elders (both female and male). Then, my working hypothesis was that these individuals would be found at the top of the list.

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<sup>5</sup> Rank here stands for position in a list and not social rank.

### 3.1. The Field Site.

The activity was conducted in a small village in the northern Tongan archipelago of Vava'u. Due to the size of the village, 172 residents, I decided to administer the activity to the whole adult population (95), instead of a random sample of that same adult population. Moreover, this strategy allowed me to obtain a complete picture of a local community wherein social relationships are typically established in Tonga. I am perfectly aware that the villagers social life is not limited by the boundary of the village where they reside. Kinship, social, and religious ties often exist with a variety of places, including neighboring villages, other islands, archipelagoes, the capital town (locus of a constant migration flux in the last two decades), and abroad, including New Zealand, Australia, and the United States. However, life in a village is still the typical life experience that the majority of Tongans have. Thus, I can also claim that the picture obtained represents a sample of the total population of Tonga. The only exceptions to village residence is represented by three towns, including the capital town, in three different archipelagoes whose populations ranges between a few thousand and around twenty thousand for the capital (the total population of the Kingdom is around 100,000).

### 4. The First Results.

On average people remembered 51/95 or 54% of the co-villagers (7 individuals were not in the village the day the memory task was administered and were not interviewed), ranging from 18 to 86. This high average bearing witness to the very close-knit type of social life typical of a small village the size of the one I used. After applying the two formulas introduced in Section 3, I obtained a ranked list of all the people remembered. The results were quite surprising and did not confirm the hypothesis (see Figure 3 for the results regarding the top 35 individuals in the list).

First, there was no gender bias in the results: in the top ten individual, five were female and five were male. Second, the local chief, expected to rank very high in the list, ranked only 35<sup>th</sup>. Third, the *ofisa kolo* 'town officer' was the only one ranked according to the hypothesis, in fact, he stands 2<sup>nd</sup> in the list. Fourth, the first '*ulumotu*'a or 'head of extended family and/or household' was ranked 8<sup>th</sup>, and there were only four of them in the first top 27 individuals. Fifth, four unmarried individual, expected to rank very low in the list because of their known low position in the local village structure, were found in the top 14, with the first of them ranked 5<sup>th</sup>.

	Social Status	NAME	Code #	RANK
1	elder	Lea	68	0.46
2	town officer	Kaliti	64	0.42
3	elder	Feliuaki	62	0.42
4	elder	Tumoe	69	0.42
5	unmarried	Vika	70	0.41
6	elder	Fine	63	0.39
7	elder	Laluini	67	0.39
8	ulumotu'a	Samisoni	66	0.38
9	young married	Malia	65	0.38
10	unmarried	Maluhola	71	0.38
11	elder	Nusi	57	0.37
12	young married	Isileli	24	0.37
13	ulumotu'a	Sunia	29	0.37
14	young married	Ungatea	23	0.36
15	ulumotu'a	Sipe	79	0.36
16	elder	Saane	58	0.36
17	elder	Salote	49	0.35
18	elder	Tevita-Muau	72	0.35
19	elder	Ana	30	0.33
20	elder	Mula	85	0.33
21	young married	Afa	59	0.32
22	unmarried	Keasi	31	0.32
23	elder	Ana	80	0.32
24	unmarried	Aiona	44	0.31
25	elder	Siale	20	0.30
26	unmarried	Tupou	86	0.29
27	ulumotu'a	Sione	1	0.28
28	young married	Maletá	56	0.28
29	young married	Taufa	40	0.28
30	elder	Ane	34	0.28
31	young married	Tupou	25	0.27
32	married	Lisiate	51	0.27
33	young married	Lose	36	0.27
34	unmarried	Ulaiasi	78	0.27
35	CHIEF	Hala'api'api	89	0.27

Figure 3: Top Part of Ranking List

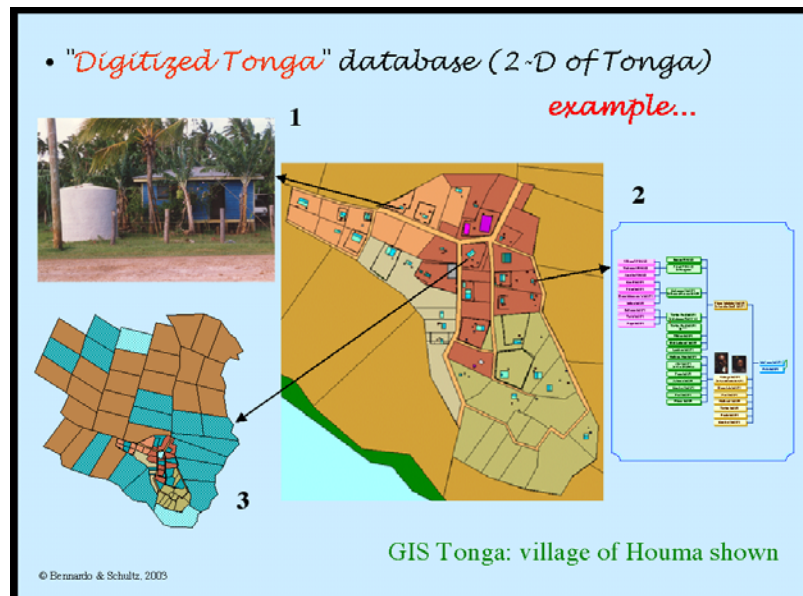
Finally, when I checked if a specific *kainga* ‘extended family’ would appear to be more prominent than others, I found that at least five *kainga* ‘extended family’ were present in the top 13 individuals. Thus, I could not assign any special value to *kainga* membership.

## 5. The Memory Routes and the Second Results.

Puzzled by the results in Section 4, I continued to examine the results and noticed that the people that appeared at the top of the list all lived in a specific area of the village. It appeared as if proximity of residence had triggered closeness of recall. Consequently, I decided to check if a ‘spatial’ strategy and/or other strategies—and how frequently each of them—had been employed in producing the memory list. This analysis involved the production of what I called ‘memory routes.’ That is, each individual’s list was transposed on the map of the village, thus I could

determine where the list started, how it went along the village space (i.e., from which house to which house), and where it ended.

During the production of the memory routes, I used the 'Digitized Tonga' database. Over several years, in my linguistic and cognitive laboratory with the support and collaboration of staff, students, and colleagues in various departments at Northern Illinois University, all the information about the physical and human place of Houma was entered in the 'Digitized Tonga' database.<sup>6</sup> The information for this database is updated every time I go back to the field. The database was built by entering in the computer—using the application ArcView GIS—the map of Tonga, detailed maps of specific archipelagoes and islands, detailed maps of specific villages (including Houma), and a map of the capital town (see Figure 4). The web page containing the first draft of the project is: <http://atlas.lib.niu.edu/tongalayer1.html>.

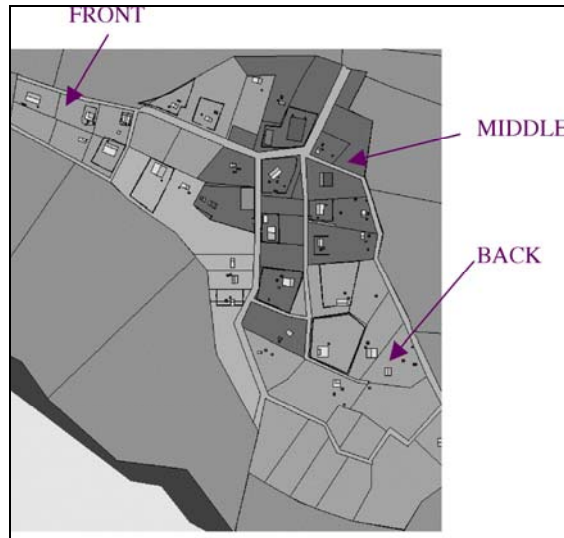


**Figure 4:** The Digitized Village of Houma  
(from Bennardo and Schultz, 2003:103)

The layout of the village of Houma and its surrounding subsistence plots were digitized. Each house on the map I drew during my many field trips (Bennardo, 1996:127) was linked to its photo, to a family tree of its residents, to the other houses where the relatives of the residents live, and to the plots cultivated by the house residents and their relatives (Bennardo, Hattman, and Testa, 2001; Bennardo and Schultz, 2003). Some preliminary information (e.g., cliques analyses) about social networks was also entered. In 2003, the GIS accurate 2-D world of the northern island of Vava'u and of the village of Houma were 3-D rendered (Bennardo and Schultz, 2004).

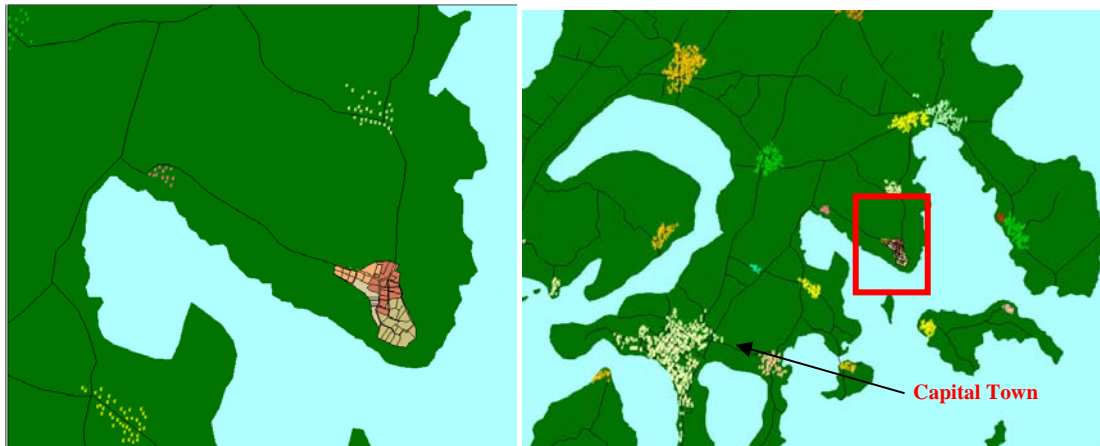
<sup>6</sup>This work was supported at Northern Illinois University by the College of Liberal Arts and Sciences, which provided the funds to set up an audio/video/digital lab, an undergraduate research apprentice from the department of geography in spring 2001, and one from the department of anthropology in fall 2001, in spring and fall 2002, in spring and fall 2003, and in spring 2004; by the department of anthropology, which provided a research assistant in fall 2000 and in spring 2001; and by the Graduate School, which provided a Research and Artistry Grant in summer 2001 and summer 2002.





**Figure 5:** Map of the Village

The map of the village I used to produce the memory routes came from the Digitized Tonga database. In Figure 5 (see also Figure 6), I indicate how the village is conceived by the villagers as composed of three parts: a ‘front,’ the north-western part also called *Holani*<sup>7</sup>, a ‘middle,’ called *Faleono*<sup>8</sup>, and a ‘back,’ the south-eastern part also called *Selusalema*<sup>9</sup> (Bennardo, 1996:126). Besides, the front of the village (part where the road to town enters/exits the village) is typically used as a landmark for many linguistic realizations of spatial relationships (Bennardo, 1996:245). This information plays an important role in the analyses that follow.



**Figure 6:** Position of the village of Houma in the Vava’u island

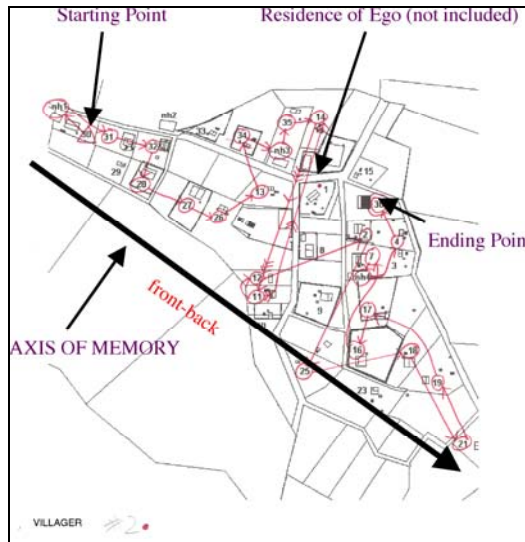
While transferring the lists of the various individuals interviewed on the map, the ethnographic

<sup>7</sup> *Holani* glosses as ‘Holland’ and villagers state that it received that name because at the beginning of the 20<sup>th</sup> century a person from Holland resided in that part of town for some time. But not all villagers agree on this etymology.

<sup>8</sup> *Faleono* glosses as ‘six houses.’ This name is strictly related to the origin myth about the village that states that only six houses inhabited by six brothers were once the root nucleus of the village.

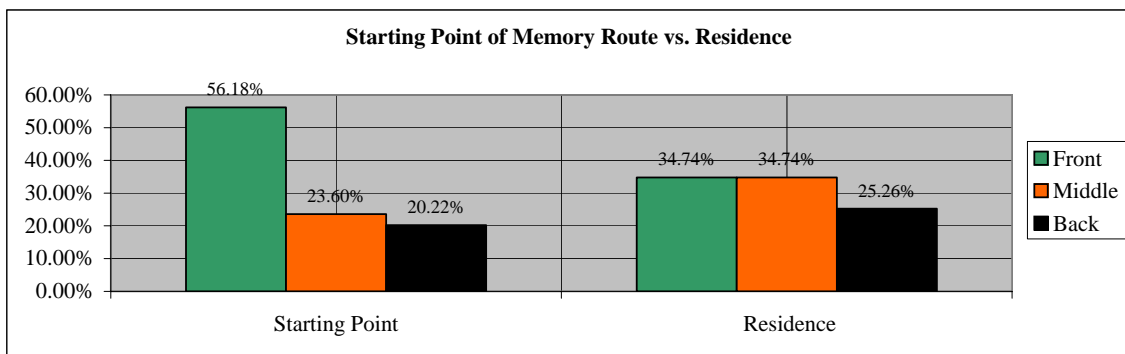
<sup>9</sup> *Selusalema* glosses as ‘Jerusalem’ and it was named in this way because it hosted the first Wesleyan church of the village. The current church building is now in a different part of the village (i.e., the middle or *Faleono*) and there are no physical remains of the old church except in people’s memory.

information in the database was used, e.g., sometime a change in direction (from front-back to front-side) could be explained by noticing the kinship relation between the people living in the places involved. In the end, while some ‘cultural’ strategies were also employed, e.g., kinship, age group<sup>10</sup>, and religion<sup>11</sup>, the strategy that was employed by all individuals was the spatial one. Using this strategy means to start listing people from a specific area of the village and then move to other areas in a sequential and typically directional (e.g., from front to back) fashion (see Figure 7).



**Figure 7:** Example of a ‘Memory Route.’

By comparing the part of the village from where individuals started their list with the actual residence distribution of all the individuals interviewed, a salient bias toward the ‘front’ of the village became noticeable (see Figure 8). In fact, while only 34.74% of the villagers reside in the front, 56.18% of them started their lists from the front. At the same time, while the same percentage of people live in the middle (34.74%), only 23.60% started from the middle. And, finally, while 25.26% live in the back, only 20.22% started from the back. It is apparent that a significant part of the village population not living in the front, still chose to start their lists with individual residing in the front of the village.



**Figure 8:** Comparing Starting Point and Residence

<sup>10</sup> There are minimally 3 age group in a Tongan village: unmarried, married, elders.

<sup>11</sup> There are two religious groups in the village: Wesleyan (majority) and Mormon (minority).

The fact that it is people not residing in the front who privilege that part of town in their memory list becomes clearer when we examine the results about choice of starting point for each group of individuals residing in the three parts of the village (see Figure 9). The content of Figure 8 shows how 81.82% of the people residing in the front chose the front as their starting point. This contrasts with the 51.52% of the people residing in the middle who started from the middle and even more vividly with the 37.50% of the people residing in the back who started from the back, clearly privileging (45.83%) the front over their choice of back.

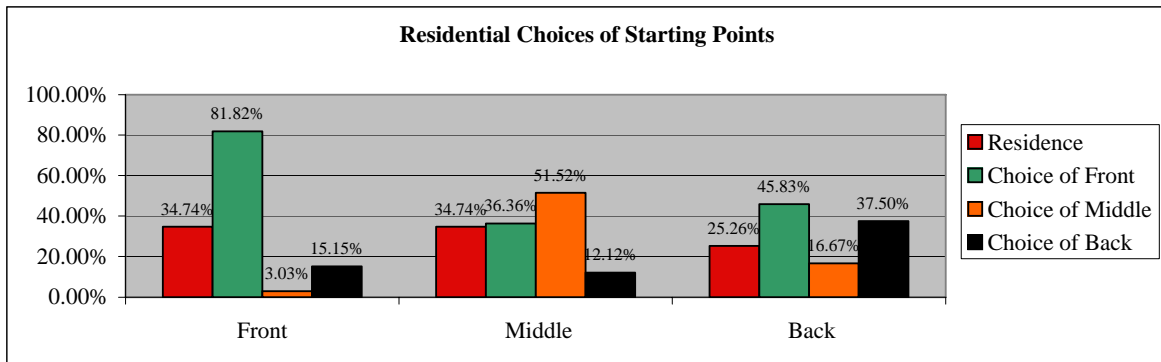


Figure 9: Detailed Comparison of Starting Point and Residence

These results need to be added to those of the analyses I conducted on the data about the inclusion or not of the self in the lists and about the nature of the individuals with whom people chose to start their lists. Both analyses intended to find out how salient was the inclusion of the self in the lists and how it compared to the choice of other-than-ego (Figure 10).

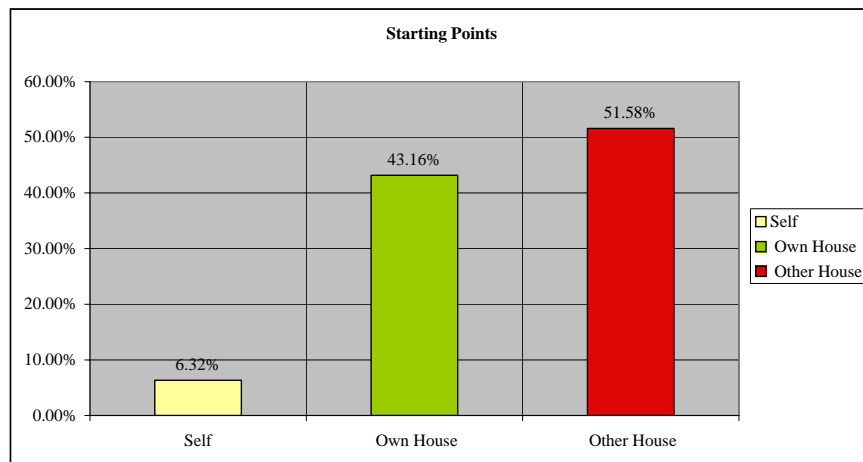


Figure 10: Self/Other Starting Points

Only 16.84% (16/95 individuals) included self in their lists, thus, the remaining 83.16% (79/95 individuals) did not do so. And, even more significantly, only 6.32% (6/95 individuals) started their lists with themselves. A large percentage of interviewees started their lists with members of their household (43.16%, 41/95 individuals) and above all, 51.58% (49/95 individuals) started their lists with a member of a household different from their own.

In conclusion, these are the fundamental findings obtained by the analyses conducted on the memory lists:

1. a variety of cultural strategies were employed, e.g., kinship, religion, age-group;
2. the most common strategy was the ‘spatial’ strategy, wherein interviewees chose a specific part of the village (either front, middle, or back) to start their list and continued by moving in a specific direction to other parts;
3. within the ‘spatial’ strategy, the front of the village was privileged as the starting point of the list;
4. very few individuals included self in their lists;
5. of those individuals who included self, very few started their lists with self;
6. the great majority of the interviewees started their lists with other-than-ego members within one’s household and/or member of another household (also other-than-ego).

How do these results relate to the hypothesis of radially as a Tongan foundational cultural model? A fundamental feature of that hypothesis (see Figure 1) is the choosing of a point in the field of ego and the representing/expressing relationships as away-from/toward that point. Results 2 and 3 highly correlate with the hypothesis. Besides, this mental process, if present in the representation of social relationships, would result in a back grounding of ego/self and a foregrounding of other-than-ego individuals. Results 4, 5, and 6 just introduced appear to strongly support the hypothesis. Thus, after presenting the results of the memory task, I consider my radially hypothesis further corroborated.

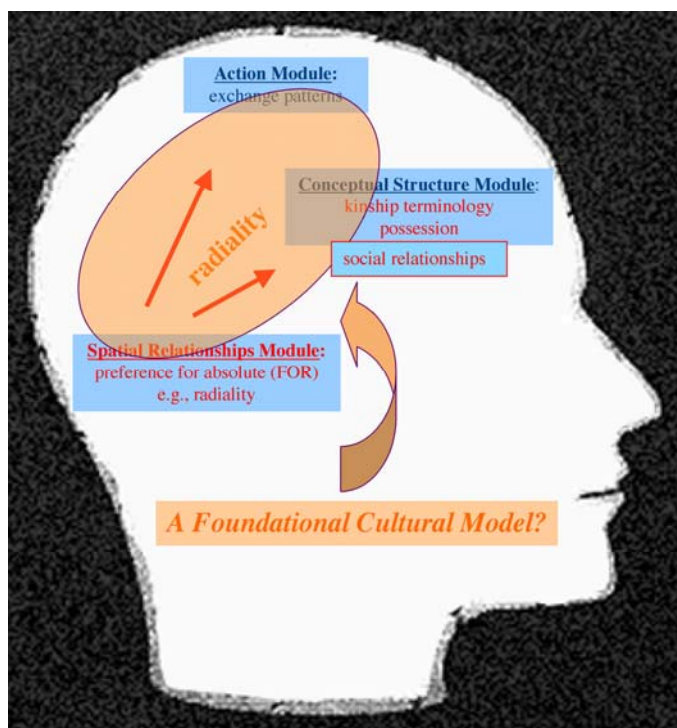


Figure 11: Radiality in Mind: A Tongan Foundational Cultural Model?

The content of Figure 11 summarizes the present status of my research project. My extensive investigation of the Tongan linguistic and mental representations of spatial relationships (spatial relationships module<sup>12</sup>) yielded a preference for the absolute frame of reference and specifically

<sup>12</sup> The cognitive modularity I am adopting is Jackendoff’s (1997).

for the radial subtype (Bennardo, 1996, 2000a, 2002b, 2003). I hypothesized, then, that a similar organization would be found in other domains of knowledge. The mental representations of salient Tongan exchange patterns (action module) supported my hypothesis (Bennardo, 1996). The investigation of possession (Bennardo, 2000b) and the kinship terminology (Bennardo and Read, 2005, 2007) (conceptual structure module) also provided some corroboration. Finally, the present investigation added some substantial evidence.

All the above mentioned findings support the general hypothesis of a common structural organization among several Tongan domains of knowledge across various cognitive modules. I have labeled this commonality “radiality” and I conceive it as a generative process underlying the organization of Tongan knowledge. I call it a foundational ‘cultural’ model because it is replicated across individuals, thus shared by a culturally similar population, and because it is at the root of various domains of knowledge (foundational). So, it represents an internal model for knowledge construction, storing, and retrieving and at the same time an external model shared and given for granted by a cultural homogenous group.

## **6. Conclusion.**

In this article, I presented an analysis of the results of a memory task (free listing) about social relationships administered to Tongans, Polynesians. Contrary to claims by Weller and Romney (1988) and Ross (2004), the free listing activity did not yield the expected results, that is, salient social individuals did not occupy all the positions at the top of the list. The strategy used to report the village population was prominently spatial. Besides, the analysis of accurate geographical renditions of the memory lists, i.e., memory routes, revealed spatial strategies in line with the preferences already documented about spatial relationships (Bennardo, 2000, 2002b).

In conclusion, the radial homology among domains of knowledge within and among mental modules appears to have received support from the analyses presented in this work. “Radiality” as a Tongan foundational cultural model can become an essential key into the on-going process of describing and understanding Tongan culture. There are also some implications for a better understanding of Polynesian cultures in general, and maybe most importantly, insights on human cognitive architecture could be obtained. Whatever the case, the journey is on its way and the traveler is fascinated by the view. Other travelers are invited to join.

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