Metaphors: instruments for understanding and tolerating geological risk

Gabriela del Carmen González (Universidad de Colima)

ABSTRACT: The intention of this paper is to show how people use metaphors to understand and tolerate geological risk in the State of Colima, Mexico, which has an active volcano and is located in the most seismic zone of the country. This research was carried out from the perspective of Cultural Linguistics, with the methodology of cultural schemas. The understanding of this natural condition is based on four cultural schemas, whose core is made up of metaphors. These metaphors contribute to hiding the geological reality in which the people live, thus providing them with a subjective immunity.

Key words: metaphor; cultural schema; geological risk; subjective immunity; Colima.

Introduction

The intention of this paper is to show how metaphors are used to understand and tolerate geological risk by people in the State of Colima, Mexico. This State is located in the Western part of Mexico, the zone presents the highest level of earthquake activity in the country, according to the National Seismological Service (*Servicio Sismológico Nacional*). In addition, Colima has the most active volcano of Mexico, located on its border with the state of Jalisco.

Earthquakes and the volcano make Colima a special place, exposing the population to daily risk in several multifactorial forms. People born in Colima have a way of perceiving risk, which is manifested in thoughts, actions, emotions, attitudes and beliefs. Through these

expressions, different social groups build their idea of risk brought about by planet Earth and they respond to the resulting eventualities.

There is not a uniform way of reacting to these phenomena or of facing the possibility of their presence; Colima's people have developed several visions of the volcano and earthquakes that are manifested in their quotidian way of speaking. The identification of multiple metaphors employed in their discourse offers a deep reading of how they perceive geological risk.

This has been built from shared experience with the other members of their community for ages and from the knowledge or suppositions about these natural phenomena generated by their culture, which are inherited through tradition.

In accordance with this content, the research question in this paper is: How do metaphors help people in Colima to understand and tolerate geological risk? Therefore, I have worked with metaphors in language and thought, with a greater emphasis on thought.

The content sequence in this article is: preliminary, methodology, data analysis and results, conclusion and references.

1. Preliminary

This paper is derived from my PhD dissertation entitled *Living in Unquiet Land. Metaphors and Subjective Immunity. Cultural schemas in Geological Risk Perception in the State of Colima, Mexico.*

From my review of literature for this research I found some preliminary investigations on topics that were indirectly related to mine. All of them work on themes related to metaphor and environment but from other perspectives: "Politics of Nature: Building the German Reunification during the Great Odra Flood in 1997", written by Martin Döering in 2006; "Tracking the fate of the metaphor silent spring in the British environmental discourse: Towards an evolutionary ecology of metaphor", written by Brigitte Nerlich in 2004; "Conceptualising Foot and Mouth Disease: The Socio-Cultural Role of Metaphors, Frames and Narratives", written by Brigitte Nerlich, Craig Hamilton and Victoria Rowe in 2002.

I used the proposal of Cultural Linguistics (Palmer, 1996) and the theory of Cultural Schemas offered by Strauss and Quinn (1997) and Quinn (2005) to develop my research.

Cultural Linguistics is explained by Gary B. Palmer as "a synthesis of anthropological linguistics with the newly emergent field of Cognitive Linguistics. The approach centers on linguistic imagery, which is largely defined by culture". (1996, p. 290). This combination has been very useful for my work because the research problem is rooted in culture. The daily life of people in Colima is tied to in the way they think and talk about the volcano and earthquakes. Language, imagery and culture are deeply linked together in this study.

I put language in first place because I worked with the discourse of the people of Colima to find the way in which they perceive geological risk; different linguistic units were identified and through them, cultural schemas were reconstructed. In second place, is imagery. Imagery generates metaphors; with them, people create representations of the world around them in order to explain that world. Therefore, imagery is the ability to construct a situation in the mind in alternate ways (LANGACKER, 1987).

The relevance of culture in this paper is also explained by the reconstruction of cultural schemas that explain the perception of geological risk; these schemas are more commonly named cultural models (D'ANDRADE and STRAUSS, 1992; HOLLAND and QUINN, 1987). Gibbs considers that "cultural models are not epiphenomenal, but are

13

presumed to do real work for individuals and collective communities in shaping what people believe, how they act, and how they speak about the world and their own experiences" (1999, p.154). Therefore, cultural models have motivational force, as mentioned by D'Andrade (1992).

Strauss and Quinn say that cultural meanings are based on cultural schemas, which are "schemas that have come to be shared among people who have had similar socially mediated experiences" (1997, p. 48). Cultural schemas do not correspond exactly to their explanation in words, that is to say, they are not isomorphic with language. They can only be reconstructed through discourse (STRAUSS & QUINN, 1997) and the keys for their reconstruction can be identified from their context.

The first aim of my doctoral research was to understand the way in which people from Colima think about geological risk by analyzing their discourse and Cognitive Linguistics provided me with the answer. And so I approached the analysis of metaphor from the cognitive perspective (LAKOFF & JOHNSON, 1980).

"Metaphor is the phenomenon where one conceptual domain is systematically structured in terms of another" (EVANS and GREEN, 2006:38).

> It involves a mapping relation between two domains (more precisely, between elements in two domains). The source domain corresponds to the notion of metaphor vehicle, while the target domain is equivalent to the traditional metaphor tenor (TAYLOR, 2002:488).

The reconstruction process of cultural schemas implies the analysis of the informants' discourse, specifically, of certain linguistic units. First, metaphors are analyzed, followed by the key words around them. Then the reasoning used in understanding the metaphors and the reconstruction of the complete schema were examined.

In my work, I also used an idea associated with metaphors and cultural schemas: subjective immunity, which consists of minimizing daily and familiar risks and ignoring sporadic risks (DOUGLAS, 1996).

2. Methodology

In order to obtain the information for this research, we conducted 130 semi-structured interviews from October 2004 to March 2005 with native speakers from the ten municipalities of the State of Colima. Participants were both male and female; their ages in years ranged from 25 to 92 and their educational levels covered a wide range from illiterate to postgraduate.

From the interview transcripts, I began to identify the metaphors. This process involved several steps: two readings of each transcription, after which I identified the fragments of text, which had the possibility of being metaphors. I was looking for words or phrases, which presented a semantic tension, that is, whose meaning was different from lexical meaning; after that I composed several metaphorical groups.

At the same time, I found that, aside from the metaphors, there were several words within the discourse, which were frequently repeated. These words were not metaphors but they gave me very valuable information in regard to my research question. Thus, I found that the discourse content was richer than I had imaged. Later on, I found some fragments of text, which explained more details about how people perceived daily risk and about the metaphors themselves.

14

This condition represented a problem for me because, initially I was only going to work with metaphors and their conceptualizations, but because of my additional findings within the discourse, I had to look for a theoretical proposal, which allowed me to work with all these elements together. After a long search, I found the Cultural Schemas of Strauss and Quinn (1997) proposal and I used it to explain my findings in combination with Cultural Linguistics.

Once I had determined the metaphoric groups, keywords and reasoning of the informants from the analysis of the discourse retrieved from the interview transcripts, I began the reconstruction of cultural schemas. I could reconstruct four of them: organicist, fatalistic, naturalistic and terminologistic.

3. Data analysis and results

Cultural schemas and metaphors in geological risk perception.

3.1. Organicist Cultural Schema

The organicist cultural schema has its origins in Plato's concept of Organicism. It states that reality is best understood if it is thought of as an organic whole. Organicist thought considers there to be similar behavior between a macrocosm and a microcosm represented by the human body.

This metaphor group appears when speakers use their own experience with their body parts and bodily functions, in order to explain volcanic and tectonic activities to themselves. This treatment of the volcano and the Earth can be explained by embodiment from experientialism (JOHNSON, 1987; LAKOFF, 1987). It is the understanding and speaking of reality from embodied experience. As Gibbs signals "People use their knowledge of their bodily experiences/actions as the primary source of metaphorical meaning and understanding" (2002:10).

Speakers see the mountain, which constitutes the volcano but they cannot understand its activity from a geological perspective. Regarding the Earth, they know it as soil, or land, but they have problems understanding the movement of tectonic plates, and especially the strength displayed during an earthquake with its unpredictability and magnitude.

Users of organicist metaphors consider that the Earth and the volcano are alive and that they are also, at times, human beings. In this way, the volcano and the Earth have human parts and functions, albeit few in reference to the Earth.

THE EARTH IS ALIVE
> 1.a *Bueno, mi creencia es de que como todos estamos vivos la tierra misma está viva ...* (Colima, male, age 34, high school).
> (Well, my belief is that since we all are alive, the Earth is alive, too…).

THE EARTH MOVES ITSELF (shakes, swings).

THE EARTH SHAKES. This metaphor is so common and it is so deeply ingrained in the minds of speakers that its users do not perceive it as metaphor; one could think that it is a conventionalized metaphor, but it is renewed when there is an intense earthquake.

Shaking is an animal function, which is extended to human beings. The Earth shakes

15

because its motion is similar to shaking in human beings; hence speakers use their bodily experience to explain the Earth's motion.

> 1. *Bueno, pos la tierra tiembla porque se mueve, todo el tiempo se está moviendo* (Manzanillo, male, age 50, technician).
> (Well, the Earth shakes because it moves – it's moving all the time).

In the same way, the Earth becomes still, breathes, eats or swallows people, suffers, has a heart and bowels. The volcano, too, is alive and it has human parts and functions.

THE VOLCANO IS ALIVE

Because it is active, the volcano is considered to be alive. This metaphor arises from the metaphoric theme: ACTIVITY IS LIFE.

> 2. *Entonces, está vivo, en esta cuestión de que está prendido, si no estuviera prendido, estuviera totalmente muerto, no tuviera actividad* (Yerbabuena, female, age 56, did not complete elementary school).
> (Then, it's alive, because it's on fire. If it wasn't on fire it would be totally dead – it wouldn't be active).

In addition, the volcano has a mouth, belly, ribs and veins. In regard to functions, the volcano grows, burps, breathes, sleeps, suffocates itself and procreates.

Mental functions are also recognized in the volcano, mainly by people who live in the communities closest to it (*La Yerbabuena, La Becerrera*). As a human being, the volcano decides, gets angry, respects people, works, communicates, warns, talks, is a friend, a guardian and a neighbor.

We also found visual organicist metaphors: the earthquake grabs people; the volcano bathes itself with lava and the volcano smokes.

3.2. Fatalistic Cultural Schema

This cultural schema has two aspects: one, secular and the other, religious. Both of them come from the notion of fate. A fatalistic person believes that he or she is held by the determinism of happenings, directed by imposed, external causes affecting his or her will. A fatalistic vision asserts that human life is governed by fate, luck or God.

The secular aspect states that human life depends on fate and therefore we can only accept it and resign ourselves to it. People who think within this aspect use utterances structured with the verb TOCAR and the pronoun LE. This is a case of pragmaticization and subjectivization. The speakers use it to signal the position of the emitter or receiver about the utterance content. This is a very productive construction in motion verbs. The development of this fatalistic meaning in TOCAR + LE comes from the image schema of the verb *tocar*. It has five semantic features: motion, manner, contact, direction and space. In order to get the new meaning, the first four semantic features participate in the change from concrete to abstract. The pronoun *le*, affectation dative, represents the speaker commitment in the event.

TOCARLE A UNO ALGO ES LLEGARLE EL MOMENTO DE EXPERIMENTARLO (FOR SOMETHING TO HAPPEN TO SOMEONE, HIS OR HER MOMENT HAS COME) is a metaphoric theme which shows a form of predestination. The source domain contents the semantic features of image schema of verb *tocar;* the target domain shows the features of the predestination.

16

Source domain	Target domain
Motion – From the one who touches to the touched.	Fate content moves from fate to the predestined person.
Contact – There is a contact between the one who touches and the touched.	A connection is established between fate and the predestined person.
Manner – The contact is gentle.	The connection is subtle.
Direction – The motion goes from the one who touches to the touched	The motion goes from fate to the person's life.

Diagram No. 1. Mapping of *TOCARLE A UNO ALGO ES LLEGARLE EL MOMENTO DE EXPERIMENTARLO.*

The following metaphors come out of this metaphoric theme:

3.a *Me tocó vivir el del 41 allá en mi pueblo y pues fue tremendo* (Colima male, age 69, elementary school).
(It was my luck to be in the one (the earthquake) of '41 there in my town, and well, it was terrible).

3.b *Si ya nos toca morir, pos vamos a morir* (Tecomán, male, age 70, elementary school).
(If it's our turn now to die, then we're going to die).

In the scope of spatial metaphors, considering that TIME IS SPACE, as many daily metaphors show, metaphors about death with a fatalistic content appear: *MORIR ES LLEGAR A UN PUNTO EN EL ESPACIO* (TO DIE IS TO ARRIVE AT A POINT IN SPACE).

Source domain	Target domain
Displacement in space	Development of life
Different points along the trajectory of displacement	Different stages in life
Arrive at a certain point in space	Death

Diagram No. 2. Mapping of *MORIR ES LLEGAR A UN PUNTO EN EL ESPACIO.*

The following metaphors come out of this metaphoric theme:

4.a *Pos miedo a que hasta ahí lleguemos* (Yerbabuena, female, age 37, elementary school).
(Well, being afraid that that's as far as we'll get). In this metaphor, the deictic *ahí* (there, in this case that) signals a point in space that represents the day in which death will happen; speakers use *aquí* (here) with the same idea.

4.b *Ya está contado el día que va a llegar uno* (Ixtlahuacán, male, age 63, elementary school).
(The day one is going to die is already known).

4.c *Están ahí por su voluntad, entonces es ya lo que toca, ya lo que toca, no puede uno pasar de la raya* (Coquimatlán, male, age 44, elementary school).
(They are there because they want to be, so that's the way it is and when that's the way it is, no one can do anything about it).

17

The religious aspect of fatalistic cultural schema has the following features: People in Colima are deeply religious. Catholicism is dominant in 93% of the population (INEGI, 2005) and there is a notable popular religiosity. This fatalistic schema aspect states that nature and human life depend on God and nobody can escape from his justice. God controls nature, his power is manifested through it, in earthquakes and volcanic eruptions. These events are the result of inadequate human behavior, and so God punishes with earthquakes. This punishment generated by sin makes people ask for forgiveness, mercy and protection during an intense earthquake. Users of this schema show two ideas of God: one presents a terrible God, angry and punitive, who appears during the most intense earthquakes and during some very difficult events in their lives. The other is a humanized God, one who is present in their daily lives.

The metaphoric group, DIOS ES UN SER HUMANO (God is a human being), comes out of this way of thinking. This is a personification of God, which is manifested in utterances such as: God says, wants, knows, decides, permits, gives, wills, controls, protects, gives life and takes it away. The mapping is constructed by the features of human being in source domain and the features of God in target domain.

> 5.a ... *ya nos íbamos a morir, pero no, quiso Dios que no.* (Colima, female, age 84, elementary school).
> (We were going to die, but no, God did not want us to).
>
> 5.b *Para mí, si Dios dice hasta aquí, hasta aquí[1] está bien* (Cuauhtémoc, male, age 58, elementary school).
> (For me, if God says this is as far as I go, then that's fine, this is as far as I go).

3.3. Naturalistic Cultural Schema

This cultural schema is the most extended in the State of Colima and it shows the people's ability to adapt to the environment. This schema manifests basic trust (GIDDENS, 1996) and an ability to live in harmony with nature and their environment. The persons who use this schema feel that they get used to the earthquakes and volcanic eruptions, and that these phenomena are natural. They do not scream or cry when there is an intense earthquake; they take these events as natural manifestations of the Earth.

Inside this schema, there are two aspects: a positive and a negative. The first shows there is a certain ease in adapting to environment; the second conveys the idea that nature is bad and that it damages human beings; thus nature is punisher and evil-intentioned. This view is very commonly used by the media when there are disasters and sometimes it serves to hide the fact that work has not been carried out properly by the authorities. These considerations about nature have also generated misunderstandings about "natural disasters" because all disasters are produced by human beings. Many disasters are socially constructed because the vulnerability of communities is the responsibility of their inhabitants and politicians. The mixture of natural threat and vulnerability results in risk, and when risk is not attended to it evolves into disaster.

The metaphors in this schema are organized into four groups: attenuated metaphors, orientational metaphors, personification of nature and an adaptation metaphor.

---

[1] *Hasta aquí* (up to here) also means to die in the context of this utterance. It is a spatial metaphor which is explained in the section of secular fatalism.

18

Attenuated metaphors

There are many metaphors that speak about the volcano and the earthquake as if they had agentivity and volitive control, although they are natural unanimated phenomena. I call these types of metaphors *attenuated* because they seem to be personifications but they are not. Speakers give them agentivity, but not like human beings. They only invest the natural phenomena with self-energy.

THE VOLCANO IS ALMOST A HUMAN BEING

6.a *El volcán nos puede sacar de aquí* (La Hierbabuena, male, age 60, illiterate).
(The volcano can force us out of here).

6.b *Nos sentimos orgullosos de nuestros volcanes aunque nos estén matando de angustia* (Colima, male, age 67, secondary school).
(We are proud of our volcanoes even though they are killing us with terror).

EARTHQUAKES ARE ALMOST HUMAN BEINGS

7.a *Ese temblor les tumbó las torres a los templos de Colima* (Ixtlahuacán, male, age 78, teacher).
(That earthquake knocked down the towers of Colima´s temples).

7.b *Lo mató el temblor* (Colima, male, age 57, secondary school).
(The earthquake killed him).

Orientational metaphors

ARRIBA ES BUENO (UP IS GOOD)

8.a *Colima está de pie y trabajando.* (Slogan of the State government in the reconstruction process after the earthquake of January 21, 2003).
(Colima is on its feet and working*).*

ABAJO ES MALO (DOWN IS BAD)

8.b *Colima estaba en el suelo.* (Colima, male, age 54, secondary school).
(Colima was collapsed).

An adaptation metaphor

Hacerse el ánimo. This metaphor talks about the necessity to mold state of mind in a specific way to accept the risk in which people have to live and to accept the possibility of dying in a geological event. The metaphoric weight is centered in the verb *hacerse* which implies the psychological action on oneself to attain a change of attitude. This metaphor is derived from the metaphoric theme: STATES OF MIND ARE FABRICATED, and STATES OF MIND ARE OBJECTS.

9.a *Ya hacernos el ánimo de que estamos en un lugar sísmico y qué le vamos hacer* (Tecomán, female, age 58, did not complete elementary school).

19

(We have to accept the fact that we are in a seismic zone and we can't do anything about that).

There are visual metaphors in this schema such as: *río de lava* (river of lava), *río de lumbre* (river of fire), *castillo de fuegos artificiales* (castle of fireworks); about the effects of earthquakes: *las calles se ven como olas o culebras* (the streets look like waves or snakes), *gelatina* (a jelly), *licuadora* (a blender), and *columpio* (a swing).

3.4. Terminologistic Cultural Schema

This cultural schema reflects the degree of knowledge the people of Colima have about geological phenomena. Speakers use it mainly for speaking about the causes of these kinds of events. However, they do not talk about geological risk with scientific accuracy, applying concepts erroneously and mispronouncing terminology.

The content of this schema is that the volcano is an escape outlet for energy, heat, fire and gases from the Earth's core. The volcano has to release pressure, gases, lava, smoke, ashes and stones, as it finds necessary; if the inside of the volcano is blocked, it can explode. As long as the volcano is expelling fumaroles, there is no danger; it would be dangerous if it were blocked. The volcano is connected to other volcanoes. And earthquakes are caused by the Earth, plate motion or adjustment or by the volcano itself. In Colima there are earthquakes because it is a seismic zone.

The semantic weight of this schema is not metaphorical; the meaning of its contents is mainly literal, hence there are few metaphors: THE VOLCANO IS AN EXPLOSIVE ARTIFACT.

Source domain	Target domain
Explosive artifact	Volcano
It contains gases	It contains gases
It can explode	It can explode
It has an escape outlet	It has a crater
It is dangerous	It is dangerous
It can cause great damage	It can cause great damage to the population

Diagram No.3. Mapping of THE VOLCANO IS AN EXPLOSIVE ARTIFACT.

10. *Sí está como que estamos con una bomba de tiempo ahí, nomás que no le vemos el reloj, no sabemos a qué horas va a explotar* (Colima, female, age 64, technician).
(Yes, it's as if we had a time bomb there, only we do not see the clock, we do not know when it is going to explode).

There are some visual metaphors in this schema: *cascarón de huevo* (the Earth's crust is an eggshell), *chimenea* (the volcano is a chimney) and *las raíces de los volcanes* (the roots of the volcanoes).

20

Conclusion

The findings of this research are organized into three sections: a) a characterization of the metaphor of geological risk; b) the way in which metaphors in each cultural schema serve for understanding the volcanic and tectonic activities and c) the way in which each cultural schema with its metaphors is useful for being able to tolerate life in a place where there is a high geological risk.

a) The metaphor of geological risk.

According to my findings, the metaphor of geological risk is the result of a cognitive, imaginative and experiential process immersed in culture, in which creativity and a pervasive intention are implicated, taking form in a word or a sequence of words.

This metaphor constitutes a cognitive process because it requires the mapping of a cognitive domain (source domain) onto another cognitive domain (target domain); generally, though not necessarily, the first is concrete and the second, abstract. The relation among these domains is usually unidirectional; in a few cases reversibility is present between both domains. There is a relation of similarity or analogy between them that is called ground (Goatly, 2007). The habitual directionality of mapping (concrete to abstract) is related to the issue of function of the metaphor in helping to understand abstraction.

This is an imaginative process because the role of imagery or imaginative ability on the part of the speaker is fundamental for its generation. Through it, the person builds a representation of the part of the world that he or she is metaphorizing.

This process also is experiential because individual or community-shared experiences that the speaker has had, participate in its consecution. These experiences are loaded with perceptions, emotions and knowledge that are culturally invested and related to the words that have been metaphorized. This experiential load necessarily relates metaphor with culture in a profound manner. As a person's life develops, he or she is going to learn multiple ways of getting in touch with reality, of perceiving it and of feeling about it from his or her culture. "Important parts of metaphoric thought and language are as much part of the cultural world as they are internalized mental entities in our heads" (GIBBS, 1999, p.146).

In addition, metaphor implicates creativity because whenever a new or conventional metaphor is used, there is freshness and novelty in its expression, characteristic of figurative symbolic language, that offers a different way of considering the metaphorized topic, even though the relation base between the metaphorizer and the metaphorized terms in conventional metaphors is the same.

This type of metaphor also has a pervasive intention because when using it, the speaker has the purpose of convincing the listener that the content of her or his experience related to the volcano or the earthquakes was real. The speaker apparently presents an urgent need to make listeners understand what his or her experience was like: if it was appealing, like the vista of an active volcanic landscape or if it was undesirable, like high intensity earthquakes. In order to fulfill this pervasive intention, speakers use many visual images, which they verbalize. These visual images favor listener understanding because they generate imaginative processes within her or him, according to what is heard. This feature of metaphor in geological risk is directly related to pragmatic issues.

Each process takes form in a word or sequence of words called metaphor. The formula to expresses the relation between source and target domains and functions such as the metaphoric base is represented as X is Y and has been named *metaphoric theme* by Goatly

21

(2007). The metaphorical groups throughout this paper are headed by one of these metaphoric themes because the metaphors are licensed and organized by them.

I also found visual metaphors, which are projections of image schema of one image onto another image (CUENCA & HILFERTY, 1999, pp. 104-105). These metaphors are based on a visual image, which represents geological issues.

b) How metaphors help geological risk to be understood.

Earlier in this document, I explained that many people in Colima have a superficial understanding of volcanic and tectonic plate activity. Hence, in the case of the volcano, they see the volcano and its fumaroles, lava, ashes, stones, but they do not understand the volcano's essence or the inner workings of the planet from a geological perspective. Likewise, there is no geological understanding of what tectonic plates are and why they need to move.

All of this explains the function of metaphors in the discourse of geological risk. The complexity contained in volcanic and tectonic activities impels the speaker to find some way to understand these topics and she or he uses metaphors because complex contents can be turned into concrete issues through their use.

Some of the cultural schemas with their metaphors are more helpful than others in understanding volcanic and tectonic activity. According to my findings, the most helpful are the organicist, naturalistic and the terminologistic schemas. In the first two, there is a strong personification, which makes me think that the speakers use their own bodies as the basis for understanding these issues. Therefore, the first offers a very simple explanation of the parts and function of the volcano and the Earth. In the second, the explanation is very close to being organicist, because this schema uses attenuated metaphors and the personification of nature, which are extensions of the organicist view - perhaps weaker, especially in the case of attenuated metaphors. In the third, there is a more objective explanation of these phenomena because a large part of the schema is very literal, but its metaphors help to understand very clearly how the Earth and the volcano function through their comparison with daily life settings.

c) How metaphors help in being able to tolerate geological risk.

In the case of the function of metaphors to help deal with volcanic eruptions and earthquakes, all of the schemas are useful because each one in its own way offers this possibility. Organicist schema works creating identification with the enemy, and informants see the volcano and Earth as their equals through experientialist vision.

Fatalistic schema works building victimization in the face of fate or God (in its angry and terrible manifestation) and identification (in its anthropomorphist manifestation). So people in Colima victimize themselves and they wait for any happening with the conviction of being impotent before fate or God. In some cases, the humanization of God in this schema creates an impression of control because a humanized God is a more controllable God.

Naturalistic schema works creating an adaptive behavior to the environment, which includes volcanic eruptions and earthquakes. People who use this schema consider life to be benevolent in itself. From this idea and from the basic trust instilled in them by their parents, they live quietly and have the ability to enjoy nature. They are in harmony with natural events. This schema constructs a protective armor in the face of geological events and the people whose thought is influenced by this schema consider both high magnitude earthquakes

22

and intense volcanic eruptions to be very sporadic. They are accustomed to geological risk because they live in the seismic zone that possesses the most active volcano in Mexico.

Terminologistic schema works generating knowledge about geological phenomena, but this knowledge is unfinished, limited and it contains mistakes or misunderstandings. Nevertheless, this schema creates the closest approach to objective geological knowledge. Informants who use this schema are looking for accurate knowledge about geological phenomena but they are in a primitive stage with no formal structure because there is still a large degree of community misinformation concerning these topics in Colima. Thus, people who use this schema have weak geological knowledge and they resist committing to prevention because formal knowledge implies involvement in risk management tasks. Since they do not know exactly what occurs, they do not feel they have any responsibility in regard to these issues.

From the previous exposition, a common feature underlying all four schemas can be found: subjective immunity (DOUGLAS, 1996). This disposition, as I said before, helps people to minimize daily risks and ignore sporadic risks. The features of attitude and behavior in each schema show the different ways used by people in Colima to tolerate geological risk. I arrived at this conclusion principally from the analysis of metaphors, although I also used other linguistic units such as keywords and reasoning to reconstruct cultural schemas.

The state of Colima is a territory whose entire society is dominated by subjective immunity - from the authorities down to the children. This is an acceptable way to cope with anguish. Therefore, the people of Colima enjoy the weather, the landscape, the impressive view of the Volcano of Fire and the generosity of the soil, forgetting about the geological risk that is their daily companion.

The result of my research expressed in this paper suggests that the prominent function of metaphors in understanding and tolerating geological risk is manifested in the way they help to explain and to hide the threatening natural conditions of the physical environment in which the people of Colima live.

RESUMO: A intenção deste artigo é mostrar como as pessoas usam metáforas para compreender e tolerar o risco geológico no Estado de Colima, México, que tem um vulcão ativo e está localizado na zona mais sísmica do país. Esta pesquisa foi realizada a partir da perspectiva da Lingüística Cultural com a metodologia de esquemas culturais. A compreensão dessa condição natural é baseada em quatro esquemas culturais, cujo núcleo é composto por metáforas. Essas metáforas contribuem para esconder a realidade geológica em que as pessoas vivem, proporcionando-lhes uma imunidade subjetiva.

Palavras-chave: metáfora; esquema cultural; risco geológico; imunidade subjetiva; Colima.

References

CUENCA, M.J. & HILFERTY, J. *Introducción a la lingüística cognitiva.* Barcelona: Ariel. 1999.

D'ANDRADE, R.G. Schemas and motivation in D'ANDRADE, R.G. and STRAUSS, C. Eds. *Human motives and cultural models.* USA: Cambridge University Press. 1997. pp. 23-44.

DÖERING, M. The politics of Nature: Constructing the German Reunification during the Great Odra Flood 1997 in RIYAN, J.G., VAN DEN BORN *et al* Eds. *Visions of Nature. A scientific exploration of people´s implicit philosophies regarding nature in Germany, the*

Netherlands and the United Kingdom. Berlin − Hamburg − Münster: LIT Verlag. Chapter 8. 2006. pp. 155-172.

DOUGLAS, M. *La aceptabilidad del riesgo según las ciencias sociales.* Barcelona: Paidós. 1996.

EVANS, V. & GREEN, M. *Cognitive Linguistics. An Introduction.* Great Britain: Routledge. 2006.

GIBBS, R.W. Jr. Taking metaphor out of our heads and putting it into the cultural world en GIBBS, R.W. Jr. & STEEN, G.J., *Metaphor in Cognitive Linguistics.* Amsterdam/Philadelphia: John Benjamins Publishing Company. 1999. pp.145-166.

GIBBS, R.W. Jr. Bodily Action and Metaphorical Meaning in Cognitive Approaches to Figurative Language a special issue of *Style* 36:3. 2002.

GIDDENS, A. La modernidad "desmembrada" y ambivalencia en Beriain, J. Comp. *Las consecuencias perversas de la modernidad.* Barcelona (España): Editorial Anthropos. 1996. pp. 33-71.

GOATLY, A. *Washing the Brain. Metaphor and Hidden Ideology.* Ámsterdam/Philadelphia: John Benjamins Publishing Company. 2007.

GONZALEZ, G. del C. *Viviendo en tierra inquieta. Metáforas e inmunidad subjetiva. Esquemas culturales en la percepción del riesgo geológico en el estado de Colima, México.* PhD Dissertation. Social Sciences. El Colegio de Michoacán, A.C. Zamora, Mich. México. Unpublished. 2008.

HOLLAND, D. & QUINN, N. Eds. *Cultural models in language and thought.* USA: Cambridge University Press. 1987.

INEGI. II Conteo de población y vivienda 2005. Tabulados básicos. Tomo I y II.

JOHNSON, M. *The Body in the Mind. The Bodily Basis of Meaning, Reason and Imagination.* Chicago: Chicago University Press. 1987.

LAKOFF, G. *Women, Fire and Dangerous Things. What Categories Reveal about the Mind.* Chicago and London: Chicago University Press. 1987.

LAKOFF, G. & JOHNSON, M. *Metaphors We Live by.* Chicago and London: Chicago: University Press. 1980.

LANGACKER, R. W. *Foundations of Cognitive Grammar, Vol.I Theoretical Prerequisites.* Stanford, California: Stanford University Press. 1987.

NERLICH, B. Tracking the fate of the metaphor *silent spring* in British environmental discourse: Towards an evolutionary ecology of metaphor. Online Journal Metaphorik.de

24

04/2003 Metaphor and ecology. Available in <http://www.metaphorik.de/04/nerlich.htm> Access in May 15 2006.

NERLICH, B., HAMILTON, C. A., ROWE, V. Conceptualising Foot and Mouth Disease: The Socio-Cultural Role of Metaphors, Frames and Narratives. Online Journal Metaphorik.de 02/2002. Available in <http://www.metaphorik.de/02/nerlich.htm> Access in april 22 2006.

PALMER, G. B. *Toward a Theory of Cultural Linguistics.* Austin: University of Texas Press. 1996.

QUINN, N. Ed. *Finding Culture in Talk. A Collection of Methods.* USA: Palgrave MacMillan. 2005.

STRAUSS, C. & QUINN, N. *A cognitive theory of cultural meaning.* United Kingdom: Cambridge University Press. 1997.

TAYLOR, J.R. *Cognitive Grammar.* New York: Oxford University Press. 2002.