


Maize and semiotic emergence in a contemporary Maya Tale: Tec Tun's, *U tsikbalob XNuk Nal* [Tales of Old Mother Corn]*

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ABSTRACT

This article discusses a contemporary Maya story about the relationship between humanity and maize in the Yucatan Peninsula: José Manuel Tec Tun's, *U tsikbalob XNuk Nal / Los cuentos de la Abuela Mazorca* [Tales of Old Mother Corn]. It argues that the story depicts a process that the recent biological field of biosemiotics terms "semiotic emergence" (Hoffmeyer): the evolution of higher stages of complexity through the interaction between previous levels. This argument is advanced through the lens of the Maya concept of *óol* or "existential growth" which displays close similarities with the concept of "final cause" as defined by the philosopher, Charles Sanders Peirce, a major influence in biosemiotics. Through textual analysis of the Maya and Spanish versions, the article shows how Tec Tun's story depicts maize and humanity as mutually oriented towards nurturing each other in a relationship of "structural coupling" (Maturana and Varela): the co-constitution of habitat and inhabitant. This interaction results in the emergence of symbolism, a complex stage of semiotic emergence that can, at least partially, account for the central role of maize in human consciousness for Maya cosmology.

O mais e o surgimento semiótico num conto maia contemporâneo: *U tsikbalob XNuk Nal* [Os contos da Avó Espiga] de Tec Tun

RESUMO

Este artigo analisa um conto maia contemporâneo sobre a relação entre a humanidade e o milho na Península de Yucatán: *U tsikbalob XNuk Nal / Los cuentos de la Abuela Mazorca* [Os contos da Avó Espiga], de José Manuel Tec Tun. O argumento é que o conto reflete um processo que a biosemiótica, um campo emergente da biologia, denomina "semiotic emergence" [surgimento semiótico] (Hoffmeyer): a evolução de etapas de maior complexidade mediante a interação entre níveis prévios. Este argumento promove-se pela ótica do conceito maia de *óol*, ou "trajetória existencial," que mostra semelhanças com o

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PALAVRAS-CHAVE

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conceito de “causa final,” tal como o define o filósofo, Charles Sanders Peirce, uma influência fundamental na biosemiótica. Mediante a análise textual das versões em maia e em espanhol, o artigo mostra como o conto de Tec Tun apresenta o maiz y a humanidade numa relação de criança mútua, o qual é um exemplo de “structural coupling” [acoplamento estrutural] (Varela e Maturana): a co-constituição de habitat e habitante. Esta interação entre maiz e humanidade produz o simbolismo, uma etapa complexa de surgimento semiótico que explica, pelo menos parcialmente, porquê o maiz tem um papel tão fundamental para a consciência humana, de acordo com a cosmologia maia.

El maiz y el surgimiento semiótico en un cuento maya contemporáneo: *U tsikbalob XNuk Nal* [Los cuentos de la abuela mazorca] de Tec Tun

RESUMEN

Este artículo analiza un cuento maya contemporáneo sobre la relación entre la humanidad y el maiz en la Península de Yucatán: *U tsikbalob XNuk Nal / Los cuentos de la Abuela Mazorca*, de José Manuel Tec Tun. El argumento es que el cuento refleja un proceso que la biosemiótica, un campo emergente de la biología, denomina “semiotic emergence” [surgimiento semiótico] (Hoffmeyer): la evolución de etapas de mayor complejidad mediante la interacción entre niveles previos. Este argumento se promueve a través de la óptica del concepto maya de *ool*, o “trayectoria existencial,” que muestra similitudes con el concepto de “causa final,” tal como lo define el filósofo Charles Sanders Peirce, una influencia fundamental en la biosemiótica. Mediante el análisis textual de las versiones en maya y en español, el artículo muestra cómo el cuento de Tec Tun presenta al maiz y a la humanidad en una relación de crianza mutua, lo cual es un ejemplo de “structural coupling” [acoplamiento estructural] (Varela y Maturana): la co-constitución de hábitat y habitante. Esta interacción entre maiz y humanidad conlleva al simbolismo, una etapa compleja de surgimiento semiótico que explica, por lo menos parcialmente, por qué el maiz tiene un papel tan fundamental para la conciencia humana, según la cosmología maya.

1. Introduction

Since the late-1980s, a new cultural phenomenon has been growing and gaining ever-greater traction in Mexico. Notwithstanding the ongoing reduction in speakers of indigenous languages that has its roots in the European invasion of the Americas half a millennium ago, many indigenous languages are witnessing a literary revival. This article centers on one work that exemplifies the Indigenous Literary Renaissance: José Manuel Tec Tun’s *U tsikbalob XNuk Nal / Los cuentos de la Abuela Mazorca* [Tales of Old Mother Corn], written bilingually in Spanish and the Yucatec Maya language of the Yucatan Peninsula. The story won Tec Tun the Alfredo Barrera Vásquez competition for Maya literature in 2009 and was published by the Universidad Autónoma de Yucatán in 2010.

Tales of Old Mother Corn is not only significant as an example of cultural, linguistic and literary revitalization, but also in illustrating the symbiotic relationship that, for millennia,

has existed between humanity and maize in Mesoamerica. In this article, I will illustrate how the Maya cultural paradigms that Tec Tun invokes to describe this relationship exhibit striking congruencies with two relatively recent biological theories: autopoiesis, as developed by the Chilean researchers, Francisco Varela and Humberto Maturana, and biosemiotics, whose best-known exponent is the Danish researcher, Jesper Hoffmeyer.

Tec Tun's story is organized in five chronological chapters. The first introduces the protagonist, XNuk Nal (Old Mother Corn), who, lamenting the loss of traditional agriculture, invents a story to teach children about the importance of maize. In the second chapter, XNuk Nal describes the many similarities that she identifies between humanity and maize. In the third, XNuk Nal dies and we learn more about her life. In the fourth, one of the children is taken by magical beings to an ancestral cornfield where he learns many secrets about corn. In the fifth, the child, now grown up, becomes a shaman, reinvigorates ancient rituals and thereby restores the parched land.

2. Conceptual framework

The core notion that informs my analysis is the Maya concept of *óol*. This concept is highly polysemous and, according to Bourdin, equates roughly to the European ideas of "soul," "spirit," "mind" and "feelings" as well as to the semantic universals of "Feeling," "Wanting," "Inside," "Moving" and "Living" (Bourdin 2007, 5). The *óol* is the individual's central axis and essence, and constitutes "a nucleus from which radiates a certain growth or vital movement [with] a centrifugal and ascending orientation" (Bourdin 2007, 12, my translation). The *óol* is therefore an animating element that, when applied to humans, recalls the upwards and outwards growth of plants while also linking "the 'nucleus' of the person to the center of the earth" (Bourdin 2007, 5, my translation). The concept defines traditional Maya understandings of "the heart as a central locus from which life radiates outwards and time and space are organized" and entails internal emotion and motivations while also being "a social condition or social identity" (Bourdin 2007, 12, my translation).

The recently developed field of biosemiotics bears a close resemblance to Maya understandings of *óol*. Hoffmeyer defines *biosemiotics* as "an interdisciplinary scientific project that is based on the recognition that life is fundamentally grounded in semiotic processes" (Hoffmeyer 2008, 3). From this perspective, "living nature is understood as essentially driven by, or actually consisting of, semiosis, that is to say, processes of sign relations and their signification – or function – in the biological processes of life" (Hoffmeyer 2008, 4). Biosemiotics is deeply influenced by the philosophy of Charles Sanders Peirce, who characterized all semiotic process in terms of three basic components: Firstness (pure potential), Secondness (a concrete event) and Thirdness (the mediating process that enables the potentiality of Firstness to be actualized as Secondness). The Peircian sign itself is composed of three elements that have a preponderance of one of the above: the *signifying element* is that part of the sign that has the potential to give meaning to something (i.e. Firstness); the *object* is that which acquires a specific meaning by virtue of the signifying element (i.e. Secondness); the *interpretant* is the mediating process through which the signifying element specifies the object.

The Maya concept of *óol* closely relates to the Peircian concept of Thirdness, or mediation. As "Feeling," "Wanting," "Inside," "Moving" and "Living," this concept describes

the emergence of an existential trajectory that is internal yet also dialogic. The *óol*, in fact, corresponds most closely to a specific kind of Thirdness: final causation, an Aristotelian notion that Peirce integrates into his semiotic philosophy. For Peirce, “a final cause is simply the general form of any process that tends toward an end state (a finale)” (Peirce [1940] 1955, 40). This can be, but does not have to be, a purpose. Peirce emphasizes that a “purpose is merely that form of final cause which is most familiar to our experience” (Peirce [1940] 1955, 63).

Combining Maya understandings of *óol* with biosemiotics enables the prelude to my argument to be formulated. Namely, in *Tales of Old Mother Corn*, the *óol* of humanity and the *óol* of maize are oriented towards nurturing each other in such a way that the survival of the other species is a final cause for both. This intertwining of two species equates with the other biological theory discussed in this article, autopoiesis, of which there are three key principles: (1) autopoietic entities (living organisms) are definable not in terms of their components but their system of organization; (2) this system of organization is self-reproducing; (3) the system of organization reproduces by constituting its environment (Maturana and Varela 1980, 78–79). These principles manifest themselves through the process of *structural coupling*, which Maturana and Varela describe as follows: “In the history of interactions of a composite unity in its medium, both unity and medium operate in each interaction as independent systems that, by triggering in each other a structural change, select in each other a structural change” (Maturana and Varela 1980, xx–xxi). In other words, structural coupling is the process whereby inhabitant (organism) and habitat (environment) co-create each other. The inhabitant changes its habitat, just as the habitat changes the inhabitant. Structural coupling is the history of these mutual changes. Integrating autopoietic theory with biosemiotics in the context of Tec Tun’s story, it can be said that humanity (as signifying element) specifies maize (as object) through the mediation of the *óol* of humanity (as interpretant); at the same time, maize (as signifying element) likewise specifies humanity (as object) through the *óol* of maize (as interpretant).

In Tec Tun’s story, this process of mutual specification leads, I argue, to a biosemiotic process that Hoffmeyer has termed *semiotic emergence*: “the establishment of higher-level [i.e. more complex] patterns scaffolded by a situated exchange of signs between components” (Hoffmeyer 2008, 228). The main principle behind this concept is that “the emergence of higher-level patterns is the result of semiotic ... interactions between entities at the lower level” (Hoffmeyer 2008, 232). The most fundamental manifestation of semiotic emergence occurs between the Peircian concepts of the *icon*, *index* and *symbol*. The icon is a sign whose signifying element and object are almost identical (e.g. a picture of fire and fire itself); in the index, the signifying element and object are clearly different but linked in a causal relationship (e.g. smoke and fire); in the symbol, the relationship between signifying element and object is one of convention (e.g. smoke and culturally specific beliefs relating to this phenomenon). Each higher level is predicated on the interaction between signs at a lower level, so that a symbol results from a combination of indices which, in turn, are ultimately reducible to icons.

My core argument can now be formulated. *Tales of Old Mother Corn*, I argue, depicts semiotic emergence by portraying humanity and maize as grounded on a fundamental sameness (iconicity) out of which the *óols* of both species emerge as distinct (indexical) in such a way that a mutually nurturing relationship can be formed. At a yet-higher

level of complexity, this reciprocal relationship forms a single *óol* out of which agriculture emerges, a manifestation of the symbolic realm that is culture. This final stage represents the advent of a new level of semiotic order – the ability of the universe to engage in dialogue with its origins through the medium of humanity – which can, at least partially, account for the centrality of maize as a symbol of consciousness both in Tec Tun’s story and in Mesoamerican cultural expression more widely. Christenson, for example, discusses how the *Popol Vuh* presents the existence of order in nature as dependant on human/maize symbiosis. From a biosemiotic perspective, this can be interpreted in terms of the new reflexive possibilities that emerge with human culture, of which agriculture is a key manifestation (Christenson 2016).

As Arias wisely cautions, however, intercultural dialogue entails the “risk of renormatizing non-Western languages and interlocutors through Western parameters and common usage of Eurocentric conceptual thinking” (Arias 2017, 220). It is crucial, therefore, to explain the purpose of my identification of such correspondences between Maya philosophical concepts, on the one hand, and autopoiesis and biosemiotics, on the other. The primary motivation of this article is to demonstrate how indigenous philosophies, while rooted, like all theory, in the particular contexts from which they emerge, are not beholden to those contexts and are not only able to engage with universal themes but even to reorient scientific thought in ways that the “West” is only beginning to discover.

As the celebrated Maya poet, Wildernain Villegas-Carrillo puts it, “we Maya speakers are the inheritors of a language that is capable of dialoguing with the philosophies of the West” (Villegas-Carrillo 2016, 59, my translation). Set in conversation with two major and comparatively recent advances in biology, Tec Tun, his characters and the ancestral voices that speak through them unfurl their universal potential to transform our understanding of humanity from a being that is ontologically separate from the nonhuman world to a *becoming* that is constantly emerging and transforming through symbiosis with other species (see Ingold 2013, 8).

3. Maize and humanity: from icon to index

Maize is entirely the product of human cultivation. Its wild ancestor is *teosinte*¹ (*Zea mays parviglumis*), a grass that is native to the southern Mexican highlands. Through selective breeding, the plant transformed into a different subspecies, *Zea mays mays*, and diversified into a plethora of different varieties. Archaeological evidence suggests that maize was brought to the Yucatan Peninsula around five thousand years ago. Subsequently, as “maize spread and evolved in the Yucatan at the hands of Mayan farmers, it achieved a symbolic, ceremonial, ecological, and economic importance surpassing that of any other plant or natural resource in the Mayan world” (Tuxill et al. 2010, 467). The north of the Peninsula is still “shaped by milpa, a traditional swidden or rotational model of maize cultivation” (Tuxill et al. 2010, 467).

In *Tales of Old Mother Corn*, the relationship between maize and humanity is grounded on an underlying iconicity (sameness) that sets the precedent for the cyclical emergence of indexicality (difference) between these two species. The underlying iconicity is evident

¹From the Nahuatl, *teotzintli* “revered deity” or alternatively “small deity.”

in the name of the eponymous protagonist, X-Nuk Nal, which translates as “old,” “great” or even “venerable maize.” Xnuuk-nal is one of numerous maize landraces in the Peninsula and has many properties that make it an ideal symbol for a protagonist who sets herself the task of re-invigorating declining traditions (Tuxill et al. 2010, 470). It takes a long time to mature, and so evokes ancient origins and the wisdom of age; it is “tall and robust” (Tuxill et al. 2010, 470), a strong figure to look up to; it is generous and fecund, giving abundant nutrition; it is adaptable and resistant and so able to withstand and even reverse the “drought” of cultural oblivion. Taube notes how the “life-giving quality of maize” (Taube 1983, 178) is considered to be feminine, as is reflected in the feminine prefix x-

From the very first paragraph, it is clear that the motivation for XNuk Nal’s story is to preserve the close relationship between humanity and maize:

At that moment, sadness began to enter xNuk Nal, as she started to remember things that had happened in her life, and she thought, all the things that she knew should be passed on to other people so they wouldn’t be forgotten. So, she called five young children who were passing by in the street and said to them that she had something to tell them. The first thing she remembered was that, a long time ago, she had many relatives on earth, but now the lives of many of them had already ended. She remembered her brothers [suku’untsilo’ob]: purple corn cob [chak choob], small corn cob [xmejen nal], white corn cob [sak nal], yellow corn cob [k’an nal] and red corn cob [chak nal]. She also remembered her grandmother had told her that humans were made from maize dough, so, for the people of this land [u wii-nikilo’ob le lu’umila’ / los hombres de esta tierra], their strength lies in the fact that they eat things made from corn ... (Tec Tun 2010, 73, 111, my translation)

The iconicity between maize and humanity is clearly evidenced in this passage where XNuk Nal describes other maize varieties as her *suku’untsilo’ob* [brothers], though towards the end of the passage iconicity gives way to an incipient indexicality as corn is shown to nurture humanity in a symbiotic relationship. The great diversity of maize in the Peninsula, alluded to by XNuk Nal, is brought home by the research of Tuxill et al. who identified 22 kinds of maize during their ethnobotanical study of one small settlement (Tuxill et al. 2010, 469).

For XNuk Nal, the significance of maize goes far beyond its role as a food source. In the above passage, XNuk Nal mentions five varieties of corn, which parallel the number of children she speaks with and the number of chapters in the story. During my conversation with Tec Tun, he told me that he chose this number because it represents the number of fingers on a person’s hand.² The number 5 is ritually potent, conveying the four cardinal directions plus the central axis. The spatial connotations are important considering that, of the five varieties mentioned by XNuk Nal, four are defined in terms of color. From pre-Hispanic days to the present, the diverse colors of corn cobs remain significant in rituals. The *Chilam Balam of Chumayel*, for example, describes how different corn colors represent different points of the compass: red for the east, white for the north, black (or purple) for the west, and yellow for the south (Edmonson 1982, 104–105). By emphasizing her kinship with the four colors of corn, XNuk Nal is situating herself as a being who is fully conscious of her location within the universe and of her ability to dialogue with its full span. Indeed, XNuk Nal was found mysteriously in a cornfield as a young child (Tec Tun

²Interview on 5th May 2016. Unless explicitly stated, all interpretations of the story are based on my own comparison of the Maya and Spanish versions.

2010, 87, 125), reflecting the emergence of humanity from the green center of the universe.

According to the *Popol Vuh*, humans were made from yellow and white corn (Christenson [2003] 2007, 193), representing the north-south axis and the upward movement of the *óol* as it propels humanity towards the zenith of the ultimate progenitor, the sun. To lose the connection with the diversity of maize is, then, to become blind to humanity's spatial and temporal emergence from the universe at large, and to the unique reflexive ability of humanity to dialogue with its more-than-human unfolding. Such blindness is tantamount to a loss of humanity itself. In the words of XNuk Nal, "she just knows that she must teach what she knows because she is afraid that maize will end on earth. If something like that happens, what will happen to humans?" (Tec Tun 2010, 79, 117, my translation). And, as Tec Tun stated to me during our discussion, "maize and humanity are one single being," which he repeated in Maya and Spanish for added emphasis: *Nal yéetel wíinik chen jump'éeel ba'al. El hombre y el maíz es un solo ser.*³

The sense that maize is crucial to human consciousness has a scientific basis given the central role of maize cultivation in the development of Mesoamerican civilization and the fact that maize is entirely the product of symbiosis with humanity. To become disconnected with maize is, then, to lose sight of human cultural origins in that region, of a trajectory of inhabitation that, for millennia, has shaped the human ecological niche and therefore humanity itself. In the passage quoted above, XNuk Nal talks specifically of "the people of this land" [u wíinikilo'ob le lu'umila'/ los hombres de esta tierra], which leaves open the possibility that people of other lands have different origins. What matters is the maintenance of historical awareness *per se*, for it is precisely this consciousness that makes us human and that enables humanity to develop so differently in distinct environments (here I anticipate the final stage of semiotic emergence, namely symbolism, discussed in the latter part of this article).

Through her association with maize, her nurturing of the children in her community, and other instances where she gives or saves life, XNuk Nal closely resembles the character of Xmukane in the *Popol Vuh* who fashions the first four humans out of yellow and white corn (Christenson [2003] 2007, 193–196). The symbiotic relationship between maize and humanity is not restricted to XNuk Nal herself but abounds throughout the story that she tells. The entire second chapter consists of a long list of shared attributes that are arranged in parallel structures, following the formula, "Corn has hair, Humans also have hair" [Nale' yaan u tso'otseel, Beyxan wíinik yaan u tso'otseel / El elote tiene cabello, También el hombre tiene cabello] (Tec Tun 2010, 81–82, 119–21).

The attributes listed range from physical characteristics (hair, teeth, clothes, bone, diversity, fatness, thinness, etc.) to life processes (nurturing, wasting of teeth, burning of bones, growth, illness, death, etc.). The penultimate couplet states that "Corn is indispensable for humanity, Humanity is also indispensable for corn" [Nale' jach k'a'ana'an ti' wíinik, Beyxan wíinik jach k'a'ana'an ti' nal / El elote es indispensable para el hombre, También el hombre es indispensable para el elote] (Tec Tun 2010, 82, 121). The iconic relationship between humanity and maize is also communicated through XNuk Nal's analysis of two Maya words, *kolnaal* [farmer] and *muknal* [tomb] (Tec Tun 2010, 83, 121–22), both of which contain the word *nal* [corn]. This prompts XNuk Nal to tell the children that, "some

³Interview on 5th May 2016.

days, I call you ‘little children’, other days, I call you ‘little corncoobs’” (Tec Tun 2010, 83, 122, my translation).

The entanglement of corn and humanity is perhaps most explicitly stated in the following passage from the first chapter:

for there to be corncoobs on the earth they must be taken care of by people, like relatives [láak'tsilo'ob / hermanos]. The farmer knows that, to live, he must take care of maize, and maize knows that the farmer cultivates it for food. In this way, the life of humans doesn't end, and neither does the life of maize. This explanation allows us to understand that the life of maize is intertwined [tsaya'an / relacionada] with the life of people and that, for maize to live, people must also live. (Tec Tun 2010, 78–79, 116–17 my translation)

While the Spanish version uses the word *relacionada* [related], the Maya version puts the point more emphatically: *tsaya'an* comes from the verb root *tsay* [to unite, join together].

4. K'áax and Kool: from index to symbol

In the previous section, we saw how Tec Tun's story depicts maize and humanity emerging from a semiotic relationship of iconicity (sameness) to one of indexicality (difference). Through their indexical relationship of mutual nurturing, both species act as Peircian signifying elements that specify the other species as object. This process is tantamount to structural coupling (Maturana and Varela) and is realized through the reciprocal orientation of each species' *ól* (final cause).

The symbiotic relationship between maize and humanity, however, is always threatened by the encroachment of the *k'áax* [forest, bush]. The *k'áax* represents a potent reservoir of existential potentialities (Peircian Firstness) but also a dangerous, unpredictable, realm. During the tale-within-the-tale, XNuk Nal describes the farmer battling to safeguard his crops:

When he sees his little corncoobs [u mejen nalo'ob / elotitos] it's as if he's seeing his little children [u mejen paalale' / hijos], so he takes good care of them. He doesn't let their small throats or feet get entangled in lianas or their breath be cut off by the vicious weeds [k'aak'as xiiwo'ob / malas hierbas], so he keeps watching them, constantly weeding the area. If he finds evidence that animals have been wandering among the cobs and threaten to eat them, he hunts and kills them. (Tec Tun 2010, 74–75, 112, my translation)

Once again, we see a clear relationship of iconicity between human and maize, reinforced by the parallelism between *u mejen nalo'ob* [his little corncoobs] and *u mejen paalale'* [his little children] in the Maya version. The passage, however, is also significant in portraying agriculture as a constant battle with the forces of chaos. Tec Tun reduplicates the adjective, *k'aas* [nasty, evil, bad] as *k'aak'as* for added emphasis. The Spanish phrase, *mala hierba*, literally “bad weed,” similarly denotes a person who exerts an immoral influence on others. Taube notes how, across the Mayan world, “wild overgrowth has negative moral connotations” since, in “contrast to the carefully delineated world of humans, the forest and its inhabitants ignore boundaries” (Taube 2003, 469). Laughlin similarly describes how, for the Tsotsil Mayans, “weeds do not have good souls,’ they are not sensible, responsible” (Laughlin 1993, 105) and even laugh when they encroach on a field and become angry when they are cut down (Laughlin 1993, 106).

As XNuk Nal makes clear, the solution is not the erection of a rigid boundary but the maintenance of the right form of communication. After discovering that the *ku'uk*

(Yucatan squirrel, *Sciurus yucatanensis*) and *chi'ik* (White-nosed coati, *Nasua narica*) have been eating his crops, the farmer draws on knowledge passed down to him by his grandfather and tries to persuade the animals rather than kill them outright:

It's said that *póokbil nal* must be performed so that the animals understand [na'atik / entiendan] that the corncobs have their guardian [yuumil / dueño], that they aren't just the fruits of wild trees. So, when he returns to his field, he must pick a few corncobs and then burn them. When he's burned them, he has to place them in the four corners of the field and offer them to *Yuum lik'*. The wind will then carry the scent of the burned corncobs deep within the forest [ichil le k'áaxo' / al interior del monte] and, that way, the animals will understand [ku na'atiko'ob / entenderán] that the cobs have their guardian [yuumil / dueño], because when the corncobs are burned, they become bitter with the smoke from the fire; this means that they'll no longer be eaten because they lose the sweetness of the corn, it's not a pleasant taste for the animals, so they leave the field and look for other things to eat. Sometimes, they go to another field. (Tec Tun 2010, 77, 115–16, my translation)

What stands out in this passage is the importance of dialogue. Rather than describing the measures in a purely utilitarian sense of cause and effect, Tec Tun emphasizes their nature as a mode of communication. The practice of *póokbil nal*, literally “corn-burning,” is depicted as a ritual that relies on respectful engagement with *Yuum lik'*, the wind guardian, who is incited to collaborate. For the farmer to actualize himself as a *yuum*, or guardian, in his own right, he must negotiate the terms with the other *yuum*s who also inhabit the Peninsula. The animals, moreover, do not just react in distaste; they “understand” [na'atik / entienden] the message as a message by virtue of the farmer's willingness and capacity to attune himself to their semiotic codes. Problems do not, therefore, arise through *communication* between *k'áax* and *kool* but through a *lack* of communication. The farmer's message is, after all, carried “deep within the *k'áax*” [ichil le k'áaxo' / al interior del monte]. Keeping the channels of communication open between *k'áax* and *kool* is not only important for mitigating the negative effects of an unruly *k'áax* in the *kool* but equally for placating the *k'áax* given the destruction inherent in creating *kool*.

García-Quintanilla notes how the Maya word for “field” derives from the verb root, *kol*—which historically meant, “to remove, ‘dispossess’, ‘deprive’ and even ‘rob’ or ‘take out by force’” (García-Quintanilla 2000, 262, my translation). The very semantics of the word therefore communicate the “illegitimacy of he who pulls up, destroys or kills the biodiversity of the bush” (García-Quintanilla 2000, 262, my translation). She suggests that, since “the bush is the territory of supernatural beings, it is their *kool*” (García-Quintanilla 2000, 263), with the result that “farmers conceive of their agricultural activities as making *k'áax* in the *kool*” (García-Quintanilla 2000, 263–64, my translation). García-Quintanilla's reflections suggest that the definition of the potential intruder is ultimately perspectival, in such a way that the *k'áax* and *kool* are partially reversible categories depending on where the subject's ecological niche is situated. In *Tales of Old Mother Corn*, the characters' semiotic attunement enables them to maintain the delicate balance and ensure that all involved remain content.

It is, however, the gradual loss of this semiotic competence that makes XNuk Nal so fearful for the future. The farmer, for example, performs rituals to thank the *yuumtsils* but equally to renew his semiotic ties with them:

Three months after sowing the seeds, the farmer has an important job to do, he must perform *jo'olche'*, which involves placing toasted corncobs on a table for the *Yuumtsils*, in order to offer

the fruit of his crop to them and also to nourish [tséentik / alimentar] the Yuumtsils in thanks for their help with taking care of the young corncoobs ... (Tec Tun 2010, 78, 116, my translation)

Key here is the Maya verb *tséentik*, rendered in Spanish as *alimentar*, “to feed.” However, *tséentik* also means “to raise,” thus connoting a process of nurture and even domestication that brings both subjects into the same semiotic sphere of relations. By maintaining channels of communication open in such a manner, the farmer ensures that his relationship with the forest guardians is mutually supportive rather than destructive.

It is precisely this ability to dialogue with the rest of the universe that enables humanity to enact a new order of semiotic complexity, as manifest in the emergence of the ordered *kool* (defined from the human perspective) from the comparatively disordered *k’áax*. Thus, to dialogue with the *k’áax* is not only to dialogue with a different *spatial* context but also an earlier *temporal* stage in the evolution of the universe. Tedlock, for example, describes how the K’iche’ Mayans of highland Guatemala communicate with a spiritual being they name K’oxol. According to Lucas Pacheco, a K’iche’ ritual specialist, K’oxol emerged with the animals during the gods’ first attempt to create humans as described in the *Popol Vuh*, and “escaped petrification by running into the trees” (Tedlock 1996, 305). To this day, K’oxol protects the forest animals and humans by maintaining the safe parameters of their interaction (Tedlock 1996, 305).

While the animals of this era lacked the capacity to fully engage with their origins (i.e. a fully developed *óol*), they nonetheless set the precedent for the emergence of this capacity. In the same way, the *kool* is a latent potentiality within the *k’áax* that can only be actualized through a particular kind of symbiosis: that between humans and maize. It is thanks to this relationship that the universe embarks on a new journey of semiotic emergence, as indexicality gives rise to symbolism. The fact that symbolism is ultimately dependant on indexicality is conveyed by the periodic dissolution of *kool* into *k’áax* in a cyclical repetition of the original creation story. Huff describes how, across the Mayan world, maize represents “the cyclical nature of the cosmos, and of human life” (Huff 2006, 85) as represented in the *Popol Vuh* where the hero twins, Hunahpu and Xbalanque perform a harvest ritual that is still observed today (Tedlock 1996, 39).

Moreover, in his comparison of the concept of *túun gracia* in the *Chilam Balam of Chumayel* and of *wiinikil túun* (literally, “person-like stone”) in the *Ritual of the Bacabs*, Morales-Damián notes how the emergence of maize is nothing less than the advent of a new kind of temporality. The term, *túun* literally means “stone” but also denotes the Mayan year and alludes metaphorically to a grain of corn, while *gracia*, literally “divine grace” in Spanish, refers to maize. The *Chilam Balam of Chumayel* enacts a fascinating kind of wordplay that describes how the *túun gracia* (maize) produces *túuns* (years) and *katuns* (periods of 20 years). Just as “the plant bears fruit and has a cyclical existence, so the same is true for time” (Morales-Damián 2007, 92, my translation) which has its origin in the reproduction of maize. Relating the passage from the *Chilam Balam* to the *Ritual of the Bacabs*, Morales-Damián convincingly argues that the phrase *wiinikil túun* describes how “the human condition is the same as that of a grain of maize: sacred – conscious – and subject to continual regeneration” (Morales-Damián 2007, 92, my translation).

By equating the verticality of humans with the upwards movement of plants, these ancient texts express how, according to Maya philosophy, our ability to mediate between land and sky derives from corn (Morales-Damián 2007, 97). Out of the structural

coupling between the *óol* of maize and the *óol* of humanity, a single *óol* arises and, for the first time in history, the universe acquires the ability to engage in dialogue with itself as a totality. Space and time, as hitherto known, give way to a new spatiotemporal order. This new order is symbolic spacetime, the concrete manifestation of which is culture and, by extension, agri-culture.⁴ While almost certainly coincidental, it is highly fitting that *kool* [field] should so strongly evoke the expression, *k-óol* [our shared *óol*].

The intertwining of the two species' *óols* and the resultant emergence of order as *kool* are clearly portrayed in the following passage:

There's nothing that gives a man greater pleasure than when he arrives at the place he's sown his crop; when he observes that his maize [u pak'al ixí'im / el maíz que sembró] has already germinated, and he sees how nicely the small corncobs have grown in rows [jats'uts' u yilík bix tsola'an jóok'ík / ve preciosos los surcos], at that moment it comes to his mind that he'll take care of them as he takes care of his small children. Thus, every day he goes to see them; when he arrives his happiness grows [ku ki'imaktal u yóol / se pone alegre], he whistles, he sings, he laughs, he speaks to himself, he passes his hand over the tiny leaves [mejen le'ob / hojitas], as if caressing their tiny hands [mejen k'abo'ob / pequeñas manos]. At that moment, a gentle breeze arrives and moves the tiny leaves of the corncobs, and it seems as though they're also happy [ki'imak u yóolo'ob / estuvieran contentos] because they're being taken care of by their guardian [yuumil / dueño]. The man walks every day among the little plants, because that's where his life is [ti' yaan u kuxtaliil / ahí está su vida], he feels at home [ku yu'ubik bey wa tyaan tu najile / se siente como si estuviera en casa]. (Tec Tun 2010, 74, 112, my translation)

The phrase, *u pak'al ixí'im* [his maize] contains the adjective *pak'al* which denotes a plant that has been purposefully sown by somebody; this term constructs a boundary between wild plants and those that form part of the human semiotic niche. By describing maize as *pak'al*, Tec Tun foregrounds the intertwining of the *óol* of maize and the *óol* of humanity. The sense that the *óols* form part of a larger *óol* is conveyed by the alternation between iconicity (sameness) and indexicality (difference): the young corncobs are likened to children, an allusion that is emphasized by parallel structures in the Maya version, such as *mejen le'ob* [tiny leaves] / *mejen k'abo'ob* [tiny hands]; yet it is also by virtue of their difference that the two species can form a symbiotic relationship.

The sense that each *óol* nurtures the other is conveyed by the grammatically parallel phrases in Maya, *ku ki'imaktal u yóol* [his happiness grows], referring to the farmer, and *ki'imak u yóolo'ob* [they are happy], referring to the maize plants. The phrase, *ki'imak u y-óol* is the standard mode of stating that somebody is happy, where *ki'imak* means "happy," *u* is the third person possessive and *y-* is a phonological modification following the possessive, giving the meaning "the *óol* of X is happy." The two phrases in the above passage beautifully demonstrate how the *óol* (final cause) of maize is to nurture the *óol* of humanity, which in turn nurtures the *óol* of the other species. Through their semiotic entanglement, the two species co-create the human ecological niche: "that's where his life is, he feels at home" [ti' yaan u kuxtali', ku yu'ubik bey wa tyaan tu najile / ahí está su vida, se siente como si estuviera en casa]. This habitat, representing a higher level of semiotic complexity (symbolism), is defined in terms of its ordered arrangement:

⁴This is not to deny that non-agricultural societies have culture, only to claim that culture and agriculture are inseparable in the Mayan context specifically.

the farmer “sees how nicely the small corncobs have grown in rows” [jats’uts’ u yilik bix tsola’an jóok’ik / ve preciosos los surcos].

Hanks describes the crucial role of straight lines in differentiating *kool* and *kaaj* from *k’áax*. Fields, for example, are created by a process called *hool ch’ak* or “perimeter cutting,” which involves “aligning two straight stakes” (Hanks 1990, 355) to cut out a square that is then demarcated by stones. The “stones are *tsolta’al* ‘counted out (ordered)’ ... and must be *toh toh* ‘straight straight’” (Hanks 1990, 357). Taube notes how *toh* (or *toj*, in modern orthography) also indicates “conditions of moral rectitude,” so that, “in early colonial sources, *toh* is a ‘just and necessary thing,’” (Taube 2003, 465) (citing Barrera-Vásquez). The concept therefore conveys how “making milpa, houses, art, and other efforts of construction are inherently good and ethically correct human acts” (Taube 2003, 465). Tec Tun’s description of the maize as *tsola’an*, which employs the same root as *tsolta’al*, namely *tsol-* “to count,” and his description of their arrangement in *surcos* [furrows], both emphasize the ordered nature of the field. However, the sense that the *kool* has emerged from the *k’áax* and is ultimately a more complex form of the *k’áax* is suggested by the description of the farmer as a *yuumil* [guardian], the same term that is used for the guardians of the forest: *yuumil k’áax* (or its variant, *yuumtsil*).

Thus, the *kool* does not represent a difference in kind, only degree; humanity and maize ultimately have their origins in the wider world, and it is only by virtue of their ability to dialogue with the beings outside their own niche that they are able to create and maintain the *kool* in the first place. The boundary between *k’áax* and *kool* is, then, as much a temporal as a spatial transition, the emergence of a new stage of complexity from a prior state in which this complexity was only latent. As the harvest draws to a close, the *kool* once again dissolves back into *k’áax*, revivifying and recreating itself as it becomes submerged in a reservoir of new nutrients and ontogenic potentialities.

5. Conclusion

The submersion back into *k’áax* is precisely what allows XNuk Nal’s community to revitalize the maize-humanity symbiosis that, at the start of the tale, had entered a period of decline: after XNuk Nal’s death (her reintegration back into the *k’áax*), one of the children she taught is taken by mythical beings known as *aluxes* (*aluxo’ob*) to the heart of the *k’áax*. In the midst of the forest, they arrive at a field (*kool*) where the child re-encounters XNuk Nal, this time reborn as a young girl. Once again, *kool* arises from *k’áax* through a process of semiotic emergence (Hoffmeyer).

By traveling through the *k’áax* and seeing the cornfield materialize before his eyes, Ch’ipix communes with the reserve of underlying potential that gave rise to a new kind of spacetime – the human ecological niche – and, years later, is able to actualize that potential to breathe new life into his community as *j-meen* (traditional shaman). Taube notes how the incursion of the forest “restore[s] the spiritual power of the human world during calendrically timed ritual events” (Taube 2003, 485), such as the five days, known as *wayeb’*, that fall outside the Maya calendar month and that are traditionally viewed as a time of danger and instability. Ochiai has similarly described how, in the Tsotsil carnival, “the experience of Disorder [and] the union of contrary and opposite elements” implies returning “to a remote and undifferentiated state” which “provokes the rebirth of life” (Ochiai 1984, 221, my translation).

The spiritual renewal of *kool* by *k'áax* is directly related to the regeneration of nutrients in the agricultural cycle. As García-Quintanilla explains, unlike temperate zones “in tropical regions fertility is not in the soil but in plants” (García-Quintanilla 2000, 266, my translation), with the result that while, in European cultures, humanity is made from soil, in Mesoamerica it is formed from vegetation (maize) (García-Quintanilla 2000, 267). Without the cyclical submersion of *kool* into *k'áax*, agriculture could never be successful. Culture (and agri-culture) depends on the constant participation of nonhumanity. For humanity to close itself off to the nonhuman world is to cease being human.

Through the Maya concept of *óol*, which I related to the Peircian (ultimately Aristotelian) notion of “final causation,” we have seen how Tec Tun presents maize and humanity in a mutually nurturing relationship. This relationship directly equates with Maturana and Varela’s theory of autopoiesis, the continuous self-creation of life through structural coupling. The entwined *óols* of both species result in the formation of a single, larger *óol*, embodied by XNuk Nal who is as much maize plant as she is human. From this unified developmental trajectory, a new spatiotemporal order emerges: *kool* (field) from *k'áax* (forest), culture from the rest of nature. Thus, icons form indices which, in turn, form symbols in a process that the recent field of biosemiotics describes as *semiotic emergence*. Rather than constituting a sharp opposition, the Maya distinction between *kool* and *k'áax* is a spatiotemporal transition that takes the form of a constantly repeating cycle. For this cycle to continue, new forms of dialogue must be, quite literally, cultivated on the turf of previous stages.

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