



AIBR
**Revista de Antropología
Iberoamericana**

www.aibr.org

Volume 16

Number 1

January - April 2021

Pp. 61 - 87

Madrid: Antropólogos
Iberoamericanos en Red.
ISSN: 1695-9752
E-ISSN: 1578-9705

The Languages of the Mind

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Submitted: August 13, 2019

Accepted: July 03, 2020

DOI: 10.11156/aibr.160104e

ABSTRACT

Linguistic relativity, rightly understood, implies that the presence or absence of certain grammatical categories and discursive styles can influence how we perceive and experience the world around us. In this study, monolingual speakers of Chol Mayan, a tenseless language, were shown a series of visual stimuli portraying different sequences of events, and were asked to describe what they saw to an interviewer. Participants were shown a long silent story composed of many sequential images, and a set of shorter stories composed of a minimum of two sequential images and a maximum of five sequential images. None of the stories that the Chol speakers recounted in response to the stimuli followed a sequential-chronological order, and all the sequential images were described in non-sequential terms. In line with the linguistic relativity hypothesis, it is argued that this interesting discursive effect may be the result of the absence of tenses in the Chol language.

KEY WORDS

Linguistic relativity, sequentiality, Mesoamerica, Chol Mayan.

LOS LENGUAJES DEL PENSAMIENTO**RESUMEN**

La relatividad lingüística implica que la presencia o ausencia de distintas categorías gramaticales, así como distintos estilos discursivos, pueden influir en cómo percibimos y experimentamos el mundo que nos rodea. Los mayas choles de Chiapas hablan una lengua que no tiene tiempos verbales, y que utiliza el aspecto gramatical para expresar nociones temporales. Este artículo explora el efecto que la ausencia de tiempos verbales puede tener en la percepción de imágenes secuenciales. En este estudio se presentaron una serie de estímulos visuales a varios hablantes monolingües choles, que consistían en distintos tipos de imágenes secuenciales que los hablantes tenían que describir. Se les mostraron una historia larga a través de múltiples secuencias de imágenes, y varias historias breves compuestas por un mínimo de dos y un máximo de cinco imágenes secuenciales. Ninguna de las narraciones que los choles hicieron de la historia larga o de las historias cortas poseían una lógica secuencial cronológica, y todas las imágenes secuenciales fueron descritas en términos no secuenciales por los hablantes choles. En línea con la hipótesis de relatividad lingüística, en el artículo se plantea que este curioso efecto discursivo puede estar causado por la ausencia de tiempos verbales en la lengua chol.

PALABRAS CLAVE

Relatividad lingüística, secuencialidad, Mesoamérica, mayas choles.

ACKNOWLEDGMENTS

I wish to thank Eve Danziger, who introduced me to linguistic relativity, and whose influence on this article and my intellectual trajectory has been invaluable. Sergio D. López made the vignettes for the sequentiality test, and supported me unconditionally throughout the fieldwork. I sincerely thank all the Chol speakers who participated in the cognitive tasks with great patience and empathy. Finally, this research would not have been possible without the generous support of the Wenner-Gren Foundation.

Any student who has taken an introductory course in the history of anthropology has heard of the so-called linguistic relativity hypothesis, formulated by Benjamin Lee Whorf (Whorf, 1941; Whorf and Bissell Carroll, 1956). This hypothesis is based on the idea that the language we speak exerts a profound influence on how we categorize and experience reality, what we anthropologists like to call worldview. The hypothesis is provocative because it implies that different languages translate into different worldviews. But, as its name implies, it is still only a hypothesis, an idea that, to date, remains to be fully refuted or corroborated¹.

Whether we agree with this idea or not, the linguistic relativity hypothesis has been one of the most prolific concepts in the history of anthropology. Decades after it was first proposed, it continues to inspire studies that attempt to prove or disprove this provocative idea. The hypothesis has taken on a life of its own that, fortunately, is not strictly confined to academia. Every so often an article is published in the *New York Times*, or other popular sources, summarizing the latest research on how speakers of one language or another perceive something differently. And every so often, highly regarded academics descend from the ivory tower to write monographs aimed at a general audience, attempting to dismantle this very idea (McWhorter, 2014; Pinker, 2007). There are even science fiction movies inspired by the hypothesis, such as Dennis Villeneuve's (2016) *Arrival*.

Why is this idea so dear to some researchers and so despised by others? The arguments of its detractors are vaguely reminiscent of those who equate cultural relativism with moral relativism. If different languages translate into different ways of seeing, experiencing, and categorizing reality, then human beings are doomed to experience the world through a lens imposed by the grammatical categories of their native languages. For the detractors of the hypothesis, whom we can call "babelists," if we were to take the hypothesis seriously, we would have to admit that different languages separate human beings instead of uniting them. In other words, some critics of the hypothesis consider that linguistic relativity is incompatible with cultural universalism. On the other hand, for linguistic relativists, languages are flexible and respond

1. On the origins and various influences on Whorf of authors such as Humboldt, Sapir and Boas, among others, see Lucy (1992a and b, and 1997), and Gumperz and Levinson (1996). Lee (1996) also provides an excellent recapitulation of the hypothesis and some critical positions. Gentner and Goldin-Meadow (2003) have compiled a collection of more recent experimental studies, which take positions on both sides of the debate, defending and refuting linguistic relativity.

to the diverse needs of each culture. Linguistic relativity, properly understood, does not imply that language forces anyone to see the world in a certain way, but rather the opposite: learning a different language is like tasting a new flavor; it is the key to experiencing or looking at the world from a different perspective. Human beings are diverse by nature, and this is not bad news; on the contrary, it is something to celebrate.

Years after I first read Whorf, I continue to ask myself the same questions that remain unanswered in the debate between babelists and relativists: is learning a language the key to understanding the culture of its speakers? Can an anthropologist studying a foreign culture have a deeper understanding of that culture if he or she learns the language? Anthropological research rarely uses self-reflexivity to analyze the impact that speaking a field language can have on the quality of the information collected by the anthropological researcher (Tanu and Dales, 2016). This necessary exercise in self-reflexivity has inspired me to write this article.

Whorf arrives in Chiapas

Anyone intrigued by the question of whether language is the key to the interpretation of culture should begin by learning a language other than his or her native tongue. Learning a field language that is substantially different from the researcher's native language is an excellent strategy to practice anthropological estrangement. Thus began my journey to learning Chol, a Western Mayan language that is spoken mostly in the Mexican state of Chiapas, on the border with Guatemala. The Chol are, like many other Mayan groups, slash-and-burn farmers, whose main subsistence activity is the cultivation of corn, beans, and various types of squash. Some Chol also combine their *milpas* (corn fields) with the production of coffee, which brings some cash to the family economy. Despite not having been the focus of attention in the famous Harvard Chiapas Project, perhaps overshadowed by the neighboring Tzotzil and Tzeltal, the Chol have been the subject of more recent ethnographic studies (Alejos García, 1999; Imberton-Deneke, 2002 and 2016; López Martínez, 2013; Pérez Chacón, 1988).

While the intellectual strain of learning a language so different from one's own is profoundly productive, this is a high-cost process. The anthropologist has to invest months, sometimes years, studying the language just to be able to have a fluent conversation with native speakers. My process of learning the Chol language was no exception

in this regard. When, after what seemed like an eternity studying Chol, I began to speak it somewhat fluently, I asked my Chol friends to tell me traditional stories: this seemed like an excellent way to start collecting oral texts while learning Chol folklore and mythology.

The first thing I realized is that the stories told by monolingual Chol speakers were quite different from the stories told by bilingual Chol and Spanish speakers, or by monolingual Spanish speakers. They were impossible to understand if one insisted on constructing a chronological timeline, where earlier events precede later events. In Chol stories, characters move freely between scenes, which are like self-contained or independent episodes, without following a chronological order (Rodríguez, 2016). The story can start *in medias res*, and from there it can go forward or backward, or develop as in a zigzag, going back over scenes already mentioned, or suddenly transporting us to scenes that seem unconnected to previously mentioned events. After so many months learning the subtleties of a linguistic system so different from my native language, I began to wonder about these fascinating stories that I could not understand in chronological terms: could it be that a sequential narrative order was not required in the Chol oral tradition?

The long months devoted to the meticulous study of Chol grammar began to shed some light on these puzzling traditional stories that had such a different narrative structure. In a language like Spanish, every verb must be inflected for tense. But Chol, like most other Mayan languages, lacks verb tenses that have to be obligatorily marked on the verb. For example, the sentence *mi kmajlel tyi cholel* can be translated in Spanish as “yo voy a la milpa” (I go to the milpa), “yo iba a la milpa” (I went to the milpa), or “yo iré a la milpa” (I will go to the milpa). The only way to know whether the action of going to the milpa is located in the past, present, or future is by context. In Chol, however, verbs are marked with the grammatical category of aspect, which describes predicates qualitatively. Grammatical aspect conveys, for example, whether an action is habitual or punctual, or whether it is finished or unfinished. The predicate *mi kmajlel tyi cholel* means that the action of going to the milpa is habitual and not punctual, and that it is by no means complete or finished. But it does not specify whether this action is habitual in the present, in the past, or in the future.

This is not to say that the Chol cannot, if they so wish, express whether an action occurs in the past, present, or future. In languages that

lack verb tenses, there are multiple strategies for expressing these concepts, including the use of temporal adverbs (Klein, 2009; Tonhauser, 2015). In Chol, as in many other languages without verb tenses, temporal adverbs can be used to express whether an action occurs before, simultaneously, or after the moment of speech, which is what verb tenses convey (Vázquez Álvarez, 2011; Rodríguez, 2016 and 2019). However, the key difference between languages such as Spanish and Chol is the obligatory nature of these categories. Verbs in Spanish have to be inflected for tense. In Chol, although it is possible to express with certain adverbs whether an action occurs before, during, or after the moment of speech, this is completely optional (Rodríguez, 2016 and 2019). Spanish grammar, in Whorf's terms, invites us to think of temporal events as inevitably tied to verb tenses. Chol grammar does not. Herein lies the key to the absence of a linear logic in Chol stories: if each sentence in a story does not have a verb inflected for tense, it cannot be anchored to a specific moment located in an imaginary timeline—a sequence of past, present, and future events.

“Thinking for speaking” in Chol

If the Chol language does not force its speakers to use verb tense, to what extent is a sequential logic absent in Chol stories? Since the traditional Chol stories I had collected did not seem to follow a sequential order, one way to answer this question was to show Chol speakers a series of sequential images, and simply ask them to explain what was represented in those images.

In the 1980s, Dan Slobin and Ruth Berman developed a famous cross-linguistic comparative study where they showed speakers of four different languages² a picture book, without any written words, and asked them to describe the story in the book (Slobin, 1987 and 1996). In this study, Slobin and his colleagues showed that, using the same stimulus, the stories the speakers told were different—not only their form, but also their content differed—and the variations that they observed were linked to the presence or absence of certain grammatical categories in each of these languages. For example, whether the languages had or did not have certain verb tenses, or different types of grammatical aspect, influenced the rhetorical style of the narratives, the descrip-

2. The original study was conducted with four languages: Spanish, English, German, and Hebrew; it has subsequently been repeated in many other languages, including Finnish, Icelandic, Japanese, Mandarin, Russian, and Turkish.

tion of certain images and the interpretation of the actions conducted by the characters.

Inspired by Slobin's work, I showed the same book they had used in that study—*Frog, Where Are You?* (Mayer, 1969)—to four monolingual Chol speakers. The 24 images in this picture book portray the story of a boy who catches a frog and puts it in a glass jar. While the boy sleeps, the frog escapes and the boy sets out to find it, accompanied by his pet dog. The boy first searches for the frog in the woods, where he finds a log, but when he looks inside the log he only finds a beehive. The bees, annoyed by the incursion, chase the boy and his pet, who run away. The protagonists continue to look for the frog, and the following images show a deer, which grabs the boy on its horns, and throws him into a small pond, where the boy finally finds the frog.

Since the vast majority of Chol speakers in the current adult generation are bilingual in Chol and Spanish, most monolingual speakers are older. Hence, the four speakers whom we showed the picture book ranged in age from 55 to 75. None had received formal schooling, and all four worked in traditional occupations, tending their cornfields or homemaking. Two of them were male and two were female. The Chol speakers carefully examined the book page by page, picture by picture. The descriptions they all gave were very similar, and were characterized by a very peculiar rhetorical style, whose main feature was the absence of sequentiality. The Chol speakers mentioned isolated events that they remembered, but did not make connections between those events. The most frequently repeated elements in Chol descriptions were the nouns “child” (*aläl/bityal*), “person” (*kixtyaño*), “dog” (*tsi*) and “deer” (*chijmay/me'/kolembä ixulu*—“the one with the big horns”). Most of the descriptions used nouns, preceded by the phrase *tyi jk'ele...* (“I saw...”) or *ya'añ...* (“there is...”). The most detailed of all the stories I collected, narrated by a monolingual Chol speaker named Don Fernando, went like this: “*These things I saw, like a child with his dog, or this... there were many things... like... like this... deer with big horns, because it is carrying the child, or where it throws him... Because that one, I think he is a witch too, or maybe not. [I saw] where he threw him. I saw many things there. But they were from another world*”.

Of all the images in the story, the one he finds most memorable is “this deer, the one with the big horns...” which may or may not be a witch. Without a doubt, the deer with the big horns reminds Don Fernando of a character from Chol folklore, the Tientzun, a terrifying gigantic goat with

big horns that, according to the Chol, is sometimes involved in witchcraft attacks.



Figure 1. “The one with the big horns”. Source: *Frog, Where Are You?* p. 18. Illustration by Mercer Mayer.

Although it is evident that Don Fernando’s account does not follow a sequential order, it is worth examining the structure of the sentence where the deer throws the boy into the pond. In this scene, which in the original book is captured in three images, the deer is first shown carrying the child on its antlers (Figure 1), and the following images show the boy and the dog, first in mid-fall, and then into the pond (Figure 2). The implication is that the images that show the deer carrying the child on his horns and the boy and his dog being thrown into the pond are sequentially connected. But is that the Chol interpretation of these images?

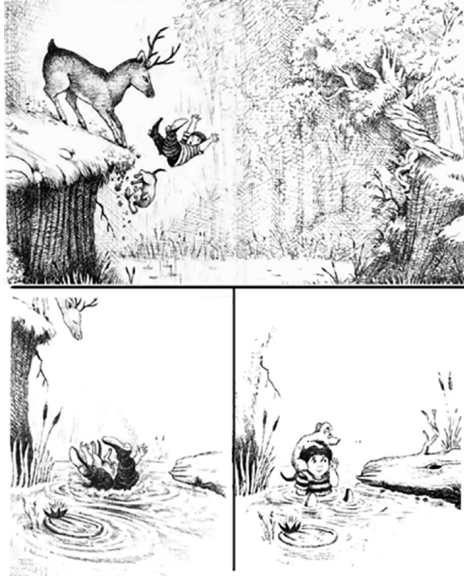


Figure 2. “Or where it throws him”. Source: *Frog, Where Are You?* Image above: pp. 20-21. Image below: pp. 22-23. Illustrations by Mercer Mayer.

Let us examine Don Fernando’s exact words:

- (1) *Jiñtyak tyi jk’ele ta’ché bajché’ aläl,*
These things I saw, like a child
- (2) *yik’oty jiñi ts’ĩ, o este añ kabältyak,*
with his dog, or this one... there were a lot of things....
- (3) *ché’ bajché’ jiñi me’ kolembä ixulu,*
like... like this... big horned-deer
- (4) *ejke choñkol ikech majlel jiñi aläl,*
because it is carrying the child
- (5) *o baki mi ichok o...*
or where it throws him...
- (6) *jiñba tyi ikaj bajché’ li xi’baj mi kñatyañ je’el...*
because that one, I think he’s a witch too....

Although there seems to be an implied sequence between “because it is carrying the child” and “or where it throws him,” in Chol this is not the case. The second predicate “or where it throws him” (line 5) is a complement to the main verb in line (1) “these things I saw”. Strictly speaking, although we may be tempted to think that there is a sequential connection between the two verbal predicates, “carrying the child” and “throwing him,” Chol grammar does not convey such sequentiality. Carrying the child and throwing him into the river are not the two parts of a sequence, but two of the “things” (*jiĩntyak*) that Don Fernando saw in the book. It is also important to note that the sentence “or where it throws him” is introduced by a disjunctive conjunction, “or”, a borrowing from Spanish. The meaning for Don Fernando is “I saw this, the other, or the other”, not “I saw this, then the other”. What he saw, besides a deer carrying the child on its horns, is *where* it threw him, not that it first carried him on its horns, and then threw him. The latter is an interpretation shaped by the grammatical categories of languages like Spanish, but not by the Chol language.

Figure-ground reversals

If traditional Chol stories do not follow a chronological-sequential order, and if a clearly sequential story such as *Frog, Where Are You?* is not interpreted sequentially by monolingual Chol speakers, how is sequentiality constructed in Chol language and thought? Can Chol speakers make an implicature of sequentiality³ between two or more images sequentially connected? Or is sequentiality is an optional element in Chol discourse?

In the case of the story *Frog, Where Are You?*, a sceptic could argue that the absence of sequentiality in Chol narratives was due to the story being too foreign to Chol cultural logic, or even perhaps because the story was too long to remember. Therefore, to delve into the notion of sequentiality we have to use stories that, first, are not dissonant from a Chol cultural perspective, and second, are not as long as *Frog, Where Are You?* Hence, I decided to work with miniature stories, which Labov called “minimal narratives” (Labov, 1972). A minimal narrative is “*a sequence of two [verbal] clauses which are temporally ordered: that is, a change in their order [of these two clauses] will result in a change in the temporal sequence of the original semantic interpretation... a minimal narrative is*

3. The term “implicature of sequentiality” refers to a pragmatic implicature (Grice, 1975) where what is implied—the “implicatum” in Gricean terms—is a chronological-sequential ordering between two or more sentences, verbal clauses, or, in this case, images.

defined as one containing a single temporal juncture [between two clauses]" (Labov, 1972: 360-361).

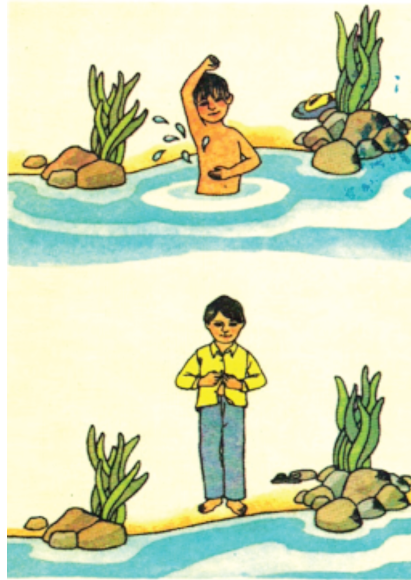


Figure 3. Sequence of two images. Source: *Mi Primer Libro* (Secretaría de Educación Pública, 1981: 33). Illustration by Irene García.

The image shown in Figure 3 contains a minimal narrative implicature between the upper and lower images: first, a child is bathing in the river; then, the child is getting dressed. From a Chol cultural perspective, the image is unsurprising, as many of them habitually bathe and swim in rivers. This is how an American English speaker described the image:

There's a boy in a pond, and he's bathing, his clothes are off to the side, and he's washing himself, rubbing himself here [makes an iconic gesture showing the way the boy in the image is rubbing himself with the sponge], he's got his arm up, so... he's... washing himself, and then in the next image he's fully dressed, or he's getting dressed, buttoning his shirt, he's got his pants back on, and he's in front of the pond.

This is a fairly standard narrative for speakers of languages such as English or Spanish; both are languages of the Indo-European family that share a large number of grammatical features, including obligatory grammatical tense. The narrator may give more or less detail in his or her

story, he or she may use a minimal narrative or several, but in all cases it is assumed that the protagonist of the story is *one* child (the child in the top and bottom images is the one and the same), not two different children. It is also assumed that there is a temporal sequence between at least two actions of the child: bathing and dressing, the first being chronologically prior to the second. But the same cannot be said of the monolingual Chol speakers whom I showed the image in Figure 3. Not even one of the nine people whom I showed the image⁴ came up with a sequential narrative remotely similar to the one volunteered by the American speaker. For the Chol speakers, the image showed either one person performing one action (not a sequence of two actions), or two people doing two independent actions.

Among the Chol speakers who only identified one person in the image, one of them simply described him with a generic form for male persons in Chol, *ombrejixtyo ta' yila*, “it seems that he is a man”. The attention of another speaker was directed towards the child’s clothes: his first phrase was *boñ ipislet* “[there is/are] his drawn clothes “. He then pointed directly to the child at the top of the picture and said *jĩni tsämel muk*, “this one is bathing”. It is clear that there is no sequential connection or minimal narrative between “[there is/are] his drawn clothes “ and “this one is bathing”, based on the fact that the first clause is not even a verbal predicate: in Chol, as in many other languages, attributive sentences⁵ can be made without a copulative verb (in this case, the verb “to be”), simply by juxtaposing a noun and an adjective. What the Chol speaker literally says is “his drawn clothes” (which means that there were clothes drawn on the paper that he was being shown).

Another speaker was ambiguous about whether there were two children in the image, or it was the same child. In her description, she also failed to include any sequential connection between the two images. Interestingly, what she mentioned first was not the child, but elements of the landscape: *che'bä tyuñ, chuxka yes ibaj ili, yopotyē?* “This is a stone. What is this? Leaves?”. After naming the stone and the leaves, her attention turned to the child bathing: *kixtyaño ibaj ili, ts'ämel ta' muk ili ibajñel* “This is a person, he is bathing alone”. She then continued naming other elements in the image, while pointing to them with her finger: *ja'*

4. These nine speakers ranged in age from 24 to 85 years old. Two were male and the rest were female, as monolingualism is more frequent among women than men in the Chol area. These speakers had little or no schooling or exposure to literacy and were engaged in agricultural work in the case of the men and domestic work in the case of the women.

5. Attributive sentences are simple sentences consisting of a subject, a copulative verb (such as to be or to seem), and an attributive argument, which expresses some quality of the subject: for example, “the clothes are beautiful”, or “the boy looks tired”.

yila ibaj ili. Tyuñ iliyi. Machäch lu' ili? Lu' jiñ ta'i, “This looks like water. This here is a stone. Isn’t that all? That’s it.” And just before she finished her description, she noticed the child in the second image and said, *choñkox ixoxo ipisleli* “they are changing their clothes.” The use of the plural in this sentence is interesting, because although only one of the two children in the image is shown changing clothes, the choice of the plural probably indicates that she sees two children, not two sequential actions performed by the same child. In any case, even if she were referring to the same child, it is clear that no minimal narrative or sequential connection is established between the actions of the child in the first image and those of the child in the second.

The rest of the speakers described the image as referring to two separate individuals, not connected to each other, and specifically used plural markers to refer to the two children. One of the speakers begun her description like this: *kixtyañotyak la'saj añtyaki* “These are little people”, an affective way of referring to children. She then described what each of the two children was doing: *choñkoläch ijam ibujk, yik'oty choñkol its'ämel*, “This one is opening his shirt, along with this one who is taking a bath”. Another speaker called the two children *X-tyämijolob* “the ones with long hair”. The Tyämijol is a supernatural character in Chol folklore who lives in a cave and abducts women at night (Vázquez Álvarez, 2011). In any case, for this woman, in the image there was not one, but two Tyämijolob, which is indicated in Chol by the plural suffix *-ob*. In another case, one of the speakers interpreted the children as being of two different genders, calling them *alo'* “boy” and *Yañ. X-k'aläl* “a different one, a girl”. In neither of these cases was a minimal narrative sequence assumed between the actions of the child in the first and second images, as the two children portrayed are not even considered to be the same child.

Finally, the most interesting case was a woman who not only did not use any sequential language to refer to the connection between the child’s actions in the first and second images, but she did not even mention the child. As she examined carefully the plants in the background of the image and pointed her finger at them, she said:

(7) *Sana'orya wol loñk'el aj-ili.*

What we are seeing here is carrot.

(8) *Aj-ili che'bä... krabano ix tyi ya'i.*

This one here is radish.

In many Western cultures, as exemplified in the American speaker's description at the beginning of this section, when an image has a person in the foreground, the person is usually what in Gestalt psychology has been called "figure", and the landscape is perceived as "ground". Discriminating between figure and ground is a complex process, where the brain processes different types of information at the same time, such as the size of the objects, their color and position; cultural conceptions about hierarchies of importance involved in the relationships between the objects compared also play a role in discriminating figure from ground. What is truly surprising in this case is not only the absolute lack of implicature of sequentiality between clauses (7) and (8), but also the complete reversal of figure and ground (Wagner, 1986). Here, the child becomes a secondary and irrelevant element, and the "figure" that is foregrounded is the landscape, and the plants within it.

A new sequentiality test

The Chol monolingual speakers did not describe the story *Frog, Where Are You?* in sequential terms, nor did they identify the sequentiality implicit in the minimal narrative of the child bathing and then dressing. If the reader may find the Chol descriptions of the image in Figure 3 unusual, be assured that my surprise was greater, like the person who rubs her eyes in disbelief at something she is seeing but finds hard to believe, thinking that her vision is deceiving her. It is extremely difficult to detach ourselves from our own analytical categories when we try to understand the categories of a foreign culture. This difficulty has been recognized repeatedly in treatises on anthropological methodology. As Agar points out, the ethnographer "struggles with the interference from his or her own ways of thinking, feeling, and acting" (Agar, 1996: 58).

Still full of skepticism, I thought that, perhaps, the curious effect I was observing was due not to a radically different worldview, but rather that the implicature in the case of the image of the child bathing and then getting dressed might be unclear. So I designed three vignettes where the sequence of actions implied in the images became increasingly explicit. What I wanted to find out with this experiment was how *explicit* the idea of sequentiality had to be in order to be recognizable to the Chol—if it was recognizable at all. The three vignettes portrayed a boy who climbed up to pick fruit from a tree and then fell down from the tree. The first vignette consisted of only two sequential images (Figure 4), the second consisted of three (Figure 5) and the third vignette contained five sequential images (Figure 6). All three vignettes referred to the same story, but

the more images the vignette contained, the more explicit the sequentiality involved in the character's actions. I showed each speaker all three vignettes, starting with the least explicit level and ending with the most explicit.

The first level (Figure 4) consists of only two images: the first shows a child looking at a fruit in a tree and the next image shows the child on the other side of the tree, sitting on the ground and rubbing his buttocks:

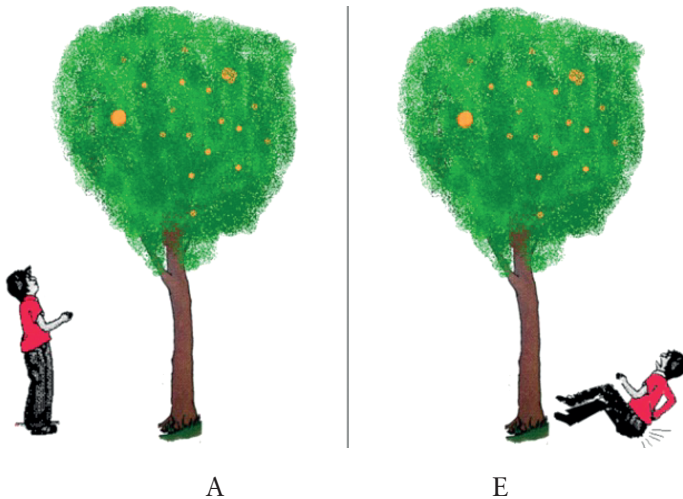


Figure 4. Sequentiality test: level 1. Vignette drawn by anthropologist Sergio D. López. The letters “A-E” do not appear in the image used in the study.

Speakers of Indo-European languages who are shown this image usually describe it in these terms: “there is a boy who is looking at the tree, he wants to pick a fruit, to get it he climbs the tree, and then he falls down.” Even if certain “episodes” in the sequence of events do not appear explicitly in the picture—in particular the episode where the boy supposedly climbs the tree—the tendency is to assume almost automatically the causal relationship between the situation in picture A and the situation in picture E. If a character is looking at a fruit high up in a tree and in the next vignette he has fallen, the “logical” assumption is that he tried to climb up to get the fruit and then fell. But this kind of reasoning seemed neither logical nor relevant to any of the Chol speakers whom I showed Figure 4.

As with some of the descriptions of the images of the boy bathing in the river and then getting dressed, the first things mentioned by the four

Chol speakers whom I showed Figure 4 were the trees, not the boy. Not a single speaker gave a sequential description of the two images, but they all mentioned that there was a boy looking at the tree because he wanted to climb up it. This is also an implicature, but it is a purely Chol implicature, not Indo-European or Western. If for a Spanish speaker the implicature is “first A happens” (the boy wants to get the fruit) and “then E happens” (the boy has fallen from the tree), the implicature in Chol does not relate A and E. It is an “intra-implicature” in the sense that it extends the content of what happens in A, or what happens in E: the boy looks at the tree *and* wants to climb it. If we look carefully, both children appear to be looking at the fruit in the tree, not just the child in image A.

For one of the Chol speakers, there were two men in the image. This is an identical effect to the image of the boy bathing in the river, which some Chol speakers interpreted as two boys doing independent actions. This speaker begun her description by indicating that there was a man cutting fruit: *wutyi, ila choñkol ik’el letsel ili. Choñk tyi bok’el li wiñiki*, “He is looking to go up to get the fruit. The man wants to cut it”. Again, this is another intra-implicature of image A, because the man in the image is only looking at the fruit. But, from a Chol cultural perspective, why else would anyone be looking at a fruit? Immediately afterwards the speaker noticed that there was “another” man, who was sitting down. But, instead of having fallen, the seated man was also looking at the tree because he wanted to climb it:

- (9) *Weñ chañ ili tye’i.*

The tree is very tall.

- (10) *Li yañbä buchul choñkol ik’el letsel.*

The **other one** seated is looking to go up.

For another Chol speaker, there were also two children in the picture, who were not connected to each other:

- (11) *Yila ibaj ili, choñkol ik’el yila ili la’bä añtyak.*

It looks like this one here, it looks like he’s looking at what is there [points to image A].

- (12) *Choñk tyi c ch’äntyam je’el yila ili, la’tá kawakña ityĩ ik’el letsel.*

This one here is looking too, the one here with his mouth open is looking to climb (the tree) [points to image E].

Then, that same speaker went on to say that the tree was beautiful and described its flowers and roots. Finally, she redirected her attention to the child on the right side of the image (E), describing in greater detail what she saw there, but she never connected it sequentially to image A:

(13) *La'ix poj buchul, weñ k'el ili, k'atyi ye'e ipaty.*

Here he is sitting, he is looking very much (up), he is touching his back with his hand.

The descriptions in Figure 4 are very similar to those in Figure 3, as in neither case do they unveil the implied sequentiality between images A and E. This is clearly demonstrated by the use of differentiated demonstrative pronouns and adjectives to talk about the two children: “this one... the other one” or “this one” pointing to the child in picture A and “this one here” pointing to the child in E. What is notable in several cases is the use of “intra-implicature”: instead of paying attention to the implied sequentiality between the two images, Chol speakers fixate on what each of the images separately implies: that a person—whether standing (image A) or “sitting” (image E)—is looking at a tree may imply that he wants to climb it, or that he wants to cut fruit; but what it definitely does not imply, from the Chol perspective, is that the two boys are the same person at different moments in a temporal sequence.

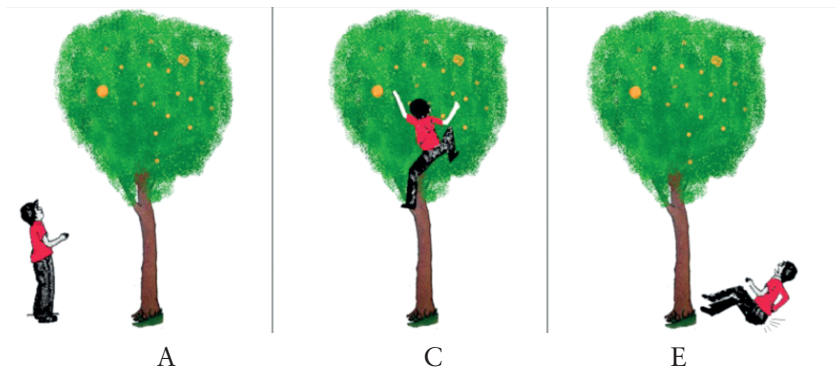


Figure 5. Sequentiality test: level 2.

The second level consists of a sequence of three images, where image C is added as a link between A and E, and where the implicature of temporal sequence is now much clearer than in Figure 4. Despite this added image, none of the speakers produced a clearly sequential description

where A precedes C, and C precedes E. The repeated use of personal pronouns has the effect of ambiguity as to whether there is one man or several. However, even within this ambiguity it is clear that the speakers are not mentally ordering the episodes in the A-C-E sequence.

The first speaker whom I showed the figure only said that there were trees, and a child playing and looking at the trees. Another speaker began to describe the figure as her gaze travelled through the images from right to left. It is not clear whether she thought that there was one child doing several actions, or several children doing several actions; but, in either case, given her interpretation of image E, it is clear that she was not mentally arranging the images in a chronological sequence, where A is the preceding event, E the final event, and C is an intermediate event between A and E:

- (14) *Ili choñk weñ k'el maje ila.*

This one [child in Image E, right] is looking intensely to get up there.

- (15) *Poj tyjikña yubi che' añ tyi iye'bal yila.*

He is happy, because he is under (the tree).

- (16) *Tyjikña che' li... poj buchuloñla tyi iye' tye'el.*

One is happy when sitting... under a tree.

- (17) *La'ix choñkol letsel ityuk tá' yila ibaj ili.*

Here it seems that he/this one [child in Image C, center] is going up to cut (fruit).

- (18) *Ix choñkol letsel k'el iyalo' ambä wutyi.*

There he is looking [the boy in Image A, on the left] to climb up where the little fruits are.

Given the use of the identical pronouns “*ili*” “he/this one” in (14) and (17) to refer to the children in the image, it is not possible to know whether the speaker is referring to one child or several. This passage could be interpreted as describing parallel activities: one child is under the tree, the same or another child is cutting fruit, and the same or another child is looking to climb the tree. Another interpretation could be that the speaker is describing a child doing several activities, and that there is indeed a sequential connection between those three activities: sitting under the tree, cutting fruit, and looking up the tree to climb. But if this were the case, we are back where we started with the traditional Chol stories: it is not that these stories do not contain temporal sequences; what happens is that

it is not possible to order them chronologically. Indo-European and Western logic dictates that the chronological order of the three images is to look at the tree, climb it, and fall down from it, where climbing the tree is prior to falling. In the “story” of this Chol speaker, it is clear that, even in the case of this dubious sequence, there is no connection between C and E: the child does not “fall” because he has previously climbed but he is “sitting” (*buchul*) because it is pleasant to sit in the shade of trees, as stated in sentence (16): “*One is happy when sitting under a tree*”.

The following is the most sequential description of Figure 5, given by another speaker:

- (19) *Choñkol iletsel tyi tyé' yila ili.*

It seems like he/this one is climbing the tree [points finger at image C, in the center].

- (20) *Choñkol iñop tyi tyukbeñ iwuty.*

He is trying to cut his fruit.

- (21) *Ta'ix ujtyi tyuk kilañ.*

He finished cutting everything [points to image E, on the right].

- (22) *La'ix choñkol ik'ele maje pamil ila.*

Here he's looking at where he's going out [points finger at image A, left].

Once again, even assuming the presence of dubious sequentiality in this description, the order of such a “sequence” does not lead the speaker to the conclusion that the character in E has fallen from the tree after climbing it, as shown in image C. For this speaker, the character in image E has not fallen, but has simply finished cutting the fruit. Furthermore, the order in which she describes the “sequence” is not “A (look) - C (climb) - E (fall)”, but “C (climb) - E (finish) - A (look)”.

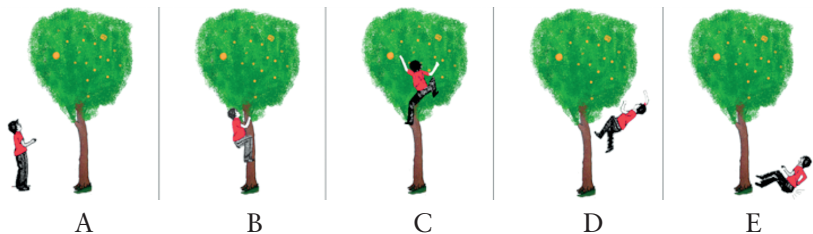


Figure 6. Sequentiality test: level 3.

As can be seen in Figure 6, in this vignette the implication of sequentiality should be quite clear. But the descriptions obtained do not differ from the ones provided in levels 1 and 2. Interestingly, one of the speakers mentioned children who are “in a line” (*ts’äyäkñā*) cutting fruit, but did not mention the child in image E. Another speaker, pointing to the child in image E, said that “his back hurts”. This is the first description where the Chol interpreted the child in image E as feeling discomfort or pain. But the sequential link between that pain and the previous image was, again, absent in the speaker’s description. To make sure, I asked the speaker the reason why the child’s back hurt: if there were any kind of sequentiality involved between D and E, the speaker would have answered something like “because he fell down from the tree.” Instead, this was the answer:

(23) Anthropologist — *Chukoch k’ux ipaty?*
Why does his back hurt?

(24) Mrs. Yolanda — *Machäch lakñatya(ñ), ichämeläch je’e(l) wa’le.*
We don’t know, it must be his illness as well.

It is evident that for Mrs. Yolanda there is no kind of sequential connection between images D and E. Only one of the three speakers whom I showed Figure 6 gave a description that, in principle, seemed to include a minimal narrative in the transition between D and E. The description was somewhat ambiguous because for this speaker there was not one child, but several. However, in principle there seemed to be a connection between images D and E:

(25) *Choñkol weñ letselob tyi tyé iliyi.*
Many are climbing the tree here.

(26) *Cha’ mi ikäñob letsel tyi tyé ila.*
Again, they start to climb the tree.

(27) *La’ix choñoxbä tyi yajlel.*
Here [is] the one who is falling.

(28) *Ta’ix xujli li ibaj!*
He hurt himself!

There seems to be an obvious connection between “here is the one who is falling” and “he hurt himself”. However, since there is no explicit

subject in either sentence, we cannot be sure that it refers to the same person, and that the speaker is not describing parallel actions. What Chol grammar marks very clearly is the contrast between the action in D, the child “falling”, which is expressed with progressive aspect in the verb, and the action in E, the child who “hurt himself”, which is expressed with perfective aspect. Let us recall that in this language verbs are obligatorily inflected for aspect; the progressive aspect is used with actions that are in progress, and the perfective aspect describes events or actions that have already been completed. The words chosen by the speaker show exquisite precision in describing the internal dynamics of each image, but it is not clear from what the Chol grammar conveys whether the speaker truly assumes a sequentiality between sentences (27) and (28). To find out whether indeed both sentences shared the same subject, and whether the actions in (27) and (28) were two sequential actions performed by the same child or two parallel actions performed by two children, I asked again:

(29) *Anthropologist.* — *Jaytyikil ma'awilañob ila?*
How many do you see here?

(30) *Martina.* — *Añ siñko.*
There are five.

(31) *Anthropologist.* — *Chuki mukob?*
What do they do?

(32) *Martina.* — *Choñkol ileselob tyi tyé.*
They are climbing the tree.

(33) *Anthropologist.* — *Pejtyelel?*
All of them?

(34) *Martina.* — *Yik'oty choñkol ik'el letsel, yik'oty añ buchulbä.*
Along with the one who is looking to go up, along with him there is the one who is sitting.

(35) *Anthropologist.* — *¡Ah! Chukoch buchul jiñi?*
Ah!... Why is he seating?

(36) *Martina.* — *Mach kñatya, choñkol ik'el letsel yila.*
I don't know, he's looking to climb on it, it seems.

(37) *Anthropologist.* — ¡Ah! *Buchul cha'añ choñkol ik'el jiñi wutyi?*
Ah! Is he sitting down because he's looking at the fruit?

(38) *Martina.* — *Bu... buchuläch chejach choñko/bä ik'el letsel.*
Yes, he's seating down, he's just looking to climb it.

On this occasion, the speaker again describes the child in image E as he had been described on multiple previous occasions: *buchuläch* “seating”, because he wants to climb up to get the fruit, not because he has fallen down. Therefore, and especially because Chol grammar is as ambiguous about the subject of sentences (27) and (28), we cannot be entirely sure that in this person’s eyes there is a sequential connection between the child who is “falling” and the one who “hurt himself”.

Whorfian effect and anthropological estrangement

Gerardo Fernández Juárez talks about “the return capacity of the ‘estrangement’ that the vision of the other gives us even in the most habitual scenarios” (2018: 350). The lessons I have learned and each day continue to learn in my exploration of Chol language and culture have resulted in an estrangement, but not with respect to Chol language, culture, and thought, but with respect to my own, as Fernández Juárez argues. Returning to the images some time later I realized that the Chol descriptions were tremendously accurate, for in Figures 3 and 4 there is actually not one child, but two. There is nothing exotic about the Chol descriptions, contrary to what may appear to be the case. What is truly “exotic” is what *we* do, adding something to the image, imagining a story that does not really exist. The idea of sequentiality is nothing more than a filter through which we look at these images, which makes us place in the background infinite details about the landscape, about the different types of plants, about the rocks— sometimes we do not even realize that they exist. All these details are present in the Chol descriptions, unlike the supposed order in which the events unfold, which we have learned to assume, but which is not really there. Our assumption of sequentiality is nothing more than a “*fictitious experience of time*” (Ricœur, 1984). By contemplating a vignette like the one in Figure 6, what we do is to mentally transform space— which is what the Chol speakers describe with great precision—into sequentiality, into the imagined order of events, and, ultimately, into the very notion of time itself. But the real Whorfian effect, as some call the relationship between language, worldview and thought, is not that the Chol do not process the sequentiality of images because

their language has no verb tenses. Simply put, for the Chol I interviewed sequentiality did not seem to be a relevant element of the images discussed in this article. The surprise is that sequentiality is relevant for us, because our grammatical categories invite us to think that way. Whenever we mark verbs with an inflection that describes whether an event occurs before, during, or after the moment of speech, we begin to feel, think, and perceive an inevitable sequentiality that goes beyond words, “seeing it” even where it is not really there.

The answers I collected from my Chol friends are reminiscent of the famous Pirahã of the Brazilian Amazon, who prefer to restrict their communication to themes pertaining to the immediate experience of conversational partners (Everett, 2005), and the Mopan Maya of Belize, for whom the literary genre of fiction may not exist, and who interpret fictional stories in movies or books as stories that have occurred in reality (Danziger, 2010). They are also reminiscent of the responses that Alexander Luria obtained from Russian peasants in the 1930s, when he presented them with his famous syllogisms, to investigate whether they were capable of making syllogistic inferences. Abdurakhm, a 37-year-old Russian peasant, says in response to Luria’s syllogism:

Luria. — In the Far North, where there is snow, all the bears are white. Novaya Zemlya [a village] is in the Far North and there is always snow there. What color are the bears there?

Abdurakhm. — There are different sorts of bears.

Failure to infer from syllogism.

The syllogism is repeated.

Abdurakhm. — I don’t know; I’ve seen a black bear; I’ve never seen any others... Each locality has its own animals: if it’s white, they will be white; if it’s yellow, they will be yellow.

Luria. — But what kind of bears are there in Novaya Zemlya?

Abdurakhm. — We speak only of what we see. We don’t talk about what we haven’t seen.

(Luria, 1976: 108-109.)

The awkwardness of young Luria pressing Abdurakhm, hoping to get the answer that “the bears are white” makes me smile, thinking of my

own awkwardness asking the Chol again and again “how many children are in the image? But why is the child on the ground?”, when in fact, neither the bears were white—who knows what color bears are in Novaya Zemlya?—nor was there only one child in those images. And it makes me appreciate the tremendous empathy and patience with which the Chol responded, marveling perhaps at the incompetence of this anthropologist who, with all her knowledge and studies, couldn’t even count the children in the image. Like the Russian peasants with whom Luria worked, the Chol are more empiricist than Westerners. The Chol do not “invent” what they do not know with certainty, they do not “assume” stories that do not really exist, but they describe in exquisite detail what they see. Dissecting, categorizing, and arranging experience in a sequential order is not a requirement of their language, nor of their culture.

One may wonder whether language is the only factor influencing this peculiar interpretation of sequentiality. Of course it is not. In spite of the deep connection between language, worldview and cultural identity, there are many cultures that have lost their language during colonization, yet they still maintain a distinctive cultural identity. Language is a key element in articulating worldview and provides its speakers with categories to codify that perception of reality, but it is not the only element that influences worldview and the notion of sequentiality. Many other factors, particularly schooling and literacy, exert a profound influence on the perception of sequentiality and the notion of time itself (Rodríguez, 2013; Tversky, Kugelmass, & Winter, 1991).

Let us come back, by way of conclusion, to the question with which I began this article: can an anthropologist studying a foreign culture have a deeper understanding of that culture if he or she learns the language? My answer, as the reader can probably guess, is yes. In the words of Roman Jakobson: “[T]he true difference between languages is not in what may or may not be expressed but in what must or must not be conveyed by the speakers” (1971: 492). It is a basic principle of linguistic anthropology that any language is capable of expressing any concept, as long as it responds to a need present in the culture (Lippi-Green, 1997). Therefore, language is not an impediment that forces us to see the world in a certain way, creating insurmountable barriers between speakers of different languages, as babelists often point out. What Humboldt (1988), Jakobson (1971), Whorf and Bissell Carroll (1956), Slobin (1987 and 1996) and so many other linguistic relativists have argued is that, in the process of dissecting and categorizing reality, and describing what we perceive with words, we rely heavily on the discursive resources available in our native languages. Those available or more widely used grammatical categories

of our native languages influence how we think about the world. Learning these resources, these grammatical categories, may be the key to that way of thinking and categorizing reality that we call “worldview”, and, ultimately, “culture”.

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