Linguistic and cultural conceptualisations of time in Huni Kuĩ, Awetý and Kamaiurá indigenous communities of Brazil

Vera da Silva Sinha

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Vera da Silva Sinha BA, MA, MSc

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I dedicate this thesis to my father José Carlos da Silva†, and my angel sister Valdinéia Soares da Silva†, I know you are both up there thrilled and proud of my achievement and my work.

Abstract

This thesis reports a comprehensive investigation and discussion of event-based concepts of time in three indigenous cultures and languages of Brazil: Huni Kuĩ, Awetý and Kamaiurá. The research was based on field work in the three communities. A combination of methods was used that varied from structured elicitation and comprehension tasks to open-ended questionnaires and interviews. Ethnographic information and observations of traditional time reckoning practices were gathered. The research investigated the lexicalisation and indexicalisation of time intervals and temporal landmarks, focusing on three domains: *life stages, times of day* and *seasons*. The metonymic and metaphoric sources for conceptualising past and future in these languages were investigated, and the relationships between the conceptual and linguistic domain of time and other conceptual domains, including space but also the domain of thought and perception, were analysed. The event-based time intervals in all three languages are indexicalised by environmental happenings (water level, cool breeze, bird and animal songs), celestial bodies (sun, moon and stars) and activities. It was found that there are no lexical translation equivalents for 'time' in any of these languages, and no names for days of the week or months of the year. These results confirm and extend our previous study of the Amondawa language and culture. In these cultures, time is not organised and expressed metrically, but is event-based. It is suggested that the results are evidence of a cultural linguistic area encompassing at least the Greater Amazonia and Xingu regions.

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List of abbreviations

1P	first person
2 P	second person
3 P	third person
ABS	Absolutive
ADV.DEICTIC	Deictic Adverbial
ADV.NOW1	Adverbial expression1 – right now -this moment
ADV.NOW2	Adverbial expression2 – now
ADV.NOW3	Adverbial expression3 - Affirmative. Right now
ARG	Argument
ASP.COMPL	Completive aspect
ASP.CONT	Continuative aspect
ASP.PERF	Perfective aspect
ASP.PROJ	Projective aspect
ASSERT/ ASS	Assertive
ATTEN	Attenuative
ATTEST	Attested past
CAUS	Causative
COM	Comitative
COLL	Collective
DAT	Dative
DECL	Declarative
DIM	Diminutive
EVID	Evidentiality
EXCL	Exclusive
FEM.SP	Female speech
FUT	Future
FUT.MED	Immediate Future
FUT1	Projected future

FUT2	Reassured future
GEN	Genetive
GER	Gerundio
ID	Ideophone noise
INCOMP	Incompletive
INT.MARKER	Intensify Marker
LOC	Locative
MASC.SP	Masculine speech
ME	Moving ego
MT	Moving time
NEG	Negative
NOM	Nominalizer
PAST	Past
PAST DIST	Distant past (attested)
PAST IMM	Immediate past
PAST REC1	Recent past before the time of utterance on the same day
PAST REC2	Recent past one or more days ago
PAST REM	Remote past
POSTP	Postposition
POT	Potential
PL	Plural
PROG	Progressive
PERF	Perferctive
REFLEX	Reflexive
REL	Relational of non-contiguity
REP	Reported Past

RETR	Retrospective continuative
PROSP	Prospective continuative
STAT	Stative
SUBJ	Subjunctive
TRANSL	Translative
UNAT	Unattested

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Introduction

Aims and motivation. This research investigated the way in which Kamaiurá, Awetý and Huni Kuĩ concepts of time are organised and expressed in language structure and cultural practice. The rationale was to understand the way in which concepts of time are motivated by cultural patterns, and to understand the relationship between the language and conceptualisation of time, space and other conceptual domains. The Author also tried to establish to which extent concepts of time vary between languages and cultures in Amazonian languages and Xingu languages. This research also looked at how the concept of time in these communities may contrast with the familiar Western concepts of time expressed in European languages. Therefore, the overall aims of this research were:

- To investigate the way in which indigenous Amazonian concepts of time are organised and expressed, in language structure, cosmologies, myths and everyday life.
- To advance knowledge and understanding of how language variation is situated in socio-cultural variation, using concepts and methods from anthropology, linguistics, and psychology.

As will be seen throughout this work, one of the main motivations to undertake this project was to refute with empirical information the arguments that metaphorical mapping in all languages relates the domains of space and time. Spatial meanings and structures are generally seen as more fundamental, and therefore space is viewed as the primary source domain for time concepts according to Conceptual Metaphor

Theory (Lakoff and Johnson, 1999), and the linguistic mapping of space to time is claimed or assumed to be universal (Fauconnier and Turner, 2008).

However, recent research by the Author and senior colleagues on an Amazonian language and culture (Amondawa) has challenged this universality hypothesis (Sinha et al., 2011; Silva Sinha et al., 2012). This research advanced the argument that the systematic space-time mapping in language depends upon the existence of cognitive artefacts such as clocks and calendars, and numerical systems that conceptualize "Time as Such" in terms of metric time intervals along a time line. However, other languages and cultures also use time interval concepts based on events, which are not necessarily structured by space-time mappings or metaphors.

Hypotheses. The hypotheses that guided this research were:

- The nonlinguistic cognitive basis of space-time mappings is probably universal, but whether and how it is realised in language depends on sociocultural factors;
- The absence of numerically based calendars is a cultural areal feature of indigenous Amazonian (and other Brazilian) languages, crossing language family boundaries;
- Space is not the only or primary source domain for the metaphorical understanding of time in all languages;
- "Amazonian time" involves mappings and correspondences between social structure, cosmology and mythic narrative, and social space.

Throughout this research the Author worked on the assumption that the interaction of language and culture is fundamental to understand the concept of time, especially Event-based time intervals. As a result, the Author was able to produce a

comprehensive description of the way the Event-based time intervals are organised and expressed in these communities.

Life Stages, *Times of day and night* and *Seasons* are the domains that were investigated to provide empirical data to clarify the Event-based time intervals. The event-based time concepts described in this research are indexed to, and embedded in, everyday life, and in the communities' relationships with the environment and their cosmology. The data demonstrate how the sun, the moon, the stars and natural and social happenings index the Event-based time intervals; and how they are used by the community to reckon time.

Fieldwork and community engagement and support. The field work was done with the collaboration of native speaker linguists and with the participation of members of each community. This project was possible because of the way I, as a researcher, established engagement with the community members. The length of direct contact with the communities was three months in total, divided into two fieldwork trips. Additionally, throughout the transcription, analysis of the final linguistic inventory of Event based time intervals was done through direct collaboration with the Collaborating Researchers, who are native speaker postdoctoral linguists who worked with the author, not only on this project but also in previous projects. The Collaborating Researchers have provided expert overviews of the entire dataset, assisted with data collection and analysis, helped secure access to the villages, and facilitated communication with the villagers. In the Methodology Chapter 3 this is explained in detail.

Thesis structure. This Thesis is organised in five chapters. The first chapter is a literature review about the conceptualisation of time, bringing up to date the discussion

of how time is perceived and conceptualised in different cultures, and the support for the claim that space-time metaphor is a universal way to express time.

Chapter Two provides an overview of the cultural and linguistic features that illustrate how each community is organised and how each language expresses time in its grammar. It also provides a general description of the social structure and organisation of each community.

Chapter Three provides a detailed description of how this research was carried out, specifying the methodology describing the questionnaires, the tasks and the ethnographic observation in the field work, as well as how community engagement and trust-building between community and researcher was fundamental to the success of this research.

Chapter Four describes the results and discusses how Event-based time is organised and express in these communities. It is demonstrated how Event-based time intervals in all these cultures are indexed by the dry and wet seasons, "happenings" in the natural environment, the movements of heavenly bodies, and the regularities of social life and *habitus.* It is further demonstrated that temporal concepts are not metric, not cyclical (unless in hybridised blends with imported calendar time), and not based upon a timeline. Conceptually, past and future events are located in the body and perceptual processes, rather than being located along an oriented timeline. In the absence of metric time, of a concept of "Time as Such", and of lexicalised concepts of past and future, Event-based time intervals give structure to a complex and traditional lifeworld.

Chapter Five provides a general discussion, showing how the grammar of time is also similar in all three languages, focusing on completion and incompletion of events, in combination with notions such as belief, desire, and evidentiality; and on *states of*

being of predicates. In Chapter Five the data in this thesis is also examined for the support that it gives to the view that the languages and cultures studied are part of a cultural and linguistic area.

The Appendices include examples of the completed questionnaire and tasks used, some narratives that were produced by speakers (moon, knots) and some photos of the tasks and of life in the villages.

Chapter 1. Conceptualisations of Time

> *Wishing to know the future … exposes the limits of wishing to know the past.* (Bassi, 2016, p. 231)

How humans conceptualize time is a question that has provoked a large debate through different disciplines. Not only philosophers (Mctaggart, 1908; Minkowski, 1964; Davis, 1976) and anthropologists (Evans-Pritchard, 1939; Bourdieu and Nice, 1977; Bloch, 1977; Whitrow, 1989; Wright, 1991; Gell, 1992; Munn, 1992; Pinxten, 1995; Hubert, 1999; Schieffelin, 2002; Postill, 2002; Birth, 2012) but cognitive scientists and linguists are debating and trying to understand the conceptualisation of time across the disciplinary boundaries (Whorf, 1950; Moore, 2006, 2014; Bohnemeyer, 2009; Levinson, 2003; Levine, 1998; R. E. Núñez and Sweetser, 2006; Tenbrink, 2011; Sinha, et al., 2011; Núñez and Cornejo, 2012; Núñez and Cooperrider, 2013; Núñez, et al., 2012; Silva Sinha et al., 2012; Majid, et al., 2013; Sinha and Gärdenfors, 2014).

Every culture and language have ways of encoding and thinking about time. The debate about conceptualisation of time, in the social sciences, physics, cosmology, biology and neuroscience, remains one of the greatest mysteries to unravel. The main question remains unclarified: 'what is common to all cultures and what is culture-specific in time concepts'?

Conceptual Metaphor Theory, for example, proposes that humans conceptualize time through reference to the space domain and that the experience of time *going by* is a universal feature in human culture. Their argument is that universally humans understand and use the TIME IS SPACE metaphor (Grady, 1999; Yu, 2012, 1998; Lakoff and Johnson, 1999; Moore, 2006). However, this argument has been slowly unweaved by many recent cross-cultural researches (Brown, 2012; Gaby, 2012; Le

Guen and Balam, 2012; Levinson and Majid, 2013; Sinha, et al., 2011; Silva Sinha et al., 2012).

To understand the points of argument in this debate it is necessary to draw attention to some points of discussion that focus on the relationship between spatial and temporal language and concepts of time, and the way in which concepts of time vary between languages and cultures. Therefore, the Author will bring up a comprehensive and historical summary about how temporal conceptualisations are embedded in culture; whether the "time as space" metaphor is universal; and how concepts of space and time vary between languages.

1.1 How time conceptualisations are culturally embedded

In everyday life we do things and participate in activities which are related to a time framework and entail the concepts of duration, sequence, present, past and future; and these are intrinsic to individuals' experiences. The conventional way to identify these features is by looking at calendars and clocks. These cultural artefacts constitute a material-symbolic system that represents metric time intervals (Sinha and Gärdenfors, 2014). However, as noted by Silva Sinha et al. (2012), and many others, not all cultures have a calendar or employ metric time intervals. Our previous research investigated an Amazonian (Tupí Guarani) language and culture (Amondawa) and it has challenged the universality hypothesis that all humans conceptualize time through space (Sinha et al., 2011; Silva Sinha et al., 2012). We have argued that whether or not space-time mapping is conventionalised in linguistic structure is determined by sociocultural factors, most importantly the use of cognitive cultural artefacts such as clocks or calendars that give rise to metric time interval concepts.

In cultural and social approaches anthropologists and sociologists have been looking at time and time representation through studies of topics such as time-reckoning, time-keeping, time consciousness, time apprehension, time-making, time-framing and time-time shifting (Abu-Shams and González-Vázquez, 2014).

In classical sociology, for example Durkheim (1912), Mauss (1966) and Hubert (1905) already pointed out that time could not be understood as an a priori universal assumption (Abu-Shams and González-Vazquez, 2014, p.2). In this sense, Durkheim (1912) argued that spatial, temporal relation are social in origin because 'classes of men' and 'classes of objects' in the world are linked. These categories are belonging in or having an extension of the social structures already stablished (clan, moiety, phratry, residential or kinship group). Therefore, time and space, he argued, are concepts that are not only transmitted through social relations, but they are social creations. For examples, the temporal divisions: days, weeks, months, and years correspond to periodical recurrences of rites, feasts, and ceremonies. Moreover, the calendric time expresses the rhythm of the collective activities, while at the same time its function is to assure their regularities.

Katovich (1987) emphasised that "He [Durkheim] portrayed the social form of the transaction as extended in time (and as against overarching and abstract structural features) and as held together through a confluence of shared sentiments, beliefs, and values. Thus, the complex organic transactions are temporal not only because specifications of time are printed in contracts, but because faith in time is internalised and etched into the collective consciousness." (Katovich, 1987, p.379). It means that time is embedded in the culture and society, and it cannot be understood as a separate category.

For Durkheim time has a duration, it underlies rhythms in people's lives (sacred-profane and collective-individual life) and it "has a particular local shape in particular local ways of life and representations" (Miller, 2000, p. 16). Mauss and Hubert (1905) pursued Durkheim's argument and introduced the ideas of time-environment and sacred time and suggested that these concepts of time involve ideas of infinitude, immutability, and indivisibility.

However, time as a social construction has provoked many discussions across social disciplines. Fabian, (1983), in his work *Time and the Other: How Anthropology makes its object*, demonstrated through a critical epistemological analysis of anthropological writing about concepts of time the ideological bias existent in the ways Western researchers represented the time of the Others. His argument focused on anthropological *"coevalness"* in a classical anthropological method of study. For him there is a discrepancy between the "here and now" of reality in the fieldwork, and the way the anthropologist writes about this notion of time. Fabian provided a history of temporalizing rhetoric in anthropology and demonstrated how sacred Judeo-Christian time became secularised in European intellectual history, which led to the influential evolutionary frame in the 19th century, which spatialised time.

This spatialization of time had unfortunate consequences for the human sciences, such as anthropology, in that subjects were naturalised and denied meaning in a historical sense, (see also Fabian, 2006). This account highlights the relevance of historical and anthropological perspectives when thinking about the relationship between time, history and, in the last analysis, cultural and symbolic approaches to understanding time, not least understanding time through spatial metaphors.

The metaphors of time are anchored through cognitive artefacts such as calendars and clocks. These are discussed by Gell (1992) in his book *Anthropology of Time: Cultural Constructions of Temporal Maps and Images* where the Author examines concepts of time and subjects to a critical review the classical literature that discussed time. He brings up a lengthy discussion of calendrical time, traditional timekeepers and the lunar/solar year; and the role of culture and cognition, formulating a social/cognitive model of time. Therefore, this discipline needs to understand time in their cultural context, he claimed: "the time-anthropology of the future must be open-ended, eclectic, empirical" (Gell, 1992, p. 328).

More reviews about time and anthropology were produced in the nineties. The Author could not fail to mention the critical work done by Munn (1992) who produced a critical review of the *Cultural Anthropology of Time*. Her approach on this review was based on 'practice theory', interpreting first and foremost the lived experience and the conceptual perception of time. She was able to base her approach on her ethnographic work in the Trobriand Islands, where she studied the Gawa people, looking at *kula* which is an exchange system between people and communities in the Trobriand Islands (Munn, 1983,1986). Munn's argument was that:

> "temporality is a symbolic process continually being produced in everyday practices. People are 'in' a sociocultural time of multiple dimensions (sequencing, timing, past-present-future relations, etc.) that they are forming in their 'projects'. In any given instance, particular temporal dimensions may be the foci of attention or only tacitly known. Either way, these dimensions are lived or apprehended concretely via the various meaningful connectivities among persons, objects, and space continually being made in and through the everyday world." (Munn, 1992, p. 116).

Here she also emphasised the argument that time is a symbolic process that is originated in the everyday lives of people. People, objects and space constitute the dimensions of a past-present-future relation that is constructed in the way people experience and give meaning to their everyday world.

More recent discussions of the cultural and social construction of time are brought up in James and Mills (2005) *The Qualities of Time: Anthropological Approaches*. This edited book brings together authors who examine the classical ideas about time, bringing together anthropologists and archaeologists in a new conversation about the "patterns" of our understanding and experience of time. Time is not only an abstract principle that people live by, it is also a local construct. Time is shaped, punctuated, organised, and suffered in complex ways by real people negotiating their lives and relations with others, they claimed.

A similar argument can be seen in Birth (2012) *Objects of Time: how things shape temporality*, who also initiates a discussion about the role of cultural artefacts in the conceptualisation of time, focusing on how the objects that we use to think about time shape our thoughts. He argues that we must consider the cognitive effects of our cultural timekeeping artefacts and devices on the ways we conceptualize time.

"Time reckoning" is a widespread feature of human society. Expressions such as TIME IS PRECIOUS, TIME IS MONEY, MY BIRTHDAY IS COMING UP, MY TIME IS GONE are time concepts that involve monetary value, moving and flowing through a line or located on the timeline, and are examples of how we in Western cultures perceive, understand and conceptualize time. We employ a time reckoning system that is built up through our socialisation and is not biologically innate but culturally acquired, in a historical

context. Birth (2012) maintains that the cultural artefacts that enable timekeeping shape our thoughts and the way we conceptualize time.

All these arguments that time is a social/cultural construct underline the importance and relevance of this work that investigated time in Huni Kuĩ, Awetý and Kamaiurá. This can be understood only through empirical investigation that looks at concepts of time expressed through language, cosmologies, myths, and everyday events. This work adds more evidence that corroborates the argument that time concepts are social, cultural, and linguistic constructs.

1.2 Deictic time (D-time) and Sequence time (S-time)

In his article *The Unreality of Time,* the philosopher John Mctaggart (1908) identified two linguistic and conceptual ways to describe temporal relations, which he named 'A-series' and 'B-series' (see also Sinha and Bernárdez, 2014; Gell, 1992; Traugott, 1978). These are Frames of Reference, or schemas, for relating one co-event to another event or several events to each other. The A-series is the view of an event or more than one event in which the standpoint is in the present moment; as the present moment is changing, events "pass" from future to past, configuring a "passage" time. The events are ordered as being in the past, present, or future and the temporal relations are relative to the perspective of the observer, and for this reason the frame of reference is considered to be *deictic*. This Deictic-time (D-time) is the schematic basis of grammatical tense, adverbial time such as 'tomorrow', 'yesterday', and temporal landmarks such as 'next week', 'next Christmas' (Nuñez and Cooperrider, 2013; Evans, 2013; Le Guen and Pool Balam 2012). This view of time as "passage" or "flow" (Price, 1996, p. 12) is the basis of metaphors such as "my birthday is approaching".

In contrast, the ‘B-series’ is said to be “tenseless”, it conceptualizes the temporal relations between events event solely in terms of ordering of events within a sequence. An event is marked as ‘earlier’ or ‘later’ with respect to another event, regardless of the present moment. Sinha et al. (2011) refer to this as ‘positional time construction’, and Moore (2011) called it the ‘field-based’ frame of reference. Núñez and Cooperrider (2013) (following Le Guen and Pool Balam, 2012) refer to the B-series as ‘S-time’ and state that it “concerns the relation of one temporal landmark to another, with no mandatory anchoring to the present moment. For example, the expression ‘After the storm it will be a nice day’ characterizes the temporal relation between two events, the storm and the nice day that follows it, but this relation does not depend on when the sentence is uttered”, (Núñez and Cooperrider, 2013, p. 221). In other word, there is simply no future and no past in S-time, just *earlier-than* and *later-than* relationships. ‘S-time’ is the conceptualisation in which relations are specified by ‘before’ and ‘after’ as well as ‘earlier’ and ‘later’, ‘first’ and ‘last’ (Sinha and Bernárdez, 2014).

Gell (1992) illustrates B-series time with reference to “dated events”: “All events, including future events, have their dates, which are unqualified temporal attributes of events. The date of an event does not change with the passage of time … If an event occurs at all, it must do so at a definite date” (p.157). But he also says:

> The *indices* provided for events in terms of whatever culturally transmitted schema is in operation are their ‘dates’. These indices may relate to a metrical scheme such as a calendar of some kind or may not. From a logical point of view, it does not matter, though from the point of view of anthropological understanding it matters a great deal. (Gell, 1992, p. 159).

The question of calendars and time indices is central to this investigation of event-based time in Huni Kuĩ, Awetý and Kamaiurá languages and cultures. However, Gell can be criticised for claiming that dates are crucial for the B-series. The idea that every event has an objective date is metaphysical. In fact, the only crucial B-series relationship is *sequence*: one event occurring before or after another. For example, the apple fell from the tree before it hit Newton's head, even if we do not know when or even if this sequence of events actually happened.

The distinction between D-time and S-time frameworks helps to clarify the discussion about *motion* or *passage of time* in Moving Time (MT) and Moving Ego (ME) Metaphors (Clark, 1973). A Moving Time metaphor is one in which an event moves towards or away from the Experiencer (e.g. "the deadline is approaching"). A Moving Ego metaphor is one in which the Ego moves towards the Event (e.g. "I am coming up to the deadline"). Both of these are based on the perspective of the Experiencer, and the "now" of the Experiencer, so they are both D-time constructions.

However, Sinha and Bernárdez (2014) pointed out that "S-time, as well as D-time, can be metaphorically conceptualised in terms of spatial relations, with the difference that the relations are between events, rather than between an experiencer and an event, even though the same spatial terms may be employed that can also be used in passage metaphors. So, we can say that 'check-in is ahead of boarding', or 'beyond the first rite of passage lie many more tests'. S-time is always positional in meaning, that is, the inter-event relations of temporal antecedence and succession are invariant, whereas the relations of past and future are relative to an ever-changing present moment." (p. 315). Sinha and Bernárdez (2014) have also claimed that all languages have both D-time and S-time schemas. However, this raises the question of the universality of space-time mapping.

1.3 Is space-time metaphor universal?

Human experience is structured in terms of a complex of events, objects and actions within/between agents and objects (Sinha and Gärdenfors, 2014). For this reason, the epistemology of "time as space" as a metaphorical model to define time in human life and cognition is widely held. The claim is that space/time metaphorical mapping is a framework common to all languages, and spatial meanings are viewed as the primary source domain for structuring time concepts (Lakoff and Johnson, 1980, 1999, Fauconnier and Turner 2008). The argument proposed by these scholars is that the human conceptual system is structured by a limited set of experientially based concepts; and this includes a set of basic spatial relations: (e.g. front/back; up/down); a set of basic ontological concepts (e.g. entity, container) and a set of basic actions (e.g. eating, moving). Thus, it is argued that concepts that are not directly based on experience must be metaphorical in nature, understood and structured through metaphorical mappings and recruited from this fundamental and limited set of experientially based concepts (Boroditsky, 2000). Considering the argument that people use metaphor to talk about abstract domains, time is classified as abstract and therefore it is claimed that it is only possible to talk about time through metaphorical mapping from the spatial source domain.

Boroditsky (2000) claimed that "time is a phenomenon in which we, the observer, experience continuous unidirectional change that may be marked by appearance and disappearance of the objects and events…" and the "sequence or order of events" (Boroditsky, 2000, p.3) Furthermore, she argued that "time is generally conceived as a one-dimensional, directional entity" and employ, for example, spatial terms such as ahead/behind, up/down in its conceptualisation (Boroditsky, 2000, p. 4). According with this argument SPACE IS TIME metaphor is universal because when people think

about time they do not use only the temporal components but also are required to access spatial schemas that will organize the temporal components. Her studies have indicated that the time and space domains share conceptual structure, that spatial information is useful for thinking about time and space-time mappings are frequently used. She claimed that "abstract domains such as time are indeed shaped by metaphorical mappings from more concrete and experiential domains such as space" (Boroditsky, 2000, p. 1)

Casasanto and Boroditsky (2008) reported further findings supporting this "universal" argument based on research with, again, native English speakers. For the authors people talk about time in terms of space, such as e.g. '*long* vacation' and '*short* concert'. In accordance with the findings "people are unable to ignore irrelevant spatial information when making judgments about duration, but not the converse. This pattern, which is predicted by the asymmetry between space and time in linguistic metaphors, was demonstrated here in tasks (see methodology Chapter 3 for more details about the tasks used in this research and appendices B, C, D, E, F and G) that do not involve any linguistic stimuli or responses trying to minimize bias towards a time line. These findings provide evidence that the metaphorical relationship between space and time observed in language also exists in our more basic representations of distance and duration. Results suggest that our mental representations of things we can never see, or touch may be built, in part, out of representations of physical experiences in perception and motor action". (Casasanto and Boroditsky, 2008, p.579). The evidence supports the argument that in the English language and culture people talk about time in terms of space, but this does not imply that all languages and cultures of the world does the same.

In fact, the universalist argument is based on evidence from languages that indeed map space and time domains to conceptualize time. In English, this can be illustrated with the following examples: 'we are looking *forward* to a brighter tomorrow', 'we are falling *behind* schedule', 'the answer is *ahead* of my time', 'we are *ahead* of schedule.' The spatial relational words *forward*, *behind*, *ahead* are used to indicate a temporal relation. Consider the following utterance: "we are coming up to New Year". This is an example of the Moving Ego metaphor (ME), because 'ego' *we* are moving towards to the future along the time line, and not the event/temporal landmark 'New Year'. The complementary way to conceptualize time in the same schematic fashion is when time itself is considered to 'flow' along a time line, such that events are moving from the future through the present to the past, as in 'New Year is coming up', which is an example of the Moving Time metaphor (MT) (Clark, 1973). It should be noted that the metaphor that "the future is ahead of me" does not hold in all languages. In the Aymara language (Núñez and Sweetser, 2006) the orientation of the timeline is apparently reversed, so that the future is located behind the speaker.

However, it is possible to argue that time can also be more directly experienced and perceived. Subjectively, we can make judgments of duration, for example, if we ask a person whether a song was *long* or *short* after the person listened to the song, or if their writing duration was *longer* or *shorter* than when the person was listening to the music. The answer for these questions probably will be a description based on the person's experience, not their use of a time reckoning artefact, and the duration will be subjectively evaluated according to how she/he perceived the passage of time. Furthermore, just to complicate a little more the context, we should consider that not all cultures use a number-based metric to measure duration, and the answer will be different from those who do have metric measurement for time, such as English. The

mapping of number to space has been found to be different between cultures, for example Dehaene et al. (2008) compared English speakers with speakers of Mundurucu, a Tupian language, the Mundurucu people lives in Amazonia river basin in Brazil. Mundurucu speakers mapped numbers onto a logarithmic scale, whereas Western adults used linear mapping. The study found that

> "at all ages, the Mundurucu mapped symbolic and no symbolic numbers onto a logarithmic scale, whereas Western adults used linear mapping with small or symbolic numbers and logarithmic mapping when numbers were presented non symbolically under conditions that discouraged counting. This indicates that the mapping of numbers onto space is a universal intuition and that this initial intuition of number is logarithmic. The concept of a linear number line appears to be a cultural invention that fails to develop in the absence of formal education" (Dehaene et al., 2008, p 1).

This study argued that in the Mundurucu 'numerical' system the number words are a cultural device which does not require to use measurement or invariance by addition and subtraction numerical system as used in Western numeral systems (Dehaene et al., 2008, p. 4)

Therefore, the counter-argument implicit in this work suggests that the "abstractness" of time is not so straightforward as is often assumed. We can directly perceive two objects and their spatial relationship. We can also experience directly two events and their temporal relationship in terms of sequence (S-time: see above). We can only directly perceive what happens 'in the now'. However, through episodic memory we can recall past events, and through imagination we can anticipate future events.

Therefore through memory and imagination we create past and future, and also the sequence of events, for example in narratives.

We also directly experience events as change, that is, the passage of time, that is we experience the change of the "now", and so deictic time (D-time: see below) is not really abstract either (except insofar as future events are imaginary, which is a large philosophical issue), (Mctaggart, 1908; Price, 1996). Furthermore, we directly experience duration, although not "objectively", because our experiential duration does not coincide with metric time.

For these reasons, the Author argue that time, because duration, passage and sequence can be directly perceived, is not "abstract" in the same way that, for example, social domains are. In other words, if I say, "Manchester United are ahead of Liverpool" (in the football league) that is really a metaphoric expression in which the target domain is a social institution; and that domain is more abstract than time, so it is more abstract than "Manchester United scored the winning goal just ahead of half time".

The claim that time is always metaphorically structured from space in all languages and cultures in the world cannot therefore be based on an argument that time cannot be directly perceived. Time can be conceptualised by itself and can correspond to an aspect of everyday life, everyday experience. Space is not the only conceptual domain used to conceptualize time, we should also consider the notion of *change*, as argued by Sinha and Gärdenfors (2014, p. 72): "from earliest infancy human beings orient primarily to changes in the surrounding world, learning to anticipate the regularities of events, to realize their intentions and desires through actions and to read the intention manifested in the actions of other". Change is also essential for event classification, as proposed by Filipović (2007) and language typology seems to be sensitive to the

relevant distinctions related to change. For example, different languages use different means to ensure that change in spatial configuration is signaled (Aske, 1989) or to express the difference with regard to the point within a motion event at which change was witnessed (e.g. when it already occurred or while it was occurring; see Filipović, 2007).

Recent empirical evidence also suggests that the claim that time is always metaphorically structured from space is no longer sustainable. Although as Sinha and Gärdenfors (2014, p. 73) pointed out that "In English, it is difficult, if not impossible, to think of and talk about time as an abstract concept without employing metaphors that have as their source domain space and motion", this is not the case in all languages. Time as space metaphorical mapping is not universal, and it is not the most appropriate way to understand time in many cultures. Bernárdez, (2013) has criticised the cognitive universalist approach, pointing out that it neglects entirely the cultural dimension of metaphor.

Our research (Sinha et al., 2011) showed that in the Amondawa language and culture speakers do not utilize spatial language to metaphorically express temporal relations; similar results have been found in the Yélî Dnye language, spoken in Rossel Island, Papua New Guinea, in in the Louiseade archipelago (Levinson and Majid, 2013). Amondawa and Yélî Dnye use only event-based time intervals, with no calendars or other metric time intervals. The notion of a "time line" is also not universally applicable. It has been found that in Amondawa there is no timeline (Sinha et al., 2011); and Le Guen and Balam (2012) have also claimed that there is "to some extent, non-linear, non-directional conception of time in Yucatec Maya" (see also Brown, 2012 for the absence of a timeline in Yucatec Maya spoken in Mexico). This shows that time is expressed and experienced in different ways across cultures.

1.4 Space, time and variation between languages

The issue about how culture influences language use and language structure has been investigated and debated in different disciplines. In sociolinguistic typology, for example, linguistic variation in kinship terms has been widely explored. Kinship terms provide a reflection of the social structure and social rules of a particular culture. For example, in the Njamal language (spoken in Australia), kinship terms distinguish not only generation, as in English, but also generational distance: "a man can use the same term, *maili* for his father's father and his daughter's son's wife's sister". The term *mama* "signifies as a single kinship relationship" but when translated to English the context has to be taken into account, because the *father and father's brother* do not have the same importance in Njamal society as in European societies. Whereas English employs the term *uncle* for father's brother and mother's sister's husband, as well as for the equivalent relatives on the mother's side, Njamal has different terms for each side: *mama* for the father's side (father's brother and mother's sister's husband) and *karma* for the mother's side (mother's brother and father's sister's husband), (Trudgill, 2011, p. xvii).

Examples can be found of many grammatical terms and structures that are influenced by culture, such as pronouns, plural forms and gender (Corbett, 1991) and classifiers (Aikhenvald, 1996). Deictic terms (Carling, Cronhamn, Kamaiurá, and Skute, 2017) and numbers (Silva Sinha et al., 2017) are other examples of cultural influences on grammatical relations, as argued in *Language the Cultural tool* by Everett (2012). Everett claims that "all human languages are tools […] Language is how we talk. Culture is how we live. Language includes grammar, stories, sounds, meaning and signs […]" (Everett, 2012, p.6).

Considering the argument that culture influences language at the grammatical level, we should consider also that all languages have ways for situating objects and events in space and these events are also situated in time. However, how this event-time is organised is much diversified across cultures. In the last 20 years, many studies have demonstrated wide inter-cultural and inter-linguistic variation in the conceptualisation and linguistic organization of the semantic domains of space and time (Moore, 2014; Filipović and Jaszczolt, 2012; Bender and Beller, 2014).

The language of space, time and motion has been a major focus for "neo-Whorfian" research testing the effects of language on thought. Boroditsky (2001) looked at Mandarin and English speakers' conceptions of time and the results suggested there is a difference. She says, "English and Mandarin talk about time differently—English predominantly talks about time as if it were horizontal, while Mandarin also commonly describes time as vertical". The Author argued that "This difference between the two languages is reflected in the way their speakers think about time" (Boroditsky, 2001, p. 1).

Many research studies over the last decades have looked at cultural variation in terms of the dominant spatial frames of reference (Levinson, 2003). A frame of reference is a systematic way of organizing position of a figure in reference to a ground, or the relationship between one object or event (the figure or trajector) and to another (the ground or landmark).

Levinson (2003) proposed three basic types of frame of reference: intrinsic, relative and absolute. For example, if a dog is described as being in front of a car, viewed from the point of view of an observer to one side of the car, there are two positions in which the dog could be, either at the front of the car or at its side between the car and the

observer. In the first case, we say that an *intrinsic* frame of reference is being used, because the car (the landmark) has an intrinsic front and back. In the second case, we say that a relative frame of reference is being used, because the front of the car is not its intrinsic one but the part facing the observer, so it is *relative* to the observer's position. The third possible frame of reference is the *absolute* frame of reference, which is based on a set of fixed coordinates or directions, such as cardinal directions or the position of a geographical landmark such as a mountain or a river. If we say that, the dog is to the south of the car we are using the absolute frame of reference.

Levinson (2003) and his collaborators developed a series of experiments to investigate the relationship between frames of references use in linguistic and non-linguistic representations. The experiments were conducted to test the influence of linguistic frame of reference on spatial relationships in non-linguistic tasks. The results of Levinson's experiments found significant cross-linguistic differences, and that performance on non-linguistic tasks requiring a conceptual frame of reference was correlated with the dominant frame of reference in the language.

The relation between the experiencer and the event itself brings up the discussion about space-time metaphors. To understand this relation there are recently studies that bring ups the discussion of language and cultural variation. Topography is one area of study that reflects very well the variation of language and culture. This area has gained, recently, a great deal of attention of studies that investigated the role of topography as landmarks and their link with concepts of space and time and how topography influences spatial concepts and their relationship with time concepts. These studies highlighted and demonstrated how environment features can also influence language and concepts of time (Magga, 2006; Brown, 2012; Gaby, 2012; Levinson and Majid, 2013; Núñez *et al* 2012).

Núñez et al. (2012) investigated construal of deictic time (D-time) among the Yupno people of Papua New Guinea. Traditionally, Yupno make extensive use of allocentric topographic (up/hill/downhill) terms for describing spatial *relations*. Their study shows that "the Yupno construal is not linear but exhibits a particular geometry that appears to reflect the local terrain. The findings shed light on how, our universal human embodiment notwithstanding, linguistic, cultural, and environmental pressures come to shape abstract concepts" (Núñez et al., 2012, p.25). Despite of their universal argument for time and space metaphor this study shows that "Abstract concepts are commonly grounded in spatial concepts. However, as the present case study demonstrates, exactly which spatial concepts are recruited is culturally shaped, not universally given" (Núñez et al., (2012, p.34).

In other research Núñez and Cornejo (2012) addressed topography, frame of reference, architecture, linguist special terms and cosmology of Aymara. This is a language with over three million speakers, spoken by the Aymara people of the Andes. Aymara, along with Quechua and Spanish is an official language of Bolivia and it is also spoken around the Lake Titicaca region of southern Peru and by some communities in northern Chile and in some parts of Argentina. This study investigated how all these features are inherent in the construction of an absolute frame of reference. Núñez and Cornejo (2012) conclude that "following fundamental principles of Aymara cosmology, people, objects, and land - as a whole - are conceived as having an implicit canonical orientation facing east, a primary landmark determined by the sunrise"; and the use of lexical items that refer to space *nayra* 'front' and *qhipa* 'back' in Aymara is a manifestation of "a broader macro-cultural worldview and its psycho-cognitive reality" (p.965).

In another study, Brown (2012) investigated frame of reference, space, time and topography in the Mayan language Tzeltal. This language employs an absolute frame of reference utilizing uphill/downhill (south/ north) and sunrise and sunset (crossways directions). This study's results show that this frame of reference is not necessarily transferred to the domain of time, and the Author also noticed that "the time moves uphillwards metaphor, based on the absolute frame of reference prevalent in Tzeltal spatial language and thinking and important as well in the linguistic expressions for time, is not strongly reflected in responses on these tasks" (Brown, 2012, p. 1). In summary her argument is that "systematic and consistent use of spatial language in an absolute frame of reference does not necessarily transfer to consistent absolute time conceptualisation in non-linguistic tasks; time appears to be more open to alternative construal" (Brown, 2012, p.10). In fact, in this language there are many possible construals for time related to space.

As reported by Fedden and Boroditsky (2012) whose described the patterns of spatial and temporal reference among the Mianmin of Papua New Guinea. This community use the rivers and surroundings landscape for orientation and direction. Their study shows that "Some participants arranged time with respect to their bodies (left to right or toward the body). Others arranged time as laid out on the landscape, roughly along the east/west axis (either east to west or west to east). This absolute pattern is consistent both with the axis of the motion of the sun and the orientation of the two rivers, which provides the basis for spatial reference in the Mayan language" (Fedden and Boroditsky, 2012, p.1). The study also suggested that people will use more left to right temporal representation if they have considerable years of formal education, in other words the increase use of left to right temporal representations is linked with increasing

years of formal education; and the reverse will be true for the pattern for absolute spatial representations for time (Fedden and Boroditsky, 2012, pp. 6-7).

In the same line of research, but also considering the importance of formal education in the use of spatial language for temporal construals, Gaby (2012) compared two populations of ethnic Thaayorre from Pormpuraaw (an Australian community that lives on the south west of the Cape York Peninsula, Queensland in Australia): one Kuuk Thaayorre/English bilinguals and the other English monolinguals. This study pointed out that

> "despite of their common physical, social, and cultural context, the two groups differ in their representations of time in ways that are congruent with the language of space in Kuuk Thaayorre and English, respectively. Kuuk Thaayorre/English bilinguals represent time along an absolute east-to-west axis, in alignment with the high frequency of absolute frame of reference terms in Kuuk Thaayorre spatial description. The English-monolinguals, in contrast, represent time from left-to-right, aligning with the dominant relative frame of reference in English spatial description. This occurs in the absence of any east-to-west metaphors in Kuuk Thaayorre, or left-to-right metaphors in English. Thus, the way these two groups think about time appears to reflect the language of space and not the language of time" (Gaby, 2012, p. 1).

This result further substantiates the conclusion that time concepts, and in particular space-time mappings, are strongly related to cultural experience and cultural schemas, and that the relations between the frames of reference in the spatial domain and the temporal construals and frames of reference are not one-to-one.

Space also provides a frame of reference for embedding notions of time for Maori people of New Zealand, but this cannot be considered as a space-time metaphor. Meijl (1993) describes the Maori Meeting House, and how Maori time is understood in relation to the spatial layout of the house. He writes "Cross-cutting the symbolism of ancestors in meeting-houses and the different temporal dimensions involved in this representation is a spatial orientation which has more effect on the practical use of meeting-houses. There is a complementary distinction between various parts of the meeting-house into *tapu* (sacred) and *noa* (common) dimensions" (Meijl, 1993, p.209). This partition also embeds notions of time. Meijl (1993, p. 213) cites Salmond (1978, pp. 9-11) and reports that "she [Salmond] noted a contrasting opposition between the meanings of 'front, past time, sacred place, seniority of birth' and the meanings of 'hind part, rear, future time, *noa* (unrestricted, profane) place and cooked food, junior birth, north and death'". Furthermore, "In the Maori language the past was described as *ngaa raa o mua*, 'the days in front', whereas the future was 'behind', *kei muri* (Metge 1976, p.70 also cited in Meijl, 1993, p. 213). Maori people moved, as it were, into the future with their back to the front while facing the past." (Meijl, 1983, p. 213; see the discussions of Aymara, above). Here it can be noted that space and time moulded, resulting in a fusion between the two domains (Levinson and Majid, 2013; Sinha and Bernárdez, 2015). However, we can argue that this is not necessarily a metaphorical construal of time as space in the way that this is understood by many authors (Moore, 2006; Boroditsky, 2000; Lakoff and Johnson, 1999; Grady, 1999; Yu, 1998).

Spatial and temporal language and concepts vary between languages because these concepts are strongly linked to worldview and cultural practices. As argued by Sinha et al. (2011) and Birth (2012) the importance of social practices and the cognitive

artefacts is influential for the source domain that underlies the cultural concepts of time. Therefore, it is important to consider not only linguistic features, but also other elements that are presented in our everyday life, as "The sociocultural structuring of space and time is achieved by practices involving the construction and use of artefacts and artefact systems that blend the material and the symbolic at different scales. These include familiar, and historically evolved, artefacts such as compasses, clocks, calendars, and other time interval systems based on language" (Sinha and Bernárdez, 2014, p. 310).

Calendars and clocks are cognitive artefacts that play important roles into the concept of time. These artefacts were produced with the intention to measure time in our society in a precise way (weeks, months, years, seconds, minutes, hours and so forth). These time intervals systems are designated by Postil (2002) and Levine (1997) as "clock time" and "calendar time" and are "constituted by segmentation of conceptual domain of time as an abstract entity called *time as such*" (Silva Sinha, 2012, p. 16). They are conventional durations based on numerical measurement, but also based on natural (astronomical) cycles of events.

In a wider cultural perspective, the research reviewed above shows that it is important to consider other artefacts in the built environment, such as architecture, villages, and city layout which also are intrinsically linked with cosmology and the environment indexes (bird songs, breeze) and celestial bodies such as the sun, moon and stars to understand the concept of time.

In many cultures of the world the use of the cultural and environmental indices motivates cultural and linguistic time concepts. As reported by Huang, (2016) the Bunun (Bunun is a Austronesian language spoken in the central and southern

mountainous areas of Taiwan) people do not talk about time in terms of calendars and clocks; their time is "expressed in terms of daily chores and traditional rituals in the Bunun Community" (Huang, 2016, p.1). The Author investigated Bunun linguistics expressions of time in Isbukun, a dialect of Bunun. The study reported that the Bunun do not have a word for time, neither has concepts of the hour, minute and second.

The Bunun borrowed the term *zikan* which also has the meaning of Japanese Year and use this when it is required. However, traditionally they have used seasons to represent 'year' so the term *Hamisan* (winter) is used to express the notion of year. In this culture there are only 2 seasons: *hamisan (winter)* and *talapal* (dry season). Furthermore, they also refer to *buan* (moon) to represent or 'count' the 12 months of the year. The moon has an important role for the temporal events, the festival and rituals are planned in accordance with the lunar 'cycle' in Bunun culture. The words *hanian* and *dihanin* are used to designate 'day' and the *dihanin* not only refer to 'day' but to 'sky', meaning 'day time', in opposition of the 'night'. The author also noted that although the Bunun express 'calendrical units' such as 'month', it is "unusual to refer to a time point by its order in a year or a month" (Huang, 2016, p. 6). The author concludes that the Bunun time concepts are derived from the event process, and that "the starting of TIME coincides with the beginning of an activity and its ending with activity's completion". (Huang, 2016, p.18). Time in this system is not a separate category but is fused with the event per se, as reported in the Amondawa (Silva Sinha et al., 2012).

A similar system was reported by Bohannan (1953) who described concepts of time among the Tiv community in Central Nigeria. The Tiv language does not have a word for time, and this notion is expressed the use of terms referring to long and short for 'duration'. For example, the word *cha* meaning 'far' "is used of space, of time and of kinship. However, such words are not dependent on time indication or reckoning for

their primary meanings" (Bohannan, 1953, p. 251). This language is reported to have three nouns, *shighen, dzum, icin,* meaning 'occasion'. *Icin* can be counted; *shinghen* is used in the sense of 'now is the time' and *dzun* applies to longer intervals. These words can be used to indicate a temporal landmark for locating another event in time. The author states that when Tiv speakers place an event in time they "do so by referring it to a natural or social activity or condition using solar, lunar, seasonal, agricultural, meteorological or other events. Tiv ritual is not associated with a calendar, and for these reasons ritual events are not usable as time indicators" (Bohannan, 1953, p. 252).

Tiv people also use the *iyange* (sun) to indicate 'day' (the period between sunrise and sunset). They also have names for parts of the day, e.g. *sev* mean 'dawn is breaking' and the expression *sev mbu aven* mean 'the next day; *pepe (early morning)* followed by reduplication and gestures *pepepepe* mean more reduplication 'very early in the morning' more duplication mean 'earlier'; *nomyange* mean 'male sun' this are expressed in two forms: 'littler male sun' around 9 and 'big male sun' about 11o'clock; *tetan* refer to the heat of the sun and the sun is more or less directly overheard and *tugh* mean 'night' (Bohannan, 1953, pp. 251-153).

The word *uwer* (moon) is used to indicate 'month':

> "Months can be counted and referred to by the Tiv word *uwer* which applies both to the moon and to the period between one new moon and the moon comes out. 'The moon comes out' (*uwel u due*) means both the time between the and full moon, and also the new moon itself. However, if Tiv point to the sky with the words, 'When the moon comes out here' (*uwel u duwe hen*), they are referring to the date of the lunar month when the moon will be in that position at dusk. 'The dark of the moon' (*uwel u ime*) is a time of quiet nights; people are

> most likely to catch cold or to be bewitched at this time of month … Though administrators, missionaries, and literate Tiv translate the word 'month' by the Tiv word 'moon'(uwer), and use transliterations of the English month names, Tiv themselves have no lunar month names. Moons are sometimes counted by pregnant women to determine of pregnancy. According to them, the period of human gestation for child is nine moons and for a female child eight moon. Some women make marks on their hut walls to indicate the passage of the moons. The marks seldom tally with the event: that they do not do so is put down to human error—either the woman made two marks one month or forgot one or more months. The discrepancy does not affect the belief" (Bohannan,1953, p. 253).

This description illustrates how the celestial bodies, sun and moon, are used to index Event based time intervals, as will be further explained in Chapters 4 and 5.

Tiv culture also has two seasonal periods, *inyon* (dry season) and *fan (*wet season). The seasons are also subdivided, for example *karegh u nyom, karegh u fan* meaning 'stripes of dry and wet season' refers to the cyclone period after the return of the rains. The seasons also have other names such as *ice iyologh* meaning 'the heat of the body', this characterizes the period before the wet season and *wanger nyom* means 'the approach [lit. lightening] of the dry season'. The wet season is subdivided into more specific divisions: *wulahe* (new rain), *tswagher* (planting corn) *atôatô fam* (mid-fam), *fam hides* (fam returns). The dry season is divided by different harmattans: the dust-bearing northerly wind from the desert. The first appearance of the harmattan haze and wind, is called *hil u kelen atur* (the harmattan which dries the okra), *hir u abebejondugh* (harmattan of the broken calabash) *hil u vesen* (grand harmattan). Seasons are also indexed by the prevailing weather.

> *Tswagher*, for example, is a time of cloudy and turbulent skies, but there is little rain. So long as this sort of weather is to be found, and the millet is not yet ripe, it is said to be *tswagher*. As soon as the millet is harvested, and the cloudy weather has given way to rains, it is *fam*. If one of these conditions has occurred but not the other, it may be either *tswagher* or *fam*. It does not really matter to Tiv where one ends and the next begins; no social or ritual events depend upon it. Tiv makes no correlations between these seasons and 'moons' (Bohannan, 1953, p. 254).

The agricultural activities are also used to designated parts of the year. For example Tiv use Event-based time interval expressions, as we defined in the Chapter 4, such as 'the time for clearing fields' and 'time for planting millet', and another expression is 'the first hammantan comes when we cut the guinea corn'. In these examples are evident the fusion of environmental happenings and activities to conceptualize Event-based time intervals.

A detailed description of the time intervals segmenting the parts of the day and night in Tarifit (a Tamazight [formerly known as Berber] language of North Africa) is given by El-Arbaoui Jelouli (2013). There is no Tarifit word that designates the full cycle of day and night, and speakers use the Arabic loan word *yawm* to express this concept. "Day" is expressed by *swass* 'daylight' and night by *djirth* 'absence of the light'. Human activity is governed in the first of these by the sun, and in the second by the constellation. "The parts of each entity are connected to certain events" (El-Arbaoui Jelouli, 2013 p. 221). These events and indexes are the position and heat of the sun, meal times, light and dark, the breeze, and the length of shadows. It is important to note that day has more negative connotations than the night, because "the light of the

sun at ‘t’haa’ [noon] is dreaded, basically it hurts the bodies but mainly for it is an obstacle for all human activities” (El-Arbaoui Jelouli, 2013, p. 223).

This fusion of event-based time and human value is represented in the tradition *Izri* verse that is analyzed by the author:

> *Walk your way do not look back*
> *If from the day are saved*
> *The night will walk towards you*
> (El-Arbaoui Jelouli, 2013 p. 216)

El-Arbaoui Jelouli (2013) states that, surprisingly for a reader from a culture for whom life is associated with light, and death with darkness, in this *izri* “the term *swass* is a predicate for ‘death’" (El-Arbaoui Jelouli, 2013, p. 243).

Baldus (1940) briefly described concepts of time amongst the Brazilian indigenous people, specifically, he described how time is expressed in a Tupi language from the littoral of Brazil. The Tupian people from this time used to have time intervals named after the *acajus* ‘cashew fruit’ and the stars *ceixu* ‘a constellation that appears in May’: these words were also used to name ‘year’. The explanation suggested by the author is that the *caju* tree gives fruit only once a year. He also mentioned that time for Tupian people was based on the nature, fruits, fishes in the river, by the level of the water, the heat of the sun, by the rain and the sun, moon and constellations (Baldus, 1940, pp. 90-93). The description provided by Baldus is sketchy, but it is consistent with the more detailed data reported in Chapter 4 of this study.

In terms of grammar of time in Tupian languages Father José de Anchieta, in his grammar of Tupinambá (Old Tupi) published in 1595 (*A arte de grammatica da lingua mais usada na costa do Brasil* (Anchieta [1595] 1874, cited in Leite, 2000, p. 45),

observed that in the Tupinambá language the past is marked by the particle(s) *puera, uéra, era* and the future by the particles *ráma, uáma;* as in *mbaé poera* 'thing that was, old thing' and *mbaé rama* 'thing that will be'. Leite (2000, p. 45) quotes Anchieta's description of some other Tupian temporal particles as follows: "The present indicative, although it includes in itself the four times, all the same more properly means the past. But it can be understood from the context or the way of speaking; and commonly for the present (although it is not always necessary) in the first or another person the particles *ã, iã, ikó* can be used which are all one [=equivalent?]. As in *a-só-ã, a-só-iã, a-só-niã* , *a-só-iko* 'here I go, I go here'. And sometime the sometimes the same *ã* etc. is used for future (...) For the imperfect, you just add the [morpheme] *biã* as in *a-so-biã* 'I was going', but still when *biã* joins with other(s) [it means] that the goal for which the work was not fulfilled or some impediment (...) for the more than perfect, there is an *umuã* at the end which properly means 'already' and it can be used for all times" (See Anchieta [1595] 1874 p. 30-37).[1]

Leite (2000 p. 45) additionally notes that "These markers indicate more *a notion of mood and aspect (intention, desire, perfective, imperfective etc.)* than time and that is why sometimes the particles are similar to adverbial expressions such as: yesterday, tomorrow, long time ago, some time ago and now" (Author's translation from Portuguese; italics added). The above descriptions highlight the way the Tupian systems emphasises the completion or incompletion of events; and that the events are not placed on a time line, as in English, Portuguese and other languages with tense systems. Dietrich (2010, pp. 69-70) also argues that time *itself* is not a category in the

[1] Author's translation. The Portuguese is archaic and it is difficult to reconstruct the exact meaning.

Guarani (Tupi-Guarani) language. He emphasises that the Guarani language partitions time into "two temporal spaces, the future and the non-future. This means that the temporal deixis that focuses the future, and even distinguishes different nuances of the future, is directly opposed to the non-future, which encompasses the present and the past" (Dietrich, 2010, pp. 69-70; Author's translation from Spanish). This implies, he argues, that "it is not the present that is the neutral time departing from which all utterances are interpreted, so that objectively past actions can [be expressed] as present, but rather that it is, on the contrary, the past, the neutral time, which comprises everything that is not future. As a consequence of this, the unmarked verbal form of Guarani does not express the time of utterance, but the past that extends to the present moment." (Dietrich, 2010 p. 70; Author's translation from Spanish). Again we can see that the completion of acts, and the evidential status of the events spoken about, are more important in Tupian languages than time *per se*.

For example, Carvalho (2013, p.127) reports that in *Mbya* (also known as Tambeopé; Tupi Guarani) "the temporality of predicates … is more important than the notion of time ordered in present past and future [S-time: Author's addition] … What is more important is what is the informational content expressed by the predicate, [whether] it was or is in process. And if it already occurred, who attested it, the speaker or another [person]? Did the information come in a dream? In the Mbyá language it is important to distinguish whether the predicate constitutes an exhortation, a strong command, a need or a desire. Modality and aspect are important in past and non-past." Carvalho also notes that there is a distinction in Mbyá between actual (*realis*) and non-actual (*irrealis*): "Actual can be interpreted as a present, but may not coincide exactly with the moment of utterance, but is more extended interval that includes the act of utterance in its scope. Mythic events do not occur in the actual, but in a differentiated

time that reaches into actuality. In the *Mbyá* culture the past is always alive in the present." A similar system is also observed in Kaiowá (Tupi-Guarani) (Cardoso, 2008, pp. 80-87).

To consider the conceptualisation of space and time" or "the TIME IS SPACE metaphor", not the domains themselves is questionable, because there are cultures that conceptualise time through metonymic and fusional constructions (Sinha and Bernárdez, 2014) rather than metaphorical mapping from space to time. Furthermore, as will be shown in Chapters 4 and 5, space is not the only source domain for metaphorical conceptualisations of time. Therefore, the cultural specificity of temporal language discussed here does not endorse any simple model of cognitive universality, and certainly not in relation to "time as space".

Summary. From all these above examples it is clear that concepts of time are, in many cultures, directly linked with the environmental happenings, celestial bodies (sun, moon and stars). Such Event-based time concepts are more widespread in traditional cultures than calendar and clock time concepts. In fact, the use of Event-based time concepts can be claimed to be universal, but they are specific to a particular culture, in their ecological niches having their own specific social structure and value system.

Chapter 2. **The indigenous communities, their cultures and languages**

> *Tense classes of nouns are not rare in American languages. As we may speak of a future husband or of our late friend, thus many Indian languages express in every noun its existence in presence, past, or future, which they require as much for clearness of expression as we require the distinction of singular and plural.* (Boas, 1911, p. 39).

The culture and language descriptions presented here are based on the literature and empirical observations. Many of the descriptions are based on information acquired during field work and other encounters with members of the communities working in different projects in which the Author participated.[2] This chapter has the intention to give an overview about some relevant aspects of culture and language: social organisations, traditional rituals and an outline of time-related grammatical features. This work does not have the aim of producing a "thick" or dense description (Geertz, 1973) of the communities. It also does not aim at a comprehensive grammatical description, although the grammar of time is addressed in some detail.

2.1 Huni Kuĩ - the True Humans[3]

The Huni Kuĩ people (also known as Kaxinawá, Cashinahuá, Caxinawá, Juni Kuin, Kaxinauá, Kaxinawá, Kaxynawa) live in Brazil and Peru, the population living in the Brazilian state of Acre consisting of 7,535 people (Kaxinawa, 2014). The language of

[2] The Author held a position 2013-2014 as Researcher on the Lund University project LUNDIC (Lund Digital Archive of Contextualised Typology) http://portal.research.lu.se/portal/en/projects/lundic-lund-digital-information-system-of-contextualized-typology(e16328f7-f759-48bb-83d4-517d3a9dc12c).html

[3] I wish to extend my sincere thanks to Dr Joaquim Kaxinawa and his family for sharing the cultural information summarised in this chapter. Much of the information can also be found in Kaxinawa (2011, 2014).

the Huni Kuĩ is called Hãtxa Kuĩ by the people, and in this work the Author uses this terminology. In other current linguistic terminology, it is referred to as Cashinahua/Kashinawa/ Kaxinawa of the *Ibuaçu* River. Hãtxa Kuĩ belongs to the *Pano* linguistic family (Fleck, 2013) and is considered to be threatened.[4] Field work took place in the *Aldeia Repouso* village (Santa Rosa municipality), on the upper Purus river, which at the time of the fieldwork in 2015 and 2016 had about 120 inhabitants. All inhabitants of this village speak Hãtxa Kuĩ, as well as other languages such as Spanish, Portuguese and other indigenous languages. However, the group prefer to call themselves Huni Kuĩ, which means "true humans".[5] We can note here that in many Amerindian languages and cultures, terms that mean 'real humans' often function as the self-designation of the cultural community; "the Amerindian words which are usually translated as 'human being' … do not denote humanity as a natural species." (Viveiros de Castro, 1998, p. 476).

Kinship and Marriage. The Huni Kuĩ, traditionally, are socially organised in exogamous moieties. The moiety system, in which the society is divided into two sub-groups (Lévi-Strauss, 1971), is common in other Pano groups in the region as well as with other indigenous communities in Brazil. There are two moieties, *Txashu Inu* 'Red Jaguar' or 'puma' and *Inu Keneya* 'Jaguar' or 'painted *onça*' in Hun Kuĩ. Each moiety also has a named gender division. In the *Txashu Inu* moiety the men belong to the side

[4] Endangerment status of the languages under study is based upon consultation of Ethnologue https://www.ethnologue.com/language/cbs retrieved 11/01/2018.

[5] *Huni* = 'men' (Port. 'homems'); Kuĩ = 'true, themselves' (Port. 'verdadeiro, ele mesmo'). Translation into Portuguese provided by Joaquim Kaxinawa, p.c. 25/02/2018. This translation conflicts with that provided by Kensinger (1994) cited in Camargo (2002), who state that *Kuĩ* = 'man', and *Huni Kuĩ* = 'real man'. Camargo (2002: 149) states that "The term *kuin* refers to the part of the Cashinuaha socio-cultural system of classification." Note that, as stated above, the language is referred to by the people as *Hãtxa Kuĩ.*

called *Rua* and the women belong the side called *Banu.* In the *Inu Keneya* moiety the men belong to the side called *Inu* and the women belong to the side called *Inani.*

Marriage is exogamous between the moieties, marriage within a moiety is not permitted. The community has a strong resistance to marriage between members of the same moiety, they consider such relationships unacceptable. Traditionally, the husband to be was chosen by the father of the bride. The preferred husband might be a skilled hunter, warrior or orator. Another traditional way to arrange marriage was through *encomenda cultural* 'cultural request'. The sons and daughters of a couple should then marry the sons of husband's sister(s) or sons of the wife's brother(s). Marriage is not permitted with the sons and daughters of the husband's brothers, or of the wife's sister(s) (Kaxinawa, 2011, 2014). This marriage system is the preferred one in some Huni Kuĩ communities, although not all communities follows this traditional marriage system. Men can also marry two women, the second of whom can be the sister of the first wife or a woman from other division. This relationship can be initiated by the woman side or by the man initiative.

If the man is a leader *Shanẽ ibu* 'chief' in the community he decides if he needs more than one or two wives, because his role is to host and be diplomatic with visitors. He needs to provide the best welcome to guests and visitors and the wives have a duty to cook the best of the traditional cuisine for the special occasions. Huni Kuĩ consider hospitality to be an important part of their way to receive people in their houses and their community. If you do not provide good food and enough food for your guests, you are considered a rude *Yauxi* 'miserable' person. More recently, the man can choose his own wife and woman can also chose her own husband, however this type of freely chosen marriage is considered problematic by traditionalists because it

interferes in their traditional marriage system and its related onomastic system, causing confusion about names (Kaxinawa, 2011, pp. 27, 28, 29, 33).

Onomastics. Each moiety has their unique archive of proper names and these names are transmitted through the generations. Kaxinawa (2011) surveyed 77 names distributed between the two moieties. The main onomastic rule is that the first son of a family will have the name of their paternal grandfather and from then on, other sons will receive their uncles' and great uncles' names. If the first child is a girl she will receive the maternal grandmother's name, and the subsequent daughters will receive their maternal aunts' and great aunts' names. It is not permitted to give other names to the child. Following this onomastic system is only possible if the traditional marriage is practiced.

Community leaders. Each moiety, as mentioned above, has a leader (cacique, chief) called *Shanẽ ibu* who is responsible for looking after the village and organising parties; additionally, he is responsible for finding a new place for the community to move to, if, for any motive or circumstance, the move is required. For example, one trigger to moving out can be caused by food shortage, if their current settlement place is not productive for their subsistence crops, so they need to find another location where they can produce food for the entire community. In this case, the *Shanẽ ibu* can invite other members of the community to help him find a better place to build new *Shubuã* 'houses'. He has a crucial rule in leading the entire community to harvest the crops (corn, potatoes, peanuts) before moving to the new location.

Environment, economy, division of labour. The Huni Kuĩ have a strong relationship with the environment, plants and animals, water, and the moon and the sun. Their cosmology is directly linked to their experience and their direct relationship with the

forest, the animals and plants, the moon and the sun. Their spirituality and sense of meaning in the world is anchored in these experiences. Even though they have suffered loss and changes for hundreds of years in their way of life their spiritual relationship with nature remains strong and vital. They follow traditional beliefs and practice shamanism and are proud to transmit this belief system to the new generation.

Like most Amazonian societies, the Huni Kuĩ economy is based upon subsistence agriculture, supplemented by hunting and fishing. In term of division of labour, the men are responsible for preparing the land for planting, supervised by *Shanẽ ibu* 'the chief' and the elders of the community. There are several special rituals to be followed when planting crops. For example, cotton can be planted only by women, and this happens only when the sun is going down *bari kaya* (see Section 5.2). The reason given for this was that the *Caburé* (a species of owl that comes out at this time) needs to see the women planting the cotton and is awake at this time. During planting the women must sing a song called *Pupu beru Pupu beru;* this song refers to the owl's eyes. Huni Kuĩ believe that the *Caburé* will give the crop a healthy and beautiful growth.

There are many customs that illustrate very well the Huni Kuĩ relationship with nature and how this relationship is a foundation for concepts of time in this culture. For example, the women also plant the *yuxu* (potato) and before planting the seed potatoes need to be soaked in sugar cane juice for a day. This is believed to produce healthy and very sweet crops. *Atsa* 'manioc' may only be planted during *Hutima* 'early morning', if the manioc is planted in the afternoon, it is said that it will not produce a healthy crop. Corn can be planted at any time, however those who are planting this crop should not stretch their limbs, and never yawn, as being lazy or sleepy will lead

to a very small and weak corn crop, and the cob will have only few grains. The *mani* 'banana', another very important crop in the Huni Kuĩ diet, can be planted at any time, but its planting also has to follow a particular ritual. The cultivator needs to sing a song called *Awa pixi Awa pixi* while they are planting *mani*. This song makes references to the tapir's ribs, the feathers of the royal eagle and bunches of *cacau da mata* (a type of cocoa); this ritual will ensure a good production of big and beautiful bananas.

The women are responsible for cooking, looking after the house and children and for harvesting the crops. The women are also responsible for sharing the food with all the family's members. The wife is the head of the household, and her role is to divide everything between the family members and to sort out the seeds of each crop to be stored for next planting season, and she also relies on the help of other female members of the family to perform all the household tasks (McCallum, 2001).

Festivals and rituals. In Huni Kuĩ culture there are many festivities and rituals that celebrate life, nature, friendship and welcoming. For example, *katxa nawa* is a celebration of all food and crops that are planted by Huni Kuĩ people. During this event people sings songs that refer to crops and their names. The main guest for this type of event is the leader of the other moiety. The *Nixpu Pima* event is a rite of passage for the Huni Kuĩ children. This event occurs when the children lose their milk teeth. All the families who have children that are changing their milk teeth are invited to attend this event. To prepare the ritual, the most experienced man will collect some herbs to use in the ritual, these herbs will produce a black ink that is used to paint the children's teeth, and these children are at the centre of the party. This festival takes place all day for several days and during this period the adults sing, dance and eat delicious food. The strongest man of them all will dance and jump with the children

until they are exhausted, then when they are very tired the children's teeth will be painted with the special herb fusion. After the children's teeth have been painted, they need to lie down in their hammocks and stay still. They are observed by their family members so that they cannot move for some time. They believe that if the child moves, it will bring bad fortune for the rest of the child's life. During the ritual and celebration, the children also have a special diet, and cannot eat meat or fish. Later, the children drink a special potion made from a certain species of frog and tobacco juice. This potion serves to clean up the liquid used to paint their teeth. At end of this ritual, the children are immune to many bad things and influences in the world. To complete the ritual the parent play with their children, throwing over each other *caiçuma* (a drink made from peanuts and corn), and the children and their sisters and brothers in laws will also give a c*aiçuma* shower to the parents too, everyone will have fun together and celebrate the good fortune and health of the entire community.

The *Txiri/Tete pei Peuwa* (Eagle festival) is an event in which the elders give instructions, teaching the young adult participants about the festival and awarding the participants a ritual "certification". This certification gives an authentication with public recognition and assurance that the certified youths can also promote a festival in the village. The newly qualified individuals dance, with a special body decoration made from the feathers of the Royal Eagle that is prepared specially for the occasion. Another festival is the *Bunawa* (banana festival), which is considered by Huni Kuĩ people very important, because *Bunawa* 'banana' is the most important crop for Huni Kuĩ, it is the main ingredient in the Huni Kuĩ diet. The *Bunawa* is planted and then it is harvested, when is ready they will make *mani mutsa* 'a drink', and everybody is invited to drink, eat, and dance the entire night. All the food and drinks are made from banana during the event.

Pia Atxia is an event to celebrate hunting. This festival will take place in the village, and the organisers will keep it secret until the day. On the day of the event, they will invade the neighbours' houses and take their weapons. The 'seised' weapons will be used for hunting. After a successful hunt, the women will divide and share the meat between the families and invite them to be involved in the play. During this time, the elders teach the younger members of the community to dance and to sing songs. The songs make reference to the animals, their names and their characteristics.

During the fieldwork in *Aldeia Repouso* the villagers performed a *Mariri* ceremony to welcome the research team. This is a ceremony to celebrate friendship and to welcome a visitor to their village. Everybody dressed up for the occasion with traditional ornaments, such as *cocares* 'feather ornaments', ornaments made from banana and palm tree and face paint. All the participants ran together through the village and then afterwards everybody danced around a special log, called *mariri*, which is the source of the name of the ceremony. We danced together around this log for a long time, the elders sang songs, and everybody followed the tune of a very nice melody. The music refers to everyday life and gives thanks for everyday activities and for food. During the party, there is plenty of food and drink for everyone. If you do not provide food and well-being to others in Huni Kuĩ culture you are *yauri* 'miserable' and *sovino* 'not a good person' (Kaxinawa, 2011, p. 28).

All these events make up the cultural experiences and reflect and values of being Huni Kuĩ. The practices are transmitted to each community member, and children learn from a very early age how to interact with the environment. Boys learn how to make arrows, bows, and blow pipes. They also learn how to hunt and what rituals to follow to become a good man and good hunter. The young girls also start learning at a very young age to work with cotton, ceramics, making ornaments and food preparation. The

learning process is based on participation in all these events and everyday life. Parents will also explain to their children the key spatial orientation points through the streams, rivers, lakes, and the sun. The children learn how to identify and collect wild fruits, herbs, medicinal herbs and how each crop should be planted, and by whom, and when it can be planted in accordance with the moon, the sun, and the environmental indexes (see Chapter 5 for more details).

In each village, there is a school administered by the municipality, and the teachers work with other community members to develop a curriculum and syllabus that incorporates the traditional learning together with formal learning. Many books and teaching materials have been produced by the teacher-researchers, with the aim of empowering the members of the community through knowledge of Huni Kuĩ language and culture.

2.2 Time in Hãtxa Kuĩ grammar: an outline description.

Hãtxa Kuĩ (the language spoken by the Huni Kuĩ) is an agglutinating language with roots for nouns, verbs, adverbs, and a restricted class of adjectives. The lexical (form) categories are determined by their suffixation and their respective utterance position; there are no verbal prefixes in this language. The word order in Hãtxa Kuĩ is predominantly verb-final with default SOV and the language has split ergative alignment (Abreu, 1914, 1932; Camargo, 1991, 2002; R. Montag, 1973; S. Montag, 2004; Kaxinawa, 2014)

Temporal markers. In Hãtxa Kuĩ there are grammatical morphemes that express temporal notions of past and future. These markers are usually classified as verbal suffixes and they generally precede the morphemes indicating mood (Kaxinawa, 2011, 2014, p. 180; R. Montag, 1981, 2005). These temporal markers have a complex

relationship with aspect, especially the notion of completion, sometimes also expressing aspectual notions. It should also be noted here that there are also time-related suffixes on nouns, which are addressed below.

It is difficult to establish word boundaries in this agglutinating language, so sometimes the temporal morphemes are referred to as particles (Kaxinawa, 2004, 2011). It has been observed that:

> Panoan languages are primarily suffixing languages and could be called highly synthetic due to the potentially very long words (up to about 10 morphemes), but the typical number of morphemes per word in natural speech is not large. It is the large number of morphological *possibilities* that is striking about Panoan languages, not the typical length of words. For example, up to about 130 different verbal suffixes express such diverse notions as causation, associated motion, direction, evidentiality, emphasis, uncertainty, aspect, tense, plurality, repetition, incompletion, etc., which in languages like English would be coded by syntax or adverb words. (Fleck, 2013 p. 43).

The above is certainly true of Hãtxa Kuĩ, which creates certain methodological problems in regard to the classification of the temporal markers. A particular problem is that some of the field data obtained was in the form of narratives, some of it was based on interview, and some of it was based on the use of the questionnaire (Appendix A) which requests translations of Portuguese temporal adverbials. Some morphemes occur in different parts of the data, but the glosses are not always identical in the different contexts.

These data were also compared with previous descriptions of the language. Most of the temporal markers, and their usages, have been described by Kaxinawa (2004,

2011), R. Montag (1981) and S. Montag (2004). The former (the Collaborating Researcher for this project) worked on the specific local variety of Hãtxa Kuĩ in which this field work was conducted, while the latter worked on the variety spoken across the border in Peru. Although these are dialects of the same language (Fleck, 2013), the spellings vary between the analyses reported by Kaxinawa and those of the Montags, reflecting different orthographies in Brazil and Peru. Where there is a more substantial discrepancy between the analyses provided by the Montags and by Kaxinawa (2011; 2014 and personal communication), this research follows the analysis by Kaxinawa, because the he is a native speaker of the language studied in this research. Where such discrepancies occur, they may be either dialectal, or related to differential language contact (Spanish vs. Portuguese), or they may reflect the fact that R. Montag (1973, 1981, 2005) employs in his glosses time interval terms (e.g. week) that simply do not exist (have no lexical equivalents) in Hãtxa Kuĩ. The important point is that the general features of the descriptions given by these two linguists are broadly in accord with each other, even if their analyses differ in specifics.

The temporal markers give information about the time of an action or event in relation to the time of speaking: that is, they "situate an event in the past or project an event into the future" (Kaxinawa, 2011, p. 47). They are therefore markers of D-time (deictic time). However, even though these grammatical morphemes may be combined with the verb (and have been designated by analysts as verbal suffixes: e.g. R. Montag, 1973), it would be misleading to classify them as tense markers, since they simultaneously express aspectual and other notions. R. Montag (1981, p. 562) argues that "The suffix … indicates the time at which the action occurs and/or its importance for the speaker … Some suffixes indicate both aspect and time, and others indicate only aspect" (transl. by the Author from the original Spanish). In fact, markers of the

future are for the most part best described as aspectual. It would, however, be problematic to say that the temporal markers simultaneously express tense with aspect. It is more accurate to say that they may differently express some temporal notions in the context of others. This leads to very complex rules of usage. For example, the following description applies to just one aspectual morpheme:

(1) ***-aii***

This is analysed by R. Montag (1981, p.562) as "first or second person, incompletive aspect, declarative used for present and future time." This gloss is confirmed by Kaxinawa (2011, 2014) and was further confirmed in the glossing of the field work data by Collaborating Researcher Dr Joaquim Kaxinawa (personal communication). Examples are:

(2) *ma k**aii***
'I go now/will go now'

(3) *Min dayajaid**aii***
'you are working a lot'

However, this description does not always apply, since the same suffix *-aii* can also be used to mark third person in collocation with the verb *ju-* 'come':

(4) *Mario ju-**aii***
'Mario is coming'

R. Montag (1981) also argues that "*-aii* is used in the first, second and third persons with the suffix *–kean-* to indicate incomplete action in a counterfactual situation." (p. 552, Author's translation).

It is important to note, therefore, that the meanings of the temporal markers can depend on the co-occuring markers that also indicate the type of actions in terms not only of

completion, but also person (of agent), affected object (patient), mood, negation and evidentiality (reported actions).

As noted above, some temporal markers give information that the event happened in the past and others indicate that the event has not yet occurred. Events can be marked as being at different *degrees of pastness*, or as being ongoing or intended actions or events in the future:

> Just prior to the mood marker, there is usually a time marker that indicates the time of the action in relation to the time of speaking: *completed action* of a little while ago, of today, of yesterday [or of much longer in the past], or *incompleted action*: the present (now), the very recent past and the rest of today, or a *future* marker can be put in front of incompletive markers to mean future of tomorrow or later but can also be used for later today. There are no hard and fast boundaries between the time indicated by these markers except that the 'of today' marker cannot stretch to mean 'of yesterday' (Montag, 2005, p.4).

Kaxinawá (2011) describes how the past (or completive) is marked by five morphemes indicating degrees of pastness. The examples below show the past time markers and their meanings, along with examples of usage taken from the data set collected during the field work for this thesis[6] (Kaxinawá, 2011, pp. 51-55; 2014, pp. 180-185).

Immediate Past ***-shu***: for an event that just happened now or a few moments ago

[6] All data were obtained through written elicitation, after which the information was glossed in Portuguese and submitted for checking by the Collaborating Researcher.

(1)
ẽ hushu sheki bana ***shu-*** *ki*
I white corn plant PAST.IMM DECL
'I planted white corn just now'

(2)
ẽ mani huxiã pi ***shu-*** *ki*
I banana ripe eat PAST.IMM DECL
'I ate a ripe banana just now'

Recent Past ***-ika, aki***: for an event that happened early today

(3)
ẽ hushu sheki bana ***ika-****ki*
I white corn plant PAST.REC1-DECL
'I planted white corn [today, early]'

(4)
ẽ tĩ ***ika-****kiki*
I fall PAST.REC1-DECL
'I fell this morning'

Recent Past - ***xina / xiã***: for events that happened yesterday, or a few days ago

(5)
ewatã en haska ***xina*** *na eskati-ã en haskai, haskaya*
Grow I do PAST.REC2 this like- is I make so
'[I remembered] how I was when I was growing up'

This example is a fragment of an autobiographical narrative spoken by the community leader. Although the speaker is referring to the distant past, he is talking about his recent memory of this, and the Collaborating Researcher confirms that the temporal morpheme is a marker of the recent past.

(6)
ẽ hushu sheki bana ***xiã-****ki*
I white corn plant PAST.REC2-DECL
'I planted white corn'

Distant Past ***-ma, -ima*****:** to mark events that happened in the distant past, one or two summers ago

(7)

*ẽ hushu sheki bana i**ma** -ki*
I white corn plant PAST.DIST DECL
'I planted white corn long ago'

(8)

*ma bariã rabe binu xinaki, bui **-ma** -bu -rã*
Already summer two pass do go PAST.DIST -COLL DECL
'They have already been gone two summers'

Remote Past ***-ni / -pauni:*** to mark events that happened a very long time ago, 'once upon a time'. Note that ***-pauni*** incorporates an evidential marking of unattested events.

(9)

*ẽ hushu sheki bana **ni**-ki*
I white corn plant PAST.REM-DECL
'I planted white corn [long ago]'

(10)

*Huni Kuĩ hushu sheki bana **pauni**-kiaki*
Huni Kuĩ white corn plant PAST.REM-DECL
'Huni Kuĩ planted white corn [long ago]'

Present and immediate future are indicated by completive, perfective, projective continuative and inceptive aspectual markers. There is also one future time marker. The following examples are also taken from the field work data.

Projective: ***itiru***

(11)

*ẽ atsa pi- **tiru-** ki*
I manioc eat- ASP.PROJ DECL
'I will eat manioc'

Completive: ***a***

(12)

*ẽ ma atsa pi **a***
I just manioc eat ASP.COMPL
'I have just eaten manioc'

Perfective/completive: ***ki***

(13)
ẽ *piti* ***ki***
I eat ASP.PERF
'I ate'

Inceptive / beginning of an action**: tae**

(14)
ẽ *pia* ***tae*** *wa-i*
I eat ASP.INC do
'I am starting to eat'

Continuative - not yet finished, incomplete: ***-ai***

(15)
ẽ *buni* ***-ai***
I hungry ASP.CONT
'I [am] hungry'

Future action that is intended but has not yet occurred is marked by a future time marker: ***shana.***

(16)
ẽ *atsa* *pi* *ka* ***shana****-i*
I manioc eat go FUT
'I will go and eat the manioc'

States of existence: nominal aspect. All the above examples relate to verbal suffixation (that, is, they occur in the word order after the verb or predicative element, and before mood). There are also *nominal* suffixes with temporal meanings. Kaxinawa (2014) states that there is a class of morphemes that conceptualize the "state of existence of beings", in terms of whether this existence is *actual*, *retrospective* or *prospective*. That is to say, nouns can be qualified in terms of their *coming into*, *being in*, or *going out* of existence; and can express the relationship of the noun to the speaker. "All referents of nouns are viewed in accordance with their state of existence, whether this be

‘actual’, ‘retrospective’ or ‘prospective’.” (Kaxinawa 2014 p. 36, translation by the Author). These states of existence are expressed by morphemes that are suffixed to the noun. Kaxinawa (2014) argues that these morphemes are expressive of nominal aspect, rather than (as has sometimes been claimed in studies of other Panoan languages) nominal tense. To complicate the picture still further, at least one morpheme *itiru*, (see above) can be employed both as a verbal aspectual suffix (projective) or as a nominal suffix (prospective). The nominal aspectual markers are as follows Kaxinawa (2014, pp. 36-38):

Zero morpheme (unmarked) ***Ø “****actual”*

(17)
e-n *hiwe* *haven-rua*
1-GEN house-ABS beautiful-BE
‘My house is beautiful’

Retrospective marker ***-ini***

(18)
e-n *hiwe-**ini*** *haven-rua*
1-GEN house-RETROSP beautiful-BE
‘My former house is beautiful’

Prospective marker ***-itiru***

(19)
e-n *hive-**itiru*** *haven-rua*
1-GEN house-PROSP beautiful-BE
‘My future house is beautiful’

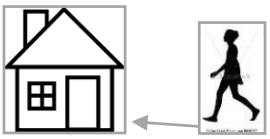
Temporal adverbs. “Adverbs in Hãtxa Kuĩ form a small closed class” (Kaxinawa, 2011 p. 57, Transl. by Author). There are few clearly identifiable temporal adverb words, and the linguistic data that were elicited for this thesis included just three such morphemes, one of which is the deictic term *kiri*, which has as its primary meaning

spatial direction (to/towards). Below are some examples provided by the Collaborating Researcher (Joaquim Kaxinawá pers. comm.) that illustrate the spatial usage use of this directional marker, *kiri*.

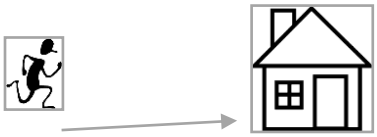
(20)

Ni	*kiri*	*kai*	kiki
Forest	direction	go	DECL

Trave ***kiri***	
goal	direction



há	*hiwe*	***kiri***	*ka-*	*i-*	*kiki*
She	house	direction	go	Progr	DECL



Ei	*kiri*	*hui*	*kiki*
I	direction	come	DECL

Temporal usage of this directional deictic term can also be illustrated by the expression *mexu kiri*, lit. “towards darkness”, which means tomorrow day, or tomorrow night, or any other day or night after tomorrow night. There is no other expression in the data in which the term *kiri* is used in combination with another morpheme to form an expression with a temporal meaning. This expression, *mexu kiri*, is also one of the few expressions uncovered by the field work in which spatial motion is mapped to temporal meaning (see below).

The other four temporal adverbs identified are:

(21)
Ikis - now
Eska- tiã ***ikis***
So-be now

Ikis needs to combine with *Eskatiã 'so-be'* to convey the meaning 'now' as an adverb expression.

(23)
Ikima
'A long time ago'

(24)
Ishani
'before, in the future'

(25)
Samama
'soon, right away'

The use of the temporal adverb section of the questionnaire (Appendix A) also yielded the following morphologically complex temporal adverbial expressions, some of which include the temporal suffixes listed above.

(26)
na shabaki
na shaba -ki
This day DECL
'today'

Note *shaba* also means 'clear' = daylight

(27)
mexu binu xinaki
mexu *binu* *xina- ki*
Darkness pass PAST- DECL
'Yesterday'

Note the use of the verb "pass" which is a verb of motion, referred to the darkness passed.

(28)
mexu rabe binu xina
mexu *rabe* *binu* *xina*
Darkness two pass PAST
'day before yesterday'

Note the use of the verb "pass" which is a verb of motion, and the quantification of the expression meaning 'yesterday' to yield 'day before yesterday'

(29)
mexu kiri
mexu *kiri*
Darkness toward (deictic)
'Tomorrow'
(see also 20 above)

(30)
Yame betsã ishani -
Yame betsã ishani
Other night FUT. before
'The day after tomorrow'

(31)
Akaitiã
Aka -i -tiã
Do- PROG-happen
'during'

(32)
shaba rasi
shaba *rasi*
Day many
'in many days'

Note *shaba* also means 'clear' = daylight

The temporal marker *–xiã*, (Recent Past, see 5, 6 7 above) can also be used adverbially:

(33)
Xiã
PAST.REC2
'after, some time ago, some days ago'

It is noteworthy that ***ishani*** means both 'before' and 'in the future', and ***xiã*** means both 'after' and 'in the past'. This conflation of meanings conflicts with the intuitions of speakers of English and other European languages, for whom THE PAST IS BEFORE, and THE FUTURE IS AFTER along a time line. This is clearly illustrated by example (30):

Yame betsã ishani
Yame betsã ishani
Other night FUT. / before
'The day after tomorrow'

In Hãtxa Kuĩ, ***Xiã*** **‘**after’ and ***Ishani*** **‘**before’ are not located on a time line. The word *Ishani* is part of an adverbial expression and has the meaning ‘before’, while *Shana* is a temporal marker meaning ‘immediate, certain [reassured] future’. The morpheme *Xiã* can be used both adverbially ‘after’ and as a temporal marker ‘past’, ‘some time ago’. The discussion how ‘before’ and ‘after’ are schematically organised in Huni Kuĩ is returned to in Chapter 5.

Summary. This survey of the organization of time in Hãtxa Kuĩ grammar serves to demonstrate that temporal meanings in Hãtxa Kuĩ are “packaged” in ways that do not correspond with the familiar distinctions made by Indo-European languages. Even if we just restrict ourselves to “time” marking (that is, marking of past and present/future), it would not be correct to say that this is equivalent to a tense system, since what is conveyed by the temporal marker seems to be more about completion or incompletion at the time of utterance, rather than before/after relations in relation to time of utterance. It seems that deictic time (D-time) and aspect are articulated together in Hãtxa Kuĩ, rather than D-time being co-articulated with sequential time (S-time). This analysis needs to be tested in more systematic linguistic analysis. A more detailed discussion of Huni Kuĩ temporal schemas is provided in Chapters 5 and 6. A further point is that there is very little overlap between spatial expressions and temporal expressions.

2.3 Awetý

Awetý (also known as Awetí, Awytyza, Enumaniá, Anumaniá, Auetö) is an indigenous community in the center of the Upper Xingu region of Mato Grosso state, between the Aruak groups to the West and South and the Carib groups to the East. The Awetý language (considered to be threatened) is an isolate Tupian language; the

closest related Tupian languages are those of the Tupi-Guarani family, which is the largest family of the Tupí stock (Rodrigues and Cabral, 2012). The population is about 365 people who are living in four separate villages: Aldeia Awetý, Aldeia São Jorge, Aldeia Saidão/Fumaça e Aldeia Mirassol (Sabino, 2016). The field work mainly took place in the Saidão/Fumaça village, which at the time of the field work in 2015 and 2016 has a population of 72 people. All inhabitants speak the Awetý language, and many of them speak other languages too, such as Kamaiurá, Aura, and Portuguese

The Awetý history and culture have been described by many researchers from the late eighteenth century through the twentieth century. Here just highlighted some of these works. These include the famous expedition led by Karl von den Steinen in 1884 and 1887 (Steinen, 1988, 1987, 1940 [1894]); Ribeiro (1979) who went to the Xingu area to map and to describe the region and its people; Pedro Augostinho da Silva ([1970, 1972] see (Silva Agostinho, 2009) who wrote an extensive description of the region, including myths and rituals of Upper Xingu region. The most celebrated outsiders who visited the region were the brothers Cláudio Villas-Boas and Orlando Villas Boas (see Boas and Boas, 2009) who lived amongst the Awetý and Kamaiurá and who were responsible for the creation of the Xingu National Park. More recently, Coelho de Souza (1994, 2000) wrote about Awetý history; Bastos (1989) also wrote his PhD thesis about the Awetý; Borella, (2000) wrote a dissertation about Awetý, presenting a preliminary analysis of some morphosyntactic aspects, mainly describing how this language organised the case marking in independent utterances as well as presenting a preliminary description of deictics in Awetý language.

Others scholars include Sebastian Drude (see Drude, 2002, 2006, 2008, 2011) who worked with Awetý language; and (Vanzolini, 2015) who wrote about witchcraft amongst the Awetý. Even more recently, in 2016, the Awetý history and language have

been described in a PhD thesis by the indigenous native researcher Wary Kamaiurá Sabino, who is Collaborating Researcher for this work. His work is important for this study because he brought forward a native perspective on Awetý history culture and language.

Like any other Indigenous community in Brazil, the Awetý is a surviving community that still has to fight for their right to exist and for the preservation of their language and culture. The Awetý community today is the result of a fusion of two groups: the *Enumaniá* (also known as *Enumaniah, Anumaniá*) and the 'true Awetý'. Many Awetý believe that the "true Awetý" disappeared after many disputes concerning land, marriage relationships and many other conflicts between the two groups. As a result of these conflicts the 'true Awetý' and *Enumaniá*, became one group, nowadays known as Awetý (Sabino, 2016, pp.18-29).

Village and Houses. As is typical in all Upper Xingu indigenous communities, the Awetý live in large communal houses distributed around an open space. The houses are constructed next to each other, forming a circle and in the centre of the circle is the main communal house and football pitch. This communal house is an exclusive place for men to gather, to smoke, to talk, to discuss, to receive visits, to prepare rituals and to keep safe the sacred flute (*Karytu)*. This flute is a sacred music instrument that is not permitted to be seen by the women (Vanzolini 2015:30). In each communal house lives an extended family consisting of the principal nuclear family, who own the house and have authority within it, plus relatives (including other nuclear families). During the fieldwork for this study, the Author stayed in one of the communal houses; at the time there were 17 people living together.

Awetý villages may be quite recently formed. Usually this is because a family moves out of a previous village because of disagreements with members of another family, and as result of this conflict the entire extended family relocates. This was the case for the village where the field work was conducted, called *Saidão Fumaça,* where during the field work there were 72 people living in this village.

Division of labour. Traditionally, the work division is between domestic tasks and non-domestic tasks. The men are, generally, responsible for hunting, fishing, and preparing the soil to plant crops, such as manioc, the main ingredient of the Awetý diet. The men also produce some artefacts related to rituals, and hunting weapons such as bows and arrows, and spears to fish.

Women who are at the life stage of *Kujãperyt* (mothers and/or grandmothers) are considered mature, even if they are still teenagers (see Chapter 5 for a full description of Life Stages) and are responsible for harvesting crops and preparing and processing manioc to make *beiju* 'flat bread' and for collecting wood for the fire. The *Kapia'jyt* (young woman) is responsible for domestic tasks inside the house such as preparing and cooking *mingau* (a kind of tapioca porridge), *beiju* and fish; and cleaning up the house. Women of all ages produce many handcraft products such as necklaces, bracelets, belts and hammocks. Women are also responsible for processing the *jenipapo,* a wild fruit that produces the ink used for body painting and decorating objects, especially pots.

Community Leaders. The Awetý have a hierarchy of different leaders. At the top of the hierarchy is the *Morekwat katu* (cacique/chief). Supporting sub-leaders are the *Momo morekwat (*the master of speech); the *Iti'ingku to'otat* (the host responsible for receiving and looking after visitors); and the *Tazungku tat* (a kind of support role, who

will help organising meetings, festivals and other community events). Both men and women can be a leader or sub-leader as long as they have the necessary leadership qualities and skills. The Awetý community elects its leaders according to their assessment of the persons, based on whether the person has demonstrated skills and abilities, and dedication to the community on different occasions. The *Morekwat katu* may also come from a hereditary family, but the sub-leaders will be chosen by him/her or by the community.

Morekwat Katu needs to be very polite, caring, loving, smiling, joyful and full of happiness, must have a good attitude and be positive. His speech must be polite and smooth, never rough. Every time a person passes by his home, it is expected that the person enters the house, often requested by the *Morekwat Katu* who asks the person to enter the house to talk and have a drink together. The *Morekwat's* family, wife, sons, daughters, brothers, and sisters must also have a good attitude. The entire family of a leader are expected to display the same behaviour and attitudes.

The general rule is the *Morekwat Katu* should never mistreat a person, should not have a prejudice of any kind towards to anyone from the community, should never show sadness and never hurt any member of their community. During discussions with the Collaborating Researcher about the leaders function he said "All members of the community depend on the *Morekwat Katu.* This dependence can be represented organically, like a dependency carved in the bones of *Morekwat Katu*. Only the leaders can protect the individuals; the community faced with any difficult situations say 'The *Morekwat Katu* is the heart of the stability of our community'" (Wary Kamaiurá Sabino, personal communication 2018).

The community respect for *Morekwat Katu* is reciprocal, the leader respects the community, the community supports and respects the leader. The community follows and obeys the leader's advice and instructions. His/her function is to decide how the community is running, and to take decisions on behalf of the community. The community members always ask the leader for advice, guidance, and permission. However, the Author was told that in general the *Morekwat Katu* never says no to anyone who asks permission to do anything that is consistent with the usual culture practice.

To support the leader's role, there is *Momo morekwat (*the master of speech and *iti'ingku to'otat* (the host) who must have the same leadership attitudes and qualities. These sub-leaders can replace the *Morekwat Katu* at any time in case of sickness or absence for traveling. They also have powers of decision. If there is a divergence in the views of the leader and the sub-leaders, no final decision will be taken until they reach consensus.

Momo morekwat is an articulator, the same as a politician, ambassador, the community spokesperson. He has the skills to understand foreign languages and the meanings of what is said. His function is to transmit information to *Morekwat Katu* and *Tazungku tat* about the source of the information, who is involved, who are the visitors, what are the purposes of the visitors and which support the community can provide to visitors.

Awetý diet. The diet consists of: *porvilho* of manioc (the main ingredient of *Beiju),* porridge of *beiju* (Mingau de beiju) seasoned with Chilli peppers and Awetý salt[7],

[7] The Awety traditionally produce their own salt. The salt is extracted from *Aguapé (*a species of grass that grows in the river). This herb is collected by men and women who work together to pull it out from

Corn, fish, prepared in several ways: mashed fish (*Pirão de Peixe*), barbecued fish (*peixe assado*), grilled fish (*peixe moqueado*); and *piqui* (a wild fruit that gives the main seasoning). These compose the main ingredients of the daily diet. *Piqui* is also processed to make a traditional drink called *caiun.* In general, Awetý do not eat meat.

The economy is based upon small-scale subsistence agriculture, fishing and gathering fruits. Besides planting manioc and corn, Awetý also grow *papaia*, *urucu* (Achiote plant that produce annatto, a natural orange-red condiment), sweet potatoes, cotton (to make the hammock) and squash. Each family has their own field that will be prepared by the man and looked after by the women of the family from each house.

A typical day. Work is mainly done in the morning. In the afternoon, when it is very hot, and it is impossible to go out to work in the fields, everybody has a kind of a *siesta.* Early in the morning everyone has a bath, and the practice is repeated in the evening. The family tends to gather in the river to have a collective bath, time to wash but also time to talk with each other. The bath time is not only to refresh the body but also it is a moment for interaction between individuals.

As is common in the region, football is a common leisure activity. The young boys and girls, women and children play football in the middle of the village, which is also a football field. Generally, they play football daily before the evening bath. At the weekends and on special occasions during the year, the local team participates in the

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the river and then put it to dry in the sunlight. After drying, the women burn the dried *Aguapé* and it turns to ashes. The ashes are sifted to extract the salt.

tournaments, competing with other villages close by; and participates in the major championship organised by other ethnic groups in Upper Xingu region.

The Awetý family. The relationships in the community are based on the extended family which consists of relatives from both mother's and father's sides. The kinship system is characterised by bilateral relationships, which means the relationships on the mother's side and the father's side are equally important, and all the people who are relatives and siblings of ego (Galvão, 1953, p.27 cited in Laraia, 1971, p. 3) have equal kinship status in terms of descent and inheritance of names. Although the bilateral system is very widespread in the Tupí societies in the region, it is possible to find in other Tupí societies patrilineal descent. The traditional marriage rules are based on preference for cross-cousin marriage (MacDonald, 1965, p. 18 cited in Laraia, 1971, pp. 1–3). It is noticeable that there is also exogamous inter-marriage with other ethnic groups. For example, there are many marriages between Awetý, Aura and Kamaiurá individuals. Marriage between Awetý and other indigenous and non-indigenous individuals outside the Xingu area also frequently occurs.

Exchanges and Gifts. Gift-giving is a very prominent cultural feature for both Awetý and Kamaiurá. During my fieldwork in the villages, the Author received many presents, in fact, each family in the villages gave me presents, such as necklaces, bracelets, small miniatures of animals and salt. Reciprocity is the governing rule of this cultural practice. Gifts are exchanged between the members of families, and between members of different groups, amongst themselves, and between the community members and visitors. There is a gender rule for this practice in the Awetý, a woman gives presents to women and men give presents to men. The exception to this rule is the giving of gifts to the community leader or to shamans (see below), to whom anyone can offer presents regardless of their gender. There is also exchange of objects,

goods, and favours between families. For example, if one family has corn, and the other does not, it is expected that the first family should offer the corn to the other family. This practice creates a reciprocal expectation that the same should happen in the future, vice versa.

Birth. When a woman gets pregnant, the couple follow a special diet to make sure the foetus will grow well and stay healthy. After the new-born arrives, the father stays at home too. The father will be in reclusion inside the house until the baby is crawling. During this period, some rituals will take place. The first one is when the child's umbilical cord has dropped off. If it is a boy he will receive an earring and the first pair names is given; if a girl, she too will receive the first of pair of names (but no earring).

Rites of Passage. The rite of passage, from childhood to adulthood for boy and girl, is performed in different ways. The passage from girl to woman is marked by a period of reclusion and following a special diet. When a girl has her first menstruation, she

Figure 1. Rite of passage for girls in Awetý

stays inside the house out of sight of non-family members and visitors; she is only allowed to go out in the company of her mother for biological necessity. During this period, she is learning all the knowledge necessary to be a woman: handcrafting and how to look after a family, children, and work on the land. The reclusion is also a time for body transformation, hair will not be cut, and her body will be shaped up. Her legs are bound with cords (Figure1.); this will make the shape of her legs more pronounced and beautiful. She will also drink special tea that makes her feel nauseous and vomit. This is a kind of de-tox, to clean inside the body. It is believed that after the cleaning process the skin will become smooth and beautiful. Additionally, to the de-tox therapy there is a body scraping skin care: the main purpose of the scraping process is to renew the skin and give new vitality to the body.

The scraper is made of wood in a triangular format (see Fig. 2) with dogfish, catfish or piranha teeth set in the wood. Although the process is painful, the result is worth the pain and guaranteed, the Author was told. The legs and arm are first washed and

Figure 2. Scraper

then every part of the legs and the arms are scratched with the scraper. After scraping, the blood is running out, the skin is washed with water again and then the scraped legs and arms receive a good massage with a special tree oil, made by the owner of the house. Although during the process the oil adds to the burning feeling for a few minutes, the oil will help to heal the skin and prevent any infection. The people believe the scraping treatment helps renovation of the blood. New skin will grow, and this also helps to renew the skin cells and relieve muscular pain, in fact it is a kind of peeling treatment. The people said that the traditional way to deal with muscular pain is with scraping therapy. "One scraping, and the pain will disappear after a while."

The male rite of passage starts when their voice changes. During this period, they also experience some restriction of movement and a special diet. The boy drinks special teas to strengthen their lower and upper body muscles. Their arms are also shaped with cords. The boy has to practice a lot of exercises to shape his body and to become strong and invigorated young person. The ultimate goal is perhaps to become a *huka-huka* champion. For their son to be a renowned *Huka-huka* fighter, or a musician, or a spiritual leader is the highest aspiration for any Awetý family.

Onomastic system. Each child receives in the rituals after birth, following the loss of the umbilical cord, two names. If the child is a girl, she receives the names of each of the maternal grandmother and the paternal grandmother. If the child is a boy, he receives the names of each of the maternal grandfather and the paternal grandfather. However, Awetý individuals are named twice in their lifetime. The child will receive new names at the end of the rite of passage to adulthood described above. The second pair of names is given following the same rule as for the first name giving. Since each adult individual has four names, each grandparent can give up to four names to grandchildren, which means that for any married couple, two children of each gender

can be named using the grandparents' names. If they have more than two children of any gender, the names given are taken from one generation back, from the great grandparents, so that in any nuclear family, no two people of the same generation will have the same names.

To repeat these rules for clarification: If a couple has a boy, his first pair of names is from his (great-) grandfather's names from the father's and mother's side. When the boy becomes an adult, he will have a second pair of names, also from his (great-) grandfather's names from both father's and mother's side. If the child is a girl, she will have as the first pair of names her (great-) grandmothers' names from both parent's sides. When she becomes a young adult, she will receive her (great-) grandmother's names from both sides too. For both men and women, only the second pair of names will be used during adulthood.

This onomastic system is important for the rules that govern what any person may be called by another person. In Awetý culture, it is strictly prohibited for anyone to pronounce the names of in-laws. So, the maternal family members are allowed to use only the name from the maternal, and the paternal family members are allowed to use only the name from the paternal (great-) grandparents. It is also important to note that Awetý (and Kamaiurá) people use different grammatical markers in everyday language, depending on the gender of the speaker (see below).

Death and funeral. The Awetý ways to deal with death and grieving are similar with Kamaiurá practices described below. When a person dies, he or she will become a spirit, and the spirit goes to live with the other dead relatives (but not in a "spirit world"; human spirits and humans all exist in the same world). All the belongings of the deceased are burned, nothing is left behind. The Awetý believe that, if anything is

left unburnt the deceased will come back to reclaim it. He or she will be incorporated in the body of an animal and will haunt the family, asking for their stuff back. The ultimate rule is that the stuff belonging to the deceased should never be kept by anyone, and failure to follow this rule puts the living person in danger of death.

The funeral ritual, *kwaryp,* is organised by the *Morekwat Katu*. If the deceased was a leader, or a member of a leader's family or has some has some leadership family background, their bodies will be buried face up in a lying down position inside their hammock. The people say that this is the sleeping position. The community provides a large hole to receive the deceased lying in his hammock. Ordinary people who are not of leadership background are buried in accordance with the ancestral custom: this may be in a standing position, a sitting position or a lying position (but not in the hammock).

The leaders decide the place where the body will be buried. If the deceased was a leader he or she can be buried in the middle of the village. The leaders, together with the family of the deceased, decide when and how this ritual happens. After the grieving period (this can vary, up to two or three years) the leaders and the community will organise the *Kwaryp*. This ritual allows the family to reflect on the life of the deceased person and to achieve closure, in the sense that they will no longer feel sadness and grief.

Supernatural beings. The Awetý people believe in Supernatural beings. The beings are present in their myths, their narratives and in their everyday life. The spirit called *Kat* is around in the real life and it can represent both good and danger to the community and to individuals. For the Awetý, *Kat* is a spirit being who can be very angry, very sentimental and can feel offended and can offend too. *Kat* is present in the

domestic environment, inside the house and outside the house. It can be close to you. It sees and hears everyone everywhere. *Kat* does not like impulsive and abusive persons. (Wary Kamaiurá Sabino, personal communication 2018). According to Vanzolini (2015), the term and the definition *Kat* does not exactly designate a class of beings, but rather a common feature to characterize a variety of beings, something that can manifest potentially in everything or almost everything that exists in Awetý culture (p.139).

Tupijaritat and sorcery. A *Tupijaritat, feiticeiro*, 'sorcerer' is a manipulator of things (fetishes) to bring harm to people by supernatural means. *Tupijaritat* is invariably a man, never a woman. He uses bad *kat* to help him to hurt someone. The process of cursing or bewitching is done through an object that has belonged the victim, such as piece of necklace, piece of hair, belt, *urucum* paint, piece of clothing etc. The fetish object can also be something that is just in the vicinity of the victim. For Awetý, "*mo'at e'jm tupiat itaza"*, 'the sorcerer is not human' (Vanzolini, 2015, p.138), he has no heart or conscience. Vanzolini (2015) provides a full description of *feitiçaria* 'sorcery' and its relationship with kinship and social relationships between individuals in Awetý culture. Her argument is that the sorcery is often performed by a relative of the family member, and their motive to harm the person is linked to jealousy and envy within the family or between families: *temyzotu.* If somehow the interaction and relationship within and between family produces *temyzoty* the *Tupijaritat* most certainly will appear (Vanzolini, 2015, p. 22).

This brief cultural description hopefully helped to contextualise the present study in terms of how Awetý society and culture is organised, and how the people interact with each other and the world. However, it is important to point out that although the Awetý language is vital, living and spoken on a daily basis, many traditional customs and

knowledges are under threat of disappearance. For example, the singers, the story tellers who chronicle the history, the traditional builders and the handcrafters have all declined in number in the recent years. The people told me that the elderly who are the keepers of cultural knowledge are dying, and every day and every year knowledge is being lost. Traditionally, knowledge is transmitted orally. However, this mode of transmission no longer constitutes a practice used by the younger members. For this reason, during this fieldwork, many people from the community spoke out about the necessity of systematic documentation of Awetý culture. There is a need and a drive in the community to document and transmit cultural knowledge through alternative means, such as books and videos. The Awetý knowledge, their beliefs, their interpretations, and their practices explain their origin and the evolution of their universe. Their cosmology is an essential component of their identity as group and individual.

2.4 Time in Awetý grammar: an outline description.

The Awetý language is Tupian, and closely related to (but not classified as belonging to) the large Tupi-Guarani linguistic family, which is the largest family of Tupi stock (Rodrigues 1964, 1985; Drude, 2006; 2008; Dietrich, 2010; Rodrigues and Cabral 2012). Although there is no detailed typological research on the Awetý language, researchers agree that word order is SOV, with intransitive word order VS or SV. "The Tupian languages generally follow the word orders object + verb, possessor + possessed, noun + adjective, determiner + postposition. Tupian languages are head-final: dependent clauses precede main clauses, complements precede the verb, subordinate clauses precede subordinating ones, and complement verbs precede main verbs" (Rodrigues and Cabral, 2012, p. 510).

Although there has been considerable research over the last forty years, the language is not yet fully described. The first major work was published by (Monserrat, 1976) who gave a morphological description of person prefixes in Awetý languages. In this work, she identified the gendered speech or 'genderlect' differences which were later confirmed by Drude, (2002) in his work Fala Masculina e Feminina em Awetý (Masculine and feminine speech in Awetý, 2002).

According to these authors, the differences between the speech of men and the speech of women are manifested at the morphological and lexical level. The authors identified this difference in the pronouns, prefixes, and deictic terms. For example in Awetý the man says *atit* meaning 'I' and the woman says *ito* also meaning 'I'. These differences are also noted for 3rd-person singular and 3rd-person plural pronominals. The personal prefixes in male speech and female speech occur as noun forms which are nominalised verbs. In the Awetý they are three deictic positions to be considered: (1) close to the speaker, (2) to close to the listener, (3) distant from the speaker and the listener. In this deictic system there is a possible morphological relationship between the masculine and feminine forms. The masculine forms are marked by the presence of the syllable *-tä* that does not exist in the feminine speech (Drude, 2002, pp. 2,3,7-9). Regarding the lexicon, Drude (2002) argues that although there are gender marked words (specifically nouns), more research on this topic is required to understand their occurrence and word composition. In accordance with his primary results it seems there are not clearly defined different masculine and feminine lexicons..

We asked a female Awetý native speaker about the differences between men's and women's speech or and she said: "the woman speaks more gently (*calma*, *leve*) and the men speak harder (*duro*). In our culture it is so" (Yana Awetý, 2017; WhatsApp

conversation with Awetý speakers). This information suggests that the distinction is also a matter of discourse style.

Corrêa-da-Silva (2010) in her Phd Thesis presents an analysis of the affinities and linguistic relations between the Mawé, Awetý and Tupí-Guaraní families, all belonging to the Tupi stock, to identify socio-historical correlations between these languages. The starting point of her analysis was linguistic data, but she also considered historical documents, archaeological data, ethnographic and ethnohistorical studies. Her objective was to clarify the history of the last linguistic families to be recognised as part of the Tupi stock. She showed that proto-communities of Mawé, Awetí and Proto-Tupí-Guaraní shared the same cultural and adaptive tools and practices that enabled them to develop the efficient and adequate use of environmental resources for countless generations (Corrêa-da-Silva, 2010, pp. 361, 362). Borella (2000) also presents a preliminary morphosyntactic description of the Awetý language, on the basis of which she considered Awetý to be a "verb-adjective" language.

It is important to emphasize that besides these studies we now can count on the work of researchers who are native speakers of Awetý and Kamaiurá. Wary Kamaiurá Sabino and Aisanain Páltu Kamaiwrá both hold a Doctorate in Linguistics. The Masters dissertation of Sabino (2011) presents a very comprehensive comparative and historical description of Awetý and Kamaiurá (another Tupian-Guarani language, see below for more detail about the Kamaiurá language); which aimed to identify lexical and sound correspondences between these two languages. Throughout his dissertation, using lexical and phonological comparative study methods, he confirmed previous studies by Rodrigues (1997,1999, 2005, 2007) and Rodrigues and Cabral (2006, 2012). He argued that although there are many phonological and lexical characteristics in

common with languages of the Tupi-Guarani branch, Awetý does not belong to this branch, despite some proximity with Kamaiurá. Awetý, he concludes, is an isolate language within the Tupi stock (Rodrigues and Cabral, 2012, p.60). In his PhD thesis, Sabino (2016) presents a comprehensive description of the phonology, morphology and morphosyntax of the Awetý language. In addition to its purely scientific aims, this study is intended to contribute to the Awetý community and their language teaching, and didactic material for the Awetý schools. This work is the beginning of an extensive documentation of this language produced by the native researchers who do not wish their language only to survive in museums or linguistic databases (Sabino, 2016, p.184). The Awetý language is a vital language spoken by a small population, and their community will not let the language disappear (Kamaiurá, personal communication 2016 during fieldwork).

2.5 **Awetý Time Markers**

There is no fully comprehensive study of time in Awetý. In the Awetý language temporal concepts and relations are expressed by temporal suffixes (on both nouns and verbs) and temporal adverbs. As explained below, in Awetý, similarly to other Tupian languages, there is no tense (even though there is marking for future), but there is an aspectual system. Temporal aspect is marked by suffixes which indicate the continuous and/or progressive, future and perfective, in terms of either "state of being" for nominals, or more familiar "verbal aspect" (for verbs) . The notion of "state of being" is important for understanding Awetý (and more generally Tupian, and other indigenous South American) concepts of time (sse the description of the Huni Kuĩ grammar of time, section 3.2 above). The notion was introduced into the study of Awetý by Ruth Monserrat, who wrote the first descriptive linguistic accounts of the language.

Monserrat (1976) identified, on the basis of its inflectional morphology, a word class that she designated as "state" (*estado*), We can consider this as meaning "state of being". The *estado* word class is formed morphologically by the addition to either a noun or an adjective of one of six stative personal prefixes: 1st person singular, 2nd person singular, 1st person plural inclusive, 1st person plural exclusive, 2nd person plural and 3rd person plural, together with an aspectual suffix (Monserrat, 1976, p. 23). She described the state of being as "The resultant forms indicate a situation or transitory state of the [subject] which is the focus of the utterance" (Monserrat, 1976, p. 23, transl. by Author). These resultant forms she calls "stative themes" (*temas estativos*). A *stative theme* can be compared to a copular or existential construction in other languages, but the stative theme has no verb. As stated above, the root is a nominal derived either from a noun or an adjective. The stative themes always have a suffixal temporal aspect marker.

These temporal aspectual markers can be suffixed to verbs as well as to the root nominals of stative themes. Monserrat (1976, p. 23) identified three temporal suffixes. The suffix *-ju / -eju* indicates continuous and / or progressive (for stative themes) and continuous action (for verbs). The suffix *zoko* indicates a future state (for stative themes) and future actions (for verbs). The null morpheme - *Ø* indicates an achieved state for stative themes and a perfective for verbs (Sabino, 2016, pp. 129-139)

Drude (2008) identifies and analyses in more detail the occurrence of these suffixal markers in the Awetý language with regard to Tense, Aspect and Mood (T-A-M). He differs from Monserrat in designating what Monserrat calls "stative themes", which are nominals, as stative verbs (Drude, 2008, p. 14). The issue of nominal T-A-M, its differences from verbal T-A-M and its typology, is complex and will not be further discussed here (for more details see Judith Tonhauser, 2007; Muysken, 2008;

Nordlinger and Sadler, 2004). However, Drude confirmed that, as Monserrat previous suggested, the suffix *ju /-eju* denotes either an event in progress or, with the stative verb, a state being achieved. The suffix *–(z)oko* is characterised by Drude (2008) as belonging to another aspect category, which is labelled as Imperfective. According to Drude (2008) aspect in Awetý can be classified as Perfective (null), Progressive *–(e)ju* and Imperfective *–(z)oko* (p. 18).

Following his argument about mood and auxiliary particles, Drude suggests that in the Awetý language the only apparent tense marking is for future. He said future is marked by an auxiliary particle *tut,* which occurs in the second position of a clause and can be combined with a verb in the indicative or subjunctive mood. Adding to this description, he concluded that it is possible to distinguish between the category Future (marked by *tut*) and the unmarked category for an event that happens in the non-future (this includes the past, presents, permanent events, states, and situations (Drude, 2008, pp. 27-30). The future can also be marked by the auxiliary particle ***ari*** which he labeled a marker of as Reassured Future. Speakers use it when they know the action will happen and is one that is desired by the hearer (so it has a mood component). To make things even more interesting there are other particles that are used to identify "future" action. The particle *tutepe* also occur in the same linguistically environment as the others but "[the] event is not located somewhere on the time-line, but its non-occurring is presented as counterfactual" (Drude, 2008, p. 28). Since the particles *tut, ari, tutepe* all belong to the same grammatical category, Drude proposes that *tutepe* marks the category "So there is one tense category (Fut), two categories (Irr[ealis]and Frust[rative]) that are rather to be considered moods, and one category (Reassured Future) which is of a mixed character – and there is the unmarked category, Present Tense (non-future)" (Drude, 2008, p. 29).

Drude (2008) acknowledges that such an analysis is unsatisfactory because the categories are defined by criteria which do not share a common "point of view". His final overall argument is that verb form is best characterised by *factuality*, not time, and the category Factual (non-Future) is unmarked, while non-Factual can be marked by the following markers: Future *tut*, Reassured Future *ari*, Irrealis *tutepe* and Frustrative *tepe*. Time in the Awetý language is, according to this analysis, not represented according to a conceptual time line, but co-ordinated with or subordinated to utterance mood, aspect or factuality of the events. Drude argues that the "common point of view here is not time reference but rather 'factuality,' which can be subsumed to modality" (p.29), and his overall conclusion is that "Awetý does not have a tense classification at all although it has a category Future (which is a tense in other languages)" (p.30).

This brief account makes it clear not only that the temporal categories in Awetý are differently organised than in languages such as English or Portuguese, but also the grammatical categories and word classes used in linguistic theory based on European languages are not satisfactory for understanding languages like Awetý. This point is also made by Dietrich (2010) in relation to tense, aspect and evidentiality in Guarani languages : "Maybe traditional categories as used by linguists are not proper for these languages." (p. 67) The most important conclusion is that there is no grammatical or conceptual timeline in the Awetý language. Time is organised in terms of "states of being" of both events and objects. In the Awetý language, objects seem to be conceptualised as participating in changing "states of being", rather than having unchanging essences. Objects, so to speak, are event-like. Therefore, in a sense we can say that (unlike in European cultures and languages) events are more fundamental in

the Awetý world view than objects. In the examples below these Markers and their meanings are described, along with examples of usage taken from my own data set.

Projection/desire (irrealis): ***tut***

(34)
ato ***tut***
a -to **tut**
1P go projection
'I [will] go'

Reassured Future: ***ari***

(35)
a -to ***ari***
1P go ATTEST
'I [will] go [for sure]'

Desire incompletive: ***tepe***

(36)
a -tet ***tepe***
1P sleep INCOMP
'I [will] sleep [not yet sleeping]'

Future irrealis (desire):

(37)
tutepe *e-ut-u*
FUT 2P-come-NOM.action
'wish [desire] to come'

Adverbial expressions. "There are few lexical adverbs in Awetý. However, the adverbial function can also be exercised by adverbial locutions" (Sabino, 2016, p. 134). The following words and expressions were obtained from using the questionnaire and from conversations with Collaborating Researcher Dr Wary Sabino.

Ko'jem 'Tomorrow'

(38)
Ko'jem *a-'ajpok*
Tomorrow 1P return
'Tomorrow I will come back'

Ko'jem tiwo 'after tomorrow'

(39)
ko'jem tiwo *tut i- tutu*
tomorrow after FUT 1P come
'after tomorrow I will come'

-Nywo 'when'

(40)
a- ka'ru, *na-**nywo*** *i-* *ty'aput*
1P eat when 1P satisfied
'when I eat I [was] satisfied'

Ma me 'right now'

(41)
nawỹj *y* *kyty* ***ma me***
Go water DAT right now
'Now we are going to bathe'

Ma a'yn 'now'

(42)
O- te *-ju* ***ma a'yn***
3P sleep STAT now
'They will sleep now'

This implies uncertainty about the event, in opposition to example (41) where is certain that the event is 'happening' now.

Ma'yto (a little while ago, just now)

(43)
ma'yto *o-to* *kyty*
just now 3P-go DAT
'he went just now'

In relation to examples (41-43): ***Ma'ẽ*** is a spatio-temporal deictic demonstrative meaning 'this', 'here' or 'now' (Sabino, 2016, pp. 76-77). The root ***ma*** cannot occur on its own without a suffix.

Ãtiwo (today/after)

(44)
Ãtiwo *i-* *to'ota'ryp* *totempu*
today 1P friend arrive
'Today my friend arrives'

Moite (early [in the day])

(45)
Moite *minta* *a-* *jzyk*
early hook 1P jogar
'Early in the day/today I fished'

Mimo (yesterday)

(46)
Mimo e- take- ju
yesterday 2P cry STAT
'yesterday you cried'

Before/Ahead and Behind/After: The term ***ytang*** has the spatial meaning 'at the front of', 'ahead of', 'in the presence of'. It is one of a small class of mainly spatial relational terms (Sabino, 2016, p. 79), but it is not part of the class of locative postpositions and does not have the meaning 'in front of' as in 'in front of the house'.

(47)
Ytang *i-* *to-* *tu*
Ahead 1P go NOM
'My going ahead/I go ahead'

(Example from Sabino, 2016, p. 136).

Ytang can also have a temporal meaning, which can be glossed as either "before" or "in the past". The translation equivalent offered for "before" was the expression ***ytang ne***, but the morpheme ***ytang*** can be prefixed to other morphemes to produce an adverbial expression.

(48)

ytang*-a'yr-ijan*	*ozo-*	*to -tu- rijan*	
before-ATTEN-still	1P.PL.EXCL.	go-NOM-still	
n- upaw	*a-*	*pap*	*a'yn*
REL-place	1P -	clear	ASSERT

‘Long ago, there still was a place to go and clear’

(Example extract from narrative, from Sabino, 2016, p. 191).

The terms ***atiwo/atiwari*** have the attested temporal meaning ‘after’, but it cannot be established from my data or from the literature whether it also has a spatial meaning equivalent to ‘behind’ (there is a locative postposition, *akiheri*, that means ‘behind’, but this is not used temporally, Borella, 2000, p. 202).

(49)

Atiwo	*i-*	*to-*	*tu*
After	1P	go	NOM
‘I go after’			
Atiwari	*i-*	*to-*	*tu*
After	1P	go	NOM
‘I go after’			

(Example from Sabino, 2016, p. 136)

The root ***–tiwo*** ‘after’ also appears in example (39), ***Ko’jem tiwo*** (after tomorrow).

Summary. This survey of the organization of time in Awetý grammar demonstrates that temporal meanings in this language are “packaged” in ways that do not correspond with the familiar distinctions made by Indo-European languages. The same way as Hãtxa Kuĩ, the “time” marking (that is, marking of past and present/future) in Kamaiurá is not comparable or equivalent to a tense system. This language conveys

temporal marker linked completion or incompletion at the time of utterance, rather than before/after relations in relation to time of utterance. A more detailed discussion about the temporal schemas is provided in Chapters 5.

2.6 Kamaiurá

The Kamaiurá community (also known as *Camaiura, Kamaiurá, Kamayirá*) lives in Upper Xingu Park. The Kamaiurá language (considered by Ethnologue to be vigorous see https://www.ethnologue.com/language/kay) belongs to the Tupi-Guarani family. The population is around 650 people living in two separate villages: *Ipawu* and *Morená* . The field work took place in *Ipawu* village, which at the time of the field work in 2015 and 2016 had a population of around 350 people. All Kamaiurá people speak Kamaiurá and other languages.

According to the Kamaiurá history, in the past Kamaiurá used to be part of a larger group living together in another place, before migrating to the Upper Xingu. After contact with non-indigenous people, fear of conflicts and wars led to many Kamaiurá families fleeing from their old village. Those who first left the old village went along a big river and then later the remaining group tried to follow the first migration and went by a different pathway, called *caminho da anta* 'path of the tapir'. Together with Kamaiurá, there was another neighbouring community called *Waura*, who also left and went in the same direction. As a result of this escape Kamaiurá arrived in the Xingu and chose to live by a big lake, named *Ypawu* because in this place there were fewer mosquitos and the lagoon is sacred (Kamaiwrá, 2010, p. 20).

The Ypawu Sacred Lake. The legend says that another indigenous group called Mawaiaka used to live where the lake (which has changed its shape) is now located. The Kamaiurá people used to live in another place, which today is on the other side of

the lake. The story says that during a time of reclusion for the youngest Kamaiurá boys, people were drinking a special tea when suddenly a pigeon appeared, and this bird started to drink their tea. The pigeon drank all the tea from the tea container or bowl. Someone saw this happening and ran to the house, and shouted: "Look, the bird is drinking the tea!" The people in the house ran out towards the bird and it flew away. People followed the bird until it arrived in the *Mawaiaka* village. They found the bird on top of a house and then the bird started gushing water from its beak. This water was the tea that the bird had drunk before. The bird spilled out the water until the evening, when the water flooded the village. The village disappeared completely. Many people died in their houses. However, meanwhile there was another group harvesting in the field far away from the village. When they came back they saw the devastation. They could not see any houses any more, only water, the water was everywhere. They tried to drain the river at several points, but just managed to get water out from some points, making the lake take on the shape it has today. The people never succeeded to drain the water completely. The entire population of *Mawaiaka* disappeared into the lake. For this reason, the lake is sacred for the Kamaiurá people (personal communication by Mauricio Kamayura, 2016). This narrative is also cited in Kamaiwrá (2010) who reports that there are also other versions of this narrative described by Galvão, (1996) and Samain (1991).

Figure 3. Kamaiurá House

The village and the community. The Kamaiurá, like other communities living in the Upper Xingu area, live in large communal houses, distributed in a circle around an open space, where the men's house is located. Ipawu villagers' houses are very wide and long, more than 100 meters in

length and at least 50 meters wide (Figure 3.). The house only has one front door and one back door in the same direction, from one door it is possible to see through the other because the doors are aligned, this makes the corners of the house dark. The house has a very high ceiling, more than 10 meters high. The house is built by the members of the community who retain the knowledge and skills to build the traditional houses. In general, this traditional architecture is taught when they are building the house, normally the entire family helps to build, and the younger generation is taught during the process. The family members are responsible for collecting the material necessary to build the house from the forest. In some cases, people have to travel a long way by boat and walk a great distance to find the right timber and the right thatch (*Imperata Brasiliensis Trin)* to cover the house. Fig. 3 is a photo of a newly built house which was constructed by our host family in the village.

The youngest brother of the leading nuclear family has the skills to build such a construction. He taught the highest-ranking woman of the house and her brother (who are members of the leading family) to build it. They are very proud of the result and what they achieved by building the house. They are also very proud to be able to pass on the knowledge about the use of ties (knots) with lianas to hold the house structure together. The skill to build such a house is valuable to everyone because the building is a massive and impressive structure. The time required to complete the house is around eight months. The house is divided into different spaces, each occupied by one of the families who are living together. However, there are no walls or physical divisions. The cooking fire occupies the centre of the house, where everybody comes together to have their meals. As well as nuclear families, relatives such as nephews, nieces, uncles, aunts, and older family members, are living with the leading family. In

the house depicted in Fig. 3, at the time that I stayed there, there were 15 people living. In other houses there were a larger or smaller number of occupants.

In the patio of the village surrounded by all the houses, there is a central point. In this central point of the *hoka´yterip* (square) is the men's house, known as *tapuwí*, the house of the flute. The sacred flute *YaKuĩ* cannot be seen or touched by females. The centre of the village is considered to be a male space; however, on occasions women can be seen there if they are invited by the chief. The men's house is the collective place for men to interact when they are smoking *Kawytet* (tobacco), playing dominos, discussing issues in the village, planning festivals, planning new constructions and so forth. It is also a place to host the headquarters for festivals such as *Huka-huka* matches, football tournaments, and other traditional events. Furthermore, it is the place to receive and give a welcome to visitors and a place to exchange gifts between the guest and community. For example, when we arrived in the village the reception was in the centre, where we gave the presents to the community leaders and they reciprocated with a welcome to their village, talking about their culture, and the people cooked chicken and shared it with everybody there. Everybody was so happy to have our visit and eager to show the way they live. All the presents were shared with all the members of the community. The exchange of presents between guests and hosts and between members of the family is important in the community. Everybody gives and receives presents on an everyday basis. The exchange of goods between groups, too, is a common practice inside the upper Xingu. The generosity of giving brings with it prestige between the communities.

Division of labour. The Kamaiurá society shows similarity with the Awetý division of labour. There is women's work and man's work. The domestic tasks such as looking after the young children, cooking, harvesting, planting some crops (sometimes the

entire family is involved) and handcrafting are responsibilities of the women. However, when a woman has their menstruation, which is considered an impure period, the woman is prohibited from going to many places, for example, she cannot fish or follow her husband to hunt or travel in the forest. Going out to fish and preparing the land for planting is a man's job. However, the men also make some artefacts such as the sacred flutes, bows, arrows and boats.

Onomastics. The name-giving practices are similar to the Awetý culture (see Section 3.3). When a child is born, if it is a boy, when the umbilical cord drops off the child will receive the first set of names from their grandfathers and will receive an earring too. If it is a girl she will received the first set of names from their grandmothers. In the Kamaiurá culture they also will received their second set of names after the rite of passage from child to adult, for boys and girls, in the same way as in the Awetý culture.

Newborns. Among the Kamaiurá, when a woman gets pregnant the couple will have a special diet together to make sure the foetus will grow well and healthy. After the newborn arrives the father stays at home in a kind of reclusion period. He will stay inside the house until the infant is crawling. During this period some rituals will occur. The first one is when the infant's umbilical cord drops off. Previous to this the infant is referred to as a 'boy' or 'girl' without a name (see Chapter 5). After naming, the infant is categorised as being in a different life stage: *ta'yi* 'vagina', 'girl'; *pi'a* 'testicles', 'boy'. The father stays inside the house, avoiding outside activities, until the child starts walking. The father needs to be under this regime because he will help inside the house with the child care. There are restrictions on his diet. The wife will carry on with her everyday work, but also will have a special diet, to give the child health and strength.

Subsistence agriculture. The Kamaiurá economy is based upon small-scale subsistence agriculture. The preferred crop is manioc, the main component for the Kamaiurá diet, while corn and banana are also cultivated. They also collect the wild fruits of the region, *piqui, mangaba* and other wild berries. Their diet is the same as the Awetý. They eat fish, *beiju*, porridge of beiju (*Mingau de beiju*), chilli peppers (*Pimenta*), mashed fish (*Pirão de Peixe*), Barbecued fish (*peixe assado*), Grilled fish (*peixe moqueado*), and also small turtles, small animals such as *paca*; some birds for example, *Jacu* and *Mutum,* and small crabs from the lagoon.

Leisure activities. Again, these are similar to those of the Awetý, including *huka huka* and football. Men, women and children play every afternoon in the improvised football field in the middle of the village, which is divided into two football fields. There are four teams: two female teams, and two male teams. Every day they play against each other, training for the big tournament between the groups from Upper Xingu that takes place every year in the summer. The football practice for this community represents an important moment of interaction and leisure time between members from different families in the village. *Huka huka* is also a daily activity, there are teaching sessions every afternoon for boys and young men practicing for the Xingu tournament.

Community leaders. The *Morerekwat* is the Chief, and his deputy *Jeneywypy* can substitute for him when he is absent for any reason such as travelling or in sick leaving. Kamaiurá chiefdom is hereditary in the male line. The *Morerekwat* must have the same skills and qualities as described for Awetý. He must be a polite, caring, loving, smiling and joyful person. He needs to be happy and must have a good and positive attitude. When talking with people he should not be rough. He should welcome everyone to his home, giving drinks and food during the person's visit. These qualities and expected behaviours are extended to the *Morerekwat's* family. The respect must be mutual, the

Morerekwat must respect the community members and the community members owe obedience and respect to the *Morerekwat*.

The *Tawa Jat* (the owner of the land) is responsible for the administration of the land. For example, the *Tawa Jat* is responsible to deal with issues of housing, if a person or family from another ethnic group want to move in to the village, he invites other ethnic groups to the village and decides permission for visits of outsiders in the village. He also decides on behalf of the community the arrangements for funerals and the arrangements for the *Kwaryp*. This sub-chief has the responsibility to call all the men of the community to the centre of the village and ask for volunteers to dig the grave where the dead will be buried. He also decides how many holes are necessary to dig the grave, and in which posture (sitting, standing up, lying) the deceased will be buried. The *Tawa Jat* will consider the social status of the deceased; whether he/she was a leader, or an ordinary person. If he/she was a leader the deceased will be buried lying down in his hammock, and if an ordinary community member they will follow their ancestral ways, standing up, sitting down or lying down (Kamaiwra, 2010, p.17).

Je"Eng Ijat (the speech owner) and *Ojareko Ma'e* (the host) are responsible for talking with and welcoming visitors. They also give help and support to the Chief with communication and oratory skills. They have duties to find information about visitors and inform the Chief and the community about the purpose of the visit and which support it requires from the community; and invite visitors to the village from outside.

Pajé, traditional medicine. In Kamaiurá there are different healers and shamans, always men, who are responsible for curing the illnesses caused by evil spirits and witchcraft (*feiticeiro*) and for ensuring wellbeing. In the community there are: *Peju tat* (the ritualist) knows the healing prayers for people affected by sickness or evil eye.

Paje (shaman) possesses the knowledge of how to heal individuals who are possessed by evil spirits, and knows how to interpret dreams. *Ihwanungat* (white sorcerer) has knowledge of how to heal people affected by witchcraft. *Ywapoa jat* (herbalist) has the botanical knowledge to make traditional medicines to cure diseases. *Moang ijat* (Port. *feiticeiro* 'black sorcerer') knows how to make people very ill. Witchcraft is a practice that everyone in this community and other Xingu communities fears (Vazolini, 2006).

Death and Kwaryp. When a person dies, he or she returns to the beginning, they return to the starting point of all life. The Kamaiurá people believes that after death we return to nature. For example, when people get old they tend to become small, shrinking and when they die their soul does not return in human form or join the ancestors. Their soul will return to the forests, sometimes in animal form. After death, there is a long period of mourning of the deceased in which the relatives and friends perform many rituals, crying and feeling sadness for missing the presence of the person. All the deceased's belongings are burned, nobody will keep anything which used to belong to the dead person. The Kamaiurá, like the Awetý, celebrate the life of the deceased, saying goodbye through a ritual called *Kwaryp*. *Kwaryp* literally means "Joy of the Sun" this ritual offers an opportunity for the family and the community to reflect on the person, their life and death.

Kamaiwrá (2015) provides a thick description of the *Kwaryp* from a native perspective and discusses the rhetoric of the Kwaryp narrative. His work focuses particularly on the educational function of ritual for the Kamaiurá, and describes rhetorical strategies used in Kwaryp orations which make the speech both eloquent and didactic. The author argued that Kwaryp ritual is an instrument of transmission of cultural tradition and empowerment to strengthen the identity of the Kamaiurá people; and at the same time

is a community engagement exercise among the different ethnic groups in Upper Xingu, so providing an opportunity to strengthen relationships with other groups in the Xingu.

Kwaryp and myth. Kwaryp allows the Kamaiurá to reflect upon why people die. The ritual teaches about the deaths that have already taken place since the transformation of animals into human beings. A long time ago, the animals such as birds, fish, cutia (Dasyproctidae, a large rodent) and others used to speak like human beings. And then one day the Moon, the youngest brother of the Sun, became angry and decided to kill his grandfather the *cutia*. It was at this moment, the Kamaiurá people and other groups believe, that the first death occurred. At this time enmity appeared in all the groups, families and peoples. They say that this is why in every family there are fights between fathers and sons, and between brothers, and why there are quarrels between friends. People get angry and can kill each other when they become angry because they lose control and respect for others. Nowadays, we die because our enemies send bad things to us. Because of this people die of illness, accidents, and fights. These things were taught to us by our mythic heroes, the grandchildren of the Creator, Mautsini, who is the God of everything and who taught all things to us human beings (Kamaiwra, 2015, pp.16-17)

Mautsini is the ancestor (grandfather) of everyone in the world, He created all living beings, including the Sun and the Moon, and He organised the world for the Kamaiurá to live. This mythical narrative of Mautsini was recorded by Villas-Boas and Villas-Boas in 1970 and by others. For example, Junqueira and Vitti, (2009) described the ceremony of the Kwaryp, highlighting the social function of engagement between groups in the region. The Kwaryp narratives are described as practices that aim both to reaffirm social cohesion and express the ambiguity of relations between the different

groups, revealing a complex political network that surrounds the event. Seki (2010) published a collection of mythical narratives of the Kamayurá with Aisanan Paltu Kamaiwra and Wary Kamaiurá Sabino. The *Moronetajat* (storytellers) contributed to this collection that provides important historical/mythic information and insights into Kamaiurá culture.

Rites of Passage. Kamaiurá and Awetý seem to have similar rituals. The girls when they have their first menstrual period will enter the period of reclusion and will learn the skills of womanhood from their mothers and relatives; after a long period of learning, they will be ready to leave the house and be presented to society. During the reclusion period, the girl does not cut her hair. If there is a *Kwaryp* event, this is the ideal time to appear to the wider group, and when the girl is ready, she will have her hair cut and will receive her second set of names. The boys also undergo a period of reclusion, which commences when the voice breaks. In the same way as Awetý, the boys will drink special teas, and work out to improve their body shape and strengthen upper body muscles and become handsome young men. They also use the scraper treatment therapy and sickness tea therapy to as part of the necessary physical transformation (see Section 3.3), helping the boy to become a strong fighter who can later be a *huka-huka* champion, fulfilling the highest aspiration of the family.

2.7 Time in Kamaiurá grammar: an outline description.

The Kamaiurá language is classified as belonging to the Tupi-Guarani family, and as the sole extant member of Branch 7 (Rodrigues and Cabral, 2012 p. 499). The word order is in transitive clauses is SOV and in intransitive clauses as SV. It is a postpositional language, in which the genitive marker precedes the noun, and the auxiliary markers follow the main verb. Interrogative markers and interrogative words

are in initial position in the sentence. Demonstratives and modifiers follow the noun, and verbs of volition follow the main verb (Greenberg, 1963; Seki, 2000, pp. 45–46)

In the Kamaiurá language there occurs gendered speech or 'genderlect' differences that are grammaticalised in the language. According to Seki (2000, pp. 100-101), there are a set of particles that mark this distinction. The set for masculine speech are: *pa, wa, py, kwãj, ja,* and *ka* and for female speech are: *ma'e, Ø /ra'e, põj, kyn, (he)kyn and ky.* She argues that these particles express the attitude and emotional stance of the speaker. For example, the particles *pa/ma'e* are used in sentences or utterances that express surprise or exclamation.

For example, the same sentences (taken from my data; p.c. Wary Sabino, 2016) spoken by a male and a female speaker:

(50)
Pe *awyky* *yara* *kora'e**wa***
2P.PL make canoe MASC.SP
'You make a canoe (masculine speech)'

(51)
Pe *awyky* *yara* *ko**ra'e***
2P.PL make canoe FEM.SP
'You make a canoe (feminine speech)'

These examples are just for illustrate the way gender division are presented in the Kamaiurá language. It is important to note that this 'genderlect' is common in the region and related languages.

2.8 Kamaiurá Time Markers

In accordance with the previous description about the absence of tense in Tupian languages, Kamaiurá has no verbal tense. In general terms, as would be expected,

Kamaiurá and Awetý (see Section 3.4) seem to have similar ways to express time and temporal relations. Temporal relations are expressed by words and particles, which in many cases express aspect and mood, not tense. Two markers are used when referring to events in the future, after the time of utterance. The particle *in* (classed as 'projection', Sabino p.c.; or 'potential', Seki, 2000, p. 136) marks an event or action that is expected to occur in the future, at some point. The particle *korin* is analysed by Seki (2000, p. 136) as a combination of *ko'yt* (change of state) with *in*, and is used to refer to actions that are intended by the speaker, that will take place in the immediate future (see the discussion of "reassured future" in Awetý, Section 3.4). Futurity in Kamaiurá therefore fuses together notions of proximate *vs.* indeterminate future with notions of expectation *vs.* definite intention.

Past is marked by two particles that also express the evidential status of the event. The particles *rak* (attested, I/we witnessed the event) and *je* (reported, it is said that) both imply events that happened before the time of utterance. If there are no mood, aspect or temporal markers, the event can be understood to take place in the present or past (Seki, 2000, p. 136). The examples below, taken from my own data set, illustrate the usage of these markers and their meanings.

Projected future: ***in***

(52a)
ahan
a - *ha-* ***n***
1P. go FUT1
'I will go'

(52b)
akerin
a- *ker-* ***in***
1P sleep FUT1
'I will sleep'

Reassured future: ***Korin***

(53)
aha korin
a - *ha* ***korin***
1P. go FUT2
'I will [surely] go'

Attested past: ***rak***

(54)
ape'a rak
a- *pe'a* ***rak***
1P open ATTEST
'I opened (something)'

Reported Past: ***je***

(55)
okete je am
o-kete ***je*** *am*
3P- sleep REP here
'He [is said to have] slept here'

Adverbial expressions. Kamaiurá also has adverbial time expressions, including no less than five expressions referring to the present moment. Some of these involve combinations with *'ang*, which means means 'here', but which in some collocations takes on the temporal meaning "now": *'ang ete* 'right now', *'ang kõ* 'now', *Ko kõ* (affirmative immediately now, in answer to a question), *Ko kon* (affirmative now, 'in a minute'), *Ko korin* (affirmative now, 'in a bit'). In term of space the *'ang* is a deictic, which appeared to be linked with locative: 'here' as in *ang ako a'ewa* meaning 'here I am' (Seki,2010, p.77). Other temporal adverbs are: *'angamo* 'just now', 'earlier today', *arehe* 'later', 'later today', *ja'iwe* 'early in the morning', *ikue* 'yesterday', *o'iran* 'tomorrow', *o'irana mue* 'day after tomorrow', *a'awite tete* 'always', *ramue* 'when', 'then'. The following examples are from my own data:

'ang ete 'right now, this instant':

(56)
'ang ete jaha yp
'ang ete *ja-* *ha* *y* *-p*
ADV.NOW1 COLL go water POSTP.in
'Now we [go] [to bathe] in the river'

'ang kõ 'now':

(57)
Nerup o'ut ang kõ
Ner *-up* *o'ut* ***ang kõ***
Your -father 3P-come ADV.NOW2
'Your father comes now'

ko kõ 'right now' – Affirmative:

(58)
I'awyje? ***ko kõ***
I'awyje ? *ko kõ*
3.ready? ADV.NOW3
'Are you ready? Right now!'

ko kon 'now', 'in a minute' - Affirmative:

(59)
Ojemoypy? ***Ko kon***
O-jemo *-ypy?* ***Ko kon***
3-REFLEX start in a minute

ko korin 'now', 'in a bit' – Affirmative:

(60)
Awyje ijemoypyw? Kokorin
Awyje *i-jemoy-* *pyw?* ***Kokorin.***
Ready 1P. REFLEX. benning? In a bit
'Ready to start ? now, in a bit'

'angamo 'just now', 'earlier today':

(61)
Ayk angamo ka'a wi
A- *yk* ***angamo*** *ka'a* *wi*

1P- arrive PAST.IMM forest POSTP.from
'I arrived just now from the forest'

arehe 'later', 'later today':

(62)
.Arehe jere'irywa yki
Arehe *jere- 'irywa yki*
FUT.MED my friend arrive
'[Later] today my friend will arrive'

ja'iwe 'early in the morning':

(63)
já'iwe apinamomot
já'iwe *a- pinamomot*
early.morning 1P cast.hook
'Early today I fished'

Ikue 'yesterday':

(64)
Ikue ere jae'o
Ikue *ere* *jae'o*
Yesterday 2P cry
'Yesterday you cried'

o'iran 'tomorrow':

(65)
o'iran aha nepyra katy
o'iran *a- ha* *ne-pyra* *katy*
tomorrow 1P go your-house ADV.DEICTIC
'Tomorrow I will go to your house'

o'irana mue [Day] 'after tomorrow':

(66)
o'irana mue ajorin
O'irana mue a- jorin
Tomorrow when 1P come
'I will come the day after tomorrow'

mue also occurs as a constituent of ***–ramue***, 'when', below. ***O'irana mue*** probably may be used for more than one day after tomorrow.

a'awite tete 'always':

(67)
a'awite tete *ikow am*

a'awite	*tete*	*ikow*	*am*
similar	all	stay	here

'He always stays here'

ramue 'when':

(68)
akaru, a'e ***ramue*** *jerewek*

a-	*karu*	*a'e*	***ramue***	*jerewek*
1P	eat	this	when	satisfied

'When I ate I was satisfied'

"Aspectual" particles. According to Seki (2000, p. 132) there is no consistent marking of aspect, which can be expressed by reduplication of the verbal root, suffixation to a main verb of the root of a different verb (which seems to be the most productive form), auxiliary verbs and particles. Therefore, it seems that aspect in Kamaiurá is mostly expressed through modification of the verb. Seki does not specifically mention nominal aspectual or time suffixes but provides examples of particles suffixed to nouns. The particles do not only express aspect and are not always suffixes, sometimes functioning more like adverbials. Two particles express continuative, progressive or comitative notions, in relation either to past and continuing events (retrospective) or past/present/future continuing events. The following examples are from Seki (2000, pp. 87-88) but following the gloss formatting of this research.

We, -awe retrospective continuative: final particle

(69)
Amana oky ***we***

Amana	*o*	*-ky*	***we***
Rain	3P	rain	RETR

‘It is still raining’

(70)
ako ’am ikue we
a *-ko* *’am* *ikue* ***we***
1P be here yesterday RETR
‘I have been here since yesterday’

We, -awe retrospective continuative: nominal suffix

(71)
*Kunu’uma**we** oho*
Kunu’uma **-we** o -ho
Boy -RETR 3P -go
‘The boy also went’

Rane, -ane prospective continuative

(72)
Wetepe ne rak oro *etsak **ane** py*
Wetepe ne *rak* *oro* *etsak* ***ane*** *py*
all ASS. ATT. 1P.EXCL SEE PROSP MASC.SP
‘We all saw [the shining object]’

(73)
*0poroneta **rane***
0 *-poroneta* ***rane***
3P tell PROSP
‘He is telling [stories]’

(74)
*Ihuku atsa **rane** akon*
Ihuku *atsa* ***rane*** *a* *-ko* *-n*
Long DIM PROSP 1P be POT
‘I will stay here a little while’

Summary. This time search in the Kamaiurá grammar demonstrates the temporal meanings in this language are also "linked" in ways that do not correspond to the familiar system of Indo-European languages. However, it seems to correspond to the languages Hãtxa Kuĩ and Awetý. These languages have similar ways to mark "time" (i.e, marking past and present/future). As described here time in these three languages is not based on tense system. In fact, these languages convey time through temporal

markers linked to completion or incompletion at the time of utterance, rather than before/after relations in relation to time of utterance. This argument will be presented in detail in chapters 4 and 5.

Chapter 3. **Methodology**

This research project studied the way in which Kamaiurá, Awetý and Huni Kuĩ concepts of time are organised and expressed, in language structure, cosmologies, and everyday life. To research the concepts of time in these three different cultures in Brazil, it was necessary to use mixed methods because this gave more flexibility in the field and provided more support from different angles for the research arguments. The Author needed to be flexible and open minded to navigate the complexity of information emerging in the field research.

The methods used in this research varied from structured elicitation and comprehension tasks to open-ended questionnaires and interviews, enhanced by information from Ethnographic observations of traditional time reckoning practices. There was an anticipation of the need to be prepared to engage with people, organisations, and community members in different settings and situations. During the research period, the Author encountered many scenarios of cultural practices presenting a lot of challenges that needed to be rapidly and sensitively overcome.

This research addressed the interaction of language and culture, in a variety of situations that could not be predicted, and therefore did not involve testing a specific linguistic feature in a specific situation with controlled variables, but rather an act of interpretation of multiple cultural and language features in different environments and situations. There was a need for understanding cultural meanings, and this process requires mediation and interaction between individuals and groups of people and, sometimes, the interaction between individuals and objects. We cannot understand another culture immediately in one conversation, or through a pre-designed interview or questionnaire, without the risk of misinterpretation.

Moreover, it was considered that to research cultural concepts requires the unfolding of different layers of meanings. This scenario also demands understanding of the ways that people construct their explanations and their thoughts about the world. All humans are social beings and they interact with each other mainly through language. People talk with each other to express and to share feelings, to share and to express experiences and to communicate their ways of living in this world. The multiple methods employed were necessary to unravel how Kamaiurá, Awetý and Huni Kuĩ understand and conceptualize time.

The field work team. The field work was carried out with the collaboration of native speaker linguists and with the participation of members of each community. The engagement of the community and Collaborating Researchers was essential to the research methodology. The key roles of community members were designated as Collaborating Researcher, Research Consultant and Research Facilitator. The term Collaborating Researcher is used to identify the native speaker postdoctoral linguists who worked with the author, not only on this project but also in previous projects. They provided expert overviews of the entire dataset, assisted with data collection and analysis, helped secure access to the villages, and facilitated communication with the villagers.

Research Consultants are all persons from the community who participated in the research by providing language and culture consultancy, conducted in data collection sessions. They actively participated in the entire process, providing data collected using all the different research instruments. The Research Consultants were supervised by the Collaborating Researchers and the researcher.

Research Facilitators are all persons from the community who participated actively in the project, helping with liaison with other members of the community, with translation during informal conversations, clarifying cultural information and operating recording equipment.

The number of participants in this research varied in each community. In Awetý, 12 people participated. In Kamaiurá, 10 people were involved directly with the research and in Huni Kuĩ, 15 people were involved. In each community children, elderly, women, and men were included.

Community engagement and informed consent. The procedure to create engagement between the researchers and the community members followed a protocol which consisted of a formal conversation between the researcher, the Collaborating Researchers and community leaders (chiefs and other authorities such as shamans). The community leaders were briefed about the project, its project aims and methods. The leaders of each community gave their public endorsement to the project and our field work visits. During this process we had the opportunity to ask the community members for their support and permission. Informed consent for research participation was given verbally and collectively and was then registered in writing by the Collaborating Researchers.

The initial establishment of trust was mediated by the exchange of gifts. Gift exchange is a significant and highly appreciated cultural practice for these communities. In giving and receiving gifts a bridge of communication is constructed making it possible to establish a relationship of mutual respect, appreciation, trust, and friendship (Mauss, 1966). The research team was aware of this practice and tried to fulfil specific requests

from the community leaders, who were responsible for the further distribution of the gifts to community members.

Instruments, methods and procedures. The research employed multiple methods: open-ended questionnaire, interviews, structured language elicitation and comprehension tasks, and ethnographic study of traditional time reckoning practices.

(a) The **questionnaire** addressed the following topics: time adverbs, time interval terminology and concepts (seasons, festivals etc), social activities during the day and night, cardinal points, names of celestial bodies, numbers, spatial metaphors for time.

(b) The interview immediately followed the administration of the questionnaire in order to clarify, supplement and disambiguate the questionnaire data.

(c) The **elicitation and comprehension tasks consisted of**:

   i. Drawings or photos on cards representing temporal sequences: the human life course, the divisions of the day and the seasons and familiar crop life cycles. Consultants were asked to arrange the cards in accordance with their typical sequences, without instructions or cues being given about the configuration that they should follow; and to describe card arrangements (appendix B)

   ii. **Table top games** using dolls to elicit Moving Ego and Moving Time constructions.

(d) **Ethnographic observation.** The focus of this research was not to produce a rounded ethnography of the communities, but specifically to understand cultural concepts of time, their linguistic expression, and the ways they are embedded in social life. Ethnographic observations mainly consisted of

> conversations about time concepts, either spontaneously occurring as part of everyday life, or emerging from structured discussions, sometimes in the context of the administration of the tasks, and sometimes in the context of demonstrations of time reckoning practices or engaging jointly in other activities such as crafting, fishing, food preparation, cooking, harvesting, hoeing.

Data recording, checking, transcription and analysis. All interactions with Research Consultants were audio and video recorded. The Author does not speak any of the languages, and therefore an elaborate procedure for checking the data, transcribing in the native language, and then translated it in Portuguese and analyzing it with the Collaborating Researchers was adopted. The procedure described here is for the questionnaire data; the procedure for other data followed a similar pattern.

The questionnaire was first tested with the Collaborating Researchers, and only afterwards administered to the other Research Consultants from the community. Questionnaires were transcribed together with the Collaborating Researchers, with Portuguese translation equivalents added. Divergent answers were identified in a questionnaire checking session and the Collaborating Researchers corrected or confirmed them and gave further information that he, in consultation with other Research Consultants, agreed to be appropriate responses. This checking process provoked a lot of discussion about the different words and concepts, on many occasions, gave the opportunity for the participants to explain why during the previous questionnaire session they might have said things differently or in a different way.

A second round of data checking involved the Author and each Collaborating Researcher working through the transcripts with the questions and Portuguese

translations removed. The first author asked for an explanation for each word in the transcript. This session focused on pronunciation, meaning and context of use. This process of checking "words only" was then carried out with other Research Consultants in order to establish intersubjective agreement and as exhaustive explanation as possible.

After this double-checking process in the field, the data from the questionnaire was digitised. The result is a list of words and an explanation about each meaning and how it is used in everyday context, with its nearest translation equivalent to Portuguese. In this way we created an inventory of time interval concepts and semantically related words in each language investigated.

These inventories were then checked one more time, post field work, by the Collaborating Researchers, who checked the inventory again and if they identified remaining inaccurate words that were not written correctly they made further corrections. All corrections were made by the Collaborating Researchers, on the basis of their judgement and their expertise as native speaker, trained linguist and fluent Portuguese speaker. Only after this procedure was the information contained in the inventory approved by the Collaborating Researchers.

It should be emphasised that there is great concern in the communities about the accuracy of information gathered by outsiders regarding their culture and language. The communities expressed anxiety that when things are said "wrongly" it can have negative implications for the community and their surrounding social environment. In order to fulfil the "contractual expectation" and to avoid misinterpretation, communication between the research and the Collaborating Researchers was maintained both during and after the field work trips, with constant discussion of the

data analysis and the writing up of the data summaries. Everything that is reported in this thesis has the approval of the Collaborating Researchers and the communities.

3.1 Why do we use multiple methods in this research?

There are two main methodological traditions in the study of language and culture. One is the most longstanding and is ethnographic observation. This tradition dates from as far back as the Ancient Greek historian Herodotus, who wrote about the customs of the Persians and Scythians (Sluka and Robben, 2007, p. 10). Darwin also observed the native peoples of the lands that he visited and initiated comparative psychological anthropology with his work on the Expression of Emotions in Animals and Man (Darwin, 1872). This was influential in the work of the early British anthropologists such as Rivers and Radcliffe-Brown (Sluka and Robben, 2007, p. 10).

Ethnography. Classical ethnographic fieldwork in anthropology was developed further by British researchers such as Malinowski, who emphasised the importance of long-term field work in which the anthropologist lives amongst the people "to discover how the people thought, behaved and saw the world. Malinowski hoped thus to 'grasp the native's point of view' as complementary to the more objective observer's perspective" (Malinowski, 1922, p. 25; Sluka and Robben, 2007, p. 12) However, linguistic anthropology was pioneered in the United States by Franz Boas. Franz Boas' work demonstrated how ethnography has influenced research perspectives to understand language and culture. Boas (1911) criticised the idea that different "races" have different mental capacities and that cultural differences are due to mental differences. This assumption of racial inequality and white supremacy was common in 19th century European thought. Although Boas in his early work believed that some cultures were more advanced than others, he challenged the assumption that this was

due to different mental abilities: “the development of culture must not be confounded with the development of mind. Culture is an expression of the achievements of the mind and shows the cumulative effects of the activities of many minds. But it is not an expression of the organization of the minds constituting the community, which may in no way differ from the minds of a community occupying a much more advanced stage of culture” (Boas, 1911, p. 11). This led him to be the pioneer of cultural relativism and to criticize all forms of racial and cultural prejudice:

> It is somewhat difficult for us to recognize that the value which we attribute to our own civilization is due to the fact that we participate in this civilization, and that it has been controlling all our actions since the time of our birth; but it is certainly conceivable that there may be other civilizations … although it may be impossible for us to appreciate their values without having grown up under their influence. The general theory of valuation of human activities, as taught by anthropological research, teaches us a higher tolerance than the one which we now profess (Boas, 1911, p. 11).

Boas and his students later produced a vast amount of studies about Native American languages and cultures, published in the *Handbook of American Indian Languages* (Boas, 1911). He re-evaluated Indian languages and the concept of the ‘primitive’, redefining the differences in culture and languages. Boas did not believe in the concept of a “primitive language”, emphasising that all languages are equally complex. During this period, he also articulated further the principle of relativism and its methods, emphasizing the *emic* perspective which strives to describe culture from the perspective of the “insider view”. This emphasis on the diversity and equality of human cultures was an argument against racial determinism, xenophobia, ethnocentrism and nationalist supremacy.

Boas was also interested in the relationship between language and thought, in fact he believed that the study of language was part of the development of a cultural approach to psychology. He wrote: "a theoretical study of Indian languages is not less important than a practical knowledge of them … the purely linguistic inquiry is part and parcel of the thorough investigation of the psychology of the peoples of the world" (Boas, 1911, p. 63). In this way Boas laid the foundation for the theory of the *linguistic relativity* of thought developed by his student Edward Sapir, and Sapir's student Benjamin Lee Whorf (Ball, 2012; Leavitt, 2010).

Two other aspects of the legacy of Boas for the study of language and culture are also relevant for this research. Boas and his students documented extensively Native American languages, and he is considered by many scholars to be the harbinger of modern approaches to language documentation (Austin and Sallabank, 2011). Boas believed that it was important to preserve indigenous cultural and linguistic forms because of their contribution to understanding indigenous philosophies. This "presumed that indigenous languages and cultures were disappearing and that artefact production was a key to their preservation, if only for posterity" (Ball, 2012, p. 206) and this led to the movement for the documentation of endangered languages. Boas' legacy therefore comprises the precedent for the notion of language revitalization through language and culture documentation (Greenhouse, 2010; Handman, 2009).

Finally, Boas in his later work opposed evolutionary approaches to cultural comparison, preferring to understand each culture in terms of its own particular history and way of life. However, he recognised that some cultures and languages (for example, the peoples of the North-West Pacific coast) showed similarities based upon their proximity to each other and the common natural environment. This was the idea of the "cultural area". Linguists (including Edward Sapir) have also studied "areal

features" shared by languages that are not genetically related, and this notion of "cultural linguistic area" was important in the design of this study, which involved two genetically related languages and one unrelated language, all from the Equatorial area of Brazil comprising Great Amazonia and the Xingu Park.

Ingold (2014) explains that ethnography is rooted in anthropological field research, and this cannot be mistaken as a mere description of an event or society and it is not simply a method for collecting a particular set of data. Ethnography involves a perspective on language and communication including anthropology and epistemology. Ethnography in its full meaning is not only a description, but a "thick description" in accordance with Geertz (1973). The ethnography is the result of work done by a researcher who has been involved in a complex relationship between people, places, objects and acts. This relation has been intertwined with different layers of interpretations and a merely superficial description cannot see such a process, which definitely is not possible, much less available for an outsider observer. Thick description is a semiotic enterprise in which all relevant aspects of the symbolic meanings of practices are explored and interpreted. This type of research is very demanding in terms of time, requiring the Author to live for long periods in the community. This was not a possibility for this research, so it was necessary to search for a methodology that would enable the goals of ethnographic research to be met within stricter time constraints.

Experiments. Ethnography is the prototype of qualitative methods, whereas experiment is the prototype of quantitative methods. The debate about the qualitative versus quantitative methods is not new, in terms of philosophical debate its can be traced from the 19th century where can be found the discussion about the distinction between the natural sciences (*Naturwissenschaften*) and the human sciences

(*Geisteswissenschaften*) (Dilthey, 1894/1977 cited in Makkreel, 2016; Blumer, 1969; Harré and Secord, 1972). The discussions have had a focus on the object of research, the meaning of the object, and understanding of a given particular phenomenon. For the natural sciences, the *object* and its features are the focus of their investigation; natural sciences are *nomothetic*, that is they are looking to find a general law. The *nomothetic* approach is *experimental* and based on measurement, which is the basis of all quantitative methods. The use of experiments in cultural (and cross-cultural) psychology also has a long history. The early work by Rivers and others is mentioned above. The Russian psychologist Luria (1976) and his colleagues carried out in 1931-1936 a pioneering study of cognition and learning in rural Uzbekistan.[8] The experimental study of cultural differences in cognition and perception was continued by Bruner and his colleagues (see Bruner, Olver, Greenfield, and Studies, 1966) and Cole and Bruner (1971). However, as Cole and others have pointed out, there is a conflict between the assumptions of the nomothetic method (aiming at general laws) and the attempt to understand cultural differences in psychological processes, because the methods often disadvantage non-Western people. In his foreword to Cole et al. (1971), the cognitive psychologist George Miller wrote:

> Unfortunately, most psychologists are poorly prepared by education or acculturation to understand the mental processes of people living in relatively static, traditional cultures or to grasp the full implications of the fact such people's experiences have not required them to develop and use many of the

[8] The study was planned by Luria together with Vygotsky, who was too ill to participate in the field work and died not long afterwards.

> cognitive strategies that our Western experience has instilled in us (Cole et al., 1971: ix).

The nomothetic framework is aiming at invariant and replicable results derived from hypothesis testing and measurement. This involves controlling variables in a laboratory setting, testing the significance of the results based on a statistical analysis and manipulating data using preconceived models. From this perspective field research (and ethnographic research) is limited because it is impossible to control variables and therefore it may not be possible to be replicated. However, it is also possible to advocate that replicability is not typical of the flow of cognition and communication in the natural context because the aim of the field work is to understand and to grasp the way the event is happening in the real life and how its represent the experience of everyday activities. Experiments are not scientific "neutral ground" because the interactions and the materials have meanings which will be different for people with different cultural backgrounds. For the human science, the meaning and the understanding of a particular phenomenon is the main focus. This led Cole et al. (1994) to criticise the laboratory experimental method for its "ecological invalidity", and to argue for different field experiment methods that would be ecologically valid, entrenched in a familiar social context.

Mixing methods. Ethnography and laboratory experiment are the "ideal types" of qualitative and quantitative research. However, it can be argued that the methods can be combined. For example, in social science, triangulation is defined as the combination of data and methods (Olsen, 2004). Considering this possibility to conduct a research combining different methods and optimizing the results, we need to pay special attention to the fact that the combination is between two perspectives (nomothetic and ideographic) and their very different epistemological foundations.

This is not simple, but it has advantages: “it is not simply that qualitative research can be conducted from a number of different ontological and epistemological perspectives. It is also that there are significant advantages to incorporating diverse, even ‘contradictory’, epistemologies in one's conceptualisation and practice of qualitative research.” (Maxwell, 2011, p. 11). Therefore, this research recognised this complexity and opted to use not a simple combination but a synthesis of *field experiment and qualitative observation* (ethnography) as the ideal approach to investigate the concepts of time in language and culture. During the process, it was possible to evaluate the advantages and disadvantages of the synthesis considering the opposition: Interpretive, qualitative versus experimental, quantitative methods.

The aim of this research was to understand the social process, social practices and the network of social relations that embed cultural concepts of time. In this research, therefore, the structured methods of questionnaire and elicitation tasks were used not to measure, quantify, or test the research hypotheses, but served as stimuli to provoke conversation about the ways people conceptualize and understand time. In this way, the qualitative framework was dominant, but with the advantages of structure that made it possible to conduct the field work in a limited time frame. The focal point was how and why people experience time in a certain way and to bring up an interpretation of events: “understanding the meaning of experience, actions and events as these are interpreted through the eyes of particular participants, researchers and (sub)cultures … in the context they typically or naturally occur.” (Henwood, 1996, p. 27).

Field Work as a Practice of Learning. Field work, when it is aiming to understand cultural practice and process, is not merely observation and data collection. It is a process of learning and a process of the development of social relationships. Grinevald

and Sinha (2016, p. 28) characterise field work as "Knowledge as practice/ practice as knowledge [that] can be thought of as encompassing both the know-how that underpins field research, and the reflexive stance that is *theoretically* enjoined on researchers in all disciplines that employ qualitative methods. It includes, but is not reducible to, knowledge of how to use technical equipment and software tools. Unfortunately, just such a reduction, that bypasses the difficult and complex questions of the theory and practice of ethnographic research, intercultural communication, field research ethics, indigenous rights and intellectual property, is all too common in the education and training of [Endangered Language Documentation] researchers."

Ingold (2014) says that, like education, participant observation is a process that involves both learning and unlearning. For Ingold (2014, p. 388) anthropology is "a practice dedicated to what Kenneth Burridge (1975, p. 10) has called *metanoia*: 'an ongoing series of transformations each one of which alters the predicates of being' […] anthropology is a quest for education in the original sense of the term." This is a highly personal process which changes the Auhtor as well as their relationships to those they study, and the Author as a researcher has "to join in correspondence with those with whom we learn or among whom we study, in a movement that goes forward rather than back in time" (Ingold, 2014, p. 390 see also Burridge, 1975). This relationship is based on trust and is entangled and subjective. In other words, ethnography is not only to gather data and describe the data but involves a more deeply established relation between agents.

3.2 Cultural intimacy and trust

Herzfeld (2005, p. 3) defines cultural intimacy as "the recognition of those aspects of a cultural identity that are considered a source of external embarrassment but that

nevertheless provide insiders with their assurance of common sociality." And for him "Cultural intimacy is not, for my purposes, the simple idea of acquaintance with a culture, although the term has sometimes been used in that generic sense. To the contrary, it is that part of a cultural identity that insiders do not want outsiders to get to know yet that those same insiders recognize as providing them with a comfort zone of guiltily non-normative carryings-on. These may include anything from recognizable patterns of sexual naughtiness to bribery and bureaucratic mismanagement of many kinds" (Herzfeld, 2013, p. 491).

During the field work the Author built a trust relationship with members of the communities who confidentially shared secret information about their culture. The sharing of this secret information (which is not reported in this thesis) was a part of the development of mutual trust, which gave the Author an exceptional opportunity to be part of this 'common sociality', where people's values and worldview were shared even though this could provoke embarrassment or disapproval from an external perspective.

To establish trusting and mutual interaction, confidence, and communication in the community, the Author and the community members created a bidirectional relationship of knowledge exchange, where the communities educated the Author researcher about the way they understand time; respectively the Author was asked to contribute with their skills in providing help and support to the communities and the family hosts in the villages. The attitude of openness enabled a more intimate communication related to different subjects, and above all allowed more spontaneous conversation about time, everyday time-related practices, and how time is conceptualised in the languages and cultures. The interaction between Collaborating Researchers and Researcher, in particular, was based on dialogical communication

(Bakhtin, 1981) and trust. In this way the research gave the community voices an opportunity to be heard and honoured. Increasingly in everyday life there is a need for consultation and recognition of community perspectives in the process of decision-making, and in relation to the cultural information and knowledge that is shared in the research context.

During our time visiting these communities we had to make a quick decision about how the research would be conducted. It was necessary to maximise the research time in the best way possible. It was considered that in fact the Author had developed a relationship of trust with the Collaborating Researchers some years earlier, through other previous research. The Author and the Collaborating Researchers had worked together beforehand, and they were very well informed about each other's research, so a partnership was already built. This made possible to develop a good interaction with their families who hosted the team during the staying in the village. The Collaborating Researchers' families did not take a long time to trust and to bring the Author in the family setting. Soon after we arrived in the villages, the families opened their houses and their hearts to accept the researcher. The host family immediately took the responsibility to look after the Author and their wellbeing during the entire time that the Author stayed in the village.

During this time, the Author acted in different roles in different situations. Mainly she stayed with the women's groups, helping them with everyday activities. However, there were times also that the Author went to fish with some male family member who was responsible for it, and during the fishing everyone wanted to give as much information as they could about fishing and species of fishes, which ones they eat every day and the ones they eat on special occasions.

This interaction made possible a close relationship to the point that the host family placed the Author in their own kinship relationship in the family. In one family the Author was the sister of the householder, and therefore the Author should help them with the cleaning of the fishes and go to the field to collect and process manioc. During this time, they taught me how to process the manioc, how to make the bread and how to collect the wood for the fire. On each occasion, we had long conversations about event-based time and how it is organised on an everyday basis.

This made it possible for the Author also to become an active participant in different rituals and celebrations, on one occasion being invited to dance in a festival; they explained the reasons why they promoted each specific event and gave me the context for any particular event, party or ceremony occurring in their culture. The majority of information about the cultures and the ways they think and talk about events are based on everyday experience in the villages. Looking, experiencing, and participating in activities gradually meant that the information about how the people in the cultures conceptualize time become more visible each day and the researcher's comprehension of the information shared deepened.

For example, during an interaction with the Huni Kuĩ Collaborating Researcher about the Elicitation and Comprehension tasks, a particular piece of information about his way to understand time came out. The Author explained the aim of the task and asked him to organise the pictures in the way he thought was right for him. The result was that it turned out in a different way than we anticipated. This unexpected result indicates that even though there was a timeline represented in the tasks, it was completely ignored by the Collaborating Researcher. He seemed to focus on the process of activities, such as planting manioc, not really on the sequence of the events.

During the period the Author stayed in his house together with his family, wife and children, the Author could see this emphasis represented in everyday life.

On another occasion, the organisation and management of the transport to go the village also gave the opportunity to grasp some information about time concepts in the Huni Kuĩ culture. Everything was based on the event (the trip) and its completion regardless its of its duration; the chronological time was completely ignored. This is exemplified by the fact that author was told to expect a travel time in numbers of days, (two days) on the river, to fulfil the Author's expectation about time duration and it turned out to be four days' travel instead.

During this travelling on the boat with twelve people on board we talked about different events and notions of time, and ways to think about time. After three days on the boat, the Author realised that time is not measured precisely, in fact, it is simply that, one event happens, and another event can happen too. It was said frequently, "we do, what we need to do, we are not like you who are thinking about *hours*. We are different!" The voyage took five days in total, one way, and during this time we sang, we talked, we described how life is and how people live in this part of the world. These moments cannot be captured in a questionnaire or in structured elicitation tasks. Although we did work with the questionnaire and the tasks in the boat, this served more as stimulus to start the conversation about time and the way Huni Kuĩ think and perceive time.

On another occasion, the information about the stars in Kamaiurá, would not be possible to obtain if the Author did not participate in the fishing days with the men. Each family has an expert person who is responsible for fishing. The fishermen are very proud to possess this knowledge about fishing, and the Author went fishing with

them on many occasions. During these moments a lot of information was shared about different aspects of Kamaiurá culture, such as the reason why they live in that particular region, why the lagoon is such an important foundation for the Kamaiurá identity, the existence of a "event-based constellation calendar", the importance of fish to the diet, the species of fish existent in the lagoon, events that trigger a particular way to fish and the way to live in the widest sense.

Each moment, each day, each event that we participated in was a moment of learning and interaction between the researcher, the collaborators researcher and the community members that also act as collaborators. We talked, we discussed life, we told our personal histories, and we bonded for a lasting friendship, with a lot of care and emotional attachment. Without these moments, this research would not have been possible.

3.3 Research Instruments: applications and implications in the field

3.3.1 Selecting the methods

The instruments used were open-ended questionnaires, interviews, structured elicitation, and comprehension tasks, all of which will be described in more detail in the next section. Here the advantages and disadvantages of each method will be discussed. Regarding questionnaires, it tends to be popular in many types of research and questionnaires and word lists are frequently used in language documentation and descriptive linguistic research. However, because the questionnaire is designed to answer particular questions it has limitations as a method. One limitation consists of not allowing a variety of complex answers to questions. Another major limitation with the questionnaire is to apply it to a bilingual context. As argued by Jakobson (1959), the translation of words to other "equivalent" words not only reflects the equivalence

between signs, but also must embed the cultural meaning. In this research context, the communication of information about the indigenous languages needs to be shared through a common language (Portuguese). Using a questionnaire assumes that there exist more or less accurate translations of terms between the languages; however we know that is often simply not the case. One example of this problem is the translation of the word 'month': although there seems to be a "translation equivalent" of this ('moon') in each of the three languages, this is misleading if it leads the Author to assume that the indigenous words are embedded in the same calendric schema as the Portuguese words. However, questionnaires are useful because they can lead on to further discussion in the form of a semi-structured interview. The semi-structured interview worked as a bridge between the Author and the interviewees. It was through a meaningful conversation that a relationship based on trust and care was established and this provided a flow of exchange and profound discussion about time in our research interest.

There are also many arguments about the advantage and disadvantages of lab experiment *vs* field experiment. The lab experiment does not reflect real life, it therefore, has low ecological validity. Field experiments on the other hand, are undertaken in the everyday life, the moment of the occurrence of the event in its everyday context, in real life. Although, there is still a degree of experimenter manipulation of the independent variable, it occurs in the real life context, and therefore it is impossible to control all extraneous variables. In fact, the extraneous variables arising from the situation studied will compose part of the information necessary to understand the event investigated. Therefore, it adds to the possibilities for understanding the event, and the behaviours in real life, increasing the ecological validity of the study. The freedom not to anticipate results based on hypotheses creates

the chances to consider and perceive other behaviours or phenomenon that may emerge in the natural situations. The social encounters that we had during this research were facilitated by using a combination of field experiments with other methods.

The cultural and language barrier between researcher and community members was also minimised by the active role of the Collaborating Researchers, from the beginning of the research to the writing up of the data. Many questions about this collaborative relationship rose through the process, but we tried to overcome the challenges and we believe that we successfully addressed them together. Throughout the research process the voices of the participants were considered, they had the authority to give opinions and change the research instruments. The collaborators decided to work with us and be part of the research voluntarily. Everything was checked and re-checked on different occasions to avoid misleading conclusions and research data being "lost in translation". This social relationship gave a distinctive dynamic to the project and deepened the interactive relations between the actors, because we learned from each other's experiences through participation, observation, seeing and listening. Furthermore, the process for establishing the accuracy of the information was based on ethical as well as methodological considerations, all issues that arose were discussed and considered throughout the research and writing up process.

3.3.2 *Questionnaire*

The questionnaire tool used in this study was developed through previous research (Silva Sinha, Sinha and Sampaio, 2012). It is a questionnaire-based interview protocol for the initial investigation of time concepts and space-time mapping. It addresses time adverbs, time interval terminology and calendric concepts (seasons, festivals etc), activities during the day and night, cardinal points, spatial metaphors for time (Moving

Ego, Moving Time, Fictive Motion, “looking back”, “looking forward”) and numbers their application in time reckoning; lexical (categorical and onomastic) and grammatical features expressing the stages of human life; terminology for celestial bodies and their motion and numbers.

The method is first used with a literate Collaborating Researchers who fills in the questionnaire, after which the Author conducts an in-depth interview. It should be emphasised that this kind of questionnaire-based research cannot assume the inter-translatability of indigenous languages to Portuguese, which is used as a meta-language. For this reason, the questionnaire and interview are an ongoing and developing methodology.

During the round checking issues related to reasons why there are differences in the answers, for the same questionnaires applied in different occasions. The answer given was that *“*we do not have these words, on the first questionnaire we only answered because we do not like to leave any question without a response, even it is wrong, we just did the questionnaire without many thoughts about it. Now we want to make this work correct with you and now we answered the questionnaire correctly*.”* (Kamaiurá Collaborating Researcher, 2016). This illustrated how the use of questionnaire is limited. The rounds checking with the collaborating researchers gave more accuracy to the data. Furthermore, the trust and the intimacy established between the Author and the collaborating researchers played a vital role on this relationship. If the Author did not establish a quality relationship with the collaborating researcher and the community members, this fact would not be raised, and the Author would not have considered this fact to be important or relevant, once the information was already given, and recorded.

The same situation happened with the words: *left* and *right* in all languages investigated. On the first moment that the questionnaire was applied, there was an answer to the question that referred to these words but when we these words were checked and discussed, other information emerged, they said that *left/right* is not the same in their cultures. In fact, they use deictic reference "this side" the "other side" or "up" *my head* and "down" *my feet*. They do not have the words *left* and *right.*

The inventory of words and expression from the questionnaire where checked one more time by the Collaborating Researchers from each community. They checked the inventory once more and if they found any wrong translation or words that ware not written correctly they made further corrections. Only after this procedure the collaborating researchers approved the inventory. The Collaborating Researchers made all corrections based on their judgement and their expertise as linguist and native speakers and fluently Portuguese. It is important to emphasize that when they were not sure about the meaning and usages of the words, other members of the community were consulted too. The approval process is part of the field work agreement between the Author and the Collaborating Researchers together with the leaders of each community. As said earlier in this chapter the accuracy of information caused great concern in the communities. All the communities investigated expressed anxiety about when things are said "wrongly" because for them this can have negative implications and negative stereotypes of the community.

3.3.3 Elicitation and Comprehension tasks

Language elicitation and comprehension tasks are common tools used in psycholinguistics and related disciplines such as cognitive linguistics. The tasks used in this research were designed by the Author and the supervision team in February

2015. The first application occurred in the Huni Kuĩ community on the first field work visit. Before the second field work visit the tasks were reviewed in the light of the information from previous fieldwork about the task performance and suitability, and we applied some changes to the tasks prior to fieldwork, with Awetý and Kamaiurá which happened in 2016.

The following issues were considered:

- The length of each task (because after the elicitation sessions the participants were very tired);
- Group tasks *vs* individual tasks (most of the time it was impossible to control the task for one individual, the village was willing to help and therefore each person would like to participate, but always in a collective and collaborative context);
- Quantity (there was a need to decide which task was most important, there were too many tasks and they did not all work as planned, mostly due to the previous two points listed above).

Overall, the Elicitation and Comprehension tasks were a vital supplement to the questionnaire data, because questionnaires suffer from a key methodological flaw, which is unfortunately unavoidable although it does not entirely invalidate their use. In fact, a questionnaire assumes that there exist more or less accurate equivalent translations of terms between the language of the questionnaire (the metalanguage) and the language to be studied. However, this is simply not the case in this domain. Questionnaires are useful because they can lead on to further discussion, but the tasks in which the participant is not cued by words in are also very important. In this research It is important not to cue a spatialization framework by using terms like “in front” and

"behind". The task designed for this research in the sort way that would give richer and less biased information about underlying concepts and schemas than is possible using a questionnaire.

The kind of information we expected to get from these tasks included: Our general aim is to discover how event-based time conceptualisations are culturally and cognitively represented. Verifying the time interval and time series lexicon and establishing how it is used. Understanding the cultural organization of event series in time in key domains: agriculture, seasons, life cycle, pregnancy, the lunar cycle, the diurnal cycle. Discovering if there is a CONVENTIONAL spatialization of time, such as a timeline, and if so, in what direction are past and future. We hypothesize that this will not be the case for our participants, when we ask them to place cards using the retrospective/prospective verbs "remember" and "expect"/"wait for".

Elicitation and Comprehension tasks types and application. We worked with six tasks: The agricultural cycle (manioc), Life course stages, Stages of pregnancy, Phases of the moon, Seasons, Parts of the day (24 hours diurnal stages). These tasks were based upon the SEDSU Field Manual (2011) and the MPI-PL field manuals (see http://fieldmanuals.mpi.nl/, adapted and elaborated for current purposes on the basis of project hypotheses. Table top games were the Moving Ego and Moving Time comprehension tasks.

Task 1a. The agricultural cycle (manioc). This task is the most elaborate and involves elicitation and comprehension situations, involving several rounds of card placement as well as the use of a human figure for viewpoint perspective. It was always conducted first since it was designed to provide the most comprehensive information.

Materials: 12 cards (see Appendix B)

The procedure to be followed was:

i. The participant was asked to arrange the 12 cards so that they represent the order in which the events occur. The participant is then asked to narrate the sequence of events.

ii. The experimenter then takes out 4 cards (Planting, Harvesting, Processing, Cooking) and repeats the same instructions. The experimenter then asks:

When do you harvest the manioc?

When do you cook the manioc?

When do you plant the manioc?

This is to elicit terms such as before, after, first etc.

iii. Now the experimenter takes a model person (figure) and places the figure in the middle of the four cards, facing the harvesting picture. The experimenter explains that the figure is [José], who farms manioc. The experiments says that José is thinking about his work. The experimenters asks: "what will José do (next)?" "what did José do (last)?".

The experimenter takes the 4 cards and sets them out in timelines representing the sequence. The experimenter sets out the cards 4 times, twice in the lateral axis (left-to-right and right-to-left) and twice in the sagittal axis (near-to-far and far-to-near).

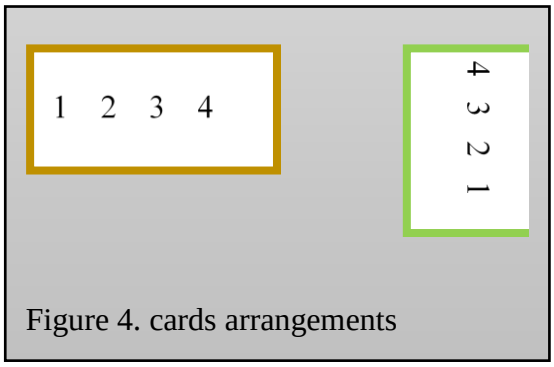


Figure 4. cards arrangements

The experimenter counterbalances the order of configurations (arrangements of cards), ensuring that for each

configuration the temporal order of placement of the cards is correct (i.e 1, 2, 3, 4), in order to emphasize the sequence. After setting out the four arrangements, the experimenter gives the cards to the participant, and asks the participant to place the cards in the arrangement that he/she thinks is the right one.

iv. Now the experimenter asks: "is there any other way of making the picture that is better?"

Now the experimenter gives the participant the figure [José] and asks the participant: "Can you show me how José remembers (*lembrar*) planting manioc?" "Can you show me how José waits for (*esperar*) cooking manioc?" All these questions were asked in the native languages by the Researcher Collaborators.

The remaining card arrangement tasks are Placement and Elicitation tasks for time interval terminology, which also give further evidence regarding any conventional spatialization of time and frame of reference. These card sequences were based upon information given by the Collaborating Researchers about the time interval systems.

Procedure: the experimenter invites the participant to arrange the cards and to name the stage/activity depicted in each card.

The results were audio and video recorded and written in the field notebook. Each task involved the placement of cards, and the naming of the time interval (or sub-interval) depicted in each card. The participant was invited to talk about their own experience.

Task 1b. Life course stages. The experimenter asks the participant to talk about their own life, including memories and expectations.

Task 1c. Stages of pregnancy. The experimenter asks the participant to talk about their own life, including memories and expectations.

Task 1d. Phases of the moon. The experimenter asks the participant to talk about the current phase of the moon, what happened during previous phases, how the moon influences and organizes life.

Task 1e. Seasons. The experimenter asks the participant to talk about the current season, how the seasons influence and organize life.

Task 1f. Parts of the day (24 hours diurnal stages). The experimenter asks the participant to describe a typical day and to explain how they know what time of day it is.

Comprehension task: Table top games using dolls to elicit Moving Ego and Moving Time constructions. This task involves the use of dolls (to represent EGO) and small paper objects representing the dry and rainy seasons. The Author moved the doll to/from the season (ME) or the seasons to/from the doll (MT), and asked the Research Consultant to describe the event. The elicitation task was used as a cue not just for a single utterance, but also for a conversation involving Research Consultants and Collaborating Researchers about how to express "temporal motion" in the language, giving Portuguese examples.

3.3.4 Application and evaluation of the tasks

We applied the entire set of tasks in the communities. However, the result from the tasks even after we revised it gave a mixed result with negative and positive points to be highlighted. The negative result is related to the failure of the task in respect to our expectation of functionality. The aim of the tasks was to bring up the discussion about events in relationship to a temporal frame of reference, but most of the data elicited by the tasks consisted of basic descriptive narratives of the individual events.

Most of the language used by the Research Consultants did not specify temporal relations between the events as we had hoped and predicted, instead the participants consistently made only descriptions of the individual photos in each situation. Additionally, many of the Research Consultants, in many occasion, refused to do the task, saying this kind of situation explicit in the tasks (e.g. life stages, pregnancy and the life span photos tasks, looking at the passage of time), would not give the Author the information that we were looking for. Instead, they offered an alternative way to show how these events occurred and how these are perceived in their culture. Their voices and cultural perspective gave us a valuable opportunity to discuss and to have a conversation about the concept of time in everyday situations. This was a positive result for this research.

The reluctance to take part in the planned tasks opened up an opportunity for a meaningful conversation, because the participants gave much more valuable information that we could not have obtained otherwise. Many participants said: “this way does not work” and “let’s talk about how we do things properly here” and then he/she started explaining in detail how things work and how they interact with the situation and event in everyday life. This situation, when the participants made the Author aware of the fact that the elicitation stimuli were not working in this context represented the most significant interaction point between the Author and the Research Consultants in this study. Two more situations illustrate the significance and highlight the validity of this methodology which emerged in the field work process when the comprehension tasks were employed.

When we applied task ***1d. Phases of the moon,*** the collaborator looked at the tasks and then she said that she will not be saying things about the photos, but she would tell me how the woman sees the moon, and she will tell us why and when the moon is

important for Awetý and Kamaiurá women, this particular participant is Awetý married with Kamaiurá. She said Kamaiurá women practise the same custom. During this conversation she told us about the shape of the moon, its different phases and its relationship with women's menstrual periods and pregnancy. She said, "we each have a moon shape that belongs to us", and this led to a revealing and fascinating conversation about all the shapes, sizes and colours of the moon and their cultural meanings. In describing the moon, the collaborator used the cards to show what moon she was referring to. The collaborator named the moon shapes, and she highlighted the importance of the moon and its shapes for women. A particular moon shape will indicate each woman's menstrual period, in other words, when the woman has her first period she must find out what is the moon shape on the first day of bleeding and that shape will be her own moon "shape" that indexes her period of menstruation (appendix I). Additionally, the moon (at any time) also influences people's mood and emotional state. For example, they believe that a red-coloured moon is a sign of misfortune.

The moon is a being, who can be asked to bring luck. When the consultants described the photos used in the tasks, they expressed the moon shapes in terms of "standing up" and "lying down".

Another example is related to the comprehension task for Moving Ego (ME) and Moving Time (MT). Awetý speakers did not consider this to be a meaningful task. In the other two languages, the movement of an event towards Ego and away from Ego (MT) was expressed using the motion verbs 'go' and 'come', but without the mention of Ego as Landmark. Metaphoric expressions conceptualizing the temporal movement of Ego towards or away from an event (ME) were judged by speakers to be impossible to express linguistically, or such an expression was said to be meaningless. In other words, the sun or the rain can move, but this is not necessarily an Ego-related

metaphorical movement of a season in time, it can rather be an expression of the actual spatial movement of the entity. For example, rain which is distant can approach the speaker. Such spatial motion expressions are conventional in all three languages.

Summary. In general, the structured tasks served to stimulate and mediate conversations about time and its role in everyday life, and this enriched the data. It was possible to gain information that would be impossible to obtain in through a purely observational approach. The tasks did not produce "controlled", quantitative experimental data. In this sense, the "field experiments" did not work as standardised instruments. However, the application of the tasks gave opportunities to interact in a more informal and comprehensive manner with the collaborators through conversation. In this respect, the synthesis of qualitative and quantitative methods yielded a combination of more and less structured qualitative methods that produced a large and comprehensive data set for this thesis.

Chapter 4. **Event-based Time Intervals and Time Reckoning**

> *Now is the sun upon the high most hill of this day's journey. It's lunchtime!*
> (Shakespeare's words used in smoothie advert)

Through this research it was possible to organize an inventory of words and expressions that are used to talk about Event-based time intervals in Huni Kuĩ, Awetý and Kamaiurá. The results for the three languages are reported below in terms of:

(a) Lexicalization and indexicalization of time intervals and temporal landmarks, focusing on three domains: *life stages*, *times of day, night,* and *seasons*;

(b) Sun, moon and stars in time reckoning;

(c) Numbers;

(d) Hands, knots and wood in time reckoning;

(e) Hybrid calendars;

(f) Space, time, metonymy, and metaphor.

It is important to mention that *Calendar and Clock Time* are not traditional artefacts. There is no lexical translation equivalent for "time" (Portuguese *tempo*) in any of the three languages studied. In none of the languages studied are names for days of the week, months of the year, year, month or week found. These data can be interpreted as indicating the absence of calendars, of metric time intervals and of the cultural conceptualisation of "Time as Such" (Sinha et al., 2011; Silva Sinha, 2012; Sinha and Gärdenfors, 2014). Huni Kuĩ, Awetý and Kamaiurá time is Event-based. The event is something that happens or takes places and the main feature for time based in events is the event itself, such as life stages, intervals of the day and night and seasons. The length of the event-based intervals is not measured numerically. This does not mean, of course, that these are "cultures without time". Event-based time concepts are the

foundation of a complex, traditional lifeworld for these Amazonian and Xinguan communities. There exist number-based time reckoning practices, although these are not based on any calendar or clock system, but on activities and their completion. It is also important to emphasize that these communities are, nowadays, familiar with clock and calendar time concepts as expressed in the Portuguese language, and these temporal terms are employed as loan words. Calendric time intervals and traditional event-based time intervals have been blended in these (and many other) indigenous languages of Brazil to produce hybrid cognitive artefacts, which are discussed below.

4.1 Life stages

Kamaiurá, Awetý, and Huni Kuĩ do not count ages in terms of years or months, since like most Amazonian languages they have very small number systems consisting of just distinct terms for ‘one’ and ‘two’ and these words can be combined, allowing for counting to ‘three’, ‘four’, ‘five’ or more, based on a compounding process, such as by juxtaposition, agglutination or reduplication (Da Silva Sinha, et al., 2017). Speakers of these languages consider life as being a process of learning punctuated by different stages of life. These stages should be thought of as categories of social status not as points on a lifeline. For each life stage, there is a certain kind of knowledge and social responsibilities that are appropriate and necessary. The transitions between these stages can involve rites of passage and organised learning. However, the knowledge associated with one life stage category is not strictly demarcated from those of another one. The knowledge of each stage can be acquired during previous stages. For example, a young person, if they have acquired “adult” knowledge and responsibility (such as being a skilled fisherman or taking on household responsibilities, with a level of knowledge recognised by the entire community) will be regarded and respected as a fully-grown person, at least in that respect.

Life stages are also characterised by physical and biological changes, for example, the girl will be considered a fully-responsible person after her first period, when she will pass through the rite of passage in which she will acquire the knowledge and skills of a woman in their respective community. Similarly, a boy, after the first puberty signs, will pass through the rite of passage. Stages of life in these communities are not age-based. A very "young" (in "our" terms) girl who is married is an adult, but an older woman who has never married or had children will still be considered and treated as a youth, unless the biological signs of ageing are very evident. The difference from the western society age categories is the focus in the life stages is on the skill, abilities but not a point in a time line, with numerical measurement such as understood by teenagerhood in western culture. As demonstrated in the tables below. Each table illustrates the life stage of a person of each community.

Feminine	**Masculine**
a. *Baku ixta* Newborn (female, human)	*b. Shuku* Newborn (male, human or animal)
c. *Umã* girl child	*d. bake ixta ewa* boy child
e. *Txipax* Lit. hot fire: (female who works in the house hold, has had her first period, ready to get married)	f. *Beruna* Lit. keen eye (boy who works, ready to get married)
g. *Aibu ewa* Grown up woman	h. *Huni ewa* grown up man
i. *Yushabu* woman with grandchildren	j. *Mestbu* man with grandchildren
l. *Ikayushã* Lit. very wrinkled (f.) (old woman who does not work anymore)	m. *Ikameste* Lit. very wrinkled (m.) (old man who does not work anymore)

Table 1. Huni Kuĩ life stages.

Feminine	Masculine
a. *Kuňa kyt* newborn	b. *Kamino'at* newborn
c. *Tonti* girl child	d. *Pi'a* boy child
e. *Kapia'jyt* grown up girl, not a child	f. *Kamino at raiwyt* Lit. broken voice (grown-up boy)
g. *Kujãperyt* grown up unmarried girl	h. *komino at peryt* grown-up unmarried boy, still dependent on their parents
i. *Aripi* adult woman with (grand) children or not	l. *Myrã* adult man, with (grand) children or not
m. *Aripi'jyt* old woman, shrunk, very wrinkled	n. *Myrã jyt* old man, shrunk, very wrinkled.

Table 2. Awetý life stages.

Feminine	Masculine
a. *Kujã-taimet* newborn (f)	b. *Kunu'um* newborn (m)
c. *Ta'yi* girl child	d. *Ta'yi* boy child
e. *Pitang* children (non-gendered)	
f. *Kujã-muku* young [grown] woman	g. *Awowajá* Lit. broken voice (grown-up boy)
h. *Kujãyman* unmarried grown-up woman	i. *Yman awawuja* grown-up unmarried boy, still dependent on their parents
j. *Matyt* Adult woman, with children of their own and / or grandchildren	l. *Myrã* Adult man with children of their own and / or grandchildren
m. *Matyri* Old woman, shrunk, very wrinkled	n. *Myra'i* Old man, shrunk, very wrinkled

Table 3. Kamaiurá life stages.

Life stage categories in Huni Kuĩ, Awetý and Kamaiurá employ similar principles of conceptualization: knowledge, skill, and biological ageing, differentiated by gender. The resulting categories also display clear similarities. This is unsurprising in the case

of the linguistically related (Tupian) and neighbouring Awetý and Kamaiurá language communities, but similar categories are also manifest in the linguistically and geographically distant Huni Kuĩ culture. A further similarity of categories in all three groups is the use of metonymic attributes of biology (wrinkles, body shrinkage, "hot" sexuality, breaking voice, menstruation), knowledge (how to run a household) and skill ("keen-eyed") to name the categories. It is also noteworthy that the categories are not clearly distinguished in terms of age/stage and are not of fixed duration. Life, as we shall see, is not thought of as progression on a timeline, but as a differentiated sequence of states of being. In our previous research on the Amondawa language and culture, we noted that personal proper names change over the life span (Silva Sinha et al., 2012). This onomastic practice constitutes a distinct S-time system, and is based upon essentially identical principles of life stage classification as those of Kamaiurá (to which Amondawa is related), Awetý and Huni Kuĩ. Amondawa also categorizes the stages themselves in a similar fashion.

4.2 Times of day and night

Event-based time and temporal indexicalization. Event-based time intervals in Huni Kuĩ, Awetý and Kamaiurá (see also Ramos, 2010) are based upon, and derive their names from, natural (diurnal and seasonal) cycles in the environment (e.g. light intensity, water level, breeze); the movements, positions and constellations of sun, moon and stars; and norms of occurrence of social activities (e.g. when to hold Huka-huka matches[9] or when to go to the fields). It should be emphasised that although many cultures conceptualize time cyclically (and natural events do "objectively" occur

[9] Huka-huka is a traditional wrestling match common to all Xinguan groups.

cyclically), Collaborating Researchers and Research Consultants in all three languages and cultures were very clear that this is not the case for their communities. Events are happenings that occur in relation to the time of utterance (D-time) or in relation to other happenings (S-time), but each happening is thought of as a unique instance of a particular event-based time interval category. However, cyclical concepts are nowadays also appropriated by community members to produce culturally hybrid cognitive artefacts, as we document below.

The position of the sun in the sky, and the appearance of constellations, indicate the period or "right time" for social activities that people in the communities conventionally might do or can do. The position of the sun is, therefore, an indexical marker for a named time interval, whose name is defined either by the sun's position, the presence of light or by a conventionally associated activity. Traditionally, these intervals have the connotation that at that position of the sun people would habitually engage in certain activities. However, these are true time intervals, distinct from the actual activity, because the name of the interval does not imply that the activity is actually taking place. Moreover, even the temporal labels that refer to the position of the sun are not actually referring to exact points in time but are also intervals. The boundaries between the intervals are not exact since they are event-based, not metric.

Environmental "happenings" thus both motivate the names of event-based time-intervals and serve as indices that mark the occurrence of events that are be named on the basis of the social activity. Environmental indexical markers identified include: the light of the day, the absence of the light, shadows, the dark, the felt intensity of sunlight, the sun's position and movement, the shape, colour and size of the moon, the appearance and position of constellations, the level of the water, the breeze off the water, birdsong, monkey calls, the sound of the cicadas, the ripening of forest fruits,

the movement of animals. These indices, the event-based time intervals based upon the environmental events, and the event-based time intervals based upon social activities and the norms for their occurrence, together make up the temporal fabric of life in these communities.

Day and night. The following tables document (Tables: 4, 5 and 6) the event-based intervals of day and night, indexed and named by sun, light, dark, moon and social activity.

a. Pena kemaia almost close close to dawn	b. *Pena-i* almost-? Just before dawn	*c. Pena tima* almost light dawn	d. *hutima* morning morning	e. *hutima txakama* morning INT.MARKER late morning
f. *Raya ibu* work owner time to work in the fields		g. *Niwe raya ibu be ika-ya* wind work owner blow being-to be worktime in the fields		
h. *bar kaya txakama* sun go INT.MARKER Return from the field	i. *Bari ni manã nabi raka tan-aya* sun forest top of head lying being-to be Close to midday		j. *Bari manã nabi raka* sun half head lying Middle day	
l. *Bari-ã kapu-kea* sun-be turn-do Beginning of the afternoon	m. *Bari tãkeshkã kain-aya* sun side of the face go-be The sun is on the side of the face (afternoon)		n. *bari kaya* sun go Later in the afternoon	o. *Bari rua* sun reflection Sunset
p. *Bari mexu-aya* sun dark- be Evening	q. *Bari-hiki* sun enter The sun is gone	r. *Mexu tai* night beginning Beginning of night		s. *Yame napũ* half ? Midnight

Table 4. Huni Kuĩ intervals of day and night.

a. *Ko'e-pywó* morning- inside beginning of the day light	b. *Moite-wene* PERF-beginning Morning (already morning)	c. *Moite-ting* PERF White dawning	d. *Ko´em putsuat* morning- look like Look like morning
e. *Ko'em moko tuwo* morning is when morning	f. *Ko´em-peju* morning STAT Morning day	g. *Ko'em* morning The morning	h. *Kwara o- tem* son 3P get out Day
i. *Apo-me* Day- affirmative marker Day			
j. *Ko ky-tsaput aipok* Field look for-RETR come Comeback from the field	l. *Ko tsaput aipoko apo* Field RETR come over Comeback from the field		
m. *Apytet tsoat* Head almost/looks like Almost middle day	n. Apyter-ype kwar-up Head over sun-is Middle day		
o. *Kwat o'awaj-eju* sun 3P- lean- STAT/beginning beginning of the afternoon	p. *Towa'-apitu tsarywo* face – fight almost Almost Huka-huka "time"		
q. *Towa'-apitu tsoat uwy'rype katu* face – fight almost under good "After" huka-huka "time"			
r. *Ka´a-ju* bush- STAT/beginning Very later in the afternoon	s. *Ka'a-peti* bush-surface Afternoon ending	t. *Ok apo* house top of Sunset	u. *Otew-eju* fade STAT/beginning Sun gone
v. Taty-kym moko-tu moon-dark is -nom Night	x. Taty-puku moon-long Later in the night	z. Apytapyte-zan half – TRANSL Half way through of [the night]	

Table 5. Awetý intervals of the day and night.

a. *Ara pota koyt* day almost ASSERT almost day/dawn	b. *Ara ohom* day go dawn	c. *Arimé koyt* day ASSERT day[break]	d. *Kuema mué* morning when morning
e. *Jaiweté* early morning			
f. *Ko-pe-wara* field-LOC-source [Back] from the field	g. *Apyter-uwaj ipota koyt* Head-half almost ASSERT Almost midday		h. *Apyter uwaj* Head half midday
i. *W-erro -aparap* 3-CAUS.COM -lean [The sun] is leaning; just after midday			
j. *Kaa-ruk amue* forest-is the when the forest [is in shade]	l. *Kaa ruk kóyt* forest is ASSERT It is later, [there is shade] in the forest		m. *Kwara itse* Sun enter The sun entered (disappeared)
n. *Ypy-tunim* Beginning-dark The beginning of the dark [night]	o. *Ypy -pipaw -amue* Beginning- silence -when when the silence begins [later in the night]		
p. *Ypy ajei ipota kóyt* Beginning half almost ASSERT Almost half way through [the night]		q. *Ypy ajei* Beginning half Half way through [the night]	

Table 6. Kamaiurá intervals of the day and night

It should be noted that there are other indices, based upon animal behaviour, that also mark temporal landmarks and imminent weather events in these cultures. In Kamaiurá, for example, when the bird called *Yrywu'ajang* sings indicates that it is daybreak, and it is time to get up; the same is true for other birds, *Muruwiri* and *Ykyju*. However, it is important to note here that these indices vary from season to season. The moment when these birds, which never sing together, appear and sing, is dependent on the season. In Huni Kuĩ there is one species of monkey and several birdsongs that are also indices for daybreak. For example, when a monkey called *Hu* calls, and the birds named *Hasin* and *Kebu* start singing, everybody in the village knows that daylight is coming. However, if the monkey *Hu* is singing at any other time, this indicates the rain is coming. These animal behavioural indices are wide spread and are also known by non-indigenous local people in Amazonia.

4.3 Seasons

The Xingu National Indigenous Park (Kamaiurá and Awetý) and the Amazon basin (Huni Kuĩ) are situated in the tropics, and the four-season cycle of the temperate climate zone, which we find expressed in many other languages and cultures, does not apply. There are two seasons, the dry season and the rainy season. In our previous research on the Amondawa culture and language, we found that the language categorised and sub-categorised these seasons, but there was no superordinate concept or word for the year (Silva Sinha et al., 2012).

The same applies to Kamaiurá, Awetý and Huni Kuĩ, all of which have named categories for dry season and rainy season; these are usually translated into Portuguese as, respectively, summer and winter.[10] The indexical markers for the seasons in these cultures are the sun, the intensity of the sunlight and the level of water in the rivers, the intensity of the rainfall and the coolness of the air (breeze). The categorization of the seasonal event-based intervals by reference to the sun and the rain (and levels of water) is common to all these languages.

However, there are additional features in each of these three languages. In each case, these are related to the particular environmental conditions of the locality in which the community lives, and in each language specific events or happenings index the seasonal time intervals. For example, in Awetý and Kamaiurá seasonal terms there is, in addition to the water-level index, a reference to the 'cool breeze' and the sensation

[10] The rainy season in tropical Northern Brazil more or less temporally coincides with the summer in temperate Southern Brazil, and the dry season in the North coincides with the Southern winter. The naming of the tropical dry season as "summer" and the rainy season as "winter", based upon weather patterns, is a feature of Brazilian Portuguese.

of cold: *Jo'ykype* (Awetý) and *iro'ytsanga* (Kamaiurá) mean 'cool breeze', which is an index of the rainy season. In Huni Kuĩ, too, the rain, the level of the water and the sun and the intensity of heat and light are the basis of the seasonal indexicalisation. However, there is also a reference to astonishment or surprise at the beginning of both rainy and dry seasons. The term *berukuĩ* (see Table 7) literally means 'surprise, astonishment'; it does not make reference to activity, but rather to the way people perceive the beginning of the fall of rain in the wet season and the heat of the sun in the dry season. Animal behavior is also understood to indexically mark seasonal changes and associated activities. For example, in Kamaiurá the onset of the sound of the cicada *Kuarai Jumi'ã* signifies the dry season, when the river is drying up and there will be a lot of fish to catch. The seasonal inventories are tabulated below for each language.

a. *ui-yã* rain-is Raining	b. *ui-yã tae-i* rain-is beginning-PROG The beginning of raining	c. *ui beruKuĩ* rain fright The rain [certainly shock] fright arrived
d. *ui napumã* rain strong The rain is strong	e. *ui-yã reske-aya* rain-is finished-is The raining is finished	
f. *Bari-ã* Sun-is Summer	g. *bari-ã tae-i* sun-is beginning-PROG The beginning of [summer]	h. *bari-ã beruKuĩ* sun-is fright The summer [certainly shock] fright arrived
i. *bari-ã napumã* sun-is Strong The is [summer] is strong	l. *Bari-ã reske-aya* sun-is finished-is The [summer] finished	

Table 7. Huni Kuĩ seasonal intervals.

a. *Jo'yk-ype* breeze-density [cold breeze] winter	b. *O'-aju* *jo'yk* 3P.STAT breeze/water Is cold breeze	c. *Jo'yk* *mytet* Breeze half water Half way of cold breeze
d. Y-watupe Water-full The [river] is full of water	e. *Jo'yk opap* Breeze/water finished The [winter] finished	
f. *Kwarype* sun-inside Summer	g. *Kwa- za* *ju* *me* sun-COLL STAT ASSERT Is [summer]	
h. *Kwaza* *tupyte-zan* sun- COLL is- TRANSL The [summer] is [Strong]	i. *Kwa-za* *-tu* *opap* Sol – COLL NOM/action end The [summer] finished	

Table 8. Awetý seasonal intervals

a. y-wp water-density Rain seasons	b. *i-ro'ytsanga* *ypy* 2P/his-cold breeze beginning The cold breeze is beginning	c. *i-ro'ytsanga* *Mytet* 2P/his-cold breeze half Half [way] of the cold breeze	
d. *i-ro'ytsanga* *r-ahwa'apyt* 2P/his-cold breeze tip end The end of the tip of the cold breeze			
e. *Kwar-ip* sun -POSTP Summer	f. *kwara ypy* sun beginning the [summer] beginning	g. *Kwara mytet* Sun half Half of the summer	h. *Kwa-rahwa'apyt* Sun- tip end The end of the tip of the [summer]

Table 9. Kamaiurá seasonal intervals.

4.4 Sun, moon and stars

The sun is of central importance to both the seasonal and the day-night interval concepts in the three languages and cultures. The dry season terms in each of the three languages incorporate the word for the sun: *Bariã* (Huni Kuĩ), *Kwaryp* (Awetý), *Kwarip* (Kamaiurá).[11] Each of these terms, used alone, names the summer (dry season), and used with other modifiers names subdivisions of the summer. These are thus unambiguously designations of time intervals. The moon is also an indexical

[11] More exactly, the root *kwar-* means 'sun' in both Awetý and Kamaiurá; and the root *bari-* means 'sun' in Huni Kuĩ.

marker for event-based intervals in Awetý, being incorporated into terms for 'parts of the night', as can be seen in Tables 5 (e.g. *taty-puku* 'late at night'). In each language there are names for what we would call 'phases of the moon'. These names are based on the moon's shape, growing, diminishing, disappearance and color. However, it is not clear that these expressions name true time intervals; they seem to function more as names for the different appearances of the moon itself. These expressions, and the shapes that they designate, serve as indices for a variety of culturally significant events. A salient example is that the moon shape indexes the female menstrual cycle, which varies between individuals. Every woman in Awetý, Kamaiurá and Huni Kuĩ culture knows her own "moon shape" and uses it to predict her menstruation, or the failure of her period to arrive, meaning that she knows that she is pregnant.

It is also important to point out that the moon is a being in the cosmology and mythology of all these cultures (Villas Boas, O. and Villas Boas C. 1974; Faleiros and Yawabane, 2015). It is believed that people can ask the moon to bring good fortune; and the moon can also announce or signify good fortune and wellbeing, or bad fortune, for individuals and for the community. These properties of the moon are integrated into a variety of cultural practices and beliefs. In all these cultures, every 'new moon' the men and women ask the moon to give health to their children and protect them from illness and crying. They may also ask to the moon to take away their ugliness, laziness, anger, bad dreams, and to suppress gossip about them. The moon is believed to have the power to purify and to renew people's energy, and to revitalize nature. For example, In Huni Kuĩ, the women ask *Ushe bena* (new moon) for healthy cotton plants and a good crop, while the men ask *Ushe bena* to give health to the potato and other vegetable crops (tayoba, cara, Kari). Subsistence activities are also indexed by the moon. For example, in Huni Kuĩ, during *Ushe nia bena-ki* (the moon is growing) the

community will plant their crops and vegetables. In Awetý and Kamaiurá, the disappeance of the moon (*Taty otewe*, Awetý) or the moonless nights (*Jay ipytun*, Kamaiurá) signifies that there are plenty of fish and it should be easy to fish; this period is marked by the abundance of food in the villages. The Table 10 contain description about the moon shapes and phases to each community.

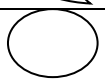
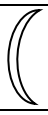
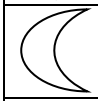
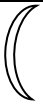
Huni Kuĩ moon shapes/phases.	**Approximate sense**
 a. *Ushe bena* Moon new	New moon
 b. *Ushe nia bena-ki* Moon is new-PERF	The moon has been new
 **c.** *Ushe babe-keirã* Moon get out	The moon is getting out
 d**.** *Ushe babe-keshur-ã* Moon get out-make-ASP.COMPL	The moon has finished getting out
Awetý moon shapes/phases.	
 a. *Taty otem* Moon get out	The moon is getting out
 b. *Taty i-pete-ju* Mom 2P-half-STAT	Half moon
 c. *Taty o-tewuka-ju* Mon 3P-grow-STAT	The moon [is] growing
 d. *Taty apoa-ju katu* Moon round-stative-beautiful	The moon is round and beautiful
 e. *Taty o-tewe* moon 3P-disappear	The moon has disappeared
Kamaiurá moon shapes/phases	
 a. *Jay oem o-ut* moon get out 3P-come	The moon is coming out
 b. *Jay j- epemok* moon he- half	Half moon
 c. *Jay o-j-emo-tuwijap mytera rupi* moon 3p-he-causative-big half by	The moon is making [himself?] bigger by a half

Table 10. Communities moon shapes/phases.

4.5 Numbers in Huni Kuĩ, Awetý and Kamaiurá

All three languages employ quantifying terms that are similar to, but not exactly equivalent to, the numbers in English or Portuguese. The first difference is that all three languages, like most Amazonian languages (Silva Sinha et al., 2017) have small number systems. The second difference is that the indigenous numbers, although they do form organised systems, do not necessarily express strict numerical value. For example, "two" can be "a pair", there is no distinction between the numeral and the use of it to quantify a particular referent (Everett, 2005; Frank et al., 2008). So, we could say that these languages have numbers but not numerals.

Huni Kuĩ Numbers. The Huni Kuĩ number system is based on 'one' and 'two' and then these numbers can be combined to generate 'three' and 'four'. For numbers larger than

1	*Besti* One
2	*Rabe* two
3	*rabe inun besti* two plus one
4	*rabe rabe* two two
5	*meken besti* hand one
6	*meken besti inun, metuti besti* hand one plus finger one
7	*meken besti inu, rabe* hand one plus two
8	*meken besti inu, rabe rabe e inun, besti* hand one plus, two two and plus one
9	*meken besti inun, rabe rabe* hand one plus two two
10	*meken rabe* hand two
20	*tae rabe inun, meken rabe* foot two plus hand two

Table 11 Numbers in Huni Kuĩ.

four, the words *meken* (hand), *metuti* (finger) and *tea* (foot) are used in combination with these numbers and this makes up the entire system.

The Table 11 represents the entire inventory of Huni Kuĩ numbers. It should once again be stressed that although these numbers are quantificationally equivalent to the numerals in the left hand column, they are not functionally equivalent in the sense that they are not part of a numerical value system. They are numeral quantifiers. For this reason, the word *inun,* translated here as 'plus', signifies a collocation of numbers rather than an arithmetic operation over numeric value.

Other words such as *itsaska* 'few', 'small amount', *akun taska* 'a few', or 'quite a few', *nati sharabu* 'many', *besti sharabu* 'one collection', 'many', *akun txakama* 'very many' are also used to quantify in Huni Kuĩ culture. These quantifiers may be derived from properties of referents, so for example *pixke sharabu* 'fabric' 'collection' refers to very large quantities (what we would call "thousands", "millions", which are also inexact quantifications) by metonymic indexing of the large numbers of fibres woven into a piece of fabric.

Awetý Numbers. The Awetý number system is also based on 'one' and 'two', with these numbers combined to produce three and four (Sabino, 2016). This is a common pattern in Amazonian languages (Silva Sinha et al., 2017). In Awetý too, to generate numbers larger than four 'hand' (numbers 5-10) and 'foot' (numbers 11-20) are used. This system uses but does not lexically mark collocation of numbers; it also uses negation to qualify collocation in order to express number three, *mojtaryka*. This is a combination of two pairs with one pair being incomplete, consisting of just one of the partners.

The hands and feet in combination with one and two generate numbers of five or more. Hand and foot with one and two are combined with the verb "cross" to produce numbers larger than five. This process can be thought of as counting fingers, up to five, with larger numbers conceptualised in terms of a movement of attention from one hand to the other. So, five is expressed in terms of completing the count of fingers on one hand: *momozotsu kaj po pap* = one 1pl.INCL.hand completed.

The six employs the same construction but instead of the completive verb *pap* uses the verb *ytatap* 'cross' to indicate that the count is starting again on the other hand: *momozotsu kaj po ytatap* = one 1pl.INCL.hand cross. The same strategy, using the noun 'foot' and the verb 'go', is employed to for numbers 11-15, after which the construction reverts to using the verb 'cross' with the noun 'foot' for numbers 16-20 (see Table 12).

The language consultants told us that in order to continue counting beyond 20, it is necessary to "borrow the hands and feet of the next person". Other words are used to quantify things, for example *I'jyt* = (very small size), *matsu'jyt* (small size), *matsu'jyt* (small quantity), *tu'ã* (many) and *tuwurytu* (very large/big).

1	*Momozotsu* only, one	11	*Momozotsu kaipy ete oto* Momozotsu kai-py ete o- to one our-foot REL 3P go 'one [toe of] our foot goes'
2	*mokõj* two (a pair, twins)	12	*Mokõj kaipy ete oto* Mokõj kai-py ete o- to two our-foot REL 3P go 'two [toes of] our foot go'
3	*Mojtaryka* mo -jtar -yka two own[er] NEG.pair 'two pairs and one has no partner' / 'two and one alone'	13	*Mojtaryka kaipy ete oto* Mojtaryka kai-py ete o- to three our-foot REL 3P go 'three [toes of] our foot go'
4	*Mokõj Mokõj* two two 'two pairs'	14	*Mokõj Mokõj kaipy ete oto* Mokõj Mokõj kai-py ete o- to Two two our-foot REL 3P go 'two pairs of [toes of] our foot go'
5	*momozotsu kaj po pap* *momozotsu kaj po pap* one we-INCL hand completed 'one [of our] hand completed'	15	*Momozotsu kaipy opap* Momozotsu kai-py opap one our-foot completed 'one foot completed'
6	*momozotsu kaj po ytatap* momozotsu kaj po ytatap one we-INCL hand cross 'one [finger of our] hand crossed'	16	*Momotsu kaipy weizo ytatap* Momotsu kai-py wei- zo One our-foot 3P-CAUS.COM ytatap cross 'one [toe of our] foot crossed'
7	*mokõj kaj po ytatap* mokõj kaj po ytatap two we-INCL hand cross 'two [fingers of our] hand crossed'	17	*Mokõj kaipy weizo ytatap* Mokõj kai-py wei-zo two Our-foot 3P-CAUS.COM ytatap cross 'two [toes of our] foot crossed'
8	*mojtaryka kaj po ytatap* mojtaryka kaj po ytatap three we-INCL hand cross 'three [fingers of our] hand crossed'	18	*Mojtaryka kaipy weizo ytatap* Mojtaryka kai-py wei-zo three our-foot 3P -CAUS.COM ytatap cross 'three [toes of our] foot crossed'
9	*mokõj mokõj kaj po ytatap* mokõj mokõj kaj po ytatap two two we-INCL hand cross 'four [fingers of our] hand crossed'	19	*Mokõj Mokõj kaipy weizo ytatap* Mokõj Mokõj kai-py we-izo two two our-foot 3P-CAUS.COM ytatap cross 'two pairs [of toes of our] foot crossed'
10	*kaj po pap* kaj po pap we-INCLhand completed 'our hand[s] are complete'	20	*kaipy opap* kai-py opap our-foot completed 'our feet are complete'

Table 12 Numbers in Awetý. CAUS.COM see causative Commutative by Rodrigues, 1953.

Kamaiurá Numbers. Kamaiurá also has a similar system to Awetý, consisting of 'one' and 'two' which are combined to make three and four; and the words for hands and feet are employed to generate larger numbers. The verb 'cross' is used in combination with the numbers one, two, hands and feet to produce numbers larger than five (Seki, 2000, pp. 79-81). Other quantificational words are also used to express quantity and sizes, for example, *amoramete* (small quantity), *i'ajang* (many), *piatsã* (small size) and *tuwijap* (bigger size). The Table 13 contains the Kamaiurá numbers system.

1	*Mojepete* One	*11*	*Mojepete jene -pya* one our - foot 'one [toe of] our foot'
2	*Mokõj* Two	*12*	*Mokõj jene -pya* two our -foot 'two [toes of] our foot'
3	*Moapyt* 'two pairs and one has no partner' / 'two and one alone'	*13*	*Moapyt jene -pya* three our -foot 'three [toes of] our foot'
4	*Mojõiru* two, two 'two pairs'	*14*	*Mojõiru jene -pya* two, two our foot 'two pairs [of toes of] our foot'
5	*Jene po momap* Our hand stop 'Our hand stops'	*15*	*Jene - py momat* our -foot stop 'our foot stops'
6	*Mojepete jene poa w-eroyahap* one our hand 3P cross 'one [finger of] our hand crossed'	*16*	*Mojepete jene pya w-eroyahap* one ur foot 3P cross 'one [toe of our] foot crossed'
7	*Mokõj jene poa w-eroyahap* two our hand 3P cross 'two [fingers of] our hand crossed'	*17*	*Mokõj jene pya w-eroyahap* two our foot 3P cross 'two [toes of our] foot crossed'
8	*moapyt jene poa w-eroyahap* three our hands 3P cross 'three [fingers of] our hand crossed'	*18*	*Moapyt jene pya w-eroyahap* three our foot 3P cross 'three [toes of our] foot crossed'
9	*Mojõiru jene poa w-eroyahap* two, two our hands 3P cross '2 pairs of [fingers of] our hand crossed'	*19*	*Mojõiru jene pya w-eroyahap* two two our oot 3P cross 'two pairs [of toes of our] foot crossed'
10	*Jene po opap* our hand completed 'our hand[s] are complete'	*20*	*Jene py opap* Our foot completed 'our feet are complete'

Table 13 Numbers in Kamaiurá.

4.6 Hands, knots and wood marking in time reckoning

We have seen that (as is true for many cultures) the hands, feet, fingers and toes are fundamental for the number systems of Huni Kuĩ, Awetý and Kamaiurá. In this section the use of these body parts in time reckoning practices in these cultures is analysed. We have also seen that for Awetý and Kamaiurá the notion of "completion" is part of the conceptualisation of number. It will be shown that this is also basic for time reckoning in these cultures and languages. Each of these cultures also uses number-based cognitive artefacts in time reckoning: knots in a string in Awetý and Kamaiurá, and marks on a piece of wood in Huni Kuĩ.

Hands, fingers and knots: Kamaiurá and Awetý. During conversation about traditional ways of reckoning time in these cultures it was possible to find the following information. The fingers and toes are used to quantify things in Kamaiurá and Awetý. For example, for example, in a narrative telling about a fishing trip (and explaining how time reckoning is done), a Kamaiurá speaker said:

(1)

Awyje	***mokõj*** *yrua*		*kõ,*	*a'ama*	*ryrua*
Ready	two	basket	UNAT	fish	REL.basket.

kõ,	*a'ama*	*ryrua*	***mokõj***
UNAT	fish	REL basket	two

'[There are] already two baskets of fish'

Kõ is unattest marker or evidential marker of *irrealis*, meaning that this event (which is part of a story to explain a time reckoning practice) has not been personally witness by the speaker.

The speaker (Tamahet Kamaiurá) here is saying that two baskets of a particular species of fish have been caught. This marks the completion of fishing for a day, and the

speaker goes on to say that at this point they untie a knot. Traditionally in these communities the duration of a fishing or hunting expedition is "measured" by untying knots on a string. The activities for each day are planned and organised beforehand by the expedition leader, and then the information is communicated to his family and to the community. The leader estimates the length of string that will be necessary to complete the expedition, in terms of the expected catch of game or fish, and ties a knot in the string for each day. Each knot on the string represents the completion of one day's activities and a night spent on the hunting or fishing expedition. During the expedition every day a knot will be untied. Each knot is representing both the overnight stay and the completion of one day's activities. However, it is important to note that the knots are *never* counted before the expedition sets out. The knotted string is therefore a kind of index of the expected duration of the expedition that will take place, but it is not a count or tally of the number of days. In fact, the number of knots tied at the beginning is just an estimate, it should be enough for the string to be used during the expedition.

Tamahet Kamaiurá (Figure 5) demonstrated to us in the fieldwork research how the

Tamahet Kamaiura/2016
Figure 5. Knot on the string.

knotted string is used. This demonstration was not given during an expedition, it took the form of a narrative of an imagined typical fishing expedition. For this reason, he

marked the evidential status of events in his narrative as non-attested. He made several knots in the string and told how this is traditionally used for time reckoning during fishing trips. The significance of the knots does not consist of their exact number, but the act of untying one individual knot each day that the fishing expedition is away from the village. The time reckoning practice is therefore not one of counting the knots/days, but one of indexing completion of each day, and the progress towards the completion of the expedition (catching a certain quantity of fish) and the return home (appendix H).

However, the narrator did use fingers and numbers to *explain* the practice, indexing each use of a number (up to three) by showing the fingers and referring to the number of fingers. The following extract (Appendix H) from the narrative makes clear how the narrator integrates the verbalization of number, the showing of fingers and the untying of knots in his explanation of the use of the knotted string.

(2)
Mokõj *ang jene hwã r-ero'yahawi kora'ewa o-jamawa kõ.*
Two this our finger REL- cross MASC.SP. 3P-said UNAT
'Two (of our) fingers cross, they said'

(3)
Ihwã rehe nokoj i-paparawaw kõ.
Finger over so 3P.PL-count UNAT
'Like that they counted on their fingers'

(4)
O'iran a'epe wejue ekat awaw, a'epe wejue ekarawaw na'ewa.
Tomorrow LOC. only look for LOC. only look for MASC.SP
'Tomorrow they will fish in the same place, they are only fishing in the same place'

(5)
A'e ramue okoj anga hwaraok awa kõ, i-hwaraok awa ko'yt,
Therefore that this untie UNAT 3P-untie ASSERT

tyk, awyje
ID ready
'Therefore they untied this [one], then, they untied it already'

Once again, the importance of the completion of events and activities can be seen in this time reckoning practice. This does not mean that 'counting' is absent from Kamaiurá cultural practices, on the contrary, there is even a word for it, *paparawaw* (see above). In fact, time intervals can be counted, in the sense that one finger can represent one day (or other entity, such as a basket of fish). However, what is significant about the time interval, and the event that is its conceptual basis, is its "happening", and particularly its having been completed. An event-based time interval for the Kamaiurá is not a segment of "Time as Such", but something that occurs or should be done or accomplished.

Another thing that is clear from the extract above is the context-dependence of the time reckoning practice itself, and also perhaps the language used to talk about it. The knotted string is not a general instrument for counting days in all contexts, but an artefact for use only in certain contexts. It is not a kind of calendar. Also, although the "basic" constituent words for number expressions (one and two, hand and foot, fingers/toes) are employed across contexts, they may be combined with other words (e.g. verbs of motion) and meaningful gestures (e.g. showing fingers) in ways which are specific to particular contexts. More research is needed on this question.

Huni Kuĩ Wood Marking. In Huni Kuĩ the hands and feet are used to count small quantities of things (up to twenty). However, the traditional way of reckoning time is to make a mark on a piece of wood, signifying the completion of a day or the activity making up a day. In the past, Huni Kuĩ people worked for the rubber plantation owners and companies, and in order to keep a tally of the number of days worked, they used the wood marking practice. "Each cut on the piece of wood was a day's work or something that was done that day" (conversation with Joaquim Kaxinawa about time

reckoning). Today, the duration of an expedition or the number of working days is marked on wood.

4.7 Awetý and Kamaiurá stars and constellations

The names of the position and appearance of stars and constellations also name event-based intervals in Kamaiurá and Awetý. The appearance of these stars and constellations indexes when to plant and to harvest crops (manioc and corn), and when to hold certain festivals or parties. The stars are also indexically linked to other events in the natural environment. Each constellation is perceived as an event-based interval and its duration depends upon what it indicates or indexes.

The names of the constellations are based on their shape. The drawings presented in Table 14 of Kamaiurá constellations were produced by Dr Wary Kamaiurá Sabino with the help of his family, to demonstrate and explain how these constellations are perceived and named in Kamaiurá. The Kamaiurá constellations do not correspond to those of 'western' cultures and their names are difficult to literally translate, since they refer to living creatures and body parts that participate in cultural narratives. A brief explanation of each constellation is provided below. Together, these constellations constitute a series of event-based intervals, but this series is not conceptualised as a 'year': there is no superordinate term for the series as a whole.

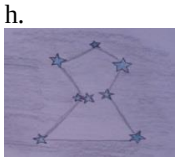
a.  *Janupitá*	b.  *Ekyitat/ Ekytat*	**c.**  *Atsingau*	d.  *Tukananhwa*	e.  *Tukanan*
f.  *Je'yke`ok*	g.  *Tawarit*	h.  *Eny'a*	**i.**  *Tsihwet*	
Drawing by Wary Kamaiurá Sabino/ 2016				

Table 14 Kamaiurá constellations.

The *Janupita* has the shape of an Emu and when it appears the cicada is beginning to sing and this indicates that the rain will start. The field is prepared for planting manioc. The *Ekyitat/ Ekytat* indicates the period of intense rain when the forest fruits (*manga, mangaba* and *peke'i*) are ripe for collecting. The *Atsingau* represents a bird called in Portuguese *Anu-branco* (Eng. Guira guira). When this constellation appears, the rivers are full and in flood. *Tukananhwa* represents a large tirangualar rack (Port. *jirau*) that is used by the Kamaiurá for grilling large quantities of fish, especially for festivals. It indexes the time when the rain is still heavy and constant. *Tukanan* also represents the same object, but it is not the "real" one (it is said to look like the real one). It indexes the end of the rainy season, when the river level is falling and there is an abundance of fish in the rivers and lagoons. This is the time to fish and to prepare the fields for planting crops. *Je'yke`ok* refers to one side of the human body from the trunk to the thigh and indexes the dry season when the river is low. It is a period of singing and dancing, and in particular the *Javali* festival. *Tawarit* represents many small turtles together, very close to each other; and also the giant river otter. It indexes the midpoint of the dry season, the cool breeze is coming and the leaves are falling. Crops are planted, the *Jamurikuma* party (women's party) and the *Jacuí (*flute festival) take place in this period. *Eny'a* refers to the shape of a traditional mortar for pounding and crushing. It indexes the time of the cool breeze during which the *Kwaryp* ritual and the *Jaruru Pira* (fish festival) take place. *Tsihwet* refers to the shape of a duck, and indicates that the dry season is coming to an end and it is time to start preparing the soil for planting.

The Awetý people also recognize some constellations (table 15), different from those of the Kamaiurá. It was not possible to obtain drawings and the information recorded may be incomplete, because the cultural knowledge is not widespread in the

community. The names of the Awetý constellations are also derived from the perception of their shape and disposition. *Kopýjyt* refers to many stars together. When it appears, this indicates that the air is getting cold and it is the beginning of the rainy season. *Ypek* refers to two stars together and it indicates the dry season. *Kauzé* refers to a single star, when it appears this indexes the beginning of the cold breeze during the rainy season when the fields have to be prepared for planting. *Taty-a'yjyt watu* is a star ("big little son of the fire") that appears early in the morning (maybe this is the morning star). *Ta'wat retá* means spots of the jaguar, referring to the milky way (the stars referring to the spots of the animal). This constellation is an important marker to guide people during nocturnal activities and for wayfinding in the night.

a. *Kopýjyt*	b. *Ypek*	c. *Kauzé*	d. *Taty-a'yjyt watu* fire- smal son big 'fire-son smal grande'	e. *Ta'wat retá* jaguar painting

Table 15 Awetý constellations.

This brief description provides an overview of how the position, configuration and appearance of stars and constellations are embedded in the everyday life of Awetý and Kamaiurá communities. The stars and constellations impact directly on their rhythms of life and cannot be ignored. During the fieldwork the importance of this knowledge for the communities was clearly stated by the participants. Unfortunately, much of this knowledge is no longer being transmitted to the next generations. More research is needed to understand and to revitalize the process of transmission of traditional cultural practices in these communities.

4.8 Hybrid Calendars: Event-based intervals and calendric time.

All the communities studied are at least bilingual, and in many cases, individuals speak more than two languages. Most people, except for the oldest community members, speak Portuguese and are familiar with the time interval terminology and concepts of the surrounding Brazilian society. Even though the three communities studied traditionally use event based time intervals, the modern (Gregorian) calendar is also now employed in education and for administrative and business relationships with non-indigenous people and institutions, such as doctor's appointments, university study, salary and pension payments and bank accounts, and in general for dealing with government officials and institutions. From this intercultural encounter has emerged the practice of making hybrid calendars, which is now common amongst indigenous groups in Brazil and other South American countries.[12] These hybrid calendars are works of art, and are artefacts for preserving cultural memory, more than they are strictly cognitive artefacts for time reckoning. Generally speaking, the hybrid calendars are based upon the 12 months of the year, rendered in writing in Portuguese (as already stated, there are no indigenous translation equivalents of names of months). This means that the hybrid calendars are *not* based upon correspondence between indigenous event-based time intervals and calendar months. Rather, the months are *indexed* to the linguistic and pictorial representation of environmental events and social activities that occur at that time.

[12] Internet search using the Portuguese search terms *calendários indigenas* yields a large number of examples.

The hybrid calendars are therefore not merely translational artefacts; they can be better understood involving a conceptual blend (Fauconnier and Turner, 2008) of, on the one hand, indigenous event-based and indexical time, and on the other hand "western" cyclical, metric time. A Huni Kuĩ hybrid calendar (WWF, 2015) and a Xinguan calendar (ISA/MEC, 1996) (which we believe to be Kamaiurá) are depicted (Figures 6 and 7). Note that the Huni Kuĩ calendar is linguistically annotated in the indigenous language, whereas the Xinguan calendar is annotated in Portuguese.

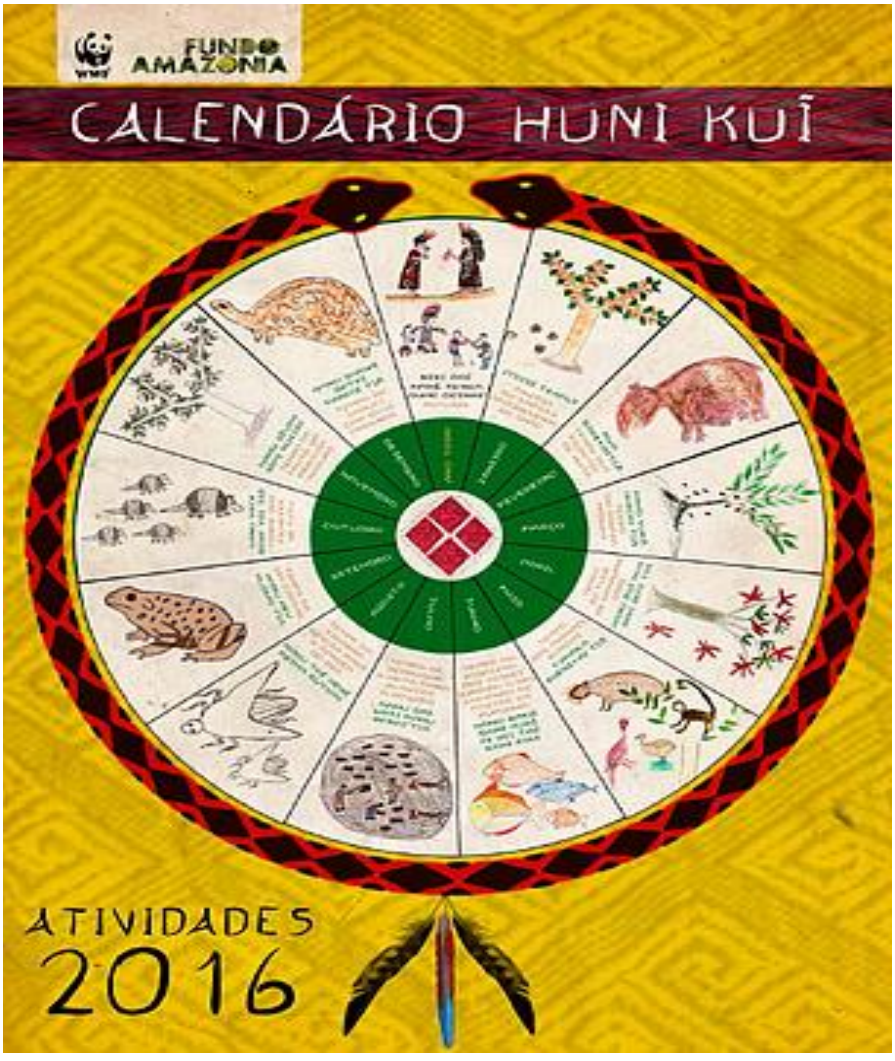


Figure 6. Huni Kuĩ Hybrid Calendar.

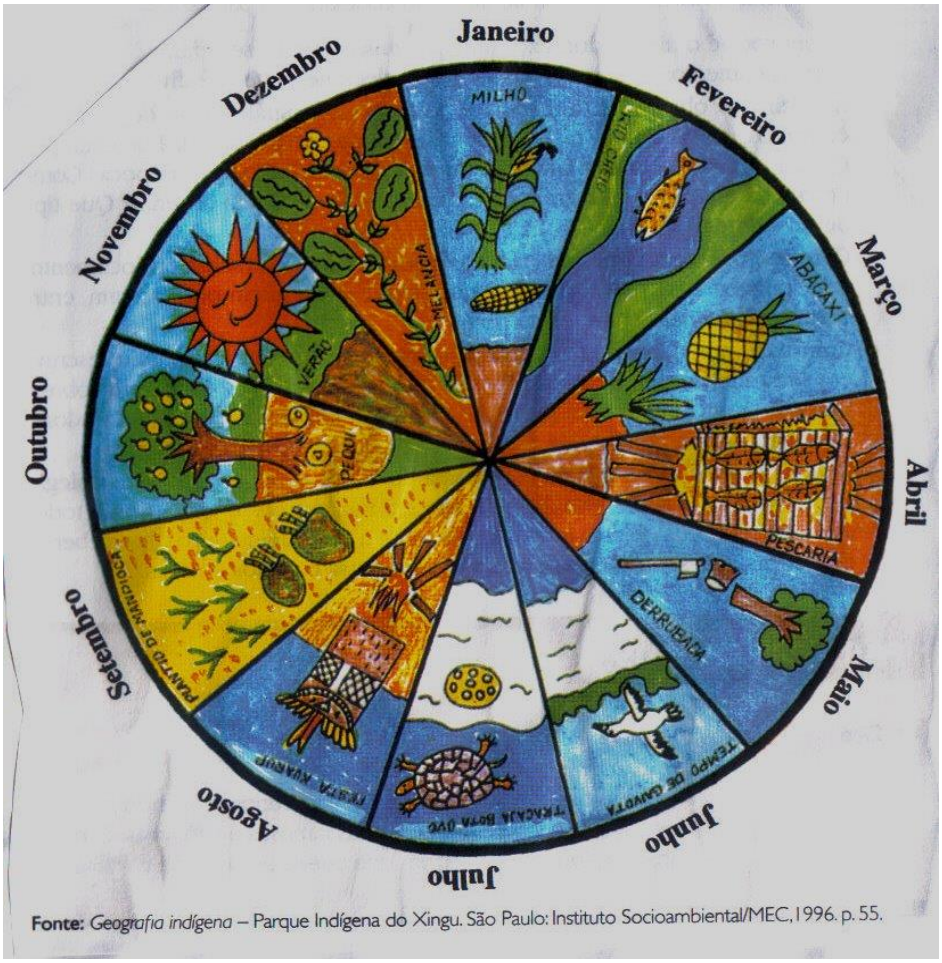


Figure 7. Xingu People Hybrid Calendar.

Calendric temporal references: Month and Year

In all these languages there are no expressions or lexical items meaning 'time'. There is a translation equivalent for 'year', but it does not denote a calendric notion of 12 (solar) or 13 (lunar) months. Nor is a year made up of the dry season and the rainy season together. In fact the term for 'year' in all three languages refers to the dry season only, using the root meaning 'sun'. This indicates that the dry seasons are used as a basis to understand 'year'. For Huni Kuĩ the expression for 'year' is *bariã kapukea* which literally means the 'dry season goes around'. This does not express the idea of a cycle or going around a circle, but rather a semi-circle as in 'go around' or 'pass by'.

Awetý and Kamaiurá just use the name of the sun for 'year': *Kwat* (sun in both languages). However, this term is used more in Kamaiurá than Awetý, many Awetý speakers were reluctant to accept this translation for 'year', although they agreed about the names of the seasons.

In all three languages investigated there was a translation of 'month' by 'moon', and during conversation the word for 'moon' was used with reference to 'month'. The time interval referred to is a lunar month, but this should not be understood as being part of a lunar calendar system. There are no names of 'months of the year', no conceptualisation of a month as consisting of 28 days. The 'moon' can be a time interval, which can be quantified (either by counting or by lexical reduplication), and it can be an index of the time for agricultural and other activities.

The lunar month is used in this way in many cultures all over the world. Nilsson, (1920, p. 149) describes how the "Samoan woman looks at the moon and expects the beginning of menstruation at a quite definite position of that planet, each woman naturally having a different position of the moon in view. If menstruation does not take place then, she perceives that she is pregnant, and expects her confinement after ten moon-months". Exactly same practice still occurs in Huni Kuĩ, Awetý and Kamaiurá. Each woman has her own 'moon' (that is, shape of the moon) at which her menstrual period is expected. However, in these cultures, although the length of pregnancy is counted by approximate reckoning, the physical changes of the body, and dreams, indicate the stage of the pregnancy more than the counting of moons. During the field work Kanuaku Aweti explained how she and other women in the community index their period time with the moon. She said:

> "We always look out for the moon, when we look at the moon, we already know and worry that we are going to menstruate. Women are always afraid of menstruation! Every woman has her own moon, so every woman menstruates on a different day. When the woman does not menstruate at her moon, the woman becomes anxious, or she knows that she is pregnant. I always menstruated at my moon, this one here (pointing at the moon picture), I never got it wrong! (this a translation of fragment of the conversations, the full narrative (see appendix I).

In summary, Huni Kuĩ *Ushe,* Awetý *Taty* and Kamaiurá *Jay* are terms used to name the lunar month and these words are used every day in the community, not only to index womens' periods, but for time reckoning in relation to agriculture activities, hunting activities, festivals, and rituals. Finally, it should be noted that the moon is a being which is important not for time reckoning but also to explain human existence and which is embedded in the cosmology, mythology and everyday life (see Chapter 5).

4.9 Space, time, metonymy and metaphor

As noted above, it has been proposed that the derivation of temporal language and concepts by metaphoric mapping from the spatial domain is a linguistic universal. In the previous sections, it can be seen that space is very important for concepts of time and time reckoning practices in Huni Kuĩ, Awetý and Kamaiurá. However, what has been shown above is that event-based time intervals and temporal landmarks are *indexed* by the spatial positions, shapes and configurations of the sun, moon and stars. These are not metaphors. Indexation of time intervals or landmarks may be metonymic, in the sense that an event-based interval or temporal landmark in all three languages can be defined by the spatial position, motion or orientation of a heavenly

body (or its emanation) in relation to a spatial landmark. The spatial landmark may be a human body part, or an inanimate object or part of an inanimate object. The similarity of such indexical-metonymic conceptualisations in the three languages is illustrated by the following examples:

(6)
bari *ni* *manã* *nabi* *raka* *tan-* *aya*
sun forest top of head lying be- is
'the sunlight is over the forest' = close to midday (Huni Kuĩ, Table 4i)

(7)
bari *tãkeshkã* *kain-* *aya*
sun side of the face going- is
'the sunlight is on the side of the face' = afternoon (Huni Kuĩ, Table 4m)

(8)
Apyter- *ype* *kwar-* *up*
head over sun- is
'the sun is overhead' = midday (Awetý, Table 5n)

(9)
Ok *apo*
house top of
'[the sunlight] is on the top of the house' = sunset (Awetý, Table 5t)

(10)
Apyter *uwaj*
head half
midday (Kamaiurá, Table 6h)

(11)
Kwara *itse*
sun enter
'the sun goes in' = sunset (Kamaiurá, Table 6m)

The use of spatial indices for event-based time intervals is no different from their indexation by social activities and by other environmental "happenings" and states, such as the water level, the sound of the cicada and so on. Space and motion in space are ever-present, but space is not a specifically privileged domain in conceptualizing time metonymically. However, the research also investigated whether space is

employed as a source domain for space-time metaphor, and in particular for Moving Ego (ME) and Moving Time (MT) constructions, such as:

a) She is coming up to graduation (ME)

b) The summer is approaching (MT)

c) We are falling behind schedule (ME)

d) The deadline was pushed back (MT)

ME and MT schemas, in which temporal relations are expressed in terms of the movement of either the deictic centre towards/away from an event (ME), or an event towards/away from the deictic centre (MT), are both instances of D-time. Before addressing these metaphoric constructional patterns, it is important to note that Huni Kuĩ, Awetý and Kamaiurá, although none of them have verbal tense, all employ grammatical and lexical markers that indicate, amongst other notions, the past and future (or future-present) status of events in relation to time of utterance (Abreu, 1914; Baldus, 1940; Drude, 2008; Kaxinawa, 2014; R. Montag, 1973; R. Montag, 1981; Seki, 2000).

To investigate whether ME and/or MT schemas can be used in these three languages we employed an elicitation task involving the use of dolls (to represent EGO) and small paper objects representing the dry and rainy seasons. The Author moved the doll to/from the season (ME) or the seasons to/from the doll (MT), and asked the Research Consultant to describe the event. The elicitation task was used as a cue not just for a single utterance, but also for a conversation involving consultants and Collaborating Researchers about how to express "temporal motion" in the language, giving Portuguese examples. Awetý speakers who were participants of the research did not consider this to be a meaningful task. In the other two languages, metaphoric

expressions conceptualizing the temporal movement of Ego towards or away from an event (ME) were judged by all of those speakers participants of the research to be impossible to express linguistically, or such an expression was said to be meaningless.

The movement of an event towards Ego and away from Ego (MT) was expressed using motion verbs “go” and “come”, but without the mention of Ego as Landmark. In other words, the sun or the rain can move, but this is not necessarily an Ego-related metaphorical movement in time, it can rather be an expression of the actual spatial movement of the entity. For example, rain which is distant can approach the speaker. Such spatial motion expressions are conventional in all three languages.

The elicitation task was supplemented by a questionnaire (appendix A) which asked for translations of Portuguese ME and MT expressions. There are methodological problems with the use of such questionnaire data, since the respondent may simply give a word-to-word translation, even though the resulting expression is barely acceptable, or is not conventional, in their native language.

Furthermore, it is sometimes problematic for native speakers in question-answer sessions to make sense of a task that is posed in terms of linguistic items (words or constructions) in Portuguese that are not part of the conventional repertoire of the language under investigation. In fact, it was impossible to collect MT/ME questionnaire data in Awetý. The Awetý participants just ignored the questions, when queried about the reasons why, they just stated that they do not saying in the same way as in Portuguese and therefore they do not know how to translate the sentences.

However, the Collaborating Researchers are not only fluent speakers of Portuguese, they are also postdoctoral linguists, with whom the Author has conducted many conversations about their native languages and about the research reported here. For

this reason, the questionnaire was also treated as a basis for structured conversational interviews with Collaborating Researchers about ME and MT constructions and conceptualisations in Huni Kuĩ and Kamaiurá.

Moving Time. In both Huni Kuĩ and Kamaiurá, examples were provided of MT expressions. None of the MT expressions involved a construction in which EGO is mentioned as a participant, although in many cases the verb of motion is deictic, as exemplified below.

Examples of MT expressions provided by Collaborating Researchers are:

(12)

hanu	*piti*	*anu*	*nuku*	*shu-*	*ki*
then	to eat	there	arrive	PAST	DECL (Huni Kuĩ)

[Translation of the questionnaire item (Brazilian Portuguese: *Chegou a hora de fazer uma refeição* (Eng. 'meal time arrived').]

(13)

bariã	*ma*	*kemai*	*ki-*	*ki*
sun	just	arrive	PROGR DECL	(Huni Kuĩ)

[Translation of the questionnaire item (Brazilian Portuguese: *O verão está chegando* (Eng. 'summer is arriving').]

(14)

kwara	*o-'at*	*o'-ut*
sun	3P-fall	3P-come (Kamaiurá)

The sun is born

[Translation of the questionnaire item (Brazilian Portuguese: *O verão está chegando* (Eng. 'summer is arriving').]

(15)

kwara-	*iwet*	*o-*	*ho-*	*m*	*-a'ê*	*het*
sun	bad	3P	*go-*	GER	ARG	ASP.COMPL. (Kamaiurá)

[Translation of the questionnaire item (Brazilian Portuguese: *o verão passado* (Eng. 'last summer' lit. 'the past summer').]

Although it is clear that events may metaphorically undergo motion, it is not clear that the movement is from the past/future to the present. Even in cases where deictic verbs are used, these may be as part of a serial verb construction signifying appearance (e.g. 14, 'being born') rather than motion (compare, for example, Eng. 'it's gone!' to mean disappearance of an object).

Moving Ego. In Huni Kuĩ, there were no examples of ME expressions, in response either to the elicitation task or to the questionnaire, and the Collaborating Researcher and Research Consultants insisted that such constructions do not occur. In Kamaiurá, there were examples of expressions that appear to use ME schemas, but conversational interview with the Collaborating Researcher, and the Collaborating Researcher's re-translation, established that these are in reality neither MT nor ME expressions. For example:

(16)

kwara	*ypy*	*ramuê*	*rak*	*a-'itse*
sun	beginning	SUBJ	EVID	1P-enter

[Translation of the questionnaire item (Brazilian Portuguese: *eu entrei no ano novo* (Eng. 'I entered the new year'.]

(16) was re-translated by the Collaborating Researcher as *no ínicio do ano, eu entrei* 'I entered at the beginning of the year'. In other words, the Kamaiurá utterance conceptualizes an attested spatial motion event, specifying its time of occurrence as being at the beginning of a temporal period. Although there is clearly a need for further investigation and analysis, it seems that in Huni Kuĩ and Kamaiurá, Moving Time constructions, but not Moving Ego constructions, are grammatical and conventional. This should not, however, be interpreted as evidence for the conceptualisation of the metaphoric motion of events as being "along a timeline".

None of the three languages have words that are translation equivalents for *past* and *future*. The Collaborating Researchers were therefore asked in Portuguese about the spatialization of past and future, to establish whether there is a cultural conceptualisation of a timeline, or at least a conventional directionality or orientation (e.g. Future=In front, Past=behind; or the reverse of this: Núñez and Sweetser, 2006).

The questions posed to the Collaborating Researchers were:

- Where is the past [thought to be] located?
- Where is the future [thought to be] located?

The Author then checked the answers given by the Collaborating Researchers with other speakers (Research Consultants). The data reported here are based on this procedure. Awetý and Kamaiurá speakers, when queried about the location of events in the past were unanimous. The past for them is *in their eyes*. The explanation offered is that the past consists of memories, and memories can be "seen" in "the mind's eye". This is a metaphor which can be compared with the English use of the verb "see" to mean "understand": that is, vision is the source domain for mental processes which are directed towards an imagined, thought about or remembered world. In English, UNDERSTANDING IS SEEING (Lakoff and Johnson, 1980; Sweetser, 1990; Johnson, 1999); in Kamaiurá and Awetý, REMEMBERING IS SEEING. The future for Awetý and Kamaiurá speakers, in contrast, is in front of the speaker's eyes, but not far away; it is located in the immediate visual field. No events are located behind the speaker when thinking about past or future.

In Huni Kuĩ, the Collaborating Researcher and Research Consultants reported that events that happened in the past are conceptualised as being in the heart. Future events and plans are located in the head (which is thought of as the location of the mind and

thinking). In this language, too, there is no conceptualisation of events being behind the speaker; every event that is remembered or anticipated is located in the body: heart and mind. It seems, then, that although MT expressions are employed in these languages, these do not imply a conceptualisation of an event moving along a timeline. The evidence suggests that in these cultures past and future are conceptualised in terms not of spatial direction, but of embodied mental capacities: *memory*, *anticipation*, *intention*, and *imagination*.

Summary. The data reported in this chapter demonstrate how event-based time intervals are conceptualised, named and gives a preliminary insight into how they are used in the everyday language and life of the three communities studied. The event-based time intervals that are specifically described and analyzed characterise life stages, parts of the day and night, and seasons. Event-based time intervals are indexed by specific events, or temporal landmarks, that may enter into the metonymic lexicalization of the time interval. The sun and sunlight, the phases of the moon, environmental happenings and regular activities are prominent indices for event-based time intervals in Huni Kuĩ, Kamaiurá and Awetý.

The constellations and the stars also regulate the activities of planting and harvesting of cultivated crops and the collection of wild fruits. Furthermore, the traditional festivals in both Kamaiurá and Awetý are also indexed by the appearance of the constellations. The constellations also index seasonal changes in weather: the periods of rain, heavy rain, cold weather, wind, breeze, draught, and hot sun which lend structure to the sub-intervals of the rainy season and dry season.

The fishing period is also indexed by the constellations and environmental happenings, such as the level of the water in the rivers. In this way, it can be seen that the time

interval systems that are separately described in this chapter are integrated in practice as a complex linguistic and conceptual resource for time reckoning and temporally organised practice. The data reported here also demonstrate that it is not "timekeeping" according to the passage of metric time, but "happenings", changes of state and in particular the completion of events and activities, that regulate the temporal organisation of social life.

Chapter 5. **Discussion**

The research reported in this thesis was a comparative and cross-linguistic field-based anthropological linguistic study of the way in which indigenous Amazonian concepts of time are organised and expressed, in language structure, cosmologies, myths and everyday life, in three indigenous cultures and languages of Brazil: Huni Kuĩ, Awetý and Kamaiurá. Its overall aim was to increase knowledge and the understanding of how language variation is situated in socio-cultural variation, using concepts and methods from anthropology, linguistics and psychology.

The following hypotheses were formulated to define the scope of the investigation:

- While the nonlinguistic cognitive basis of space-time mappings is probably universal, whether and how it is realised in language depends on sociocultural factors;
- The absence of numerically based calendars is a cultural areal feature of indigenous Amazonian (and other Brazilian) languages, crossing language family boundaries;
- Space is not the only or primary source domain for the metaphorical understanding of time in all languages;
- "Amazonian time" involves mappings and correspondences between social structure, cosmology and mythic narrative, and social space.

The analyses and interpretation of the data showed that Event-based time intervals existent in the culture and language of these three different communities are similar even though they are from different communities speaking different languages. To have access to the cultural meaning of Event-based time it was necessary to build a field research design emphasizing mediation and interaction between individuals and

groups of people and, sometimes, the interaction between individuals and objects. Many interactions between researcher and community members were necessary too.

Background and methods. Cultural and cognitive linguistics were important foundations for the development of this research. Cultural Linguistics as an approach considers that "many features of human languages are entrenched or embedded in cultural conceptualisations" (Sharifian, 2017, p. 2). This assumption is intrinsic in the analytical framework to understand the notion of Event-based time in these cultures. Moreover, Cultural Linguistics grows out of the general approach of Cognitive Linguistics (Johnson, 1987; Lakoff, 1987; Lakoff and Johnson, 1999) and extends the notion of embodiment to cultural embodiment and embedding (Sinha and Jessen de López, 2002). In this research, the argument in Cognitive Linguistics that time conceptualisation is universally based on metaphoric mapping of space and time was tested and refuted.

In the development of this research a synthesis of different qualitative and field experimental methodologies was used. The mix was necessary to optimize the results and to help to manage the time allocated to undertake the research. The synthesis of *field experiment and ethnographic observation* enabled the Author to get access to cultural meanings and to understand the social process, social practices and the network of social relations that embed cultural concepts of time. In this research, therefore, the structured methods of questionnaire and elicitation tasks served as stimuli to provoke conversations about the ways people conceptualize and understand time. The research design made it possible to conduct the field work in the limited period of time allocated to undertake the research.

The contributions of the Collaborating Researchers, Research Consultants and Research Facilitators were vital for getting community engagement and the completion of this research. This research counted on the help of three Collaborating Researchers, each of whom was a native speaker postdoctoral linguist from each community. They provided expert overviews of the entire dataset, assisted with data collection and analysis, helped secure access to the villages, and facilitated communication with the villagers.

The research also counted with the help of the Research Consultants, who were volunteers from the community who participated in the research by providing language and culture consultancy, conducted in data collection sessions. They actively participated in the entire process, providing data collected using all the different research instruments. Training was provided for them beforehand to familiarize them with the instruments used. The research also counted with the help of the Research Facilitators, volunteers from the community who participated actively in the project, helping with liaison with other members of the community, with translation during informal conversations, clarifying cultural information and operating recording equipment. The Author together with the Collaborating Researchers supervised all the volunteers collaborating in this research.

This teamwork helped to enhance community engagement and enabled us to follow an Introduction protocol which consisted of a formal conversation between the researcher, the Collaborating Researchers and community leaders (chiefs and other authorities such as shamans). It is also important to mention the importance of the exchange of gifts as part of this Introduction protocol and in ensuring community engagement. Gift exchange is a significant and highly appreciated cultural practice for these communities.

In giving and receiving gifts a bridge of communication is constructed making it possible to establish a relationship of mutual respect, appreciation, trust, and friendship (Mauss, 1966). The research team fulfilled this expectation providing the gifts requested by the community leaders, who were responsible for the further distribution of the gifts to community members. The entire research was possible because the Author built a trust relationship with members of the communities who not only shared general cultural information about time but also confidentially shared secret information about their culture. This sharing of secret information (which is not reported in this thesis) exemplifies the importance of the development of mutual trust between research and members of the communities. It also encapsulates the way the community members are part of a 'common sociality', in which values and worldview are shared.

Trust and mutual interaction, confidence, and communication in the community generates a bidirectional relationship of knowledge exchange. The communities educated the Author about the way they understand time and respectively the researcher, asked by the communities' members, contributed with skills in providing help and support to the communities and the family hosts in the villages. Fostering dialogical communication where information and means were shared mutually was an important factor. Community members felt empowered to express the community perspectives in the process of decision-making, and in relation to the cultural information and knowledge that was shared in the research context.

Event-based time intervals. Event-based time concepts are indexed and embedded in everyday life, and the communities' relationship with the environment and their cosmology. This research mapped out the following Event-based time intervals: *Life Stages*, *Times of day* and *night* and *seasons*. The sun, the moon, stars and natural and

social happenings index the intervals of time and are used in time reckoning in these communities.

The sun has a central importance in both seasonal and the day and night intervals in the three communities. The sun *Bariã* (Huni Kuĩ), *Kwaryp* (Awetý), *Kwarip* (Kamaiurá) is used to name the dry season, and its light and heat intensity indexes the subdivision of the dry season as well the part of the day; its absence indicates the end of the day and the beginning of the night.

The moon is used to index parts of the night in Awetý e.g. *taty-puku* 'later at night'. The moon is used in all languages and cultures investigated for reckoning time. It can be used in different ways, to reckon and index women's periods and pregnancy, to index and reckon agricultural and hunting activities. The moon is a BEING in these communities' cosmology and mythology (Villas Boas, O and Villas Boas C, 1974; Seki, 2010; Faleiros and Yawabane, 2015).

The star constellations are also indices that index Event-based time in Kamaiurá culture. The appearance of specific constellations indicates when to plant and to harvest crops (manioc and corn), and when to hold certain festivals or parties. The stars are also indexically linked to other events in the natural environment. Each constellation's appearance is perceived as the beginning of an Event based interval. Awetý also has constellations that index activities, however it seems that this practice is not used anymore. Only a few members of the community where this research took place can remember or rely on using this practice. In Huni Kuĩ culture and language no evidence of constellation-based practices was found in the community where this research took place, but this does not rule out that they might also have this knowledge;

more systematic research is needed to find more information about this type of time indexing.

Environmental happenings are also an important part of the Event-based time concepts, e.g. *niwe raya ibu be ikaya* or 'working in the field time' in Huni Kuĩ. The word *niwe* means 'wind' and *be* means 'blow', they refer to this time as 'a fresh time' to work in the fields, after that they must return home because is too hot to stay out in the open air. Not only the natural environment happenings index time, but activities such as 'back from the field time' and the *absence* of activities also index Event-based intervals, e.g. *ypypipawamue* 'later in night' in Kamaiurá refers to the *ypy* 'beginning' of *-pipaw* 'silence', *-amue* 'when'. In the house at this time there is no noise, it is time to go to sleep. In summary, it was possible to identify that the light of the day, the absence of the light, shadows, the dark, the felt of intensity of sunlight, the sun's position and movements, shape and colour of the moon, the appearance and position of constellations, level of water, the breeze on the water, bird songs, monkeys calls, the sound of the cicadas, the ripening of the forests, the movements of animals and peoples are all used to index the event-based time intervals in these communities.

Event-based time intervals have been reported to exist in many cultures all of the world: Bunun in Taiwan, Malagasy people in Madagascar, Tiv community in Central Nigeria Amondawa, and other Tupian languages in Brazil (see Huang, 2016; Sinha, et al., 2011, Dahl, 1995; Bohannan,1953; Baldus,1940). In English, event-based time is used in expressions like *let's meet at the lunch time* or *I will be around yours at tea time*. In contrast with 'time as such' and 'linear time' Event-based time cannot be measured, cannot be punctual, cannot be precisely pointed to. The rhythm of everyday happenings brings the subjective necessity for people to experience and do things at or around the occurrence of the events that will trigger activities. Event-based time

concepts “stress involvement of people and *completion of transaction* (my emphasis) rather than adherence to present schedule” (Hall, 1976, p. 17; Dahl, 1995, p. 202).

The assumption that the linear time is predominant in all cultures can lead to misunderstanding of cultures that are exclusively Event-based in time concepts. In Event-based time cultures schedules cannot be fixed. As the Author experienced in the field, a two days trip was planned to get to the village, but we finally arrived four days later. The Author asked the Collaborating Researcher why this situation was not discussed beforehand and he said, “you asked for a date, and I gave you one, but traditionally we don’t know what will happen, many things can delay travel, you see the river is very full and many things can happen during the trip, we know when set out to travel, but we cannot indicate ‘a duration’ before we arrive, we arrived when we arrived!” (conversation with Joaquim Kaxinawa, 2015, translated by the Author). This highlights that, even though the Author was researching about a different time experience, my western view of linear time, ‘time as such’ was predominant in my way to organize and to undertake the fieldwork. The Author learned during this research that in the Event-based time the duration is often unspecified, because every activity that needs more time will have it and others will not, the important thing is *the completion of the activity*. Dahl (1995, p. 203) cites the following example from research on Pueblo communities of the South-West United States:

> “Events begin when time is ripe and no sooner” (Hall, 1959, p. 9). When [Hall] asked Indians when a ceremonial dance was to start, they could not tell. Nobody knew. ‘Those of us who have learned now know that the dance does not start at a particular time. It is geared to no schedule. It starts when ‘things’ are ready! (Hall, 1959, p. 10).

In this system time is not the trigger of the event but rather the event generates the actions. For example, in the example given to explain the use of knots for reckoning time in Kamaiurá, we see that the knots on the string do not represent or enumerate the exact number of days planned for the expedition. Instead, they index the completion of each day, and the progress towards the completion of the goal of the expedition (catching the desired amount of fish) and the return home. In the same way, in Huni Kuĩ people used to work for the rubber plantation owners and companies and therefore they used to keep a tally of the number of the days worked by marking a piece of wood each day worked or a to mark a completion of an activity. However, when the Author discussed this example with the Huni Kuĩ Collaborating Researcher, he emphasised that the marks were meant to tell the tasks were completed on the day, and that's why they need to mark it on the wood, because they could not express it numerically.

Other evidence that demonstrates how the Event-based time intervals are experienced is the life stages on these cultures. The life stages are not fixed on a point of a timeline (birthdays), and they are not a 'progression' on a timeline either; rather, life stages comprise a sequence of states of being. In this sense fife stages are *events* in a process of learning and acquiring skills, and therefore the stages are categories of social life and cannot be fixed points on a "life line".

Numbers and quantification. The hands and toes in all three communities are used as part of the number systems, all of which have numbers up to three. In Huni Kuĩ 'two' combines with 'one' to make 'three' and 'two-two' means 'four'. In Awetý and Kamaiurá 'pair' is used to mean 'two', and 'pair-half pair' makes up 'three' and 'pair-pair' means four. These numbers, combined with hands and fingers, feet and toes, make up the entire number system. However, this combination system should be interpreted as consisting of numeral quantifiers, not numerical values, for example in

Huni Kuĩ *tae rabe inun meken rabe* ‘foot two and hand two’, for example, signifies a collocation of numbers rather than the arithmetic operation over numeric values that makes up (in mathematics) the number ‘twenty’. This way to allocate the basic value ‘one’, ‘two’ or ‘pair’, to hands, fingers, feet and toes can be found in all three communities. The numerical systems in these cultures are not generally used to count or measure Event-based time intervals such as life stages. However, hands and toes, knots on the string and marks on a piece of wood can be used for quantifying objects and, in some specific communication contexts, time intervals, in Huni Kuĩ, Awetý and Kamaiurá. Many quantifiers derive from properties of referents, e.g. *pixke sharabu* ‘fabric’, ‘threads’ refers to a large quantity such as ‘thousands’. Although the numbers can be used for time reckoning, in the sense that one finger signifies one day, when it is not possible to express the ‘quantity’ by fingers and toes, hands and feet this can be done by more ‘qualitative’ quantifiers.

The argument here is that the Event-based time reckoning is linked with the completion of the event, rather than a segment of ‘time as such’. The event is based on something that occurs, or has occurred, or is going to occur, or should be done or accomplished. These event-based intervals used in time reckoning in these communities are highly context-dependent. The knot on the string is not a “unit” in a “calendar system” or an instrument that can count days in any and all situations, but it is an artefact that should be used in a specified context and it indexes the completion of an event.

This system is not the only way to reckon time. The indigenous system and the “gringo” (foreign) calendar system co-exist in the everyday life of these communities. It is very common for indigenous communities to make and use hybrid calendars. These hybrid calendars are artefacts that represent the cultural event-based intervals

and symbolize the traditional ways to understand Event-based time in their culture. The hybrid calendars also represent the 12 months of the year, rendered in writing in Portuguese. However, hybrid calendars are *not* based upon absolute correspondence between indigenous Event-based time intervals and calendar months. Rather, the months represented there are linguistic and pictorial *indexes* and representations of environmental events and social activities that occur at that time. For this reason, it is possible to consider that the hybrid calendars are not merely translational artefacts; they are cognitive artefacts that merge two systems, Event-based time and Calendar time, in a conceptual blend (Fauconnier and Turner, 2008).

Metaphors for past and future. Events do not occur on their own, they occur in the "flow" of time and the "stream" of events. They are happenings that occur in relation to the time of utterance, in the past or future (Deictic time: D-time); or in relation to other happenings, in an event sequence (S-time). Both D-time and S-time are spatialised in many languages in terms of a timeline in which events are either "ahead" or "behind" the present moment (D-time); or ordered from earlier/before to later/each other (S-time). The distinction between D-time and S-time is important to understand both event-based time and metaphors for time.

To begin with, we can say that all three languages studied in this work have both D-time and S-time. For example, there are words for 'tomorrow' and 'yesterday'. And some Event-based time intervals make up ordered, sequential systems (e.g. parts of the day, life stages). However, the Author has emphasised that there is no timeline in any of these languages. In all three languages and cultures the past and future are not located behind (past) and in front (future), like they are in English. Nor is the past above and the future below, like sometimes in Chinese (Boroditsky, 2001; Fuhrman et at., 2011; Yu, 1998, 2012). Nor is it the reverse as in Aymara (Núñez and Sweetser,

2006). Nor is it like in Vietnamese, in which time 'approaches' from the future, behind Ego and continues 'forward' into the past (Sullivan and Bui, 2016). Nor do the Huni Kuĩ, Awetý and Kamaiurá speakers mentally travel in time, as is claimed for Malagasy: "Malagasy moves backward into the future" (Dahl, 1995). In fact, in the three languages studied, there is no 'mental time travel' metaphor of the Moving Ego (see below); and events do not move on the timeline either, although they can "approach" the speaker and they can "pass" and "disappear". In fact, for Huni Kuĩ, Awety and Kamaiurá the past and future are not spatialised in relation to a time line, but are *psychological* concepts related to memory and anticipation of events. The source domain for conceptualizing past and future is not spatial orientation (in front/behind, up/down, left/right), but the senses and their embodiment.

In Awetý and Kamaiurá the *PAST* is located *in their eyes.* The past in this sense is linked with memories, and the memories can be *seen in the mind's eye*. This metaphor for the past can be compared with the English metaphorical usage of 'see' to mean 'understand', with the source domain VISION mapping to mental process through the conceptual metaphor UNDERSTANDING IS SEEING (Lakoff and Johnson, 1980; Sweetser 1990; Johnson, 1999). In Awetý and Kamaiurá, however, REMEMBERING IS SEEING. This has some similarity to what Dahl (1995, p. 199) reports for Malagasy, in which "The PAST … is seen 'in front of the eyes'."

For Awetý and Kamaiurá, by contrast, it is the *FUTURE* that is *in front of the eyes*. But this should not be understood as a "reversal" of a time line, or different orientations of a time line. *In front of the eyes* should *not* be understood as meaning either "future is ahead on a time line" (Awetý and Kamaiurá), or "past is ahead on a time line" (Malagasy). In fact, none of these languages have metaphors for past and future based

on the model of time as "passage", or the "flow" of the "river of time" (Smart, 1949). The metaphor is different, and it is to do with memory and imagination.

In Malagasy, the future is *ho avy* which means 'to come' (Dahl, 1995, p. 199), which Dahl explained in terms of what Bourdieu (1963) called the "horizon of the perceived present", "the forthcoming". Dahl (1995, p. 199) says we should understand it as follows: "The nearest future, the forthcoming, is perceived in the same way as the actual present to which it is tied by organic unity". In Huni Kuĩ the future is located in the head, the metaphor is THE FUTURE IS IN THE MIND. This is also related to vision, because the future is what you see "in the mind's eye", or imagination. In Huni Kuĩ, the past is located IN THE HEART and never behind the speaker. For this culture events that are remembered, anticipated, planned or desired are located in the body: HEART and MIND.

In summary, for Huni Kuĩ, Awetý and Kamaiurá the future is marked in the language as a *possibility of completion*, or *desire for completion*, of an anticipated or intended event. The event is metaphorically located within sight, but not far way; it can be seen, it is not unknown. The visual field is the source domain to express future or desired events. The evidence gathered in this research suggested that in these cultures past and future are conceptualised in terms not of spatial direction, but in terms of the embodiment of mental representational capacities: *memory*, *anticipation*, *intention* and *imagination.*

To illustrate the difference between the metaphors for past and future in these languages, and the familiar linear spatializations of time in the Moving Ego and Moving Time schemas for THE PAST IS BEHIND/EARLIER IS BEHIND and THE FUTURE IS IN FRONT/LATER IS IN FRONT, the following visualisation (see Figure 8, Figure 9 and

Figure 10) of the different schemas can be proposed, using the example of ***Xiã* (Past, After)** and ***Ishani* (Future, Before)** in the Hãtxa Kuĩ language. Two points should be considered. First, for Huni Kuĩ THE PAST IS IN MY HEART and THE FUTURE IS IN MY MIND. Second, in English and in most languages, THE PAST IS EARLIER/BEFORE and THE FUTURE IS LATER/AFTER on the time line. This is the conventional mapping in English between D-time and S-time. This is not the case in Hãtxa Kuĩ. In Hãtxa Kuĩ, it seems that THE PAST IS AFTER (***Xiã***) and THE FUTURE IS BEFORE (***Ishani***). This analysis is based on the ambiguity or conflation of D-time and S-time in these two words, which can be used both as temporal adverbial expressions and as temporal markers: *ishani* means both 'before' and 'in the future', and *xiã* means both 'after' and 'in the past' (see Chapter 2, examples (6), (16), (30-33)). Because it seems to the English speaker so counter-intuitive that *future=before* and *past*=after, the difference can be best explained through schema diagrams which show how D-time articulates with S-time in English (Moving Time and Moving Event) and Hãtxa Kuĩ.

It should be noted that in the schematic diagrams for English (Schema 1 and Schema 2), a distinction is made between Moving Time and Moving Event, which are conflated in the original terminology of Clark (1973), in which the name "Moving Time" is given to what here is called "Moving Event".

SCHEMA 1: ABSOLUTE MOVING TIME/TIME AS SUCH			
PAST	[NOW]	FUTURE	**D-TIME**
EVENT 1----------→ EVENT 2			
BEFORE/EARLIER	----------→	AFTER/LATER	**S-TIME**
2008 ----------→ 2028			

Figure 8 Mental Schema for Absolute Moving Time

In Schema 1 (Figure 8), Time moves from Past to Future (this is the schema of **time as such,** or Newtonian Absolute Time): "Absolute, true, and mathematical time, in and of itself and of its own nature, without reference to anything external, flows uniformly

and by another name is called duration." (Newton, 1686, cited in Sinha, 2014, p. 56). In English, unlike in Ancient Greek (Gard, 1954, Bassi, 2016), Aymara (Nuñez and Sweetser, 2006) Malagasi, (Dahl, 1995) and Vietnamese (Sullivan and Bui, 2016) THE PAST IS BEHIND, THE FUTURE IS AHEAD, TIME MOVES FORWARD.

In the literature on spatial motion metaphors for time, from Clark (1973) onwards, the term 'Moving Time' is generally used for a different schema, which underlies expressions such as:

'My old age is approaching' (OLD AGE IS AHEAD)

'My childhood is has passed' (CHILDHOOD IS BEHIND)

In this schema 2, (Figure 9) Events time move from the future to the past (AHEAD to BEHIND) in D-time. This Schema 2 shows that the equivalence *before=past* and *after=future* is transferred in English from the Moving Time schema 1 to the Moving Event schema. So, events move, or "pass", from LATER to EARLIER, in S-time. It could be because we speak of 'time passing' from future to past, that in previous analyses the Moving Event schema 1 has not been distinguished from the Moving (Absolute) Time schema.

SCHEMA 2: MOVING EVENT (D-TIME)			
PAST	[NOW]	FUTURE	**D-TIME**
EVENT 1 ←----------[NOW] ←----------EVENT 2			
Childhood BEHIND CHILDHOOD IS BEHIND	←----------	Old Age AHEAD OLD AGE IS AHEAD	
BEFORE/EARLIER ----------→ AFTER/LATER			**S-TIME**

Figure 9. Mental Schema Moving Event

In Hãtxa Kuĩ, ***Xiã*** **'**after' and ***Ishani*** **'**before' are not located on a time line. Events are "passing" from BEFORE NOW (IN MY MIND) to NOW, and from NOW to AFTER NOW (IN

MY HEART). Note that the word *Ishani* is part of an adverbial expression and has the meaning 'before', while *Shana* is a temporal marker meaning 'immediate, certain [reassured] future'. The morpheme *Xiã* can be used both adverbially ('after') and as a temporal marker (past, some time ago) (see Chapter 2).

Unlike in languages which have a tense system, in Hãtxa Kuĩ D-time is not articulated grammatically or schematically with S-time. *There is no time line.* Instead, D-time is related to attested *completion* of events, and the intentions, desires, commitments of the speaker and the attested certainty of occurrence of events. So, in Schema 3, D-time is related to Aspect and Evidentiality, not to S-time

SCHEMA 3: HÃTXA KUĨ TIME SCHEMA			
PAST ***Xiã***	[NOW]	FUTURE ***Shana***	**D-TIME/ aspect/ evidentiality**
EVENT 1 ←---------- [NOW] ----------→ EVENT 2			
AFTER NOW ***Xiã*** COMPLETED ←----	NOW	BEFORE NOW ***Ishani*** INCOMPLETE -----→	
IN MY HEART			***IN MY MIND***

Figure 10 Mental Schema Hãtxa Kuĩ time

In Schema 3 (Figure 10), therefore, in Hãtxa Kuĩ events are "passing" from *before now* to *after now* in relation to the deictic centre. In accordance with this, the future is *before completion* (it has not yet happened, it is still in my mind) and past is *after completion* (it has already happened and is in my heart). This schema, which is based entirely on D-time, is completely different from that of English and other Indo-European languages, but it is coherent as well as being consistent with the way Hãtxa Kuĩ grammaticalizes aspect and evidentiality.

Hãtxa Kuĩ, Awetý and Kamaiurá all have temporal markers to express past and future. In Hãtxa Kuĩ, there are grammatical morphemes that express temporal notions of past and future. These temporal markers have a complex relationship with aspect, especially the notion of completion. This language also has time-related suffixes on nouns. In this language the temporal markers give information about the time of an action or event in relation to the time of speaking: that is, they "situate an event in the past or project an event into the future" (Kaxinawa, 2011, p. 47). There are five ways gradations of expression of an event in the past in Hãtxa Kuĩ: immediate past, recent past, events that happened today before the speech, recent past that happened yesterday or few days ago, distant past and remote past. The future is marked by two projective markers which mark known vs. intended (not yet certain) actions.

In the Awetý language temporal relations are expressed by temporal suffixes and temporal adverbs. Temporal aspect is marked by suffixes which indicate the continuous and/or progressive, future and perfective, in terms of either "state of being" for nominals, or more familiar "verbal aspect" (for verbs) . The notion of "state of being" is important for understanding both Awetý and Kamaiurá (and more generally Tupian, and other indigenous South American) concepts of time.

In Kamaiurá temporal relations are expressed by expressions and particles, which in many cases express aspect and mood. Two markers are used when referring to events in the future. Futurity in Kamaiurá fuses together notions of proximate *vs.* indeterminate future with notions of expectation *vs.* definite intention. The past is marked by two particles that also express the evidential status of the event: *rak* (attested, I/we witnessed the event) and *je* (reported, it is said that), which both imply events that happened before the time of utterance. In this language, if there are no

mood, aspect or temporal markers, the event can be understood to take place in the present or past (Seki, 2000, p. 136).

States of existence: nominal aspect. In general, Tupian languages like Awetý and Kamaiurá do not express past and future by inflections on the verb, but on the noun. Anchieta ([1595] 1874) had already noted that past and future were not expressed in verbal tense-marking morphology, but by morphological modification of nouns. Kaxinawa (2014, p. 36) describes this as consisting (in Hãtxa Kuĩ) of a class of morphemes that conceptualize the "state of existence of beings", in terms of whether this existence is *actual*, *retrospective* or *prospective*.

All three languages mark temporality on nouns, but the conceptual basis is not one of tense, because it focuses *completion*, in combination with notions such as belief, desire, and evidentiality. The Author considers that the notion designated by Monserrat (1976, 2012) as *estado* (state) and Kaxinawa (2014, p. 36) as *estado de existência dos seres* (state of existence of beings) is the most appropriate one, which can be designated in English as *state of being*. This leads to the hypothesis that what is grammaticalised in both Tupian and Panoan languages is *state of being*, comprising what is usually classified as aspect, mood and evidentiality, and not tense. A further hypothesis is that the prominence in the languages of *state of being* is a cultural-linguistic areal phenomenon.

Similarity and common characteristics. This research took into consideration the notion of the cultural area which refers to the fact that some cultures and languages have similarities based on geographical proximity and cultural and linguistic contact, even though the languages are not genetically related (Sapir, 1916; Darnell, 1998, p. 283). The choice for this research of two related Tupian languages spoken in close

proximity and with constant contact (Awetý and Kamaiurá); and one unrelated language (Hãtxa Kuĩ), spoken in a completely different region. All languages are spoken in the Equatorial area of Brazil comprising Great Amazonia and the Xingu Park. The results of this research demonstrated that time in these communities is organised and expressed in the same way: the indexes (sun, sun's light, position of the sun, environmental happenings, activities, constellations and the moon, the absence of the sun and the shape of the moon) for time intervals and time reckoning are present in all three cultures and languages.

Furthermore, the way the Event-based time intervals are organised and expressed is similar in Hãtxa Kuĩ, Awetý and Kamaiurá languages. As described here, the grammar of time is also similar in these languages. In each language there are morphemes and markers that are used to express future and past, and each language seems to focus on the completion of the action and state of being of predicates. Time (as tense) does not seem to be a linguistic category. This data can contribute to the hypothesis that Amazonian languages, despite of the great genetic diversity, all share certain structural features (Aikhenvald and Dixon, 1998). This research contributes additional evidence that vent-based time is a common areal feature in many communities in Greater Amazonia and Xingu areas.

Overall summary of this chapter. Event-based time intervals are to be found in many cultures (e.g. Amondawa and many others Tupian languages in Brazil, in Bunun in Taiwan, Malagasy people in Madagascar, Tiv community in Central Nigeria and Yélî Dnye in Rossel Island) but metric time intervals (clock time and calendar time) are not transculturally universal. Metric time is a cultural invention, and the associated, resulting notion of "Time as Such" is also a cultural invention. It is only our cultural familiarity with this notion that leads us to assume that it is common to all cultures. As

Sinha and Gärdenfors (2015, p. 72) argue, "the cognitive and linguistic representation of events, and inter-event relationships, is the key to understanding the human conceptualization of time. This proposal is at odds with the widespread assumption that time is everywhere, for all people, a distinct cognitive domain or dimension."

Huni-Kuĩ, Awetý and Kamaiurá (at least in their traditional way of life) use exclusively event-based time intervals, as do the Amondawa (Sinha et al., 2011) and the Yélî Dnye (Levinson and Majid, 2013). The evidence presented above also demonstrates that there are many similarities in the ways in which Amondawa, Awetý, Huni Kuĩ and Kamaiurá conceptualize event-based temporality, suggesting that they all participate in a cultural areal conceptual complex encompassing Amazonian and many other South American linguistic families.

Event-based time intervals in all these cultures are based upon seasons, "happenings" in the natural environment, the movements of heavenly bodies, and the regularities of social life and habitus (Bourdieu, 1977). Temporal concepts are not metric, not cyclical (unless in hybridised blends with imported calendar time), and not based upon a timeline. Metaphorical movement of events occurs but should not be thought of as along a timeline. There seems to be no metaphorical movement of Ego.

Conceptually, speakers of the three languages that were investigated locate past and future events in embodied cognitive and perceptual processes, rather than locating them along an oriented timeline: for example, in Kamaiurá, REMEMBERING IS SEEING. In the absence of metric time, of a concept of "Time as Such", and of lexicalised concepts of past and future, Event-based time intervals give structure to a complex and traditional lifeworld. The grammar of time is also similar in all three

languages, focusing on completion and incompletion of events, in combination with notions such as belief, desire, and evidentiality; and on *states of being* of predicates.

Conclusions

Main findings. The main objectives of this research were to investigate how Kamaiurá, Awetý and Huni Kuĩ concepts of time are organised and expressed in the language structure, cosmologies, myths and everyday life and to contribute information to advance knowledge and understanding of how language variation is situated in social-cultural variation. The motivation to undertake this research was to understand the way in which concepts of time are constructed and motivated by cultural patterns, and to understand the relationship between the language and conceptualisation of time, space and other conceptual domains.

Event-based time intervals exist in all cultures and languages, in contrast to metric time intervals (e.g. clock time and calendar time) that are not found in all culture. Metric time is a cultural creation which leads to the notion of "time as such". The western cultural familiarity with this way of understanding time leads to the universalist approach which assumes that this way of understanding time is common to all cultures. This research refutes this universalist approach based on the result here described.

This research found that Huni-Kuĩ, Awetý and Kamaiurá (at least in their traditional way of life) use exclusively event-based time intervals, as do the Amondawa (Sinha et al., 2011) and the Yélî Dnye (Levinson and Majid, 2013). All these cultures (Amondawa, Awetý, Huni Kuĩ and Kamaiurá) has significant similarities in the ways in which conceptualise event-based temporality. The Event-based time intervals are indexicalised by environmental happenings, the movements of the sun, the moon and the stars, and the regularities of social life and habitus. Therefore, the temporal concepts for these communities are not metric, not cyclical and not based upon a

timeline. Traditionally, there are no references for weeks, months and years, there is no term in the languages for ‘time’. In all three languages years is referred to the as dry season only, using the root meaning ‘sun’. This indicates that the dry seasons are used as a basis to understand ‘year’. The sun is of central to the concept and name of part of the day and the dry season in all three cultures. The same way the moon and the absence of the sunlight are used to name the nigh intervals, the rain, it is intensity index the rain season.

All three communities use hybrid calendars, which are a combination of traditional Event-based intervals hybridised with metric time intervals. The hybrid calendars are produced by the communities and they are artefacts that preserve cultural memory as well yielding cognitive features for time reckoning. The hybrid calendars are based upon the 12 months of the year, written in Portuguese. It is important to note that the hybrid calendars are not based upon correspondence between indigenous event-based time intervals and calendar months. The months are indexed to the linguistic and pictorial representation of environmental events and social activities that occur at that time. The hybrid calendars are products of the blending of indigenous event-based intervals and its indexical time, together with the “western” cyclical, metric time.

The number systems and time reckoning practices were found to be similar between the three cultures all of the cultures use human body parts (hands, feet, fingers and toes) being both linguistically encoded in number terminology, and used in counting, time reckoning, and demonstrations of artefacts used for time reckoning. It was found that all three languages investigated have quantifier terms that are similar to, but not exactly equivalent to, the numbers in English or Portuguese. These languages have small number systems with consisting of just distinct terms for ‘one’ and ‘two’ and these words can be combined, allowing for counting to ‘three’, ‘four’, ‘five’ or more,

based on a compounding process, such as by juxtaposition, agglutination or reduplication. This system does not necessarily express strict numerical value, e.g. “two” can be “a pair”, there is no distinction between the numeral and the use of it quantify a thing or referent, leading to argue that in these languages there are numbers but not numerals.

The hands, feet, fingers number systems of Huni Kuĩ, Awetý and Kamaiurá are used to reckon time together with knots and wood marking. In Kamaiurá and Awetý people use a knot on the string to reckon time. For example, during a fishing expedition they use knots on the string to reckon time during the expedition. It was found that untying the knot represents the overnight stay and the completion of one day’s activities. Therefore, the knot on the string is an index of completion of an event that takes place, but it is not a count or tally of the number of days. In Huni Kuĩ traditionally they use a mark on the wood to reckon the duration of an expedition or the number of working days.

The event-based time intervals and the temporal landmarks in these languages are indexed by the spatial positions, shapes, heat and configurations of the sun, the absence of the sunlight, the moon, and the stars constellations. These are not metaphors. The Event-based time is metonymical references to these indexes and it can be defined by the spatial position, motion or orientation of a heavenly body (or its emanation) about a spatial landmark. The metaphorical movement e.g., arrival, appearance and disappearance, of events occurs is not a motion along a timeline.

This research did not find any evidence of metaphorical movement of either Ego or Events along a time line. Moving Ego expressions were not found in Hãtxa Kuĩ or in Awetí, and although similar expressions to Moving Ego were found in Kamaiurá, the

Collaborating Researcher, and the Collaborating Researcher's re-translation, established that these are neither MT nor ME expressions.

Conceptually, speakers of the three languages that were investigated locate past and future events in embodied cognitive and perceptual processes, rather than locating them along an oriented timeline. For Awetý and Kamaiurá the past is *in their eyes*. Their past consists of memories, and memories can be "seen" in "the mind's eye". Therefore, in Kamaiurá and Awetý, 'REMEMBERING IS SEEING'. The future for Awetý and Kamaiurá, is in front of the speaker's eyes, but not far away; it is located in the immediate visual field. Past is not located behind the speaker for these cultures. In Huni Kuĩ, past events are located in the *heart* and future events and plans are located in the *head* (which is thought of as the location of the mind and thinking). This suggests that in these cultures past and future are conceptualised in terms not of spatial direction, but of embodied mental capacities: *memory*, *anticipation*, *intention*, and *imagination*.

It was found that all three languages employ temporal markers linked to completion or incompletion at the time of utterance, rather than before/after relations in relation to the time of utterance. Therefore, this system cannot be comparable or equivalent to a tense system. The data suggest that the deictic time (D-time) is articulated together with aspect and evidentiality in Hãtxa Kuĩ, rather than D-time being co-articulated with sequential time (S-time).

To sum up the findings on this research, it is clear that in the absence of metric time, of a concept of "Time as Such", and of lexicalised concepts of past and future, Event-based time intervals give structure to a complex and traditional lifeworld. The findings

suggest the existence of a cultural areal complex for of similar Event-based time concepts that encompassing Amazonian and other South American linguistic families.

The Author built up a relationship of trust with the Collaborating Researchers and members of each community. This made this research possible, given the time constraints to undertake this research, which without a good interaction with community's members would not have been possible. Each moment, each day, each event shared was a moment of learning and interaction between the researcher, the Collaborating Researchers, and the community members. These moments were opportunities to talk, to discuss life, to share personal histories, building a rapport that results in a lasting friendship, with a lot of care and emotional attachment. This research would not have been possible without these moments (see some field work photos appendix J).

Originality and significance of this study. Event-based time intervals are to be found in all cultures and languages across the world, but event-based time, and cultures whose temporal understanding depends exclusively on event-based time, have not been sufficiently investigated in the past. The research that led up to the work reported in this thesis (Silva Sinha et al., 2012; Sinha et al., 2011) was the first to identify and name the category of Event-based time interval and to investigate a community and language employing only event-based time. This work, which investigates the way in which Kamaiurá, Awetý and Huni Kuĩ Event-based time is conceptualised and linguistically expressed, is the first comparative study of genetically unrelated, as well as related, languages that have only event-based time. It has looked at the way in which event-based concepts of time are motivated by cultural patterns, in everyday life, in knowledge of the natural environment, and in cosmologies. It has confirmed the relationship between exclusively event-based time concepts (so absence of metric,

calendar and clock time) and the absence of the spatialisation of time in metaphoric language. It has identified previously unresearched non-spatial source domains for the metaphoric conceptualisation of past and future - VISION and MEMORY. It has described the numerical systems of the three languages, and how these, together with body parts (fingers and toes) and symbolic cognitive artefacts (knots on a string, notches in wood) are used in 'time reckoning' based on event completion. It has explored new directions for the understanding of the relationship between D-time, aspect and evidentiality in the grammar of these languages.

Limitations of this study and suggestions for future research. This research was subject to some limitations which have to be taken into account. First, the methodological limitation of the use of questionnaires in a bilingual context, (Brazilian Portuguese and the native language) and the bias this questionnaire has towards the way Westerners understand metric time. Furthermore, the tasks and stimuli used in this research should be re-structured in future research in the light of the research findings. The time constraints on the field work limited the possible scope of the ethnographic research.

This research brought out a comprehensive inventory of Event-based time intervals in three indigenous languages of Brazil and it showed there to be many aspects of such cultural, linguistic and cognitive systems that need more systematic research. Several areas are suggested, all of which would deepen the analysis of language, cognition and culture.

The first is related to S-time, in kinship and narrative; how temporal relations existent in these communities contribute to conceptualising personhood, identity, self and autobiographic memory. The second is a further investigation of the role of gesture and artefacts in multimodal time reckoning and time indexing practices in these

communities. The third is to explore more fully the non-spatial source domains for conceptualizing time, in particular indigenous notions of memory and imagination, and more generally indigenous psychological concepts.

The fourth is the relationship between the importance of event completion in time reckoning, and its grammatical encoding in the aspectual and evidential systems of the languages. The fifth is to take up the idea of *states of being* to explore the relations between time, object and ontology in Brazilian and South American indigenous philosophy. This will enable us to explore notions of permanence and non-permanence of objects, material heritage, non-accumulation of material things in economy and society, and the relation of *states of being* and cosmology, especially in relation to the anthropologist Viveiros de Castro's theory of Perspectivism in Amazonian cultures (Viveiros de Castro, 1998). Finally, a hypothesis that needs more research is that the use of event-based time intervals is one feature of a cultural areal conceptual complex encompassing Amazonian and other South American linguistic families. This hypothesis requires further investigation of a more widely geographically and linguistically-genetically distributed sample of South American indigenous cultures and languages.

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APPENDICES

Appendix A Questionnaire

Questionario sobre o conceito de tempo (2015/2016)

Participante	**Municipio**
Língua	**Aldeia**
Etinia	**Idade** **Sexo**

1. Referencia de tempo e intervalos de tempo -uso de advérbios que se referem a tempo e intervalos temporais.

1.1. PALAVRAS ADVERBIAIS

Agora	*Então*
Hoje	*Ontem*
Anteontem	*Amanhã*
Depois de amanhã	*há muito*
Antes	*Depois*
durante	*Enquanto*
Um tempo atrás	*Qualquer dias atrás*
Em breve	*Em muitos dias*
Cedo	*Tarde*
Mais cedo	*Mais tarde*

Comentario e outras palavras:

1.2. Calendário e relógio

Verificar os intervalos de tempo do calendario e relógio que existem na sua língua e se eles são indicados por palavras nativas ou empréstimo:

Dias (da semana)	*Meses (do ano)*
Domingo	*Janeiro*
Segunda feira	*Fevreiro*
Terça feira	*Março*
Quarta feira	*Avril*
Quinza feira	*Maio*
Sabado	*Junho*
Outras	*Julgo*
	Agosto
	Setembro
	Novembro
	Dezembro
	Outras

Dia	*Noite*
mês	*Semana*

Ano	*Hora*
minuto	*Segundo*

Comentario:

1.2. **Dias e as estações**

Sol	*Lua*
estrela d'alva	*estrela da noite*
estrela	*Norte*
Sul	*Leste*
Oeste	*Luz*
Inverno	*Verão*
Começo do inverno	*Começo do verão*
Metade do inverno	*Metade do verão*
Fim do inverno	*Fim do verão*
Quando você planta mandioca?	*Quando voce colhe mandioca?*
Quando é que você planta milho?	*Quando você colhe minlho*
Estação seca	*Estação chuvosa*
Tempo	*Espaço*

Comentario:

1.4. NOMES DAS FESTAS

Há alguma festa própria da sua cultura? Quais os nomes destas festas? Quando acontecem estas festas?

1.5. Partes do dia

"Por favor, explique as diferentes partes do dia nas sua língua " "Quais são as partes do dia?"

"Quais são as atividades que são realizadas durante o dia?

Como se fala na sua língua as seguntes expressões e palavras:

nascer do sol	*pôr do sol*
manhã	*de manhã cedo*
no fim da manhã	*meio-dia*
à tarde	*começo da noite*
Noite	*tarde da noite*
crepúsculo	*Amanhecer*
início	*Fim*
começar	*Acabar*
deixar	*Sair*

Palavras e expressões sobre as posições no espaço

frente	*de volta*
meio	*Topo no topo*
fundo	*Acima em cima*
abaixo	*Em frente A frente*
à frente de	*Atrás / Na parte de trás do*

2.2. Como se diz na sua língua (se for possível):

Eu olho para trás	
Eu olho para a frente	
Eu olho para a minha infância	
Eu olho para a minha velhice	
Eu olho para o passado	
Eu olho para o futuro	
Eu olho para o verão que já passou	
Eu olho para o inverno que já passou	
Eu olho para o verão que ainda vai chegar	
Eu olho para o inverno que ainda vai chegar	
Eu estou no meio da minha vida	
Eu estou em cima da minha vida	
Eu estou embaixo da minha vida	
A minha infância está atrás de mim	
A minha velhice está na minha frente	
A minha velhice está no meio da minha vida	
A minha velhice está em cima da minha vida	

A minha velhice está embaixo da minha vida	

2.3 MOVIMENTO DE PESSOA NO TEMPO

Eu entrei no ano novo	
Eu entrei no verão	
Eu entrei no inverno	
Entrei na vida adulta	
Ele saiu da minha vida	
Ele está chegando para seu casamento	
Ela saiu da vida adulta e foi para o lado esquerdo	
Ela saiu da infância	

Ele deixou o ensino de língua	
Ela entrou no curso	
Eles entraram em casamento	
Ela deixou seu casamento	
Ela saiu de seu casamento	

2.4 MOVIMENTO DO TEMPO - Como se diz na sua língua:

O tempo passa	
Chegou a hora de fazer uma refeição	
O tempo voa	
Ela ficou sem tempo	
Tempo é dinheiro	

2.5 Verbos de movimento, com intervalo de tempo e as palavras de eventos:

O verão está chegando	
O inverno está chegando	
O próximo ano está chegando	
O ano passado	
O verão passado	
O verão que vêm	
O ano que vêm	
O inverno passado	
O dia passa rápido	
O inverno saiu	
O inverno está correndo em nossa direção	
O inverno está correndo para longe de nós	
Minha infância se foi	
O inverno desapareceu	

2. 6 Movimento de tempo

Minha infância está infância está acabada.	
Minha infância está fora	
Meu tempo de criançaestá fora	
O inverno está chegando para nós	

2.7 MOVIMENTO IMAGINARIO

Eu vou para o rio	
O caminho vai para o rio	
A estrada vai para o rio	
A estrada sobe a serra	

A estrada desce a montanha	
A estrada se arrasta até a montanha	
O barco vai de Porto Velho a Manaus	
O ônibus vai do centro para Universidade	
O rio Madeira vai de Porto Velho a Manaus	
A estrada vai de Rio Branco até Poto Velho	
A montanha vai de uma aldeia para a outra aldeia	
As montanhas vão de Norte a Sul	

Commentario Geral:

Appendix B Task 1a Manioc














Awetý/ Aldeia Fumaça/2016

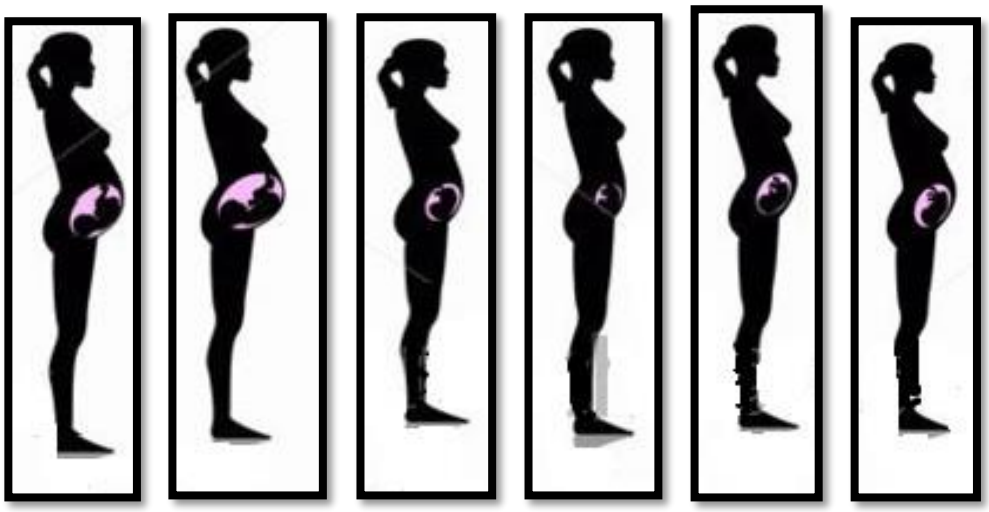
Appendix C Task 1b Life stages



Huni Kuĩ/ Aldeia Repouso – Jan 2015

Life stages video – Awetý/ Aldeia Fumaça

Appendix D Task 1c. Phases of Pregnancy

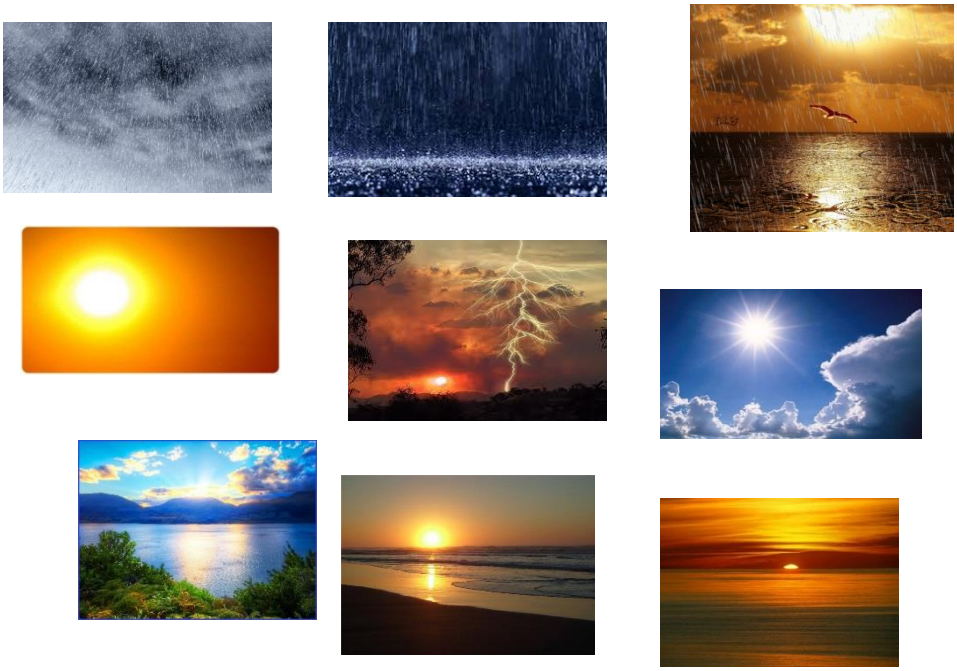


Huni Kuĩ women discuss the task Aldeia Repouso Jan 205

Appendix E Task 1d Phases of the moon

Huni Kuĩ women discuss the moon / Aldeia Repouso Jan. 2015

Appendix F Task 1e. Seasons



Application of video and photo stimuli seasons. Aldeia Kamaiurá – February 2016

Appendix G Task 1f Parts of the day

Huni Kuĩ – Aldeia Repouso January 2015

Appendix H Knots Narrative

By Tamahet Kamaiurá
Transcription by Wary Kamaiurá Sabino – April 2017

Anga wite teje ang jotawa koa. Anga wite okoj ia'awykyawaw ko'yt. Ymawe a ne ko'yt. Ymawe ane okoj anga wite. Keawa awykyme kõ. Anga wite kõ.
A'e tokoj koa. Anga rehe ang oroket tete orohom e kona'ewa, ojamawa okoj kõ. Anga rehe ang oroket orohome kona'ewa, oroko tete ane okoj kona'ewa, te'ijupaj kona'ewa. A'e ramue okoj ang, anga hwaraoke tete awa okoj kõ. Ohwarok tete awa okoj anga ko'yt. Awyje. Anga rehe ta 'ang a'ama (pira) oroekat konewa, jawera wite okoj a'ama (pira) rekat tawa kõ. O'iran okoj ko'yt... oket tete awa ne okoj ko'yt... Anga rehe ekatawa kõ, ekat tawa kõ. A'e rame okoj, ihwarok awa okoj kõ, ihwaraok awa, ihwaraok awa ko'yt. Anga rehe a'ama (pira) rekarawaw kora'rewa ojama kõ. O'iran okoj ko'yt a 'epewe jue oketawa kõ. A'e ramue a'ep ane ang ekarawaw, ekarawa jue ane na'ewa. Ihwahapawa okoj kõ, Taip pewara kõ. A'e ramue okoj anga hwaraok awa ran. Ohwaraoka awa, Awyje. Awyje okoj ko'yt. Awyje ***mokõj*** *yrua kõ, a'ama ryrua (pira) kõ, a'ama ryrua* ***mokõj.***
O'iran jajyjyj na 'ewa. A'e ramue okoj amoa te'ijupaj ojyjyjt ohome kõ. A'ep okoj ko'yt ojyjyjt, a'ep ikerawaw, owawak awa ko'yt, ohom a'ama (pira) rekate kõ. A'e awi erojepotat erut, awyje okjo pea wite ihukua kõ, ***mokõj*** *yrua kõ.*
A'e ramue okoj anag hwaraok awa kõ, mo'apyra ang jenepo, jene hwã , mojepete jene hwã ang ia'awyje kora'ewa, anga wite ang kora'ewa, mo'apyra ang kora'ewa. A'e ramue okoj ko'yt a'epe we jue ane ang ekarawaw na'ewa.
O'iran okoj ko'yt ekatawa we jue ran. A'e ramue okoj ko'yt owawak awa, owawak a'epe ko'yt a'ama (pira) rekat tawa kõ, a'e ramue okoj anga hwaraok awa kõ. Ihwaraok awa ko'yt awyje.
Awyje ang kora'ewa, apo jene hwã wero'yaha kora'ewa, ojamawa okoj kõ, awyje okoj imojo kwaha, kwahap awa anga rehe kõ.
O'irane ran... o'iran, amo te'ijupaj ohome ran, a'ep ekatawa ran, ekatawa ran... ame katu eroyhyk awa erute kõ, apo, ka'a ruka mue, apo joetykawa wite, eroyhyhyk awa amomera kõ. Ka'aruka mue wite amomena oyhyke kõ , 17 hora, amoa tokoj 18 hora wite oyk o'ute wã... imoka'em awa ko'yt. O'iran Ihwaraoke ran, awyje ang kora'ewa, ihwaraok awa. Jene hwã wero'yahap kora'ewa ojamawa kõ.
Awyje ikwaha kwahap awa kõ, a'ama (pira) ryru kwahap awa okoj taipewarawa ko'yt, taipewarawa kõ jajara re'yjawa kõ.
O'irane ko'yt, o'iran jajyjyj na' ewa kunu'umet, a'e ramue okoj ko'yt, ehe,o'iran já'iwete erro'at awa kõ Pyw pyw pyw pyw amo te'ijupajp eraha me ran, a'ep okoj anga awykym awa okoj kõ. Owawak awa, a'ama (pira) rekat awa, ka'aruka mue eroyhyk awa a'ama (pira). A'e ramue okoj anga hwaraok awa kõ. Awyje, apo ang kora'ewa. ***Mokõj*** *ang jene hwã rero'yahawi kora'ewa, ojamawa kõ. Ihwã rehe nokoj ipaparawaw kõ.*
O'iran a'epe we jue ekat awaw, a'epe wejue ekarawaw na'ewa. A'e ramue okoj anga hwaraok awa kõ, ihwaraok awa ko'yt, tyk, awyje. Jene hwã wero'yahap ang a'ama (pira) ryrua kora'ewa, aepe we jue ekatawa. O'iran a'a ma (pira) rekatawa ran. A'e rawi okoj anga rerowawak. A'ama (pira) rekate ran, ipapat.
O'iran ang tata 'ami kona'ewa ojamawa kõ, awyje okoj anga wite atsã apo me kõ, tereis tete, kwaturo tete o'ine kõ, ikwahapa kõ, pejemako'i kora'ewa. O'iran okoj

ko'yt, anga rehe okoj, tata kõ, 'o'ame kõ, tata kõ ame katu. Ka'aruka mue, 3 (15) horas. 'ypewarawa ojomonome ko'yt ojea papat tawa. Owake we tete tata o'uhwame kõ

Tatsing ami kue, tata 'ami kue.... ma'anuat! Ae aem tete awa, Ae aem tete awa o'up, ojaojan tete kujãmerera.

O'iran ang ituri kona'ewa, a'e ramue okoj anga hwaraok awa kõ. Ohwaraok awa anga, awyje, ihwaraoke kõ. Anga ang jakarepe apo korina'ewa, ojam, jakarepe oket. Jakarep ang ikeri ang korina'ewa, ojamawa kõ, anga aupe. Anag aupe okoj jakarep ikerawaw. Anga ang ypytuna rupi iturawaw korin... 'ara moahajn awa korin, anga ta ang jakarep weroket tawa korinewa. Ikwaha kwahap awa okoj a'ea tewara kõ. Awyje ram okoj inujnung awa a'ea wite wara kõ. Anga rehe ang jakarep oroket orojot te korina'ewa. A'ea wawaka wera rehe tokoj oroket orojot a'iwi, apo, am ...apope korinewa , ypawua ywyri korinewa ojamawa okoj anga aupe kõ.

A'e hera ypytuna wera rehe tokoj 1 hora wite okoj, 'ame oroket orojot 'ame korinewa, anga rehe ang orejrut taip orojote korin, ojamawa inujnunge kõ, anga rehe, anga rehe okoj iungawa kõ.

O'iran já'iwete ko'yt ojomuhut tawa kõ. Ojomuhurawa okoj ko'yt... anga hwaraok awa kõ.

Jũa rapymawa kõ, tata rapymawa erute ko'yt, ojekawe'engawa nokoj, emijara nokoj okawe'eng erute kõ.

Marawite, ***jene po momap*** *a'am (pira) ryrua, jene py, jene hwã wero'yahap anga wite. O'irane kõ...anga reroket erut... Eee apoa, mejũa reraham awa, mejũa reraham. Ty'ara nokoj ojukawa erut paraname warawa kopy, ipy'ata pawawa neje okoj paraname warawa kopy. Mejũa reraham awa ikĩ, mejũa hwa hwat reraham, a'epe teje okoj i'uaw wa.*

Anga tsak eraha kora'ewa, emijat, mejũa rerua ret a'e moemijat awa kõ. Omoejãrawa awyje. Anga tsak eraha okawyteripe warawa aupe kora'ewa, to'u awa katu a'ewa. Mejũa rerua ret weraha, anga tsak pe'u kora'ewa. Orypawa, ojetapakawa,ojekwatsiatawa o'upe kõ, oje'akawangawa, ipo'yrawa, torywam okoj o'upe kõ, urua ram, awyje.

O'irane ko'yt, anga hwaraoke kõ. Ang okoj weroket Jaim erute kora'ewa. A'epe okoj nokerite awa kua, nokerite awa ypytuna rupi, ypytuna rupi ko'yt.... ihwae hwaem tete awa ko'yt... ypyna rupi.... 'ara moahajne tete awa. Nokerite awa nokoj torywa kõ. Kwarywa torywa neje okoj kopy, poa wite wara ko'yt.

O'iran já'iwete 7 hora we ojomonom awa kõ, i'ape apep eraham, uuu jajara ra'kyheri jneje okoj a'ama (pira) a'e rahawaw kopy. Aé ramue jajara ko'yt temone ohome kõ. A'e teje okoj oje'eng ohome kõooo... oje'eng ohome kõ

Anga wite ramue te ang opoereko tete wa... temi'u katu ukara te ang, anga wite wara reraha tawa kua, a'ama rekara, jene ramyj mera a'e wite wara awykym ojoerekome kua, ojam okoj ohome kõ. A'e wite wara rehe okoj imonow, ojae'ome kõ.

Erohwaemawa kõ; wakaw. Jajara je'enga rohwaemawa kõ. Poa wite wara okoj a'ewa.

Extracts from the Knot narrative - Glossed by Wary Kamaiurá Sabino

1º Extract

A'e ramue okoj ang hwaraok awa kõ, mo'apyr-a ang jene-po
Esse- por isso dist esse desamarrar n-at três arg esse nossa-mão
Jene-hwã, mojepete jene-hwã
Nosso-dedo um nosso-dedo
ang i-'a'awyje kora'ewa, anga wite ang kora'ewa, mo'apyr-a ang kora'ewa.
Esse 3-pronto FM esse igual esse FM três -arg esse FM
A'e ramue okoj ko'yt a'epe we jue ane ang ekarawaw na'ewa.
Esse por isso dist Asser locativo somente cont esse procurar permitivo

2º Extract

O'iran i-hwaraoke ran, awyje ang kora'ewa, i-hwaraok awa.
Amanhã 3-desamarrar continuativo pronto esse FM 3-desamarrar
Jene hwã w-ero'yahap kora'ewa o-jamawa kõ.
Nosso dedo 3-atravessar FM 3-disse Não Atestado

3º Extract

A'e-ramue okoj anga hwaraok awa kõ. Awyje, apo ang kora'ewa.
Esse-por isso dist este desamarrar n-at pronto aquele esse FM

4º Extract

***Mokõj** ang jene hwã r-ero'yahawi kora'ewa, o-jamawa kõ.*
Dois esse nosso-dedo rel- atravessar FM 3-disse n-at
Ihwã rehe nokoj i-paparawaw kõ.
Dedo sobre assim 3pl-contar n-at
O'iran a'epe we jue ekat awaw, a'epe wejue ekarawaw na'ewa.
Amanhã locative somente procurer locative somente procurer FM
A'e ramue okoj anga hwaraok awa kõ, i-hwaraok awa ko'yt, tyk, awyje
Esse procurer dist este desamarrar n-at 3-desamarrar assert ideof pronto
Jene hwã w-ero'yahap ang a'ama (pira) ryrua kora'ewa,
Nosso dedo 3-atravessar esse peixe recipiente FM
Aepe we jue ekatawa. O'iran a'a ma (pira) r-ekatawa ran.
Locativo somente procurer amanhã peixe rel-procurar continuativo
A'e rawi okoj anga r-erowawak. A'ama (pira) r-ekat-e ran, i-papat.
Esse depois dist esse rel-acordar peixe rel-procurar-arg cont---3-contar

5º Extract

A'e hera ypytuna wera rehe t-okoj 1 hora wite okoj,
então noite habitual sobre foco-aquele-1 hora igual aquele,
'ame oro-ket oro-jot 'ame korinewa, anga rehe ang orej-rut taip oro-jote korin,
aqui- 1p-dormir 1pl-vir aqui futuro este sobre esse 1pl-trazer aldeia 1pl-vir-futuro
o-jamawa inujnunge kõ, anga rehe, anga rehe okoj inungawa kõ.
3pl-disse- redupl colocar n-at este sobre, este sobre esse 3-colocar n-at
O'iran ja'iwete ko'yt o-jomuhutawa kõ. O-jomuhurawa okoj ko'yt...
amanhã cedo assertivo 3pl-vir N-AT 3pl-vir esse assertivo
anga hwaraok-awa kõ.
Este desamarrar-gente n-at
Jũa r-apymawa kõ, tata r-apymawa erut-e ko'yt,
Campo rel-queimar- n-at fogo rel-queimar trazer-ger assertivo
ojekawe'eng-awa nokoj e-mijara nokoj okawe'eng erut-e kõ.
3pl-avisar assim 3-presa assim 3pl-avisar trazer-ger n-at

Appendix I The Moon Narrative

By Kanuaku Aweti

Transcription – Wary Kamaiurá Sabino – May 2017

Uja uja me'e, Taty otem uja tsoa ozokytya yne, otem uja tsoa Tatya yn.
Essa e essa, lua nasceu para esse lado para nós, nasceu para esse lado a lua

Ozojtuwa yn, ozojte peko taty me. An akyj uja ti otem yka me, ozojte peko uja tsoa ozojte peko me
Nós olhamos, sempre vigiamos a lua. Nunca nasce aquela lua para esse lado, sempre vigiamos sempre vigiamos

koj'eme, otem ozo wapyrowo wene a'yn, ozojte peko zoko. OO koj taty upejutu me'e ozo'e tu a'yn.
Como aquela, nasceu sem nossos olhos perder (lua) sempre vigiamos. Oo olha lua (estativo)- dissemos isso.

Taty upeju me'e, ozo patem ejutu akyj mapare'yman ozo upu ete. Taty oupeju, ijautsu akyj uja pe
Olha lua (estativo), já ficamos com medo da menstruação é que vamos menstruar. Do jeito que pensamos a lua sempre acontece naquele tempo

tupat ne'e, ipatem ejua yn Ipatem eju me, ijautsu akyje ouwa yn, oto pywo uja kajã kajuwuwu weto wezotsu uja yne.
(Mulher) que fica (menstruada) sempre tem medo da menstruação, sempre fica menstrua naquela (data), cada uma tem diferente época de menstruar

Uja pe ouwa yn itsoa put,
Sempre menstrua com (data) diferente

itsoa puza patem ezoko tu zanu me. Uja pe ouwa yn, ozo upu zanu uja ete, momoza upu. Itozoko tu me,
por isso que a (mulher) não menstruou ainda, sempre fica com medo. Ficamos com menstrua, outra fica, assim vai por diante.

itsoa puza zanu me,
outra também fica assim.

uja ete ouwa yn, itsoa put, uja pe ouwa yn.
Quando fica (dessa forma) fica com menstruação, fica com menstruação

Itsoa pur akyj oto zoko me'e. Tupare yme, an ouw yka'yn.
Sempre (mulheres) ficam desse jeito. Aquela que não fica menstruada, permanece sem menstruar

Itsu uja ozoza ozoporyt ne.
Assim que nós ficamos, nosso costume.
Taty ozoj tepekozo me, uja ete tupar akyj ouwa yn.
Sempre vigiamos lua, tem (mulher) menstrua sempre nesse (período)

Uja ete, uja pe tupar akyje uja pe: uja pe ouw me,
Com esse, nessa (lua) é nessa, é nessa (lua) (menstrua),

uja pe ouw me, uja pe ouw me, uja pe ouw me itsu akyj ozoza me.
(menstrua) aqui (menstrua) aqui, (menstrua) aqui, sempre ficamos assim.

Ito akyje' e, ito me'e, uja pe tuwo ko tu a'yn, uja pe itupu, uja pe itupu, uja pe itupu, an a'awyka yn, uhum.
E eu mesma, eu mesma, sempre fico menstruo quando a (lua) nessa (direção), eu sempre menstruo, nunca errei, Uhum-Sim

Kanuaku Aweti - Menstruation and the moon

Ozo upawut akyje 'e,
O dia que ficamos com menstruação

pare'yman ozo upawut ne
quando ficamos com menstruação

taty zoko tu me, opap tatya yn,
com tanta lua, acaba (desaparece) lua

ozo upawut ijane. Ko'em akyj momo ete me otem zanu a'yn.
Do dia que foi menstruada. Dias depois, outro (mês) nasce outra (lua)

Otem, ooo koj akyj taty me ito ozo'e tu, taty me ito. Ozoeko zoko tu me.
Nasce, ooo olha lua -disse eu, nós dissemos, a lua- disse eu- ficamos assim por diante

Ozo tezuwoko tu tene ozo ywyk ete meee.
Sempre aguardamos a chegada de nosso sangue (menstruação)

Ozojzyp, Ozojzyp, Ozojzyp, Ozojzyp, Ozojzyp, an a'yn, an mapare'yman ozo uwyka yn.
Passamos, passamos, passamos, passamos, passamos, nada de ficar com menstraução.

Momo out tuwo me, ity'aza tut uja me ozo etu a'yn. Ityza tu uja me'e ozo etu ozo mejã pe a'yn. Itsu akyje.
Quando chega outro (mês)-dissemos-acho que eu estou grávida. Dissemos- eu estou grávida. Assim que nós ficamos .

Appendix J Field work photos

The boat used to travel to Aldeia Repouso

In the boat

The plane used to travel to Kamaiura Ipavy village

Learning how to make Jenipapo Ink

Meeting the Chief (Cacique)

Fishing with Kamaiurá

Friendship photo