1 A foundational cultural model in Tongan language, culture, and social relationships

1.1 Introduction

I have just finished interviewing and videotaping a minister of the Government of the Kingdom of Tonga. My Tongan assistant is slowly collecting the videotaping equipment and I am taking my leave from the minister formally thanking him for his time and patience with my non-native Tongan. When walking outside the ministry building, I ask my assistant if she had noticed an episode that took place while I was interviewing. There was a knock at the door and the minister, after interrupting his speech, allowed the person to come in. It was his secretary. She opened the door, bowed and kneeled profoundly, and then asked permission to deliver a written message. The minister told her to approach and deliver the message. She did so by keeping her kneeling position and finally exited the room still almost on her knees and continuing to bow, never turning her back to the minister.

I tell my assistant that I was a little surprised by this behavior, also because the minister is not a noble. My assistant replies that ministers are due the same respect as nobles are. First, she adds, it is only a very recent innovation that ministers are not nobles, and secondly, ministers are high dignitaries of the land and are entitled to receive the appropriate respectful behavior. Besides, she did not find the secretary's behavior odd at all. In fact, she had often used that same behavior at school with some of her teachers. Then, she goes on to tell me this story.

One day a teacher called her up to the desk. She approached the desk bowing and almost kneeling (in the same way the secretary had done). Then the teacher proceeded to pull her hair and at the same time scold her for something she had done. She adds that she felt no *mā* 'shame' because she did not have a boyfriend or a relative in the class. She continues by saying that she would have felt really *mā* had she had one of those relations witnessing the event. She also explains that she would feel *mā* because she would have brought *mā* to them by her behavior.

This episode took place during my last visit to Tonga in summer 2007. I decided to start this book by telling this story because it is illustrative of a fundamental way of thinking in Tongan. What happens to an individual's ego is not the focus of that same individual's attention. One focuses on an other-than-ego

individual (or more than one individual, or a group) and the consequences of one's behavior on that other-than-ego person/s. In other words, a point, i.e., a place, a person, or event, is chosen in the field of ego, i.e., the spatial field, the social field, or the event field, and other points are put in relationship to the previously chosen one, either centripetally, i.e., toward it, or centrifugally, i.e., away from it.

The episode specifically illustrates the presence of such a mental construction in the domain of social relationships or social cognition. The nature of the mental construction, however, is inherently spatial and it is in the domain of spatial relationships that I first encountered such a Tongan preference. Besides, I found it repeated in other domains of knowledge, such as time, possession, exchanges, traditional religion, and navigation. I labeled this preferred mental organization of knowledge a foundational cultural model and named it 'radiality.' The discovery of such a mental organization of knowledge led me to reflect on the nature of cultural models and hypothesize a fundamental role they play in the overall architecture of human cognition.

1.2 Why Tonga?

The Kingdom of Tonga is a Polynesian country composed of 170 small islands, divided into three major archipelagoes and lying in a south–north direction in the South Pacific. The population, around 100,000, speaks Tongan, an Austronesian, and specifically Oceanic, Western Polynesian, Tongic language (see Chapter 2). Both cultural and linguistic reasons brought me to this tiny corner of the world to investigate characteristics of the human mind.

Tongan sociocultural organization is unique. It is a millennium-old monarchy in which the majority of the population typically resides in small villages. A recent growth of a democratic movement makes its political landscape effervescent to say the least. In November 2006, political riots broke out in Tonga's capital city, leaving widespread damage from fire and looting, and eight dead. While the debate between loyalists to the monarchy and the recently established democratic movement has deteriorated, the legitimacy of the monarchic system has largely gone unchallenged (Hoponoa, 1992; James, 1994). Among both commoners and the nation's elite, Tongans feel that their cultural history is congruent with their monarchy. The hierarchical structure is so pervasive in the society that it provides a salient variable against which other sociocultural parameters may be highlighted and measured.

There are several reasons underpinning my choice of the Tongan language as the ground for testing my theoretical approach and for comparing the results obtained by my conceptual analyses of English spatial prepositions (Lehman and Bennardo, 2003). First of all and more generally, English and Tongan belong to two different major language families, namely, Indo-European and

Austronesian, providing a minimal test of universalistic hypotheses. Second, Tongan has only three spatial prepositions, thus it provides a good comparative challenge to analyses done on a language such as English where the number of spatial prepositions is much higher (around eighty, see Jackendoff, 1992b: 107–8). Besides, since the linguistic representation of spatial relationships in Tongan is realized by different lexemes from those in English, it is relevant to find out what conceptual content the former encode.

Third, Tongan as the language of the first people to be called Polynesians shows innovations which came to characterize the Polynesian language family. This is particularly apparent in the system of directionals it currently uses. A triadic system is in place compared to a very widespread dual one (centripetal–centrifugal movement) in Melanesia (Ozanne-Rivierre, 1997), the motherland whence Polynesians sailed away more than three thousand years ago. This directional system turns out to be rooted in the foundational cultural model this book elucidates (Bennardo, 1999).

These cultural-linguistic characteristics, among others, turned my attention to Tonga. My first investigation focused on the linguistic and cognitive representations of spatial relationships. The results were very intriguing. Linguistic and cognitive preferences for the representations of spatial relationships highlighted a deep-rooted preference for a radial system of representing space. That is, a point, i.e., a place, is chosen in the field of ego, i.e., the spatial field, and other points are put in relationship to the previously chosen one either centripetally, i.e., toward it, or centrifugally, i.e., away from it.

Later, I discovered the presence of this radial system in other domains of Tongan knowledge and consequently, I continued to stay focused on Tonga. I realized that since the fundamentally spatial radial system finds its way into those other domains I could be in the presence of a foundational mental model. Moreover, this model is extensively shared within the Tongan cultural milieu and it can be labeled a foundational 'cultural' model, an essential part of what it means to be Tongan. The presence of such a preferred model has consequences in the way an individual may think and behave. Besides, the finding of such a mental organization of knowledge also has concrete implications for the way one conceives of the architecture of human cognition.

I studied Tongan language and culture for fifteen years and spent more than two years of residence in the kingdom. I collected extensive ethnographic, linguistic, and cognitive data. Most of these data found their way into this book, but much more remain at the margins, and more yet never appear. Nonetheless, all of the data and experiences gathered contribute in their own peculiar way to the emergence of the principal hypothesis for this book and to its partial resolution. It was a long journey, and the content of this book represents a stage at which the traveler regrouped and stopped to reflect on the value of the achievements obtained.

1.3 The architecture of the mind and its internal working structure

There are two hypotheses about the architecture and nature of cognition that represent the foundations of my own position. The first hypothesis is Jackendoff's (1983, 1992b, 1997, 2002, 2007) "Representational Modularity;"[1] the second hypothesis is the one advanced by Janet D. Dougherty (later J. D. Keller) with Charles M. Keller, and separately, with F. K. Lehman. They call their approach to cognition "radically intensional" (J. D. Keller and Lehman, 1991: 272, note 1).

Jackendoff defines his approach like this:

> Representational Modularity is by no means a "virtual necessity." It is a hypothesis about the overall architecture of the mind, to be verified in terms of not only the language faculty but other faculties as well. I therefore do not wish to claim for it any degree of inevitability. Nonetheless, it appears to be a plausible way of looking at how the mind is put together, with preliminary support from many different quarters. (Jackendoff, 1997: 45)

In his attempt to widen the Chomskyan research project, Jackendoff devotes extensive attention to the investigation of the semantic component of language. He reaches the conclusion that "*semantic structure* and *conceptual structure* denote the same level of representation" (Jackendoff, 1983: 95 [original italics]) and he calls this latter "conceptual structures." Furthermore, this single level of conceptual structures is the "level of mental representation onto which and from which all peripheral information is mapped" (Jackendoff, 1983: 19). In later works (1992b, 1997, 2002) he refines his proposal and suggests the overall architecture presented in Figure 1.1.

Conceptual structures remain central in this new architecture. They are propositional in nature and their modeling resembles linguistic/syntactic structures (see Jackendoff, 1983, 1990, 2002). However, three major innovations are now introduced: correspondence rules (represented by bold double-headed arrows) or "interface modules" between modules, the "spatial representation" module,[2] and the "auditory information" module which also inputs conceptual structures. An interface module provides a link between major modules by being structurally compatible with the two modules it unites. This is accomplished by a structural core of the interface module made up of correspondence rules (not directly in contact with either modules to be linked), and two peripheral structures each compatible with the structures of one of the two modules linked

[1] Foundational to this proposal, but not homologous, are Chomsky's (1972) and Fodor's (1983) modularity suggestions (but see others in Hirschfeld and Gelman, 1994).

[2] Jackendoff had already introduced a module called "3D model structures" in 1992b: 14, but it was at that time only related to the "visual faculty" model.

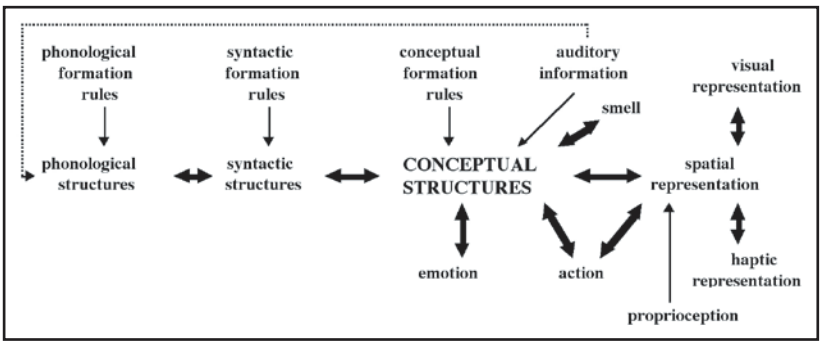

Figure 1.1 Jackendoff's architecture of cognition (from Jackendoff, 1997: 39 and 44)

(Jackendoff, 1997: 21ff; see also 2002). The advantage of this proposal is that it allows for major modules to be substantially different in their structures, while information can still move between them.

The findings of the vast literature available on the visual system convince Jackendoff to posit the module he calls "spatial representation" as separate from the central module of conceptual structures (see also Jackendoff and Landau, 1992; Landau and Jackendoff, 1993). He says, "[C]ertain types of visual/spatial information (such as details of shape) cannot be represented propositionally/linguistically. Consequently visual/spatial representation must be encoded in one or more modules distinct from conceptual structures" (Jackendoff, 1997: 43). Furthermore, this module is also the center of reference for other modules connected exclusively and directly with conceptual structures in his previous proposals. These modules are "action," "haptic representation," and "proprioception." Finally, auditory information previously inputting only phonological structures is now also inputting conceptual structures. Thus, the architecture proposed has increased in complexity as a function of the increasing amount of new information about module interactions.

It is impossible in this work to summarize all the detailed linguistic analyses and literature Jackendoff brings forth in support of his proposal. One relevant feature of his architecture of the mind is that it is driven by the two largest bodies of knowledge recently accumulated about the functioning of the mind: knowledge of the linguistic system and knowledge of the visual system. In Jackendoff (1992a, 2007), a third type of knowledge, cultural knowledge, was added.[3] This led him to hypothesize another module of the mind, a social cognition module (Figure 1.2).

[3] In Jackendoff (1992a) issues related to society and culture in the mind had already been introduced.

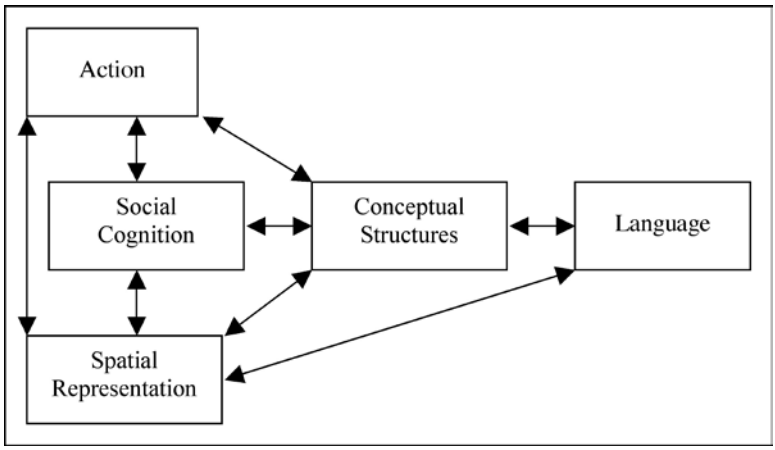

Figure 1.2 Jackendoff's revised architecture of cognition

On a very similar line of thinking, Levinson (2006) proposes that "the roots of human sociality lie in a special capacity for social interaction, which itself holds key to human evolution, the evolution of language, the nature of much of our daily concerns, the building blocks of social systems, and even the limitations of our political systems" (p. 39). He calls this system, the "interaction engine." I will restrict myself to Jackendoff's terminology for now.[4]

One problematic point in Jackendoff's overall proposal remains the collapsing of linguistic semantics with conceptual structures. Lehman and Bennardo (2003) demonstrate why this is not appropriate.[5] They argue for a conceptual content of English spatial prepositions that dictates the interpretation of their arguments as either Locus[6] or Place. An Object[7] is conceptually a Place when its geometrical characteristics count, and it is a Locus when it can be reduced to a Point because its geometric characteristics do not count. It is only when an Object (e.g., a noun like 'building') is an argument of a spatial preposition (e.g., 'to,' 'from,' 'between') that it will be considered either a Locus or a Place according to the specific preposition. The noun then acquires a specific

[4] Talmy (2000b) states: "Our general perspective is that there has evolved in the human species an innately determined system whose principal function is the acquisition, exercise, and imparting of culture" (p. 373). He calls this "system" the "Cognitive Culture System." In other words, Talmy too suggests that a part of our human mind is specialized for culture whose main component is the definition of the interaction between self and others or groups (pp. 378–400).

[5] See also J. D. Keller and Lehman, 1991: 281, notes 9 and 10, for a similar position.

[6] From now on a capital letter indicates a concept.

[7] The concept Object is very abstract and can be a physical object, a place, or an abstract idea (Lehman and Bennardo, 2003).

linguistic meaning that is different from its dual potential conceptual meaning (either a Locus or a Place). Similarly, Broschart (1997b) demonstrates that some Tongan lexical items are neither verbs nor nouns until they appear in a specific structural construction. That is, they acquire linguistic meaning in addition to their conceptual meaning. Thus, I will keep for now the distinction between linguistic meaning (i.e., semantics) and conceptual meaning (i.e., conceptual structures).[8]

The second hypothesis about the architecture and the nature of cognition I consider is the result of a collaboration of Janet D. Dougherty (later J. D. Keller) with Charles M. Keller, and separately, with F. K. Lehman (Dougherty and C. M. Keller, 1985; Lehman, 1985; J. D. Keller and Lehman, 1991, 1993; J. D. Keller and C. M. Keller, 1993, 1996a, 1996b). Dougherty and C. M. Keller demonstrate that it is impossible to access cognition fully by using only linguistic data. Their focus on "conceptualization" leads them to "characterize knowledge structures as constellations of conceptual units arising in response to a task at hand" (Dougherty and C. M. Keller, 1985: 165). These "constellations are ephemeral" (1985: 166), they are constructed only to tackle a "task" and do not bind the participating conceptual units beyond the duration of the task. When used repeatedly over a period of time they become "recipes," that is, habitual cognitive responses to tasks (J. D. Keller and C. M. Keller, 1996b: 91). The activated conceptual units include technical imagery, goals, and linguistic labels – that is, naming. None of these activated units, however, are independently sufficient to retrieve the conceptual constellation.

The two authors offer an anti-Whorfian argument by arguing that "the named class to which an object belongs for purposes of standard reference in general classification schemes has little influence over its occurrences in other constellations of applied knowledge" (Dougherty and C. M. Keller, 1985: 171). In other words, since cognition/thought works in task-oriented constellations that include a variety of conceptual units, it cannot be argued that language determines thought/cognition (although linguistic labels of objects are present).

This hypothesis about knowledge/cognition in action is very important, but leaves unaddressed the issue of the nature of knowledge, and unanswered the question of how it is possible for these "constellations" of units of knowledge to come together and constitute a well-connected unit eventually used in action. In other words, once it is demonstrated that knowledge is activated in bundles, the question arises about how this is possible. What is the nature of knowledge structures such that units of knowledge (i.e., concepts) can 'bundle' together?

[8] Recently, Jackendoff (2007) came very close to a similar position when he states "linguistics semantics per se is the study of the interface between conceptualization and linguistic form (phonology and syntax). It therefore studies the organization of conceptualization that can be expressed or invoked by language" (p. 293).

Is there a common underlying structure/nature for knowledge from different sources (e.g., perceptual, visual, emotive, etc.)?

These questions are addressed in Lehman (1985) and J. D. Keller and Lehman (1991). They state that their approach to cognition is "radically intensional" (J. D. Keller and Lehman, 1991: 272, note 1). In linguistic semantics, to adopt an 'intensional' approach means to consider meaning as the defining properties of terms (intension) and not as the set of objects in the world to which terms are applied (extension; see Frege, 1975). Consequently, Keller and Lehman look at cognition to discover its properties as mental/conceptual phenomena per se and not as defined by the external world phenomena to which they are related. They consider knowledge domains as theories, and concepts – units of knowledge – as generated within these theories (for similar positions see Murphy and Medin, 1985; Medin, 1989; Gelman, Coley, and Gottfried, 1994; but also Johnson-Laird, 1983; and Jackendoff, 1997).

They define the internal computations of these theories not as a number "of binary features in a matrix whose dimensions are nothing but such features" (1991: 288), but as a number of relations – including cause-and-effect – that are possible given the axioms of the theory. In other words, theories are computational devices; that is, given a set of axioms, a number of theorems can be obtained (generated concepts can be considered theorems). Theories are also recursive computational devices. Once theorems have been obtained, they may function as axioms for other theories. Considering knowledge domains as theories and concepts as theorems (and due to recursiveness also mini-theories) explains how they can come together to become "constellations" of knowledge. This is possible only because they share this basic intra- and inter-structure or nature.

1.4 A blended approach to cognition

I am convinced that both of these approaches to cognition and to the architecture of the mind are viable and can be combined. Then, I adopt a computational approach to cognition within a general "Representational Modularity" architecture of mind (Bennardo, 2003). My intensional analyses of both English spatial prepositions and the three Tongan spatial prepositions, five Tongan directionals (post-verbal adverbs expressing direction of movement), and Tongan spatial nouns yielded a number of axioms for a partial theory of space, that is, for a substantial part of the content of Jackendoff's spatial representation module (see Lehman and Bennardo, 2003; Bennardo, 1993, 1996, 1999, 2000b).

The major axioms of this partial theory include concepts such as Locus, Object, Vector, Path, Verticality, and Horizontality (for definitions see Chapter 6, Section 6.2.2.1). These axiomatic concepts of the partial theory of space are

used to construct frames of reference (for a similar approach see Levinson, 1996a, 2003) that are part of the content of the spatial representation module (Jackendoff, 1997, 2002). In other words, frames of reference are considered theorems derived from the major axiomatic content of the partial theory of space.

For example, given the following axioms: a Locus (the speaker), a Vector – a complex concept made up of a Locus (beginning point, in this case the speaker), a Body (repeated points), and Direction – the concept of Verticality, and the concept of Horizontality, a relative frame of reference can be generated by using also the Repeat Function – to repeat the construction of vectors and obtain axes.[9] I describe a relative frame of reference as a set of coordinates – three axes: vertical, sagittal, and transversal – that create an oriented space centered on a speaker (see Chapter 3, Section 3.3.2). Once generated as theorems of the partial axiomatic content of the spatial representation module, frames of reference can function as axioms of a partial theory of space that can be used to generate specific spatial descriptions as expressed in linguistic strings (see Miller and Johnson-Laird, 1976; Levelt, 1982, 1984; Levinson, 1996b) or other behavior (see Ellen and Thinus-Blanc, 1987; for animal behavior see Gallistel, 1993).

The approach to cognition I adopt – its architecture and its computation – allows me to shed light on why my findings about the specific way of organizing spatial relationship in Tonga could be replicated in other domains of knowledge. The common generative computational nature of the content of cognition/knowledge, combined with the inevitable exchange pathway between the spatial representation and other cognitive modules, including the conceptual structures and social cognition modules, are the two explanatory landmarks. Since knowledge is structured in the same way, it can travel across modules. Since spatial representation knowledge interacts with conceptual structures, action, social cognition, and other modules, it can be replicated in other domains of knowledge.

The role that knowledge about space and the preferential way it is organized play in human cognition are of paramount importance. The vast amount of research and the numerous publications about spatial cognition clearly support this statement. I only mention here three works. First, that of Lakoff (1987) on conceptual organization in which he clearly delineates a conceptual theory in which spatial image-schemas are fundamental. Second, that of Mandler (2004) on child development in which she suggests that spatial image-schemas are pre-linguistically used and foundational to human conceptual development. Finally, Levinson (2003) poignantly shows how cross-cultural and cross-linguistic investigations of space yield findings that can illuminate our still limited understanding of the human mind.

[9] Please note that this process has been highly simplified for brevity and clarity of presentation.

In this book, I show how the preferred way in which Tongans organize spatial representation is reiterated in other mental modules, specifically, the conceptual structures module (several knowledge domains, e.g., possession, temporal relationships, traditional navigation, traditional religious beliefs), the action module (e.g., *fono* 'village meeting,' rituals, exchange patterns), and the social cognition module (e.g., kinship, social relationships). Thus, I argue that understanding any preference in the spatial representation module provides a unique and relevant entry into the preferred organization of other mental modules.

1.5 Cultural models

A sentence is the fundamental unit of analysis for language in mind (Chomsky, 1957, 1972, 1986, 1995; Pinker, 1994, 1997, 1999; Jackendoff, 1992, 1997, 2002; Levelt, 1989). What is the fundamental unit of analysis for culture in mind? I suggest a cultural model, specifically, a foundational cultural model. Before clarifying my position, I need to explain what I mean by culture in mind.

In 1911, Boas wrote:

> Thus it appears that from practical, as well as from theoretical, points of view, the study of language must be considered as one of the most important branches of ethnological studies, because, on the one hand, a thorough insight into ethnology can not be gained without practical knowledge of language, and, on the other hand, the fundamental concepts illustrated by human languages are not distinct in kind from ethnological phenomena; and because, furthermore, the peculiar characteristics of languages are clearly reflected in the views and customs of the peoples of the world. (p. 69)

In other words, since both language and culture are mental phenomena, understanding one (language) is conducive to understanding the other (culture). Similarly, in 1952, Levi-Strauss wrote:

> I would say that between culture and language there cannot be no relations at all, and there cannot be 100 per cent correlation either.
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> …
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> So the conclusion [that] seems to me the most likely is that some kind of correlation exists between certain things on certain levels, and our main task is to determine what these things are and what these levels are. This can be done only through a close cooperation between linguists and anthropologists. (p. 79)

It is well known that it was the illustration of the working of the mind underlying both culture and language that defined Levi-Strauss's life-long research enterprise (Leach, 1974). It was only with Goodenough (1957) that the locus of culture was clearly and programmatically located in the individual mind. His frequently quoted statement asserts that culture is "whatever it is one has to know or believe in order to operate in a manner acceptable to its members" (p. 36). However, since individuals all have a human mind, when they grow in