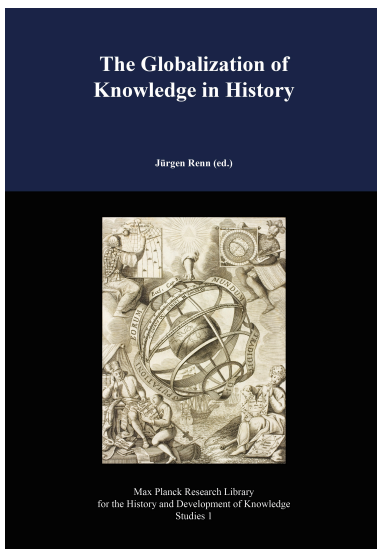


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The Transformations of Knowledge Through Cultural Interactions in Brazil:
The Case of the Tupinikim and the Guarani



In: Jürgen Renn (ed.): *The Globalization of Knowledge in History*

Online version at <http://edition-open-access.de/studies/1/>

ISBN 9783844222388

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Printed and distributed by:

Neopubli GmbH, Berlin

<http://www.epubli.de/shop/buch/17018>

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>

Chapter 23

The Transformations of Knowledge Through Cultural Interactions in Brazil: The Case of the Tupinikim and the Guarani

Circe Mary Silva da Silva and Ligia Arantes Sad

23.1 Introduction

This chapter examines and analyzes some of the questions from current discussions in the field of intercultural studies on the basis of a synthesis of aspects of the Guarani and Tupinikim cultures in the Brazilian state of Espírito Santo.¹ We would like to make the voices of the members of those native Brazilian ethnic groups audible; we would like to let them speak so that they themselves can present those aspects of their culture that have been, or not been, altered through contact with other cultures.

Our focus on the school education that has been developed for those ethnic communities aims to respond to a demand from the communities themselves. Since Tupinikim and Guarani villages have formal schools, it has proven necessary to develop an educational curriculum that is equivalent to that of the non-native populations, and therefore valid from the point of view of the educational system.

Having been invited to participate in this development process, we looked for ways to preserve and give value to the Tupinikim and Guarani cultures within a specific curricular project. The goal of such a project is to strengthen indigenous identity and to take into account the non-native knowledge that is necessary to live together in a more global society.

In order to carry out the task, we engaged mainly in documentary and field research aimed at recovering those populations' culture. At the same time, we promoted projects of continuous education in collaboration with native educators and non-native partners involved in curricular development. The chief objective of the "action research" methodology is to integrate the native Brazilian cultural perspective with the symbolic, technical and scientific knowledge transmitted by the school.

Thus, for example, the mathematical concept of symmetry, present in the formal school curriculum, could be introduced on the basis of basket-weaving and

¹The text was translated from Portuguese by Rafaela Teixeira Zorzanelli.

body painting, ancient indigenous practices that are still alive today. We therefore agree with Peter Damerow:²

It is not a different mathematics that is created but rather a different approach to it. Thus, a basic requirement is claimed. How can a “poor” country afford to waste and neglect the educational potential of its people by following the didactic model of a foreign culture in which experiences are required that are not made in their own culture! How else, but by referring to experiences made within their own culture, can educators acquire the necessary confidence that allows them to act in a way that does not follow prescribed school rituals.

In order to understand the intercultural processes that bring about transformations and continuities, we examined how the knowledge involved in such practices is produced through meanings and senses manifest in the language, material culture and religion of the Tupinikim and the Guarani.

Within such an intercultural context, we took into consideration that local knowledge is not totally isolated from global knowledge. In other words, the local should be understood as part of the global. We agree with the idea that “local” knowledge can be seen as part of global knowledge in which different types of knowledge are negotiated, appropriated, and (re)distributed by a multitude of actors.³ There are no precise boundaries between the local and the global because what we call “local knowledge” is local from our point of view and not from that of indigenous populations. Moreover, the local is perennial, since intercultural contact transforms it in such a way that it is difficult to determine if what we characterize as “local” corresponds to that characterization, or should already be considered part of the global context. In short, it is not possible to speak of “local” and “global” in an absolute or dichotomous manner.

These ethnic groups are part of what we term “local”; as minorities of the non-native population the Tupinikim and the Guarani possess only relative power and to a certain extent depend on the dominant non-indigenous culture that is imposed on them. It is in awareness of these cultural differences that one can observe and analyze negotiation issues and changes in what we call global and local knowledge.

The population of the two native Brazilian communities in question, altogether around 2000 people, is small in comparison with the approximately 3,3 million who inhabit the state of Espírito Santo. Moreover, the Tupinikim and the

²The original text reads “Nicht eine andere Mathematik wird entworfen, sondern nur ein anderer Zugang zu ihr. Eine Mindestforderung wird so reklamiert. Wie kann ein ‘armes’ Land sich auch noch leisten, die Bildungsvoraussetzungen seines Volkes zu vergeuden und zu entwerten, indem es didaktische Vorbilder einer fremden Kultur kopiert, in denen Erfahrungen vorausgesetzt werden, die in der eigenen nicht gegeben sind! Wie anders als durch das Anknüpfen an die Erfahrungen in der eigenen Kultur könnten Lehrer jenes Selbstvertrauen gewinnen, das nötig ist, um anderes zu tun, als vorgegebene Schulrituale zu vollziehen” (Damerow 1990, xv).

³See chapter 16.

Guarani occupy a small geographic area. They inhabit a cultural space the non-natives call an indigenous reservation,⁴ a limited territory owned by the federal state and organized so as to allow the communities to live in close contact with nature according to their traditional notions and beliefs. That space, however, is not free from external interference. For example, almost every village has medical stations, public telephones and temples of various religious groups.

The production of knowledge and its negotiation with the non-native is part of complex interactions between the individuals involved in the global context to which the local belongs. But the process of competition and sharing between native and non-native societies has brought about the modification of traditional ways of living, as well as technological innovations that have been assimilated into the villages, such as the use of televisions and refrigerators. The introduction of industrialized foods is also indicative of how habits and traditions have been abandoned and even replaced.

What is left, then, of Tupinikim and Guarani local knowledge? What has been modified or substituted in the globalization process? Finding answers to these questions is a challenge that requires exploring the different domains of knowledge characteristic of each group. This is consistent with Jürgen Renn's observation that:

Our situation today may rather be understood as the result of historical process that comprise all dimensions characterizing modern globalization processes, each with its own, peculiar constellation of economic, political, technical, cultural, ethic, and epistemic means of cohesion. The study of these historical processes may therefore help to understand the present situation, avoiding the reduction of its complexity [...]. (Renn 2007, 43)

This chapter will examine several relevant aspects of the negotiations and assimilations between local and global knowledge within the sociocultural context the natives share with the non-natives. The text comprises five parts. The first part describes historical aspects of the Tupinikim and the Guarani, as well as their present-day circumstances. The second part concerns their culture, religiosity and language. The third part deals with knowledge embodied in their art, crafts, food, clothing, habitation, instruments and utensils, medicinal plants and techniques of subsistence. The fourth part of this article examines the combination of formal education with an indigenous education based on the oral transmission of knowledge and on the imitation of practical activities. The fifth and final part explores the transformation of material culture and social and political relations caused by external influences, as well as the interactions of native ethnic communities with the larger development of Brazilian society.

⁴According to the *Estatuto do Índio* (Law 6.001), promulgated in 1973 and still valid today, Indian reservations (*Terras Reservadas*) consist of land the Federal Government reserves for Indian use, not necessarily land that was traditionally inhabited by native ethnic groups.

In addition our analysis aims to make systematic contributions to the continuous training of Guarani and Tupinikim educators, so that the communities themselves can become involved in the elaboration of a school curriculum that includes aspects of their own cultures.

23.2 A Glimpse into History

Anthropology continues to provide information on ever-older human groups; cave paintings around 12,000 years old have been discovered in the Serra da Capivara in the state of Piauí. The research of Perrota and Mendonça date human presence in the state of Espírito Santo to 5,000 BCE (Coutinho 2006, 74). At the time of the Portuguese arrival in Brazil in 1500, the territory was inhabited by groups identified as belonging to the Tupi-Guarani.

Authors such as Alfred Métraux (1950), Arthur Ramos (1943), José de Lima Figueiredo (1949) and Florestan Fernandes (1964) agree that the Tupinambá were one of the most important Brazilian native ethnic groups, and that almost all other indigenous groups from the coastal area stem from them. Etymologically, “Tupinambá” means “the descendants of the founders of the nation,” or “the main fathers.”⁵ The Tupinambá are related to various other ethnic groups, such as the Goitacazes (*Waitaká*), the Tamoios, the Temiminós and the Tupinikim. In the sixteenth century, the Tupinikim occupied two areas, one situated between the present states of Bahia and Espírito Santo, another further South, between Rio de Janeiro and São Paulo.

According to Figueiredo (1949) the first natives Pedro Álvares Cabral encountered were Tupinikim. Figueiredo thinks the Portuguese were fortunate to meet a group characterized by loyalty, hospitality, docility and diligence. Indeed, these features helped conquerors to dominate the natives and use them in their interest. For the native populations, however, that meant the beginning of a progressive assimilation to the non-native culture, and the subsequent loss of their own. Serafim Leite (2000, vol. 1, 230) asserts that in the sixteenth century there were in Espírito Santo four large indigenous villages under Jesuit tutelage, and six additional ones made up of natives who had not been catechized. According to the same author, after the expulsion of the Jesuits from Brazil in 1759, native communities remained under the domination of the non-Indians, employed as forced labor in agriculture, construction, and so forth, initially without remuneration and later on extremely low pay. Many natives were imprisoned to prevent their escape (Leite 2000, vol. 6, 178–179).

A critical reading of such historical narrative, written from the dominators’ point of view, highlights the sociocultural elements that have been omitted or ignored. To relate the history of the Brazilian native communities to a reflection on the indigenous educational context therefore means more than simply preserving

⁵The original text reads “os descendentes dos fundadores da nação,” or “pais principais” (Métraux 1950, 11).

a traditional and well-known history, such as that written by Serafim Leite: it should open up our historical vision and bring to it the intercultural perspective that is indispensable in carrying out the curricular transformations demanded by the Indians who inhabit *capixaba* territory (i.e., Espírito Santo).

The Tupinikim population in the area between Espírito Santo and Bahia has been estimated to 55,000 persons in the early years of the colonization of Brazil.⁶ As inhabitants of coastal regions, the Tupinikim suffered considerably under occupation. After their arrival in Brazil the Jesuits created settlements in Tupinikim territories. According to José Maria Coutinho:

Though marginalized in the national and even state context, the early history of the Aracruz municipality was not isolated from the more general context of the Portuguese colonization of Brazil. One of the oldest Brazilian towns was established there—the third in Espírito Santo after Vila Velha (1535) and Vitória (1551)—and all were created to defend the territory against French incursions, as well as to counter the natives' resistance. In the Aracruz municipality, the Portuguese established Aldeia Nova in 1556. (Coutinho 2006, 109)

In 1953, the state government of Espírito Santo created the Comboios Biological Reserve, whose borders include the totality of the lands traditionally occupied by the Tupinikim. In 1976, the environmentalist Augusto Ruschi proposed to the FUNAI⁷ to transform the biological reserve into a reservation that would host the “remaining Tupinikim.”

The land reductions imposed on the indigenous peoples by political and economic interests prevented the traditional alternation of crops, and led to a concentration of families in villages such as Caieiras Velha, Irajá and Comboios, which still exist today. Some cultural elements, such as the Tupinikim home, still present traditional features; at the same time, as we shall see in the third part of this article, new features visible in the villages derive from the contact between the natives and the non-natives.

Historically, the Tupinikim lived in Espírito Santo before the Guarani, who began building their own villages in that state only in the 1960s. Egon Schaden (1977, 10) divides the Guarani into three subgroups, the *Kaiova*, *Nhandeva* and *Mbya*, according to their linguistic and cultural features. The *Mbya* are the ones who have moved the most and therefore present the widest territorial scattering. Part of the Guarani-*Mbya* migrated from the southern regions of Brazil; they were guided by the spiritual leader *Tatatã Yva Re Ete* whose dreams, considered to be a divine revelation, indicated the ideal location for her people. That place, known as

⁶Information from www.ibge.gov.br/brasil500/indios/numeros.html.

⁷FUNAI is the *Fundação Nacional do Índio* (National Indian Foundation), a federal agency that defines and applies Brazilian policies regarding native peoples in conformity with the 1988 Constitution.

Tekoa Pora in Guarani, extended the areas of the Atlantic Forest (*Mata Atlântica*) already inhabited by the Mbya.

The group *Tatati* led in the search for the “land without evil” (*terra sem males*), left Rio Grande do Sul and, for a period of almost thirty years between the 1940s and the 1970s, traveled through the states of São Paulo, Rio de Janeiro, Espírito Santo and Minas Gerais (Ciccarone 1996, 9). In 1962, six families arrived in Espírito Santo; the group grew, and according to a FUNAI census of 2005, the indigenous Guarani population comprised at that time about 237 people.

The main Guarani village, *Aldeia de Boa Esperança* (Village of Good Hope), was established in 1979 about seventy kilometers north of Vitória in Aracruz. Although their world of gods is distinctly masculine, women play a prominent role in the family life and daily habits of the *Tekoa* of Boa Esperança and are respected in their sacred role as child bearers.

Caieras Velha and Irajá, two other Tupinikim settlements, are to be found in the neighboring region. The area that includes these three villages as well as access to the Piraquê-açu river extends eastwards to the coast, and westwards to a small native forest whose boundaries are negotiated by the Guarani-Mbya and the Tupinikim. The arrival in 1967 of the cellulose factory Aracruz Florestal and the financial interests of the mining company Vale do Rio Doce (since renamed Vale) marked the beginning of land acquisitions and conflicts caused by the invasion of forest areas, the cutting down of native trees, and the degradation of natural resources.⁸

From a historical point of view, humans are not mere repositories of information and knowledge passed on by their predecessors through practical and intellectual activities. The ethnic groups to which we refer here not only preserve their ancestors' experience, which is essential to their survival and to the existential continuity of their identity, but they also adapt to the larger cultural context in which they live in ways that are useful to them.

23.3 Identity, Language and Religion

The goal of connecting identity, language and religion is to recover the cultural foundations of the Tupinikim and the Guarani cultures so as to foster their appreciation and dissemination—and thereby their preservation—by means of school education. The proposal of a differentiated curriculum aims at satisfying a demand of indigenous communities, shared by the non-native groups who pursue an intercultural approach to education, for fair and harmonious integration. We adhere to Coutinho's position (Coutinho 2006, 53) when he asserts that interculturalism consists in the exchange of different cultures who agree to look for common solutions to disagreements and social injustices. To propose an intercultural education

⁸On its website Vale presents itself as a global company with a passion for transforming mineral resources into prosperity and sustainable development, see www.vale.com.

therefore implies reconsidering educational practices so as to take into account and respect the differences between the sociocultural groups involved in the process.

The dialogical negotiation essential for such a process takes place through an interweaving of meanings originating in different languages; although these may be different, they are not incommensurable given that the language used in Brazil has incorporated elements of the Tupi-Guarani linguistic family. Even though the Tupinikim and the Guarani inhabit the same region and belong to the same linguistic family, their languages and religions are actually quite different. These differences contribute to the differentiation of other sociocultural dimensions, and that is why they are presented separately here.

Moreover, the languages considered are constantly evolving and interact with Portuguese, Brazil's official language, which affects and is in turn influenced by indigenous languages. We agree with Mikhail Bakhtin (1984) when he considers language as a system of norms in constant and uninterrupted transformation. Linguistic transformations caused by exchanges, as well as by bilingualism and multilingualism, impact on education, society and culture in general. In addition, multilingualism can be understood as a critical factor in globalization processes (Renn 2007, 44).

23.3.1 Guarani

The Guarani themselves claim that being Guarani amounts to being religious. Religiosity plays a crucial role in their culture and Guarani individuals from an early age manifest a strong sense of identity based on religion and their mother tongue, two inalienable characteristics. While other native Brazilian ethnic groups have partially or completely lost their languages and religions, the Guarani have long preserved them and they remain relatively unaffected by intercultural processes. Among the Guarani it was always desirable to maintain traditions, though this was not always possible, as during the time of the Jesuit missions (sixteenth to eighteenth centuries), when the non-native culture was imposed on them.

The word *guarani* is written with oxytonic stress: *guaraní*, meaning warrior or warring. As already mentioned, the Guarani language belongs to the Tupi-Guarani family, which is spoken by several indigenous peoples of Brazil, Argentina, Bolivia, Uruguay and Paraguay (the country in which it is an official language alongside Spanish). From a phonetic point of view, it is to be noted that most Guarani words are oxytonic.

The Guarani believe that language (*ayvú*) has a divine origin. According to Schaden (1962, 115) they think that the primordial function of the soul is to give humans the gift of language. The creator god *Ñanderu* also gives speech (*ñée*). Unkel (1987) explains that dialects define membership in a tribe; those who do not speak the tribe's dialect are therefore considered foreigners. The same author describes the Guarani's scorn of Portuguese Christian names; according to the Guarani, each child has an indigenous name before birth, which he or she adopts as a legitimate name.

As Jürgen Habermas rightly observes,

the medium of language does not facilitate first and foremost the description or affirmation of facts; it equally serves for giving commands, solving riddles, telling jokes, thanking, cursing, greeting and praying. (Habermas 1992, 62)

The *Mbya* Guarani language remains alive and is orally transmitted to the children in the villages, who also learn and speak Portuguese quite fluently. Although written Guarani is little used, the children from the villages learn how to read and write in their mother tongue, and use it as a means of expression.

Pre-school Guarani children only use and communicate in their mother tongue. In school, learning Portuguese amounts to learning a foreign language that is unfamiliar in comparison to the mother tongue. Vološinov writes:

the native word is one's "kith and kin"; we feel about it as we feel about our habitual attire or, even better, about the atmosphere in which we habitually live and breathe. It contains no mystery [...]. (Vološinov 1973, 75)

At school, children become bilingual; this differentiates them from children who attend non-indigenous schools. When they write, they mix Guarani and Portuguese, as can be seen in Figure 23.1, which shows a page from the notebook of a third-grade girl from a school in Aldeia Boa Esperança.

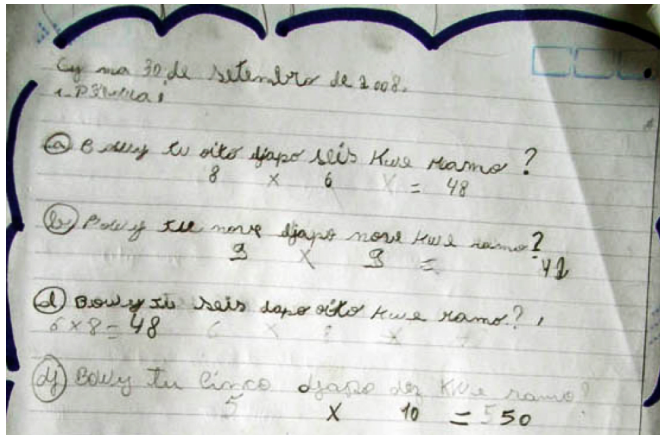


Figure 23.1: Page of a notebook of a third-grade Guarani child from Aldeia Boa Esperança. (Photo by Silva, 2008)

The page includes both Portuguese and Guarani. We see on the third line the sentence, “Bowy tu oito djapo seis kwe ramo?” In Portuguese, “*Quantas vezes*

daria se o oito a gente pulasse seis?” (How much would it amount to if eight were added six times?). The Guarani schoolteacher corrected in the following way: *“Bowy kwe oito djapo seis ramo?”* In the teacher’s translation, *“oito a gente pulasse seis”* (“if we added eight six times”) designates multiplication as six successive additions of eight. It is interesting to note that even when they know the numbers in Guarani, they name them in Portuguese. In the classroom, there is a poster with Guarani numbers (Figure 23.2).

The ethnologist Diana Green (1997, 180) explains that Brazilian indigenous languages offer a variety of numerical systems, on the basis of two, three, five, ten and up to twenty, with logical-analytical or even holistic interpretations that may differ depending on the context. The example of Figure 23.2 presents a logical-analytical system of basis five.

The natives and non-natives who are in contact with each other exert a mutual influence through actions that are mediated by language.

Moreover, language plays a fundamental role in the understanding they gain of their own actions, since learning one’s mother tongue goes hand in hand with the development of consciousness and action. Language is part and parcel of that development and moves together with it. As Bakhtin (1984) notes, language is not transmitted as a finished product from generation to generation, but is constantly evolving.

The Departments of Education of the different Brazilian states, as well as the federal Ministry of Education are currently supporting a number of programs for the introduction of Guarani into village schools.

Tupi-Guarani is the indigenous language group most studied in Brazil, Bolivia, Paraguay, Argentina and Guyana. Its study began with the Portuguese and Spanish colonizers in the sixteenth century, and today there are online dictionaries for both ancient Guarani and the current dialects.

Religion plays a fundamental role in Guarani culture. The Guarani religion assumes the existence of several gods and a relationship to nature. *Ñanderu—Tupã*—is the main god, the god of power. Thus, the *pajé*, a prominent member of the tribe, is most often a medicine man. João Carvalho, Karay Mimbi son of Tatati explains:

God never dies. He becomes old during the cold period, so he turns old, and when summer arrives, when the trees and fruits flower, God becomes new again. He turns old and then returns here, new again. (Ciccarone 1996, 54)

Such an explanation highlights the relationship between God, nature and human beings. For the Guarani, important decisions proceed from revelations their religious leaders receive in dreams. Vision is a gift, a vocation, a divine revelation that implies an active process of attaining the true vision by means of dreams. Dreams are the image repository and subjective experience of those from whom knowledge and power proceed (Ciccarone 2001, 16).



Figure 23.2: Detail of a poster in the third-grade classroom of the Guarani school of Aldeia Boa Esperança. (Photo by Silva, 2008)

The Guarani hierarchy of gods is headed by *Ñanderu*, who was their creator and gave them divinity. He created *Karai Ru Etê*, god of fire who lives in the East; *Djakairá Ru Etê*, god of fog and spring who lives in the North; *Tupã Ru Etê*, god of rain and thunder who lives in the West (Schaden 1982, 10). The village elders know how to position themselves and to relate space orientations to a given god. As the educator Mauro Luiz Carvalho told us:⁹

The process of reaching the main god includes going through a succession of special places indicated by the gods. The most religious persons go most directly. The house of prayer is always directed towards the god Nhanderú ou Tupã, god of the sun, who illuminates our earth and our soul, driving away the evil of darkness. The same god also illuminates inside the house of prayer. The ideal thing is to have all the houses orientated towards sunshine, as the house of prayer.

The Guarani religion developed through resistance to pressure from external cultures. Together with language, it is a key element of Guarani identity and expression, and serves to preserve the group's unity. Religion permeates the Guarani's entire way of life, from the most daily things, such as food, planting techniques or the construction of houses, to forms of expression such as music, dance and art, as will be discussed later.

The Guarani's religious rituals include music and dance. Several rituals are carried out daily in the villages at two different times: the *xondaro*, warming up and preparation of the body, and the *porahéi*, songs and dances asking for peace to all Indians and the white people who want to help them. The *xondaro* is as well a dance relating to defense, and is therefore also a part of the daily life of the villages.

23.3.2 Tupinikim

In contrast to the Guarani, the present-day Tupinikim of Espírito Santo have lost their native Tupi language as well as their religion. At the time of the arrival of the Portuguese, the Tupinambá and the Tupinikim practiced a religion strongly linked to nature, the essential basis for their survival. They were henotheists, since they believed in one supreme god, but worshipped several minor deities (Coutinho 2006, 90). Little by little, through contact with the non-Indians, they assimilated the conqueror's culture, to the point of no longer communicating in their own language. They thereby lost many of the meanings of their traditional religious beliefs. Though identified as Tupinikim due to their particular biotype, they have entered a process of miscegenation through marriage with non-Indian partners.¹⁰

In the *Dicionário Etimológico da Língua Portuguesa* (Da Cunha 1986), the term "Tupinikim" has various spellings: *Topinaquis*, *Tupinaquis*, *Tupin-anquins*,

⁹Interview with Mauro Luiz Carvalho, Guarani educator, 2007.

¹⁰This observation is confirmed by Teresa Goulart (1975, 30–33).

Tupiniquins. According to the historian Varnhagen, *Tupi* means “next,” or “next door neighbor.” In the past, the Tupinikim spoke the coastal Tupi language, which belongs to the Tupi-Guarani family. Until the end of the seventeenth century, Brazil’s “official” language was Tupi-Guarani alongside Portuguese. In 1759, under the influence of the Marquis of Pombal,¹¹ the Portuguese crown prohibited the hybrid language, blaming it for disrupting communication and negotiations between Portugal and its Brazilian colony. Punishments were even imposed on those who did not speak and use Portuguese. This led to a decline in the usage of aboriginal languages, particularly in the coastal areas, where the control of the metropolis was most strongly exerted, and where most commercial exchanges took place. The passage of time and the interactions between the Tupinikim of the Aracruz villages and the non-Indians of the same district eventually led to the almost complete abandonment of Tupi, even though some words and expressions persisted. Thus, little by little, the Tupinikim ceased to speak their native language; they are presently in the process of recovering it through the introduction of Tupi in village schools.

For the Tupinikim, God and nature are one and the same.¹² They believe the forest is like a spiritual temple, and unanimously think that rivers and waterfalls have a body and a spirit. In turn, animals can carry messages; the “*kauan*” bird, for example, illuminated by God, can announce imminent death. The pajé was the tribe’s priest and was endowed with great powers that enabled him to function as a guide, healer, educator, seer and sorcerer. He exerted influence on the chief and on many occasions presided over official rituals and ceremonies. Since he was also capable of driving away evil spirits, he was also considered a shaman. As described by foreign travelers such as Hans Staden, the Tupinikim religion included cosmological knowledge. According to Coutinho (2006, 92) the Tupinikim knew the Southern Cross constellation, which they called *kuruçá*, meaning “cross” in Tupi, as well as several planets, such as Venus, which had two names, *pirapanema* (evening) and *jaceí-tatá-açu* (morning). Brazilian Indians generally give considerable importance to the constellations of the Milky Way, called in Guarani *tapi’i rapé* (the road of the tapir) (Afonso 2006).

After the arrival of Europeans on the American continent, and especially through the Jesuits’ missionary work, the natives’ beliefs were repressed and Christianity was imposed on them. After that period there were no major confrontations between the religions of the Indians and the Christians. This suggests that Egon Schaden (1982) is right to argue that living peacefully and accepting the foreigners’ religion was perhaps the natives’ strategy for preserving their own beliefs and values.

This kind of process of cultural transference in the domain of religion continues until today. In the villages there are churches of different Christian denominations

¹¹Sebastião José de Carvalho e Melo, better known as Marquis of Pombal, played an important role in the government of the Portuguese King Joseph I (1750–1777).

¹²What Coutinho (2006, 90) characterizes as a *religião de integração* (integrative religion).

(Catholic and several branches of the Evangelical). The Tupinikim see no contradiction in following the religious precepts of the “white man’s” church, and at the same time their own native beliefs. In her M.A. thesis on the ideas and attitudes of Tupinikim educators vis-à-vis mathematics, Dóris Reis de Magalhães records the following narrative, transmitted by an inhabitant of the Pau-Brasil village:

I attend one of the religious temples built in our village, and I believe in the words of the Bible and the minister’s teaching. [...] I think that our belief in God has something to do with some legends we know until today, and which many of us believe as true. I don’t know. What I do know is that when I’m in trouble, I go alone into the forest, always barefoot, and I talk with the plants, with nature. It’s there that I cry, sing, talk or laugh. I don’t feel alone because I am part of the place. When the tree leaves fan me I have the feeling of being valued, as if the trees were applauding me. The forest values me because it knows I value it. I am part of the forest, like each tree, each plant, like the earth that encloses the forest, you understand? I don’t know what happens to me when I’m in the forest. My soul becomes light. I know and feel I belong to that nature that surrounds me. I don’t feel superior even to a leaf. Spiritually, I feel happiness and inner peace, close to God because nature is God. It’s there that I make my personal reflections and speak with nature, which is the same thing as speaking with Him. Sometimes I go to the forest sad or stressed out, and when I return, I feel renewed. For me, the forest is also a religious temple. And I’m not alone to feel that way. Many of us Tupinikim feel and say the same thing. (Magalhães 2007)

The Tupinikim assimilation of other religions and the loss of their mother tongue, replaced by Portuguese, has led to a weakening of their ethnic identity. In contrast, the Guarani people were able to keep their religious beliefs and native language, and have thus preserved their identity more completely.

23.4 Indigenous Practices

Traditional Tupinikim and Guarani knowledge is expressed orally, as well as in painting, music, crafts and dances. It is also embodied in the way they build their houses, cook, prepare medicines, dress, as well as in their tools and general techniques. We agree with Norbert E. Wilhelm (2008, 422–423) that “the fact that we now use other technologies does not mean that traditional knowledge was primitive.” For example, Indian crafts have their own beauty, with standards for the use of raw materials and well-systematized techniques whose cultural dimensions cannot be considered inferior or of less value than those of other cultures. Similarly, the construction of the external walls of houses, in which raw materials

such as bamboo and mud are used, demonstrate the use of natural elements available in the local surroundings; they can therefore be understood as particularly ecological, not presenting any problem of recycling. Nevertheless, since the natives are poorer than the other groups, their technology is considered primitive, and its values and potentials are not taken into consideration.

23.4.1 Tupinikim

Together with religious beliefs, legends play a significant role for the Tupinikim. One of the most important ones is the “legend of the Saci,” which has different versions and which many believe to be true. One of those versions, told by a Tupinikim woman, can be found in the 1999 publication *Os Tupinikim e Guarani contam ...* (The Tupinikim and the Guarani tell ...). The same legend undergoes cultural transformations over time and through contact with different peoples. This particular legend, with the name of Tupi-Guarani root, appeared in Brazil in the eighteenth century, and is still present in books of Brazilian legends.¹³

The most manifest Tupinikim habits are related to body painting, games, crafts, feasts and the practice of agriculture under the influence of the planets. Body painting is one of the traditional forms of Indian art and continues today with marked features and a strong meaning for those who practice it. The use of the dark pigment of the genipap (*genipa americana*) signifies a readiness for celebrations and rituals since the color black is used to denote happiness and peace. In contrast, the use of the pigment from the annatto (*bicha orellana*, *wrucu* or *wrucum* in Tupi), which is red, denotes a readiness to fight since red signals disagreement and unhappiness. The simultaneous use of the two colors means that something is being negotiated and that there is an openness to dialogue.

Music and dance have long been rooted in the life of the Tupinikim. Natural materials are used to make musical instruments such as rattles which are used for more than one purpose (children’s toys, crafts, instruments to mark rhythm in music). The “Congo” is a type of music that originated in interaction with former black slaves. Its intense rhythm is provided by drums. The Tupinikim dance to the Congo; the best known of the dances is the “warrior’s dance.” Present-day indigenous celebrations are closely associated to Christian feasts, such as the day of Saint Benedict or the *festas juninas*; this reinforces an already considerable Christian influence.¹⁴ One of the most popular children’s games consists of making a footpath in the forest. Children divide into two groups: one has the function of marking the path, and the other of discovering it. The path is indicated with gourds that are already known to the second group. The game ends when all the gourds have been found and the path discovered. The game of spinning a top, already known to the Greeks and Romans before Christ,¹⁵ must have been intro-

¹³See (Mugrabi 1999, 67–69). See also <http://sitededicadas.uol.com.br/folk01.htm>.

¹⁴The *festas juninas* are celebrations of popular saints and rural life derived from the Portuguese Midsummer Day, itself historically related to the pagan celebration of the summer solstice.

¹⁵See www.construirnoticias.com.br/asp/materia.asp?id=1353.

duced into Brazil by the colonizers and was assimilated as a game by the Indians. In addition to industrial tops, the Tupinikim use ones they make themselves which they adorn with painting typical of their culture.

Tupinikim crafts are among the most appreciated in the region. They are generally made by women and represent an important contribution to the family budget. In the Aracruz municipality there is an association of women who work together to make crafts commercially. Children and men help them by collecting raw materials from the forest. The most commonly produced objects are wristbands, earrings and necklaces, bows and arrows, *samburás*, *tipiti* (kinds of baskets), sieves, small clay pots, baskets, gourds and axes.

Anthropologists such as Ramos (1943), Métraux (1950) and others affirm that the ancestors of the Tupinambá family lived in groups of houses (*ocas*) built on a rectangular piece of land called *ocara*. The houses were rectangular, between 50m² and 200m², and were made of tree trunks set into the ground; these trunks supported transversal beams joined with liana, and the houses had a roof made of palm tree leaves. Other houses, built according to the technique known as *taipa*, had walls of mud and wood. This tradition has not been entirely lost, even though most of the houses today are masonry.

In today's villages one sees, alongside masonry houses, others constructed with materials from the forest, in conformity with Tupinikim tradition. Magalhães considers the following explanation by Yby-Membyra, an inhabitant of the Caieras Velha village, as representative:

My daughter's house is made of plaster, and the house of the people who've been here longer was like that, with walls made of palm-tree trunks and mud. And the roof, with bundles of nayhá straw. That changed as we got to know other people. I think Indians began to feel ashamed to remain that way next to those persons who live in masonry houses, and wanted also to work in order to have that kind of house. I think it's also because of this that our tradition disappeared. We went on changing our way of living. (Magalhães 2007)

The Tupinikim plaster house is built entirely with natural materials such as earth and trees, according to structural principles that are thousands of years old, and generally with women's help. In addition to allowing group collaboration, the advantage of this kind of construction is that it eliminates the need to buy materials commercialized by the non-Indians. But even this traditional home-building technique has assimilated one element of the white population's culture, namely a whitewash to protect the house from humidity and to fill narrow crevices, thus keeping out insects such as the *Trypanosoma cruzi*, which causes Chagas disease. Today the masonry houses are preferred to the traditional ones, and they are constructed collectively under the guidance of those who already master that building technique.

The Tupinikim cook in the kitchen and next to their houses. Traditionally, food was obtained by hunting, fishing and gathering fruits. The interaction with other cultures and the limits imposed on their territory gradually modified their eating habits, as told to Magalhães by a chief of the Irajá village:

We were brought up eating fresh-water fish, game, birds, fruits from the forest, swamp shellfish and crab, in addition to cultivated products, such as sugar cane, coffee, manioc, pumpkin, green beans, pigeon peas, and others I now don't remember. We all had some domestic chickens, and those who had pigs gave the other families some lard. For some time now we have vegetable gardens, each family its own, with onion, garlic, scallion. Few people plant tomatoes, because we don't eat tomatoes in our culture. It's not as it used to be. Times have changed. (Magalhães 2007)¹⁶

The Tupinikim still cultivate maize, some types of beans and manioc, sugar cane, coffee and several types of potatoes (sweet, *cará*, English, *caratinga*). In the family gardens they plant various kinds of vegetables such as lettuce, tomato, watercress, mint, onion, scallion, garlic, cabbage, cilantro and parsley. The habit of consuming these products is more recent and is related to the interaction with the non-Indians. In the villages, the most common fruit trees are the acerola, annatto, pitanga (a red berry), guava, avocado, Brazilian guava (*empharaçá*), coconut, orange, mango, jack-fruit (*jaca*), genipap, jabuticaba, lime, passion fruit (*maracujá*), banana and papaya (*mamão*). Some of them—the *araçá*, genipap, jabuticaba, passion fruit, pitanga and annatto—are native Brazilian species.

The Tupinikim eating habits include, in the first meal of the day, coffee and potatoes; for lunch they eat beans, rice, maize or pasta, meat or fish with manioc flour; in the afternoon they eat fruit or have coffee with other industrialized foods such as bread or milk; in the evening, they prepare a meal. Drinking tea is a very common habit; infusions are prepared with native herbs and can have the function of treating or preventing illnesses.

Drinking the fermented *coaba* is an ancestral habit of the Tupinikim. The *coaba* is prepared with *coin*, a sort of wild manioc which is cooked, crushed, and left to ferment for about three days. The drinking ritual takes place on special occasions such as the welcoming of guests and celebrations. Some drink the *coaba* in the shell of the *cuité*,¹⁷ a sort of gourd. The effects of the *coaba* are like those of alcohol and for this reason some Tupinikim object to its consumption.

Some health practices are intimately related to the Tupinikim cultural heritage concerning the medicinal use of plants. An informant from the Pau-Brasil village told Magalhães (2007) that she knows by heart some recipes, such as the one for a syrup made of plants like acerola and pitanga, as well as the succulent

¹⁶Jonas, Chief of the Irajá village, November 2006.

¹⁷The *cuité* resembles a coconut, and is used to make the *berimbau*, a musical instrument of African origin.

“saião” (*Kalanchoe brasiliensis*), wiregrass (“pé-de-galinha,” *Eleusine indica*), and ironweed (“assa-peixe,” *Vernonia polysphaera*), capable of curing even pneumonia. The fat of animals such as capibaras (*Hydrochoerus hydrochaeris*), lizards and nightjars serve to treat bronchitis and inflammations.

One of the pajé’s important functions in the village still is to give advice and to prepare medicine. He himself looks for and collects medicinal plants in the forest. For the most common illnesses, most adult members of the group know which plants are useful and how to prepare remedies with them. Prayers, however, are still a means of healing certain conditions. The Pajé of Caieras Velha tells part of his life history to Magalhães:

My father was a healer and my uncle too. They never taught me any of that. But when I was 12, an adult Indian here in the village came to me and asked me to pray because he was suffering from an unbearable toothache. As soon as he asked me, I shivered with fear, and without knowing anything, I prayed for him. After that I felt relieved because I was certain God would take away that pain, that suffering of his. Then I told my father what had happened. My father told me that he too had the gift and the vision to heal. From that day onwards, I never stopped. I am 91 years-old and until today I pray for pain on the side, toothache, stomach-ache. I pray for any illness, everything I can understand. I don’t cure venereal diseases, I don’t understand [them]. (Magalhães 2007)¹⁸

Although, as we see, the pajé cures many illnesses, he does not treat all of them; Alexandre, for example, excluded venereal diseases. For such diseases, the Tupinikim appeal to the medical knowledge of the non-Indians. The existence of health posts in the villages is something recent in their lives. These medical stations offer pre-natal assistance, vaccines, small sutures and emergency help. When the women return to the villages after giving birth, they continue to employ traditional remedies, using plant baths to prevent infections.

We see clearly here how sometimes tradition becomes prominent and combines with the external culture, thus transforming native culture. But the opposite also takes place, as when non-Indians assimilate native cultural habits, thus transforming their own customs and opening up spaces to live together harmoniously.

Over time and through contact with the non-Indians, the Tupinikim also changed their habits of dress. The chief of the Comboios village told Magalhães about the transformation, from the time when they were totally naked, with body paint as their only clothing, to their present use of industrialized clothes:

When I was a child, both my cousins and I, and all the children of the village, went around naked until we were 11 or 12 years-old. After that age, our parents dressed us as if we had uniforms. Our day-to-day

¹⁸Pajé Alexandre Cezenando, Caieras Velha, October 2006.

clothes in the village were the same as those of our ancestors: tow or cotton bags. All one had to do was to make holes for each sleeve, and the clothing was ready. It was a sort of nightgown. [...] Whoever wanted to personalize his clothing, his gown, painted, primarily with annatto, or drew something, like a bow and arrow, or some other object of our culture, or a bird or plant he liked. The color came from the pulp of crushed fruits that stain, and cannot be eliminated, like that of the annatto. [...] When we were teenagers, my cousins and I used the same bag as if it were a skirt (like a loincloth) and not as a gown. We wore it that way to be able to paint our bodies, our chest and back, so we could feel more adult. I myself experienced that. (Magalhães 2007)¹⁹

23.4.2 Guarani

Due to their symbiosis with nature, which they value above all, the Guarani prefer to dwell in the forest and avoid open fields. The white man's occupation of lands previously inhabited by native Brazilians has brought about transformations and difficulties in the maintenance of that tradition. In our conversations we noted their concerns about the importance of the space they inhabit so that Indians and non-Indians can live together peacefully and harmoniously.

The Tupi Indians are organized in a very different way from other peoples, because space must be distributed among them according to the number of families. Families need room for planting, room for hunting. Today we have a very limited space for the Tupinikim and Guarani families. In such a restricted space they are all massed up, which makes peace difficult.²⁰

Ideally, all houses should be oriented towards sunrise, like the house of prayers. But that is not always the case. For building, a wood harder than cedar is used. The village homes are generally divided into two parts, one for eating, another for sleeping. The bathroom is outside the house. Some sleep on the floor or on a mat, a net, or even a bed. Those who do not have money to buy a bed make a *girau*, a crude bed made of wooden rods.

There are presently many houses with mud walls and covered with palm tree leaves. Figure 23.3 shows the construction of a house in the Boa Esperança village. It is approximately 4m x 4m, has only one door and one window, and was being constructed for a pajé. The walls are made of bamboo secured with wire (formerly liana was used) and filled in with mud from the earth next to the construction site; it is, however, covered with industrial tiles. Adults and children from the community help each other with the construction (this regime of mutual help is

¹⁹João Mateus, Cacique of Comboios, September 2006.

²⁰Interview with Mauro Luiz Carvalho, Guarani educator, 2007.



Figure 23.3: The former chief Jonas explains how to use raw materials (mud and bamboo) to build a more traditional Indian house, which has a lesser impact on nature. (Photo by Silva, 2008)

called *mutirão*). This shows that they have preserved knowledge inherited from their ancestors, even though they have assimilated the use of industrial materials introduced by the non-Indians. Marcelo Oliveira da Silva indicates one of the reasons for the use of industrial materials:

Today we no longer find in the forest many natural materials to build houses, as it used to be. If we cut trees, little by little our forests will disappear, and the palm straw as well. (Silva 2003, 117)

Such justification seems partly accurate, given that it is indeed easier to obtain materials manufactured by the non-Indians than to extract and handle materials from nature.

In the Três Palmeiras village one finds many houses with thatched roofs (palm tree leaves). Marcelo Oliveira da Silva, a former Guarani chief and transmitter of Guarani culture, explains how a house was traditionally built:

It was made of lath-and-plaster, with a hardwood frame. Mud was mashed with the feet and then put on the house frame to make the

walls. [...] The roof was made of coarse hay (*kapi'íguaçú*). The houses were tall, and inside there was always a fire to heat it up and chase away jaguars, snakes, mosqui-toes and insects. All the houses were built facing the rising sun so that the sun's rays would clean the interior. They always have two doors, one at the front and another at the back. (Silva 2003, 177)

Today, Guarani crafts are not only an artistic form of expression, but also a means of subsistence. The Guarani themselves commercialize their creations and many families live almost exclusively from this kind of business. The inspiration for the crafts is very much connected to nature, from the raw materials such as liana, embira (a sort of bast fiber), grains, bird feathers, stones, wood, shells and animal bones to the forms and images of animals, plants and planets. With those materials the Guarani produce different types of objects: bows and arrows, blowguns, baskets, mats, axes, spears, fans and bags.

Basketry is one of the most interesting artistic productions of the Guarani. To understand the meanings inherent in Guarani crafts, knowledge of the culture of that ethnic group is required since the Guarani express their religion, beliefs and myths in their products. For example, the symmetrical motifs on their baskets refer to patterns found on the skin of animals such as the cobra. Other motifs, such as the *kuruxu* (cross), have a religious symbolism. The sculptures of animals, such as the *xivi* (jaguar), which lived in Guarani territory and is part of their legendary heritage, remains present in the crafts; other represented animals include the owl, the caiman and snakes, as well as other birds, fish and animals.

23.5 Education

Education as a means of preserving and ensuring the continuity and survival of minority languages such as Guarani and Tupi is a general concern for all those involved in the education of native Brazilians. Native ethnic groups have had to face the oppression of the cultural, social and economic domination of the non-Indians, who imposed their own language, values, and social norms.

Educational matters must be considered in connection with the need for ethnic groups to live in harmony with nature and with the other populations. One of the major concerns is the struggle for land, which is indispensable for the traditional Guarani and Tupinikim way of life.²¹ This constitutes one of the basic differences between Indian and non-Indian education.

As a social institution, the school is not limited to pedagogical functions, but needs to take into account social assumptions and cultural contexts in its educational project. Self-confidence is necessary to execute effectively a curriculum

²¹*Struggle for land* designates the Indians' constant struggle to recover land which, since the 1970s, has been occupied by factories such as that of the giant company Aracruz Celulose.

and other educational initiatives. If that is lacking, then the school rituals will fail due to a lack of commitment of the teachers involved (Damerow 1990, ix).

In thinking about important educational initiatives, we need to pay particular attention to the curriculum and be very aware that it makes no sense to “copy” the non-Indian curriculum. Rather, one must take into account the social and cultural specifics of the ethnic groups, particularly insofar as they differ from those of the non-Indians with respect to language, beliefs, and integration with nature. In addition, since the mother tongue of the ethnic groups is not Portuguese, the curriculum of non-Indian schools must provide a bilingual education. This is not an easy task since it often requires the collaboration of Indian and non-Indian teachers in planning and executing appropriate curricular activities. The study of native languages is therefore another specific of non-Indian schools.

23.5.1 Tupinikim

As noted by the sociologist Florestan Fernandes (1964, 11) the education of the Tupinikim, as an ethnic group of Tupinambá origin, aimed traditionally at integrating the individual in his or her society, emphasizing knowledge about nature in order to ensure their survival. The teaching and learning process was based on imitation and on “learning by doing.” In traditional education, aptitudes and values were transmitted by the rituals of passage between childhood, adolescence and adulthood, different for men and for women. The predominant educational process, however, was informal; the production of knowledge took place in everyday practical circumstances. In a general manner, one can say that cultural transmission took place orally, with the participation of society as a whole. Moral and spiritual education was the pajé’s responsibility.

Currently, although the Tupinikim maintain many of those specific educational orientations, many important transformations happened after the introduction from the 1980s of village schools and formal education. These transformations have to be discussed in relation to the Tupinikim aspiration for an intercultural curriculum. They wish, for example, to include in the school curriculum the teaching of the Tupi language as well as the history of the Tupi.

23.5.2 Guarani

In Guarani society, the learning process is much more intense than the teaching process. As Maria das Graças Cota (2000) shows in her M.A. thesis on indigenous school education, Guarani schooling gives a primordial role to oral transmission and respectful listening. The house of prayers is the Guarani child’s first and most important learning space. Oral education plays a fundamental role among the Guarani, who pursue personal perfection through the improvement of their speech, which is also the vehicle of wisdom and highly valued within the community.



Figure 23.4: Third-grade Guarani children of the Aldeia Boa Esperança. (Photo by Silva, 2008)

In 1993, the Guarani defined the education they want for their people as an “indigenous education,” and not as an “education for Indians.” They proposed the following guidelines:

1. Education ought to be bilingual and alphabetization should take place in Guarani.
2. The school should be different from the official school; the teachers should be Guarani and respect the costumes and traditions of this ethnic group.
3. All decisions about the functioning of the school have to be discussed with the communities.
4. The school should teach the history of the Guarani people and ensure the continuity of Guarani culture.
5. It is important to know the world of the white people in order to avoid being harmed or cheated, to learn how to negotiate, demand rights, and so forth.

6. There should be an exchange of experiences among Guarani schools so as to develop a unified Guarani education.
7. Guarani schools should be officially recognized.

Extending these guidelines, in 1995 the Guarani defined the goals of an indigenous education in the following terms:

[...] the command of the social, economic and cultural autonomy of each people, contextualized within the recovery of historical memory, the reassertion of ethnic identity, the study and valorization of their science as synthesized in their ethnic knowledge, as well as access to information and technical and scientific knowledge produced by the larger society and the other Indian and non-Indian societies. (Cota 2000, 56)

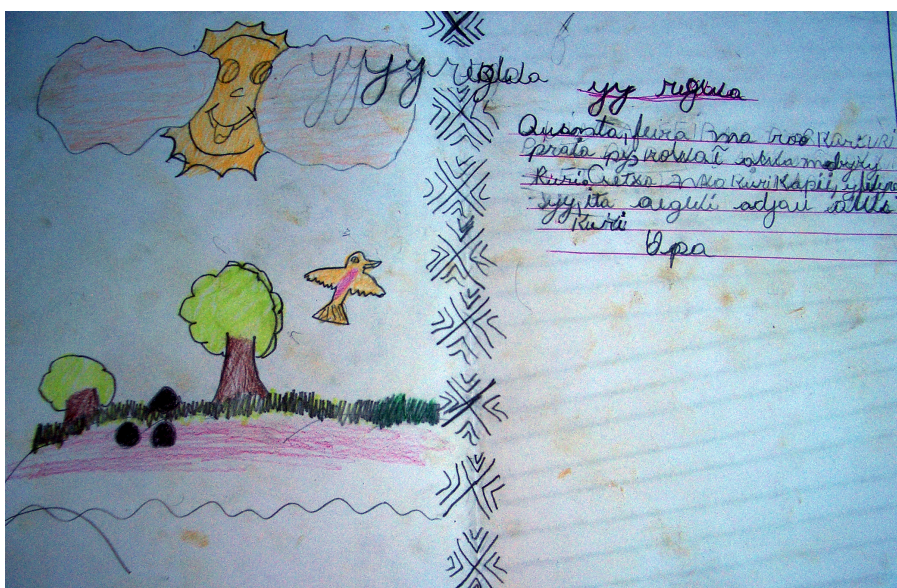


Figure 23.5: From a composition by a third-grade child in Silvio Carvalho Gonçalves' class at the Boa Esperança school.

The text in Figure 23.5 illustrates the existence of bilingualism in the village schools that seek to follow the guidelines and goals defined in the 1990s. In this composition by a third-grade child who is almost bilingual we see two parts: one consists of the illustration of the topic of the text, the other includes a text in Guarani with some Portuguese words. The child already knows how to use the

language of textual narrative, and has produced a coherent text that includes a title, a beginning, a development and an end.

The text reads as follows:

Talking about water

On Thursday we went to the beach, it was far for us to get there. I saw grass, trees, water, stone, and also went bathing.

End

We see the word *quinta-feira* (Thursday) in Portuguese—a choice justified by its absence in Guarani as well as in other native languages not influenced by Christianity. It is also worth noting here that the Guarani's measure of time is different from the non-Indian's. For example, Guarani lacks words for days of the week and has no specific word for "time." There is nevertheless a more general treatment of time, with expressions such as "from time to time" (*pokã*), "a long time ago" (*yma*), "recently" (*ramo*), "a long time" (*are*).

In addition, both Guarani and Tupi lack a word for an abstract concept of space. The drawing of a Guarani child (Figure 23.6) shows a representation of space understood as a place in which she lives (*tekoa*),²² with an emphasis on nature, which has great significance for her. The *tekoha* has three levels: the physical-geographical, the economic and the symbolic (Ciccarone 2001, 127).

In both the Tupinikim and Guarani contexts, the success of any curricular initiative depends on the training of native teachers and their professional commitment to teaching that includes bilingualism, the history of those ethnic groups and their free access to global knowledge about their own interests. Some steps are being taken in this direction: Indian educators have participated in courses for teaching languages and have obtained professional diplomas and graduate degrees from institutions in Espírito Santo and other states, with financial support from the state. In addition, extension courses are offered in the villages for the orientation, evaluation and implementation of school curricula, with the participation of investigators, including the authors, who are interested in investigating this area.

23.6 Changes in Cultural Practices

Contact between Indians and non-Indians, as well as between the Tupinikim and the Guarani has naturally brought about constant transformations in the cultural practices of those groups—sometimes imposed, sometimes through a process of assimilation or negotiation. These transformations happen both in the long and in the short term in the midst of a broader globalization process which, as Renn (2007, 45) puts it, "does not necessarily mean abandoning traditional knowledge but may well open up new spaces for it."

²²For the Tupinikim, and especially for the Guarani, the space in which they live has enormous importance; this is where they obtain subsistence from nature, where there is a forest and water to fish and hunt.



Figure 23.6: Drawing by a Guarani third-grade child from the Boa Esperança school.

Traditionally, the Tupinikim and Guarani were hunters and gatherers; through the practice of hunting and gathering, they developed the knowledge necessary for their survival. Thus, they constructed and used various hunting tools, such as bows and arrows, spears, as well as traps for fish and game. In addition, they elaborated a special technique for spatial orientation when following animal and human trails. Today, however, that knowledge is hardly used and is practiced by only a few persons in the community, generally leaders or the elderly. The contact with the non-Indian has brought into the ethnic communities knowledge as well as instrumental and technological innovations that have replaced traditional usages. Eating habits are representative of such changes: for centuries, Tupinikim and Guarani nourished themselves by fishing, hunting and gathering, and only later agriculture. The use of industrialized food, however, has been rapidly adopted through contact with non-Indians, even though the older hunting, fishing and gathering practices have not been completely abandoned.

It is difficult to evaluate the impact of such changes; our observations are consistent with Jared Diamond's remark that: "In the case of technological inno-

vations and political institutions as well, most societies acquire much more from others' societies than they invent themselves" (Diamond 1998, 406).

The fact that the Tupinikim and Guarani share territory with non-Indians facilitates exchanges and the spread of knowledge. Though referring to a larger context, the following observation by Diamond (1998, 406) is applicable to this situation too: "diffusion and migration within a continent contribute importantly to the development of societies, which tend in the long run to share each other's developments (insofar as environments permit)."

Native agriculture began to be transformed at the very beginning of the Spanish and Portuguese conquest. The Spanish and Portuguese not only introduced plants unknown to the Americas, but also took to the old world native-American plants.

These included [crops] both those familiar to European farmers, such as wheat, barley, oats, and many temperate vegetables and fruits catering to European food tastes, as well as tropical crops from Africa and Asia, such as bananas and plantains, sugar cane, and rice. At the same time many American crops were carried to the Old World—the most important being maize, potatoes, manioc, beans, and squash. (Schwerin 2008, 56)

The Tupi-Guarani system for preparing fields for planting is called *coivara*.²³ It includes first cutting down trees and thickets with stone axes, followed by burning part of the material. Trunks, as well as the larger and stronger branches, are used for construction; ash is used as fertilizer. Women participated in the *coivara* and used a wooden hoe to move the earth and plant. These tools have now been replaced by others, industrially manufactured and of non-Indian origin. The *coivara* system nevertheless persists. The fields used to be common, but have gradually become the responsibility of each family and are located close to their homes. One of the causes of these changes might be the limitation of space in the village available to the non-Indians, which prevents nomadic agriculture.

An interesting example of the transformation of cultural practices concerns the preparation and use of salt in food. Salt was an important substance, of alimentary, economic and medical (anti-parasitic) significance in the ancient Eurasian civilizations (including Europe), the Far East, Africa and pre-Columbian America (Adshead 2008, 1912). Salt exists naturally in two forms: as a rock deposit, or as brine from seas, lakes, saline earth and local plants. There are two ancient techniques (developed around 500 BCE in China) for obtaining salt. One consists of boiling down brine, the other of letting it evaporate naturally through the action of sun or wind. The Chinese called the first one *chien*, the second *shai*. The former, considered older, seems to have inspired the latter. Both were subject to careful processing, since the final product could be harmful to health. The reason,

²³According to the *Léxico Gurani* (Dooley 2006), *coivara* means "to clear land" or "to burn in order to clear land."

according to Samuel Adshead (2008) is that “the *sodium chloride* would be contaminated by the calcium and magnesium compounds contained in most brines and especially in sea water.”

The production and consumption of salt in pre-Columbian America was very limited before the arrival of the Europeans. In Brazil specifically, there are very few known instances of an ancient production of salt. Ramos (1943, 103–104) explains that the Tupinambás obtained salt by the evaporation of sea water from ditches dug in the sand on the beach, and that they mashed it with pepper for alimentary use. The traveler Karl von den Steinen tells that in his second Brazilian trip in 1887–1888, he found in the village of Nafuquá in the state of Mato Grosso, salt extract from plants:

In many houses we found people busy preparing the salt. They burn takoara and aguape, foliage plants from stagnant water, leach the ashes out and from the filtrate obtain a salty residue. Reddish earth resembling potash is also used directly and often.²⁴

Today, the Tupinikim use the same industrialized salt as the non-Indians. Nevertheless, old people from the Pau Brasil village attest to the fact that ancient techniques akin to the Chinese *chien* were known and used. During a conversation about food, an old Indian woman told us:

My mother made salt. She brought sea water and she boiled it until the water had evaporated. Then there was salt.²⁵

Those techniques were gradually abandoned due to the ease of procuring industrialized salt.

Among the Guarani, the habit of using salt with food was uncommon. This changed through contact with the non-Indians. In turn, the transformation of Indian practices led to other views and techniques for the production of food, the use of manufactured products and new habits. Such transformations were reinforced by the limits imposed on the demarcation of land, which had an environmental impact and restricted access to certain plants, animals and minerals.

The Guarani have a good knowledge of nature in general, and specifically of plants, which they use not only as food (including sacred foodstuffs) and medicine, but also as raw material for buildings, weapons, clothes, musical instruments and various kinds of tools. In addition, a plant is smoked in a spiritual ritual.

Plant substances for coloring have been known since primitive times and are still in use. For example, annatto (*Bixa Orellana*, “*urucum*”) was known before the arrival of Europeans. It was abundant on Brazilian territory and used mainly

²⁴The original text reads “In mehreren Häusern fanden wir die Leute mit der Zubereitung des Salzes beschäftigt. Sie verbrennen Takoara und Aguapé, die Blattpflanze stiller Gewässer, laugen die Asche aus und erhalten aus dem Filtrat einen salzigen Rückstand. Vielfach wird auch rötliche, wie eine Salzasche aussehende Erde unmittelbar verwendet” (von den Steinen 1897, 123).

²⁵Dona Santa, 8 October 2008, Aldeia Pau Brasil.

for body paint. The use of plants also underwent several changes. One important example concerns the techniques for extracting vegetable and mineral pigments, which are presently known and practiced by only a few Indians. Natural colors have been replaced by industrial products, such as anilines, which are now employed to dye the vegetable fibers used for basket-weaving, or the whitewash used to paint houses.

How were traditional dyes obtained? The genipap, a large tree whose wood is very versatile, has green fruit similar to large oranges, but with thinner skin that turns a brownish color when ripe. From the green fruit a clear substance is extracted, which turns black after a few hours. This is used for body paint and to dye fibers such as the embira—in Guarani *webépi*, a word that is also used to name the liana (*imbé*). This liana is dyed in three colors: brown, red and black. The body paint that was used for protection purposes, as well as for ceremonies and in war, is no longer frequently applied due chiefly to the habit of wearing industrially manufactured clothes.

A dye is also extracted from the cedar-tree (*yari* or *yãri* in Guarani), which can be found throughout tropical America (Figure 23.7). Its wood is prized for its color, which resembles mahogany, and for its various usages. It yields a perfumed oil and tanning substances can be extracted from its bark. Since tannin is soluble in water, an infusion can be prepared from it. Hence the statement of Guarani chief Jonas:

From an infusion of cedar-tree bark that is boiled in water for about forty minutes, one obtains a brown or coffee-colored dye.

From a porous pink-purplish stone (*itarã* in Guarani), abundant in Guarani territory, one can make a powder which, mixed with water, gives a purple dye.

The *embaúba* (*ãba'y* in Guarani, *trumpet tree* in English), a tree with large leaves belonging to the genus *Cecropia*, may reach fifteen meters in height. From the bark a brown dye can be produced. The flowers, buds and bark of the stems are used for the treatment of bronchitis, coughing, erysipelas, diabetes and diarrhea. The juice of the roots and leaves has a cardiotoxic and diuretic effect. The Guarani educator Aciara Carvalho Marinho explains:

The leaves of this plant can be used to treat stomach-ache and blood in the faeces.

The leaves of a tree known in Guarani as *ywyra pytã*, or “red tree,” are of considerable dimensions (about forty centimeters wide). When steeped in water they produce a reddish-brown liquid which, after drying, produces a red dye, as demonstrated by former chief Jonas in Figure 23.8. The dye can also be obtained by boiling the leaves in water.

Most of the information reported here about dyes was orally communicated by the Indian leader Jonas (Tupã Kwaray in Guarani), who claims to have learned



Figure 23.7: Former chief Jonas harvesting cedar-tree bark, Aldeia Boa Esperança.
(Photo by Silva, 2008)



Figure 23.8: Process for obtaining dye from the leaves of the embaúba tree. (Photos by Silva, 2008)

these techniques from his mother and grandmother. When asked about the disappearance of these techniques, he replied that “due to the exploitation by the White, who ruin the aboriginal forest, it became difficult to find the plants, so anilines were used as an alternative.” The plants we now see in the village were planted with the goal of preserving or protecting them. Nevertheless, they are still too scant to be used for extraction. Jonas, who now works mainly making crafts, uses hardly any natural dyes, but rather industrial dyes and methods imported by the non-Indians. According to him, he makes crafts because his parents made them, and “if parents make, then the children will make too.”

The abandonment of techniques for preparing and using natural dyes illustrates the impact of the dominant culture on indigenous culture. Contact with the White, the rarity of raw materials, and the technical ease of dyeing with industrialized and ready-to-use products are reasons why the Guarani gradually relinquished their traditional methods. The new dyeing technologies, as well as other techniques that were assimilated by the Indians, demonstrate not only the technological superiority of the non-Indians, but also the fact that aboriginal peoples accepted a technology that agreed with their cultural values as well as with their interests. As Diamond (1998, 252) notes, on every continent “certain native societies have proved very receptive, adopted foreign ways and technology selectively, and integrated them successfully into their own society.”

Social organization also underwent major changes as a consequence of contact between different groups. Transformations in the social and political relations have been both internal, affecting the community, and external. Among the internal

ones, we may mention the distribution of activities between men and women, marriage, education, religious practices and health care. Among the external ones are occupational possibilities, professional training and participation in political life, primarily in defense of the ethnic community's principles and interests.

Formerly the Tupinikim were associated in clans with a main chief (*murubixaba*) and a council of older and more experienced men of which the *pajé* (medicine-man) was one of the most important members. The social status of men and women was well differentiated; the women had to work for the men in domestic and agricultural activities.

The Tupinikim used to practice polygamy (Ramos 1943, 133). Although they still live together in villages, today's Tupinikim in contrast are no longer polygamous and the women are no longer responsible for supporting the family. Contact with non-Indians influenced the Indian man to take on responsibility for the economic support of the family. Some of the men and women now hold paid jobs outside the village. Nowadays, the village leaders have taken on the role of negotiating and defending the political and economic interests of the community, for example, in the attempts at recovering land occupied and exploited by companies such as Aracruz Celulose.

In the area of education, changes began with the imposed establishment of schools in the villages, which made the teacher responsible for the formal education of children. This task was formerly assumed by the most experienced members of the community in such a way that they prepared children for life and transmitted the group's values and cultural heritage.

In the case of the Guarani, the transformations also include the search for paid activities. Crafts, which were originally intended for internal consumption, became a source of income for the families. As for family structure and economic relations, we may quote Schaden who explains that:

The extended family, including the couple, the married daughters, the sons-in-law and the following generation, constituted a unit of production and consumption. Its breakup perhaps began already under Jesuit influence.²⁶

In the Guarani villages investigated, we observed such fragmentation of the family, as well as the focus of each family on cultivating food in its own field. Education suffered the same type of transformations it underwent with the introduction of village schools among the Tupinikim.

In the inevitable process of transformations of practices, we can observe instances of different techniques using natural materials, which are known to indigenous peoples and employed by them, but which are forgotten if not transmitted

²⁶Original text reads "[...] a família grande—compreendendo o casal, as filhas casadas, os genros e a geração seguinte – constituía a unidade de produção e consumo. A sua fragmentação talvez se tenha iniciado já com a influência jesuítica" (Schaden 1962, 80).

to the younger generations. Such transmission depends nowadays on school education, which is in turn directly influenced by official curricular orientations and government policy. In general, in several social and political contexts the belief persists that in order to pay the historical debt it is enough to simply provide indigenous peoples with a territory where they can live well. Nevertheless, closer contact with indigenous ethnic groups makes it possible to learn more about their interesting local knowledge, their needs and how globalization affects their way of living and thinking. Their most important legacy for non-Indians is undoubtedly their love of nature as a condition of human survival. Thus, multicultural initiatives in educational, social and political fields should be linked to a reflection about the defense of the environment and the knowledge that all people have accumulated over the course of history.

References

- Adshead, S. A. M. (2008). Salt. In H. Selin (Ed.), *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures: Volume 2, L-Z* (2. ed.), pp. 1912–1914. Berlin: Springer. First published in 1913.
- Afonso, G. B. (2006). Mitos e Estações no Céu Tupi-Guarani. *Scientific American Brasil (special issue)* 14(45), 46–55.
- Bakhtin, M. (1984). *Esthétique de la création verbale*. Paris: Gallimard.
- Ciccarone, C. (Ed.) (1996). *Revelações sobre a terra: A memória viva dos Guarani*. Vitória: Universidade Federal do Espírito Santo.
- Ciccarone, C. (2001). *Drama e sensibilidade: Migração, xamanismo e mulheres mbya guarani*. Ph. D. thesis, São Paulo.
- Cota, M. d. G. (2000). *Educação Escolar Indígena: A construção de uma educação diferenciada e específica, intercultural e bilingüe entre os Tupinikim de Espírito Santo*. M.A. Thesis, Vitória.
- Coutinho, J. M. (2006). *A história do povo de Aracruz*. Aracruz: REITEM.
- Damerow, P. (1990). Ethnomathematik und Curriculumexport: Zu diesem Buch. In P. Gerdes (Ed.), *Ethnogeometrie: Kulturanthropologische Beiträge zur Genese und Didaktik der Geometrie*. Bad Salzdetfurt: Franzbecker.
- Da Cunha, A. G. (1986). *Dicionário etimológico Nova Fronteira da língua portuguesa* (2. ed.). Rio de Janeiro: Ed. Nova Fronteira.
- de Lima Figueiredo, J. (1949). *Índios do Brasil* (2. ed.). Rio de Janeiro: J. Olimpio.

- Diamond, J. M. (1998). *Guns, Germs, and Steel: The Fates of Human Societies*. New York: Norton.
- Dooley, R. (2006). *Léxico Guarani, dialeto Mbyá com informações úteis para o ensino médio, a aprendizagem e a pesquisa linguística*. Cuiabá, MT: Sociedade Internacional de Linguística.
- Fernandes, F. (1964). *Notas sobre a educação na sociedade Tupinambá*. São Paulo: Centro Regional de Pesquisas Educacionais.
- Goulart, T. (1975). *Os últimos Tupiniquins*. Manchete, Rio de Janeiro.
- Green, D. (1997). Os Diferenças entre Termos Numéricos em Algumas Línguas Indígenas do Brasil. *Boletim do Museu Paraense Emílio Goeldi: Série Antropologia* 13(2), 179–207.
- Habermas, J. (1992). *Postmetaphysical Thinking: Philosophical Essays*. Studies in Contemporary German Social Thought. Cambridge, Mass.: MIT Press.
- Leite, S. (2000). *História da Companhia de Jesus no Brasil: Tomo I, Século XV, o estabelecimento*. Coleção Reconquista do Brasil: 2. série. Rio de Janeiro: Itatiaia.
- Magalhães, D. R. d. (2007). *Concepções, crenças e atitudes dos educadores Tupinikim frente à Matemática*. M.A. Thesis, Vitória.
- Mugrabi, E. (1999). *E educadores Tupinkim e Guarani. Os tupinkim e guarani contam*. Vitória: Traço Certo.
- Métraux, A. (1950). *A Religião dos Tupinambás: E suas relações com a das demais tribus Tupi-Guaranis*. São Paulo: Companhia Editora Nacional.
- Ramos, A. (1943). *Introdução à antropologia brasileira*, Volume 1–1A of *Coleção Estudos Brasileiros da C.E.B.: Série B*. Rio de Janeiro: Casa do Estudante do Brasil.
- Renn, J. (2007). The Globalization of Knowledge and the Place of Traditional Knowledge in the Global Community. *Revista Brasileira de História de Matemática* 7(Especial n°1: Festschrift Ubiratan D'Ambrosio), 43–54.
- Schaden, E. (1962). *Aspectos fundamentais da cultura Guaraní*, Volume 6 of *Corpo e alma do Brasil*. São Paulo: Difusão Européia do livro.
- Schaden, E. (1977). O índio brasileiro: Imagem e realidade. *Revista de História (Brazil)* 55(110), 321–346.
- Schaden, E. (1982). A religião Guarani e o cristianismo. *Revista de Antropologia* 25(1), 1–24.

- Schwerin, K. H. (2008). Agriculture in South and Central America. In H. Selin (Ed.), *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures: Volume 1, A–K* (2. ed.), pp. 56–67. Berlin: Springer.
- Silva, M. d. O. (2003). A história que nunca foi contada: Wéra Djekupé. In D. Guimaraens (Ed.), *Museu de Arte e Origens. Mapa das culturas vivas guaranis*. Rio de Janeiro: Contra Capa Livraria.
- Unkel, C. N. (1987). *As lendas da criação e destruição do mundo como fundamentos da religião dos Apapocúva-Guaran*. Coleção Ciências sociais. São Paulo: Ed. HUIITEC.
- Vološinov, V. N. (1973). *Marxism and the Philosophy of Language*, Volume 1 of *Studies in Language*. New York: Seminar Press.
- von den Steinen, K. (1897). *Unter den Naturvölkern Zentral-Brasiliens: Reiseschilderung und Ergebnisse der Zweiten Schingu-Expedition 1887–1888* (2. ed.). Berlin: Reimer.
- Wilhelm, N. E. (2008). Building Construction. In H. Selin (Ed.), *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures: Volume 1, A–K* (2. ed.), pp. 422–432. Berlin: Springer.