Cultural Model Theory

As with any theory, Cultural Model Theory is based on some assumptions from which we can derive some deductions. A fundamental assumption of Cultural Model Theory is that the locus of culture is the mind of individuals. A mind consists of operations and processes that work with a set of representations. Mental representations have content and at the same time they realize and induce processes. A mental representation, or a mental model, is a part of perceived reality and as such is a reduction of that part of the world it represents. These models/reductions by necessity retain aspects of the structures they represent. Therefore, mental models are structured. Consequently, they consist of units that have relationships to each other. These relationships vary in type (e.g., sequential, taxonomic, causal).

Another fundamental property of mental models is that they consist of core and periphery parts. The periphery comes into contact with contexts and could change its value/s, while the core is less prone to change. If context does not provide sufficient input to set a new value of the periphery, then a default (previously obtained) value is assigned. Mental models are typically out-of-awareness and may participate in the construction of larger models via nesting. When a mental model is assumed to be held by members of a community, then it is a cultural model. To be considered 'cultural,' models also need to be socially transmitted and carry some socially coercive force. A cultural model is to be considered the unit in the investigation of culture. And finally, mental models may participate in the construction of larger models via nesting.

From these assumptions, we can make a few deductions about cultural models.

- Cultural models are mostly out-of-awareness because mental models typically are;

- There are minimally two types of cultural models: (a) foundational, which are simpler and based on ontological domains (e.g., space, time, relationship, etc.) and (b) molar, which are complex and may include foundational ones, and knowledge from other domains;

- Individual variation in the construction of cultural models is a consequence of their nature and how they interact with context (ontogenesis);

- Cultural variation within communities is also a result of the nature of cultural models (the core and periphery structure) and how they interact with contexts (i.e., group and/or individual experiences);

- Cultural models are the units of investigation of culture.

Methodology.

Adopting Cultural Model Theory as a way of conceiving culture leads to a specific methodological path (Bennardo and de Munck, 2014) that requires the acquisition of three types of data: ethnographic, linguistic, and cognitive (see Figure 2). All the researchers in this project have extensive ongoing ethnographic knowledge of the community they investigate. This knowledge has been supplemented in the first phase of the project by means of further participant observation, nature walks and open-ended interviews focusing on cultivated fields, gatherings areas, pastures or sea outings according to the local producing modality or modalities. During these walks or outings, the researcher conducted informal, thematically driven interviews. This activity allows scholars to focus their ethnographic experience on the topic at hand while providing extensive exposure and practice in the language used to refer to the natural environment. Ethnographic knowledge is considered a necessary prerequisite to any other methodological step to be taken, and it is regarded as an essential part of the process of analyzing the data obtained.

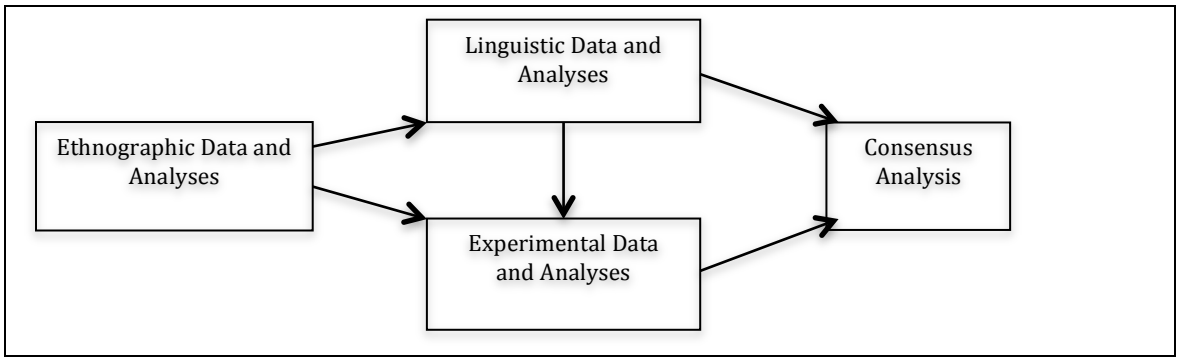

Figure 1: Methodological Trajectory (from Bennardo and de Munck, 2014:286)

Gathering linguistic data is justified by the common understanding that language represents the 'highway' into the mind. Because cultural models are shared, semi-structured interviews administered to a sample of the population assist in obtaining information about investigated domains by engaging interviewees in a topic that requires the activation of that model. One does not ask participants directly about the cultural model because the interviewees hold these models mostly out-of-awareness.

Analyses of the ethnographic and linguistic data collected follow. Ethnographic data analysis includes inferences about knowledge that was not explicitly stated. For example, when a Tongan subsistence farmer states that *taro* (among other crops) must be planted with full moon, we infer that the moon (physical environment) and *taro* (plant) are related in some significant way.

The transcriptions of the semi-structured interviews[1] are analyzed at the word, sentence, and discourse level. The analysis strategies employed include the finding of key words via a frequency analyses of the words in all the interviews. The top most frequent and salient words—relevant to the topic investigated, i.e., Nature in our case—are then used for a semantic role

[1] These texts can be reduced to their gist—care should be taken in using the interviewees' language when constructing the gist—before starting the linguistic analyses. An added benefit of the gist analysis is that the researcher acquires an extensive familiarity with the texts. However, certain type of analysis, e.g., semantic role analysis, are better conducted on the original texts.

analysis (sentence level). That is, it is determined if each of the words selected is used in the 'agent' or 'patient' role. This analysis provides insights into the role/s that various words—related to the six components of Nature, plants, animals, physical environment, weather, humans, and supernatural or local adaptations of these components—play within the interviewees' construction of their linguistic production as affected by their cultural model of Nature. Thus, a first insight into the content and structure of the cultural model begins to emerge.

The next linguistic analysis is about metaphors used (sentence level). The frequency of the various types of metaphor possible provides further insight into the cultural model activated. Moreover, an analysis of the types of source and target of the metaphors used also increases the understanding of which aspects of Nature are most commonly mobilized to 'explain' those parts of the world addressed in their linguistic production. For example, is it animate beings (source, hence, known) who are used to 'explain' inanimate ones (target, hence unknown) or the other way around? What type of animate beings are used? Insights into relationships between aspects of Nature can be obtained by the results of such analysis.

Finally, an analysis of reasoning passages (discourse level), especially those referring to causality, is conducted. The results of this analysis ensure the opportunity to ascertain important relationships established within components of Nature, e.g., a plant and another plant, and across components, e.g., plants and animals. Since causality is one of the most common type of relationships established among components of the world, it can become the focus of the analysis. Thus, a further insight into the content of the cultural model of Nature is achieved.

The results of the analyses conducted on the ethnographic and linguistic data already provide sufficient ground to formulate hypotheses about the cultural model of Nature held by the populations under investigation. These hypotheses consist of a number of propositions about the way in which the major components of Nature stand in salient relationships to each other. In addition, a causal model could also be arrived at from such content. This is exactly what has happened at the end of the previously supported phase of this research project.

As important as language is in exploring the mental organization of knowledge, analyzing language does not exhaust the possibilities in exploring the mind. Cognitive tasks should be administered to obtain further data. Some tasks allow one to explore memory (free listing tasks), other tasks explore categorization (sorting tasks), yet, others the assignment of relationships (rating tasks), e.g., causality. Free listing tasks were completed in the first round of work. In the proposed second phase, we use sorting tasks to acquire additional data about cultural models of Nature.

Causal Models and Cultural Models of Nature.

The hypothesized cultural models of Nature represent specific organizations of the suggested constitutive components of Nature, that is, plants, animals, physical environment, weather, humans, and supernatural or local variations. Causal relationships are one of the major forces weaving together these components. When presenting their hypotheses about the cultural models of Nature in the communities investigated, scholars on the team have made reference to—and refined/elaborated, that is, independently constructed from their data—one or more of the three

causal models suggested by Bennardo (2014) as characterizing the internal causal structures of cultural models of Nature. Causal models different from these three are likely to emerge for each community. The three causal models suggested are the *Holistic* model (see Figure 3), the *God-centered* model, and the *God-Humans-centered* model.

The *Holistic* causal model is based on "The Probability Distribution"—after descriptions of cultural models of Nature in other works—of the six components[2] of Nature or the "World." Notice, that the more of the six components are co-present, the higher the level of positive probability for the construction of the concept of Nature becomes. The causal model is then represented in the box labeled "The Graph," i.e., the concept of Nature. For this holistic model, Nature includes all the six components insofar as no clear separation among them is conceived as probable—this conclusion is drawn from the content of "The Probability Distribution."

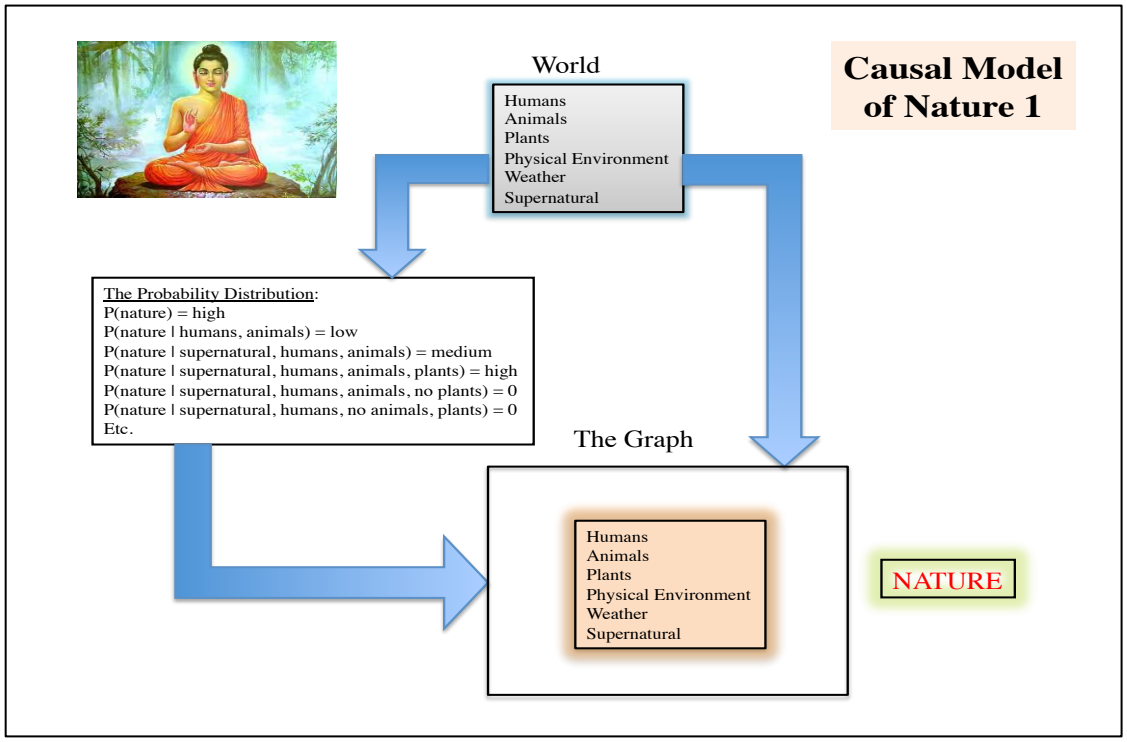

Figure 2: *Holistic* Causal Model (Bennardo, 2014)

The *God-centered* causal model is based on a different probability distribution. For example, the probability increases when the 'supernatural' is present, but it disappears when it is absent. The graph makes clear that the 'supernatural' component of the "World" is separate from the other components when the concept of Nature is constructed. The *God-Humans-centered* causal model is based on a third type of probability distribution. The presence of 'supernatural' or both 'supernatural' and 'humans' increases the probability while the absence of either of them makes the probability cease to exist. The graph makes clear that both the 'supernatural' and the 'humans' component of the "World" are independently separate from the other ones when this concept of Nature is constructed.

[2] The components vary with each community investigated, thus making the content of the "World" vary as well. The components presented are only suggestive of possible ones.

We expect a number of different causal model to emerge from the results of the analyses. Thus, by the end of the second and final phase of this research project, we anticipate a number of revisions and additions to the minimal typology of causal models just indicated.

A cultural model obtained by these procedures consists of a list of propositions that need to be validated by other means. The propositions (counterbalanced) form the basis of a fixed-format, "strongly agree to strongly disagree" questionnaire. Validation of the hypothesized elements of the model is done by univariate analyses of the questionnaire's items. Finally, because culture is seldom distributed uniformly among individuals in a community, the degree to which a cultural model is shared and the degree to which it differentially motivates people to act is assessed through a consensus analysis on the questionnaire data. This methodological trajectory represents the ideal to implement when searching for cultural models in a specific community/culture.