The Formation of Knowledge on Maya Cenotes

An Analysis of the History of Archaeological Research Regarding the Cenotes of the Yucatan Peninsula, Mexico

Master's Thesis in Archaeology

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Front page illustration: Cenote Nomozon, Yucatan (photo by author)

Sometimes the great mutations in scientific thought can perhaps be read as the consequence of a discovery, but they can also be read as the appearance of new forms in the will to truth
- Michel Foucault (1981: 54)

Abstrakt

Denne masteravhandlingen tar for seg den arkeologiske kunnskapsdannelsen om mayaenes *cenoter* på Yucatanhalvøya i Mexico gjennom en analyse av fenomenets forskningshistorie. Cenoter kan beskrives som vannfylte huleformasjoner eller synkehull som er tilknyttet grunnvannet. Siden Yucatanhalvøya mangler overflatevann i form av elver og innsjøer, har cenotene vært viktige og pålitelige kilder til vann. I og med at store mengder arkeologisk materiale – inkludert beinmateriale fra mennesker – har blitt funnet i cenoter, regner man også med at cenotene var viktige offerplasser for mayaene. Det spanske ordet *cenote* er en korrumpert versjon mayaenes *tz'onot* eller *ds'onot*.

Følgende to forskningsspørsmål stilles til den arkeologiske litteraturen om cenoter:

I. *Hvordan har den arkeologiske kunnskapen om cenotene utviklet seg fra 1880 til 2013?*

II. *Hvordan kan kunnskapsdannelsen til cenotene som fenomener for arkeologiske studier bli beskrevet og forklart på bakgrunn av aktør-nettverk teori og diskursanalyse av cenotenes forskningshistorie?*

Ved hjelp av en teoretisk og metodisk tilnærming forankret i diskursteori og aktør-nettverk teori, blir den arkeologiske kunnskapsdannelsen analysert i sin historiske kontekst fra arkeologiens begynnelse i området (ca. 1880) frem til i dag. Tre perioder for kunnskapsdannelse blir benevnt, skilt ut og senere avgrenset: the Initial Period (1880 – 1950), the Intermediate Period (1950 – 1989) og the Programmatic Period (1989 – nå).

The Initial Period markerer omdannelsen av cenoter til vitenskapelige fenomener. Innenfor denne perioden blir to repertoarer anvendt til henholdsvis å beskrive cenoter som naturfenomener og som arkeologiske (sosiale) fenomener. Den hellige cenoten (Sacred Cenote) på Chichen Itza, Yucatan, blir utforsket under vann og store mengder arkeologisk materiale kunne bekrefte fransiskanermunken Diego de Landa's beskrivelser av menneske- og gjenstandsofringer fra 1566. Istedenfor å endre diskursen, fikk den hellige cenoten en egen, unik historie.

The Intermediate Period markerer en sekundær adskillelse av cenoter som fenomener. Gjennom koblingen til funksjonalismen, samt med rot i ideen om en utstrakt cenotekult, deltes cenotene som nyttebetonte og seremonielle fenomener. Analysen viser at forholdet mellom nyttebetonte og seremonielle funksjoner tar form som en hierarkisk dikotomi.

The Programmatic Period betegner oppkomsten og profesjonaliseringen av hulearkeologien som en spesialisert underdisiplin til mayaarkeologien. James Bradys programmatiske verker om huleforskningen får direkte relevans for cenotene i og med at cenoter defineres som en form for hule. Slik inkorporeres cenoter i den gryende hulearkeologien. Bradys hovedtese fra 1989 var at huler og cenoter var rituelle av natur, og dagens forskningsstatus taler for at han har lyktes i å omdanne denne tesen til et vitenskapelig faktum. Analysen av denne perioden beskriver hvordan denne omdannelsen blir muliggjort, samt dannelsen av det epistemologiske fundamentet, den vitenskapelige konteksten og repertoaret som har blitt skapt for og av hulearkeologien. Hulearkeologien viser seg å ha en beskrivbar arkitektur hvor en rekke grep og redskaper har blitt benyttet for å skape en kontekst for å fremskaffe sikker kunnskap om mayaenes rituelle bruk av huleformer som cenoter.

Preface

It has been a privilege to have had the opportunity to write an MA thesis about the cenotes of Yucatan. To be immersed in cenotes physically and in cenote literature has turned out to be an interesting experience. The enticing cenotes in combinations with my general fascination for Maya culture serve as important reasons why it felt so attractive to write an MA thesis about the subject of cenotes. Fortunately, such an opportunity was made available through a cooperative project between the Facultad de Ciencias Antropológicas at the Universidad Autónoma de Yucatán (UADY) and the Department of Archaeology and Religious Studies at the Norwegian University of Science and Technology (NTNU). This project, called *El Culto al Cenote en el Centro de Yucatán*, was directed by Profesor Investigador Guillermo de Anda (UADY) in cooperation with Prof. Kalle Sognnes (NTNU) and Prof. Marek Jasinski (NTNU). Together with Silje Hårstad, I was invited to write an MA thesis that related to the project.

Above all, I want to express my thanks to my advisor, Prof. Marek E. Jasinski, for his attention, advices, comments, and encouragement. This thesis would not have been written without his support.

In that regard, I would also like to thank Postdoctoral Fellow Terje Brattli for his advices and comments on my thesis. Thanks also to PhD Candidate Ingrid Ystgaard for her help with the thesis.

Additionally, I want to thank Profesor Investigador Guillermo de Anda at UADY for showing me some of the magnificent cenotes and caves of Yucatan and for ensuring that I had a good and enlightening time during my stay in Merida. Special thanks also go to Dante, Poncho, and Ale for their friendship, their help with providing literature that was not available in Norway, and for showing me around the Peninsula. To Alejandra "Ale" Navarro, I would like to make additional thanks for correcting my English grammar. I most sincerely appreciate your work with my text (I only apologize that I could not give you more time!).

Amongst my fellow students and friends, I would particularly like to thank Arve Nytun, whom with I have had many interesting discussions, Silje Hårstad, who was my travel companion on the trips to Mexico, as well as Tore, Julian and the rest of the guys at the study hall. Thanks also to Lars Gjølme and friends for their support and friendship!

I would also like to thank my family for their support – both morally and economically!

Last but not least, I would like to convey my most sincere thanks to the most important person in my life, my dear Karen! Since space will not suffice for describing all that I want to thank you for – thanks for everything!

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Jo Sindre Eidshaug

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Chapter 1: Introduction

Perhaps there is such a thing as an *event* in the history of research concerning *cenotes*. And perhaps this event was so remarkable that a rather sudden transmutation of our way of understanding cenotes can actually be observed as a historical occurrence in the late 20th century. This event or phenomenon – which happens to be the primary concern in this body of work – is linked to the emergence of cave archaeology as a specialized sub-discipline within Maya archaeology.

The cenotes of Yucatan, Mexico, which concern this thesis, are in fact one of the most fascinating phenomena encountered in the field of Maya archaeology. These water-filled yawning cavities materialize in variations ranging from the grandeur of the vast circular apertures with perpendicular walls filled with green or blue waters as epitomized in the Sacred Cenote at the great Maya site of Chichen Itza, Yucatan (see Figure #1), to the tantalizing pools of water (see Figure #2) encountered deep inside the branches of dark caves where only drip-water breaks the silence. Cenotes are even more enthralling as some of the them possess rich underwater assemblages of culturally deposited materials such as jades, ceramics, textiles, objects of stone, bone, wood, shell, and metals, and even the remains of sacrificed and buried humans (A. P.

Figure #1: The Sacred Cenote at Chichen Itza, Yucatan (photo by author)

Figure #2: A pool located inside Cueva Xaan, Yucatan. This covered cenote or cave contains a vast chamber, but no lateral branches (photo by author)

Andrews & Corletta, 1995; Coggins, 1992; de Anda, 2007b; Rojas et al., 2008; Tiesler, 2005). Yet others evince traces of human modifications in the form of shrines and altars adjacent to the cenote opening or rim while others show such modifications inside over the cenote surface (above the water) in the form of platforms, altars, artifacts, and even cave art embellished on their walls (Brown, 2005; Rissolo, 2005; Sognnes, de Anda, & Jasinski, 2010; see Figures #3 and #4). Cenotes are also curious entities as they are the only naturally occurring geological phenomena of the Yucatan that expose the water table. During times when alternative, rain-fed sources of water do not outlast the dry season, cenotes prove to be important for the sustenance of biological life.

Figure #3: Human modifications of the environment within Cueva Uxil, Yucatan (photo by author)

Figure #4: Cave art (*manos coloradas*) within Cueva Manitas, Yucatan (photo by author)

However, the interest of this thesis resides in the panoramas of cenotes as created by archaeological research. Archaeological research has produced a considerable amount of information pertaining to cenotes, despite the fact that they have not been researched as extensively as other aspects within ancient Maya culture. The first underwater explorations took place at the beginning of the 20th century with the dredging and diving operations at the Sacred Cenote. Due to the massive amount of artifacts uncovered during these operations as well as the accordance found between the results of these operations and 16th century Spanish documentary sources, the Sacred Cenote (Chichen Itza, Yucatan) has been attributed a long and rather unique history in Maya archaeology. The Sacred Cenote aside, these water filled cavities have generally been thought of as indispensible sources of freshwater as a means to sustain the large Maya population of the peninsula. However, more recently, archaeologists have begun to talk about cenotes as profoundly ritualistic and sacred spaces that were perceived by the ancient Maya as entrances to the Underworld. This change in our perceived notion of cenotes coincides with the emergence of cave archaeology as a sub-discipline within Maya archaeology. As cave archaeology includes the studies of cenotes, and cave

archaeologists have seemingly reached the consensus that "caves represent the single best context for the archaeological investigation of Maya religion" (Prufer & Brady, 2005b: 2), the time should be ripe for an evaluation concerning the formation of knowledge about cenotes. Additionally, the body of archaeological literature on the subject has grown into such a size that an analysis of the historical development of the knowledge on cenotes would prove to be an interesting but challenging study. Finally, research in relation to cenotes has not yet undergone an *analysis* of its historical turn of events.

However, the latter assertion might require a qualification. During the last 25 years, Maya archaeology has witnessed the formation and professionalization of the specialized sub-discipline of *cave* archaeology (cf. Brady & Prufer, 2005c; Prufer & Brady, 2005c) wherein the history of not only cave but also cenote research has undergone a thorough evaluation (e.g., Brady, 1989; Brady & Prufer, 2005a). In the light of this last statement, we must address the two following interrelated questions before going any further into this text. First: What is the difference between cenote and cave? Secondly, why is it opted to discuss cenotes rather than caves in general in this text?

The first question might seem easy to answer, however, the distinction between their features is not well defined (cf. Bonor, 1989b: 19-26; Brown, 2005: 384-385; 2006: 174-175; de Anda, 2006: 24-25; Rissolo, 2001: 12-13; J. E. S. Thompson, 1975: x). The Yucatec Mayan word for cave is *aktun*, whereas the word *ch'en* normally denominates a well. However, *ch'en* has different meanings in various Mayan languages and is generally taken to refer to a variety of holes in the ground (see Brady, 1989: 1; Brady, 1997: 603; Kieffer & Scott, 2012: 20-21). The Spanish word *cenote* is a corruption of the Mayan word *dz'onot* or *ts'onot*. In the *Diccionario Maya Cordemex* (Barrera Vásquez, 1980) we find the following definition of *ts'onot*:

> **TS'ONOT** (...) abismo, profundidad, lagos de agua dulce muy hondos o pozos o bolsas así; (...) lago de agua dulce, manantial; (...) pozo, abismo, hondura; (...) receptáculos profundos de agua que se dicen cenotes; (...) cenote (...) abismo, profundidad sin fondo (...) **2. TS'ONO'OT** (...) caverna con agua depositada (...) cenote (Barrera Vásquez, 1980: 889-890)

> **TS'ONOT** (...) abyss, profundity, very deep freshwater lakes or wells or pockets as such; (…) freshwater lake, spring; (…) well, abyss, depth; (…) profound receptacles of water which are called cenotes; (…) cenote (…) abyss, profundity without bottom (…) **2. TS'ONO'OT** (…) cavern with water deposited (…) cenote (author's translation)

According to the dictionary, we find cenotes to refer to *various deep deposits of water*. Due to the particular limestone geology of the Yucatan Peninsula (refer to Chapter 2), most of the

submerged subterranean openings morphologically resemble geological figures like caves, caverns, and sinkholes. The word cenote is usually attributed to cave systems penetrating the water table. Given this *geological translation*, one might say that all cenotes are caves, but not all caves are cenotes since they need to contain the element of water in order to be denoted a cenote. Although such a definition renders it possible to distinguish the geological features of a cenote, it is argued during this study that this description itself is largely the result of a deeply embedded research tradition. In other words, the distinction between cenotes and caves is very much an epistemological issue, and *we must therefore conceive of the distinction between caves and cenotes as a research-historical matter*.

In order to take the historical context of the formation of knowledge regarding cenotes seriously, the very character of any distinction between caves and cenotes must be treated as a nomenclature matter that is anchored in history. Given the fluctuating nature of the distinction between caves and cenotes, it has already partially been provided an answer as to why this thesis concerns cenotes and not caves in general. Even more so, the distinctive water landscape of the Yucatan Peninsula makes cenotes a particularly interesting phenomenon, which is why it is expected that cenotes have a unique place in the history of research – at least when compared to the history of dry cave research.

Although the emergence of cave archaeology might seem to have contributed to the most radical transformation of our perception of cenotes, it is believed in the work at hand that it would be crucial to study the formation of knowledge concerning cenotes throughout the entire history of archaeological research within the Maya area.

1.1. Research questions

The main questions presented in this thesis regard how the archaeological research community has conceived cenotes. Are cenotes natural phenomena? Are they social or archaeological phenomena? Were cenotes mainly used for rituals? Or were they mainly used for satisfying domestic[1] ends? Have our perceptions of cenotes changed throughout the 150 years of research in the Maya territory? The questions that this work seeks to address will be in reference to the history of cenote research within the Maya area.

More specifically, this thesis will address the following interrelated research questions:

[1] We will take domestic to concern, loosely, non-ritual, habitual, and routinized activities in general related to a phenomenon. The important aspect is that it normally stands in opposition to ritual.

I. *How has the archaeological knowledge concerning cenotes developed from 1880 to 2013?*
II. *How can the formation of knowledge concerning cenotes as phenomena for archaeological studies be described and explained on the basis of actor-network theory and discourse analysis of the history of cenote research?*

In order to address these research questions, the archaeological literature regarding cenotes is analyzed in this text. As the second research question can only be attended to once the first research question has been addressed, attention is directed towards the first research question in Chapter 3, which is dedicated to the history of cenote research. Once the results pertaining to the first research question are obtained, the theoretical and methodological framework that is set to attend to the second research question can be developed. To be explicit, the first research question is submitted so that a basis for postulating the second research question can be created.

1.2. Thesis structure

The thesis is presented to provide an introductory backdrop for readers that are unfamiliar with the ancient Maya, Maya archaeology, and the particular geological conditions of the Yucatan Peninsula that responsible for the emergence of the formations called cenotes. Since both the cultural history of the Maya as well as the lexicon in Maya archaeology differ from that of Scandinavian archaeology, explanations to central terms and particular cultural-historical events are printed in footnotes. As for the orthography, Mayan terms written in Latin letters will be quoted as they were employed in the original literature despite there being no difference in the meaning. To exemplify with an already introduced term; the Mayan words *ts'onot* and *dz'onot* both translate to the Spanish word cenote.

Chapter 2 is set to guide the reader on a quick journey through the lands and the history of the ancient Maya. As for chapter 3, the history of cenote research is presented in order to address the first research question. While Chapter 3 can also be conceived as a continuance of Chapter 2, the research and knowledge become more specialized. Chapter 3 is also equipped with a series of goals that include the presentation of the material for the analysis, the structuring of the cenote research into its historical research periods, and the identification of programmatic works. The theoretical and methodological approach, which is anchored in the intersection between discourse theory and actor-network theory (ANT), is presented in Chapter 4. Chapters 5-7 apply the theoretical and methodological framework in analyses of the formation

of knowledge concerning cenotes. These chapters address the second research question. Although all of the chapters that deal with the analysis include summary discussions, chapter 8 is reserved for a final discussion and the conclusions that were reached.

Chapter 2: Introducing the Ancient Maya: a brief journey through space and time in Yucatan

In order to provide a brief but comprehensible introduction to the Maya and the Maya area,[2] this chapter mainly focuses on the northern parts of the Yucatán Peninsula since it is largely within this region we encounter cenotes. This geographical region defines the northernmost part of the Maya lowlands. Chapter 3 will also provide key aspects relevant to the peculiarities of cenotes.

2.1. An introduction to the geography and geology of the Yucatan Peninsula

The Maya territories encompass the eastern parts of Mexico, along with Guatemala, Belize, the northwestern parts of Honduras, and El Salvador (see Figure #5). The settled area has traditionally been divided into the lowlands and the highlands in order to highlight the environmental differences (cf. Coe, 2005; Demarest, 2004; Sharer & Traxler, 2006). The most striking element of the highlands is the volcanic mountain range which unfolds from Chiapas, Mexico, through Guatemala into Honduras and El Salvador. The lowlands on the other hand, consist of rainforests and karst topography that cover the vast majority of the Yucatan Peninsula, Belize and the northern parts of Guatemala (Peten). The lowlands can be divided into a northern and southern region. As part of the northern Maya lowlands, the northern region of the Yucatan Peninsula corresponds to the Mexican states of Yucatan, Quintana Roo, and Campeche (albeit, only the northern parts of Quintana Roo and the northernmost parts of Campeche). The peninsula is surrounded by the Gulf of Mexico on its western and northern sides and the Caribbean Sea on its eastern side.

Figure #5: Map of the Maya area, Mesoamerica. Retrieved from http://mayagis.smv.org/

[2] A more comprehensive introduction to the Maya and the Maya area can be found in Coe (2005), Demarest (2004), and Sharer & Traxler (2006).

Hereafter, the northern region of the Yucatan Peninsula will simply be referred to as Yucatan. Its most notable features consist of a virtually flat terrain and the complete absence of surface rivers in the region north of Champoton, Campeche.

The Yucatan Peninsula is constituted by a partially emerged platform of Mesozoic and Cenozoic carbonates that extends into a massive and submerged continental shelf (Dunning, 1992: 13; Isphording, 1975: 231; Perry, et al., 2003: 115). The peninsula has a generally low relief and no considerable ridges are found north of the Puuc Region, which is located in the southern part of the State of Yucatan. Even here, the hills of the Sierra de Ticul and the Sierra de Bolonchen do not exceed 150 meters in altitude (Isphording, 1975: 251, 255). The landscape formation is described as one of a karst topography, which mainly consists of limestone and dolomite. Generally speaking, a layer of soft marl (*sascab*) lies beneath the hard capped rock layer (Dunning, 1992: 20; see Figure #8). Although the karst topography is morphologically complex, it is basically the processes of solution, which occasionally causes the permeable limestone and dolomite bedrock to collapse (see Figure #6). This leads to the formation of extensive caves and caverns as well as subterraneous water systems (Brown, 2005: 376; Dunning, 1992: 13; see Figure #7). When such caves

Figure #6: Cenote Nomozon, Yucatan. A cenote with a partially collapsed roof that contains underwater caverns (photo by author)

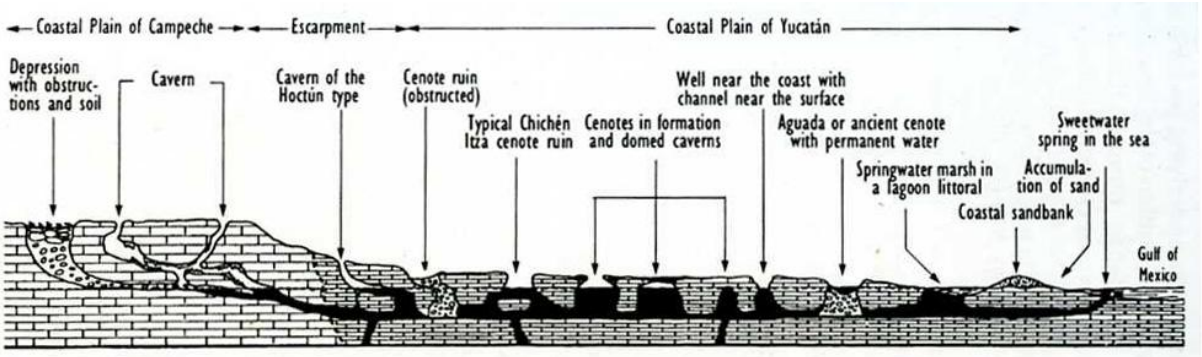

Figure #7: Scheme showing the subsurface hydrography of the Yucatan Peninsula. Retrieved from Gill (2000: 257)

and caverns breach the water table, they are called *cenotes*. The poor drainage and the permeability of the karst generally prevent the formation of permanent water sources on the surface since rainwater quickly seeps into the underground drainage.

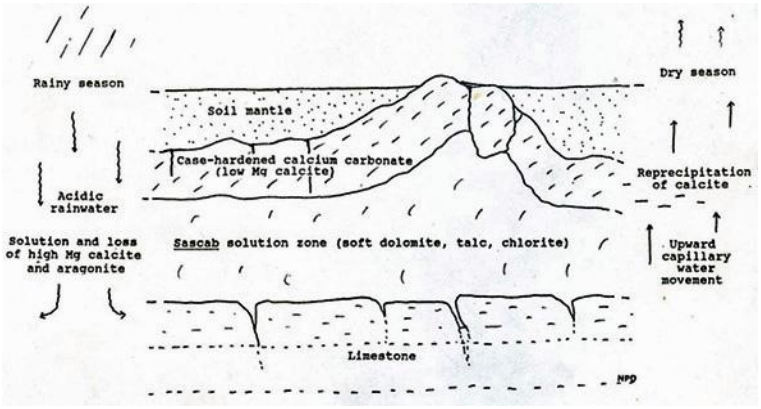

Figure #8: Figure showing residual cap rock formation. Retrieved from Dunning (1992: 20)

The cenotes of Yucatan are not evenly dispersed throughout the peninsula. The highest density of cenotes is found along the Ring of Cenotes (see Figure #9) where cenotes can be found at frequencies ranging between one and three per kilometer in a five to twenty kilometer wide band (Steinich & Marín, 1996: 640). As one moves beyond the Ring of Cenotes, the distance between cenotes or groups of cenotes increases. Accordingly, the Ring of Cenotes functions more or less as an underground river (Schmitter-Soto et al., 2002: 217).

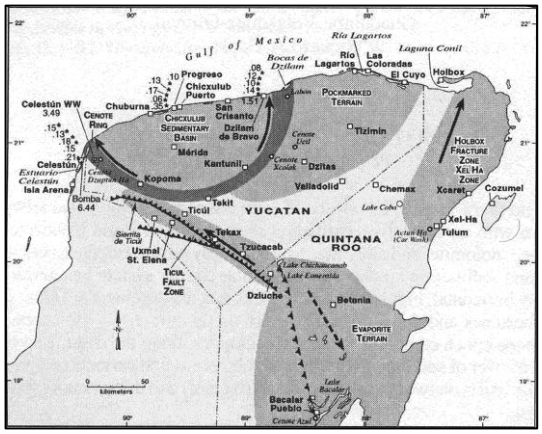

Figure #9: Map displaying the Ring of Cenotes. Retrieved from Perry, et al. (2003: 116).

The water table can be reached at various levels across the peninsula, ranging from two meters at Cenote Xlacah, Dzibilichaltun (Gill, 2000: 260), which is situated near the coast, to over 100 meters at some places farther south, like in the Bolonchen District (Dunning, 1992: 21-22). Throughout the northern plain of the peninsula the water table is reached at a maximum of 27 meters (Dunning, 1992: 21). The aquifer, which consists of permeable karstic limestone that develops into interconnected channels, conduits, and caverns, is a thin lens of freshwater floating above an intrusion of salt-water that penetrates at least 70 kilometers inland (Schmitter-Soto, et al., 2002: 218; Steinich & Marín, 1996).

In the Puuc Region, only a few deep cave systems reach the water table. Other features, such as *aguadas*, or, clay-bottomed depressions, some of which were modified anciently, and *sartenejas*, also referred to as hollows, which refill during the rainy season provide at least

seasonal sources of water in the region (Dunning, 1992: 22-24). In the northern parts of the State of Quintana Roo, which geologically belong to the Holbox fracture zone, cenotes are still prevalent and freshwater is easily reached from these as well as other fractures and variously termed water sources in the low-lying wetlands (Houck, 2006; Rissolo, 2005: 345-346). Even a few small lakes can be found in other parts of Quintana Roo, such as the adjacent area to the archaeological site of Coba.

While subtropical and tropical rain forests are distinctive to the central and southern parts of the peninsula, northern Yucatan is dominated by a rather low tropical dry forest with a rather thin soil and a climate that is characterized as semi-arid (Veni, 1990: 65). There are several distinctive environmental niches throughout the peninsula, as well as a diversified flora and fauna (e.g., Demarest, 2004; Fedick, 1996; Gómez-Pompa et al., 2003).

As elsewhere in the Maya Lowlands, northern Yucatan has a very humid rainy season (June – November) and a dry season (December – May), which, respectively, are quite marked by heavy afternoon showers (average precipitation rates for September are 232 mm, Schmitter-Soto, et al., 2002: 216) and extremely hot and dry weather (throughout the dry season, the high temperatures average is about 30°C, though temperatures above 40°C occur, Brown, 2006: 173-174). The mean annual rainfall generally decreases the farther northwest one moves, rendering the northern coastline the most arid area with an average of less than 500 mm, as opposed to the more humid southern parts of the Yucatan Peninsula, which receive an annual average of about 2000 mm (Demarest, 2004: 121; Gill, 2000: 149; Sharer & Traxler, 2006: 49).

2.2. An introduction to the ancient Maya

The ancient Maya were perhaps the most sophisticated civilization in the New World, famous for their monumental architecture, distinctive art style, hieroglyphic writing, calendars, astronomy, and mathematics, maybe even infamous for their customs of human sacrifice. Unlike their contemporary Old World civilizations, the Maya lacked the beasts of burden, the wheel, and metal tools.

The Maya never comprised a unified empire. Rather, different city-states or polities were constantly forming alliances and engaging in trade as well as in competition and warfare. They spoke some thirty different Mayan languages, some of which are still spoken today (Coe, 2005; Sharer & Traxler, 2006). Generally, and in spite of some fluctuations throughout their span, the entire Maya area was densely populated both in and between the differently

sized centers (e.g, Bey, 2006; Sharer & Traxler, 2006). Thus, there is no sharp distinction between urban and rural areas.

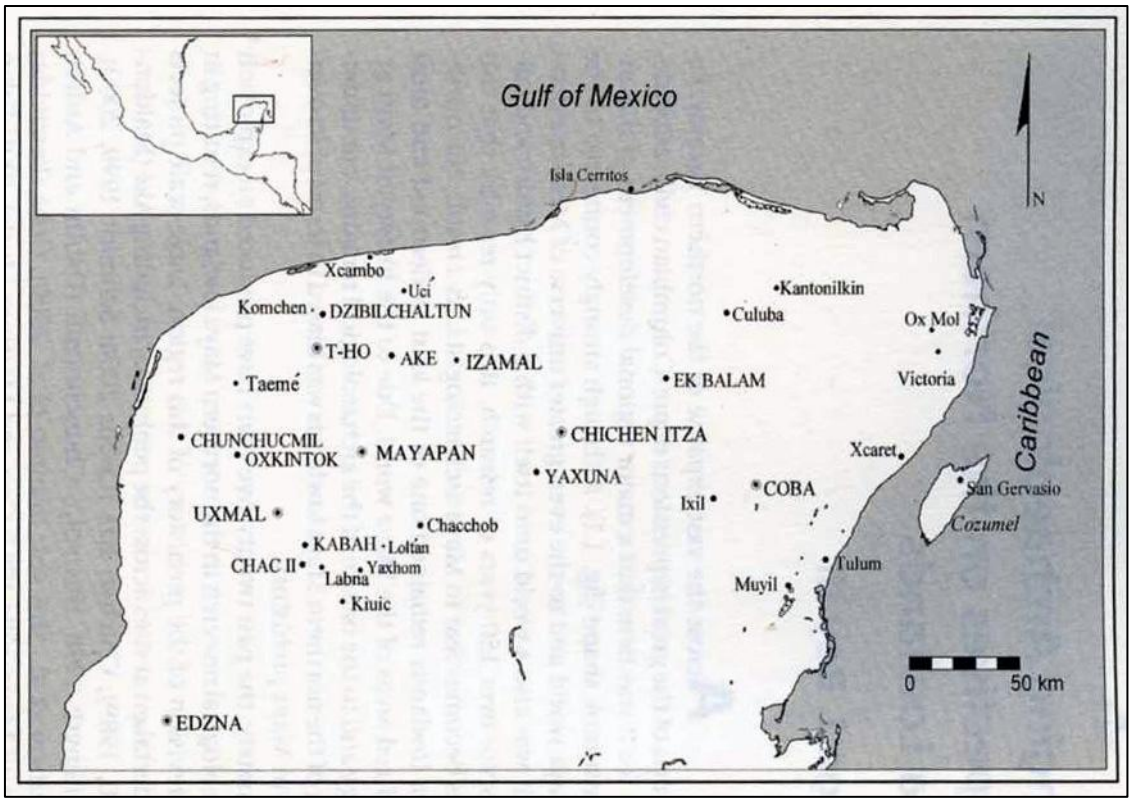

Figure #10: Map of the Northern Maya Lowlands featuring sites mentioned in the text. Retrieved from Bey (2006: 14)

The ancient Maya of the Yucatan (see Figure #10) had, on the one hand, regional and local developments that distinguished them from other parts of the Maya area, and on the other, strong ties to the larger Maya area and the Mesoamerican complex, which makes it possible to discuss several shared cultural traits. Generally speaking, the archaeological investigations that have been carried out within the Yucatan Peninsula have focused on its Postclassical sites, although in the last thirty years, research has begun to compensate for the lack of attention in other matters (Bey, 2006). This shift in focus has shed new light on issues like the internal development of complex societies during the Middle and Late Preclassic[3] Period (e.g., Bey, 2006; Stanton & Ardren, 2005).

The *ancient* Maya are chronologically situated within the Preclassic (or Formative), the Classic, and the Postclassic periods. While the latter period ends with the Spanish invasion, modern Maya still inhabit the Maya area. The chronological periods as well as their subdivisions are presented in Table #1.

[3] The Preclassic is also known as the Formative Period.

Periods	The Maya Area	The Northern Yucatan Peninsula
Paleoindian	12,000/20,000 – 8000 BCE	
Archaic	8000 – 2000 BCE	
Early Preclassic/Formative	2000 – 1000 BCE	
Middle Preclassic/Formative	1000 – 400 BCE	700/800 – 400/300 BCE
Late Preclassic/Formative	400 BCE – 250 CE	400/300 BCE – 250/300 CE
Early Classic	250 – 600	250/300 – 600
Late Classic	600 – 800	600 – 900
Terminal Classic	800 – 900/1100	900 – 1100
Early Postclassic	900/1100 –	1100 – 1300
Late Postclassic	– 1500	1300 – 1500
Colonial period	1500 –	

Table #1: Chronological periods and subdivisions in the Maya area

A greater reliance on agriculture (with the domestication of such plants as maize, chili, squash and beans) and a settled village life are believed to have taken place during the latter part of the Archaic period, which would become common throughout Mesoamerica during the Preclassic period (Sharer & Traxler, 2006: 153-176). While no existence of occupation during the Early Preclassic has been found in Yucatan,[4] recent developments in the study of the region have demonstrated widespread remnants of communities and various material vestiges from the Middle Preclassic onward throughout the entire region (Bey, 2006). Chronologically, the Preclassic or Formative periods denote the introduction of ceramics and the rise of complex societies, which began around 2000 BCE in some parts of Mesoamerica, such as with the Olmec along the Gulf Coast (Sharer & Traxler, 2006). By the Middle and evolving through the Late Preclassic, large and complex centers like Komchen, Dzibilchaltun (see

Figure #11: Dzibilchaltun and its Cenote Xlacah (photo by author)

Figure #12: Mayapan. Cenote Ch'en Mul is located adjacent to the Castillo (photo by author)

[4] However, there is evidence that humans penetrated the Yucatan as far back as the Paleoindian Period (González et al., 2008).

Figure #11), and Yaxuna among others testify that increased social complexity was also taking place in the northernmost Maya lowlands (Bey, 2006: 18-25).

The Early Classic witnessed both a general decline in demographic figures as well as continuity, growth and increased social complexity (Bey, 2006: 31-36). Nonetheless, the most well-known centers of the Yucatan Peninsula first saw their apogee (and fall) during the Late Classic, Terminal Classic, and Postclassic periods, during which many of the most powerful centers of the southern Maya Lowlands – such as Tikal in Guatemala, Copan in Honduras, and Palenque in Chiapas, Mexico – faced their downfall. Among these northern centers (some of which developed monumental architecture and complexity even earlier), were Chichen Itza, Uxmal, Izamal, Ek Balam, Tiho, Chunchucmil, Ake, Edzna, Coba, and Mayapan (see Figure #10). Amidst these centers, Mayapan (see Figure #12) is considered to have been the last Maya capital. Additional to these larger centers, there were also innumerable mid-sized and minor centers that harbored a large hinterland population.

2.3. Sources for the study of the ancient Maya

Although only some bear mention here, the sources for the study of the ancient Maya are manifold. There are the physical traces like the material remains, art, hieroglyphs, codices, and the environmental record as well as post-conquest sources like historical documents, ethnohistorical descriptions made by the Spaniards, Mayan books written in Latin letters, and ultimately there is the scientific literature. Among this multitude of sources, it is the latter that constitutes the material for this study.

Chapter 3: History of Cenote Research

This chapter, concerning the history of research, aims at identifying and establishing some sort of sequential order in relation to the incidents that lead to the identification of possible changes in the status of the knowledge regarding cenotes. The presentation addresses the first research question by focusing on the *internal development* of the sciences. Such a history of research will highlight the *context of justification*, in other words, how the arguments, methods, and empiricism guide the scientific process and ensure the right choice of theory, while only implicitly and partially touching upon the *context of discovery*, also referred to as the social context (cf. Reichenback, 1938: 6-7; Schaanning, 1997: 8-9). Thus, it is by definition presented as a sort of Whig history (Latour, 1987: 100; Schaanning, 1997: 8-9). Although such a presentation will blur some of the complex situations that brought about transmutations of in the scientific knowledge, the goal is to compensate for such a loss in the upcoming analysis. Besides, this historical outline of cenote research aims to present the material for the analysis and locate the periods of time that should receive most attention. In other words, we need to distinguish periods of 'science in the making' from periods of 'ready-made science' (Latour, 1987: 4). As for setting the stage for the analyses in Chapters 5-7, a final goal of this chapter is to identify programmatic works.

In his historical overview of Maya *cave* archaeology, James E. Brady (1989: 10-31) distinguished three periods: the Early Period (1840-1914), the Middle Period (1914-1950), and the Recent Period (1950-1989). His temporal divisions were arranged according to gaps in the literature (during the World Wars) and subsequent changes in cave literature, particularly with regard to the standards of said literature. Although the temporal divisions of *cenote* investigation in the Yucatan Peninsula that are presented in this study approximate Brady's time periods, it was necessary to construct a new set of periods since some important incidents did not correspond directly with Brady's more general survey of cave archaeology of the entire Maya area. Whereas Brady focuses on all cave features (which today also include cenotes), *the history of research presented in this thesis focuses only on cenotes.*

In general manner of speaking, the beginning of a period is set by perceived changes in the knowledge concerning cenotes. In the work at hand, the periods are thus denoted 'The Initial Period' (ca. 1880 – 1904), in which we encounter the first investigations and scientific statements about cenotes, 'The Intermediate Period' (1938 – 1980), which witnessed investigations of other cenotes and saw speculations of an extended cenote cult in Yucatan,

and finally, 'The Programmatic Period' (1980 – today), which saw the emergence and professionalization of a specialized sub-discipline of cave (and cenote) archaeology.

3.1. Approaching the Initial Period (ca. 1840 – 1880): travel writers and early manuscripts

The travel writers of the 19th century were the first to introduce cenotes to a broader audience. The most famous of these were John Lloyd Stephens and Frederick Catherwood, the latter being responsible for the making of some magnificent drawings of cenotes, ruins, landscapes, and other scenes. Stephens' *Incidents of Travel in Central America, Chiapas, and Yucatan* (1841) and *Incidents of Travel in Yucatan* (1963b[1843]; 1963a[1843]),[5] did much to awake the interest of the ruined cities of the Mayas and inspire others to undertake travels and research in the region. Apart from the descriptions of the ruins and the journey, Stephens made several remarks about the scant water supply of the peninsula, and described numerous cenotes, aguadas, and other water facilities (see Figure #13). With the following words, he described his first encounter with a cenote:

> What a cenote was we had no idea (…). It was a large cavern or grotto, with a roof of broken, overhanging rock, high enough to give an air of wildness and grandeur, impenetrable at midday to the sun's rays, and at the bottom water pure as crystal, still and deep, resting upon a bed of white limestone rock. It was the very creation of romance; a bathing-place for Diana and her nymphs. Grecian poet never imagined so beautiful a scene (Stephens, 1841: 408-409)

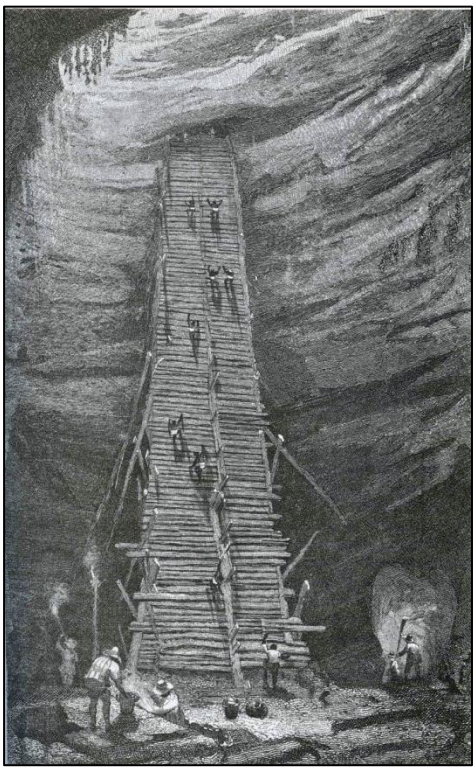

Figure #13: Sketch of Bolonchen by Frederick Catherwood. Retrieved from Stephens (1963a: 99)

Shortly after the travels of Stephens, the fragmented notes from the manuscript now known as *Relación de las cosas de Yucatán*, believed to have been written in the hands of the infamous Spanish friar Diego de Landa in 1566, were retrieved from the Madrid archive and published by the antiquarian Brasseur de Bourbourg in 1864. The manuscript provided one of the earliest European accounts of cenotes and other aspects of Maya culture and has been an

[5] The brackets indicate the year of original publication of the work.

invaluable source of information about Maya customs and history in general. Diego de Landa stated that among the types of water sources the natives of Yucatán named cenotes the "openings in the rock (…) which reach down to the water through the cut in the living rock" (Tozzer, 1941: 187). Another line of information that derives from de Landa is that of the Well – the Sacred Cenote or Cenote of Sacrifice – at Chichen Itza, where the natives had

> the custom of throwing men alive as a sacrifice to the gods, in times of drought, and they believed that they did not die though they never saw them again. They also threw into it a great many other things, like precious stones and things which they prized. And so if this country had possessed gold, it would be this well that would have the greater part of it, so great was the devotion which the Indians showed for it (Tozzer, 1941: 180-182)

According to de Landa's writings, the Well of Chichen Itza, along with the Island of Cozumel, were also important places for pilgrimages (Tozzer, 1941: 109).

3.2. The Initial Period (1880-1938): the cenotes of Yucatan at the dawn of Maya archaeology and the dredging of the Sacred Cenote

The limited information about cenotes encountered in some of the early archaeological works which discuss the ruins and ancient population of Yucatán tended to regard their shape and geological formation (e.g., Charnay, 1887: 290-291; Holmes, 1895: 18, 136-137; A. P. Maudslay, 1889-1902: 12), the dependency on cenotes for sufficient water supply in Yucatán (e.g., Charnay, 1887: 291, 350; Holmes, 1895: 18, 102; A. C. Maudslay & Maudslay, 1899: 196; A. P. Maudslay, 1889-1902: 11; E. H. Thompson, 1897b: 78-79), and the vague and yet unconfirmed legend of pilgrimage and human sacrifice at the Sacred Cenote with particular reference to Diego de Landa and the *Relación de Valladolid*[6] (e.g., Charnay, 1887: 353-354; Holmes, 1895: 137; A. C. Maudslay & Maudslay, 1899: 208-209; A. P. Maudslay, 1889-1902: 8-9). Nevertheless, the account of human sacrifices was met with misgivings.

Between 1904 and 1911, Edward H. Thompson, who was made American consul in Mérida and had bought the hacienda at Chichen Itza, managed to dredge parts of the cenote and recover a serious amount of artifacts and bones from the muddy bottom (see Coggins, 1992; Coggins & Shane III, 1984; Hooton, 1940; Lothrop, 1952; Proskouriakoff, 1974; Tozzer, 1957). Between 1909 and 1911, he also applied helmet diving as well as a combination of the two methods, thus becoming one of the pioneers of underwater archaeology (A. P. Andrews

[6] The *Relación de Valladolid* is an early Spanish documentary text, dated 1579. Refer to Asensio (1900: 1-40) for full text of *Relación de Valladolid*.

& Corletta, 1995: 103). What Thompson was able to do, was to remove any doubt as to whether the stories of sacrifices and ceremonies for the rain gods were merely mythical or based upon historical facts. As David Casares wrote:

> What Landa, Cogolludo and all other writers had narrated from mere heresay [*sic*], one of the distinguished members of this [American Antiquarian] Society, Mr. E. H. Thompson, has had the satisfaction to realize, bringing to light the truth of those statements, by diligent and intelligent work, the results of which I will not mention, as that grateful and honorable task belongs exclusively to him (Casares, 1907: 226)

Due to circumstances like the Mexican Revolution (1910-1920) and a compensation claim that was made when the monetary value of the objects removed from the cenote was known (Coggins, 1984: 25-26), scientific publications on the materials retrieved from the Sacred Cenote were delayed (Coggins, 1992; Coggins & Shane III, 1984; Hooton, 1940; Lothrop, 1952; Proskouriakoff, 1974; Tozzer, 1957). While the results of Thompson were well known, most statements about *other* cenotes than the Sacred Cenote continued to be cursory and regarded variations upon the same kinds of themes as before the dredging (e.g., Morley, 1913: 64, 73, 90; 1938: 535-536, 555; Saville, 1922: 55-57; Spinden, 1917: 18, 28; J. E. S. Thompson, 1927: 15-16, 18, 63-64).

Some papers that discuss the geological structure and different stages of formation as well as the hydrography of cenotes with greater detail did in fact appear during this period (e.g., Casares, 1907; Case, 1911: 162-168; Cole, 1910; Heilprin, 1891; Sapper, 1896). As archaeological institutions like the Carnegie Institution of Washington forged alliances with other disciplines (see particularly Kidder, 1930; but also Morley, 1929), various publications (ethnographic, ethnohistorical, historical, zoological and hydrographic studies) that also dealt with cenotes either directly or indirectly emerged (Pearse, Creaser, & Hall, 1936; Redfield & Villa Rojas, 1934; R. L. Roys, 1933; Scholes & Adams, 1938). It was, however, only Scholes and Adams' *Quijada*-publication (1938), which also marks the transition to the next historical period of cenote research, which caused the general idea of cenotes to change substantially.

3.3. The Intermediate Period (1938-1980): ceremonial and utilitarian cenotes

In 1938, France Scholes and Eleanor Adams published a collection of colonial documents that were retrieved from the archives of Spain under the title *Don Diego Quijada: Alcalde Mayor de Yucatán 1561-1565* with a lengthy introduction by Scholes. These colonial documents of Don Diego Quijada's government describe (among other things) testimonies of natives from

1562 that account for nearly a hundred events of human sacrifice – the majority of the bodies of the victims were deposited in various cenotes, including the Sacred Cenote (Scholes & Adams, 1938: 71-129; for a total of events and victims, see de Anda, Tiesler, & Zabala, 2004; Tozzer, 1957: 199). As most of these testimonies were obtained under torture, they were controversial already at the time they were recorded. The whole process began when two boys from Mani discovered some skeletons and idols in a nearby cave in May 1562. Until the arrival of the bishop Francisco de Toral, Diego de Landa and other friars were in charge of the prosecutions against the natives carried out that same year. In order to bring forth confessions they applied brutal methods of torture, which also meant that many of the accused died. Landa and the friars also conducted several *autos de fe* in which thousands of idols were destroyed. When Toral arrived, he continued the enquiry into idolatry, but he banned the use of torture as part of the interrogations. The natives insisted that their testimonies regarding incidents of human sacrifice were false, and that they had only confessed that this was the case in order to avoid torture.

Despite the initial controversy regarding the nature of the testimonies, they were accepted as essentially factual by various scholars (Scholes & Adams, 1938: lxvii-lxix; Scholes & Roys, 1938: 598-601; Tozzer, 1941: 81n344; refer to Chapter 6.1.) and contributed to a belief of an upsurge of the indigenous custom of humans sacrifice after the conquest. Thus, the implication was that the *cenote cult* could no longer be expected to be a phenomenon exclusively associated with the Sacred Cenote (Kidder, 1938: 169).

In 1941, Alfred Tozzer published what can be regarded as the first scientific evaluation and translation of Diego de Landa's *Realción de las Cosas de Yucatán* – a version where Tozzer's annotations were far more extensive than Landa's original text. In this publication, and particularly in *Chichen Itza and Its Cenote of Sacrifice* (1957), Tozzer treated the cenote ritual at length. In the latter publication, Tozzer discussed topics like the origins and survivals of the cenote ritual in detail, as well as extensiveness, purpose, progression, and character of the ritual, victims and types of offerings and rituals, along with different sets of materials related to cenote rituals (particularly at the Sacred Cenote) on the basis of ethnohistorical, archaeological, iconographic, and ethnographic data – including the Quijada-documents.

In the 1950s, the Carnegie Institution of Washington initiated a project at Mayapan, Yucatan, where they also mapped, surveyed and investigated several of the cenotes within and around the site (e.g., Shook, 1952; R. E. Smith, 2011a[1954]; 2011b[1953]; Strømsvik, 2011[1956]).

Altogether 26 cenotes were mapped within the city wall (Pollock, 1962: 2; A. L. Smith, 1962: 210; see Figure #14). In the final report, A. Ledyard Smith (1962: 210) argued that the three cenotes[7] which showed a direct association with the ceremonial centers at Mayapan indicated the existence of a *cenote cult* at the site and were likely to have been associated with cenote rituals. The cenotes Ch'en Mul and X-Coton also showed evidence of sizable mining portions of *kancab*, a type of red earth assumed to be related to pottery making (R. E. Smith, 2011a).

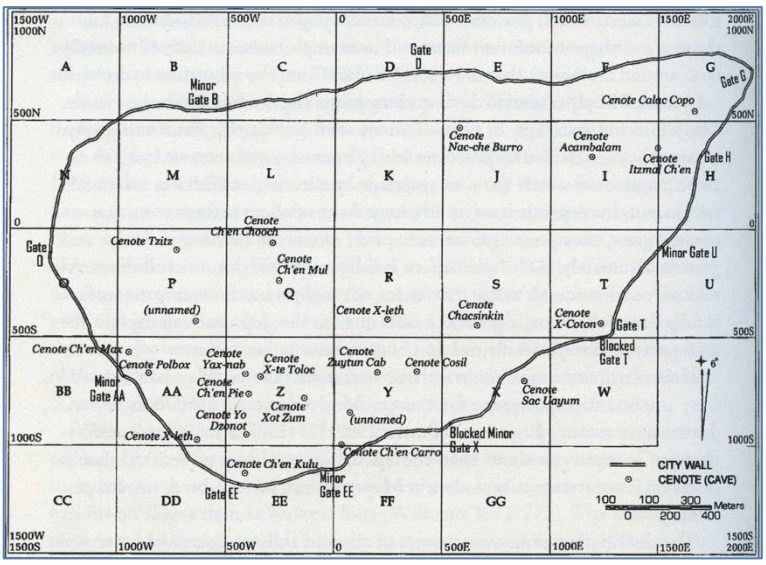

Figure #14: Map showing the locations of the cenotes at Mayapan. The Castillo (see Figure #12) is located near Cenote Ch'en Mul within Square Q. Retrieved from Brown (2005: 378)

In most cenotes, however, they found no signs of ritual use or exclusive access held by the elite sectors, and they were thus believed to be primarily for the city's water supply (Pollock, 1962: 15; A. L. Smith, 1962: 210-211). Pollock and A. L. Smith therefore recall a common idea of the general character of the relationship between cenotes and settlements, just as Morley had fifteen years earlier:

> In a country as devoid of surface water as northern Yucatan, these *cenotes* were the principal factor in determining the location of the ancient centers of population. Where there was a *cenote*, there, inevitably, a settlement grew up. The *cenotes* were the principal source of water supply in former times, even as they are today. Like oases in a desert they were, in short, the most important single factor governing the distribution of the ancient population in northern Yucatan (Morley, 1947: 12)

Another important objective of cenote explorations at Yucatan (including Mayapan), was to place trenches inside cenotes in order to obtain good samples of pottery (e.g., Brainerd, 1942, 1958; R. E. Smith, 1953: 279) as it was recognized that "the size of collections and length of occupation represented by the stratigraphy of cenote excavations make them our best source of stratified deposits" (Brainerd, 1958: 7; for the importance of the Mani cenote with respect to ceramic stratigraphy, refer to Joesink-Mandeville, 1976).

[7] These cenotes are named Cenote Ch'en Mul, Cenote Itzmal Ch'en, and Cenote X-Coton.

The 1950s and the 1960s saw the advent of underwater archaeology and new projects, with both underwater and surface investigations being carried out at various cenotes. Underwater explorations were undertaken at the centrally located Cenote Xlacah as part of a project at Dzibilchaltun at the end of the 1950s (e.g., E. W. Andrews, 1960; Bush Romero, 1972: 150) and at the Sacred Cenote in the 1960s (e.g., Bush Romero, 1972: 147-150; Folan, 1974; Piña Chán, 1970). Some of the artifacts recovered at the Cenote Xlacah were also believed to have been cult offerings (E. W. Andrews, 1960: 257). The cenotes at Ake were surveyed from the surface by Lawrence Roys and Edwin Shook (1966).

Finally, two papers by Eric Thompson (1959, 1975) must bear mention. The latter, an introduction to a reprint of Henry Mercer's *The Hill-Caves of Yucatan* (1975[1896]), is a revised and enlarged edition of the former paper entitled 'The Role of Caves in Maya Culture' (1959). According to Brady (1989: 28-29, 32), Thompson's work was still the best synthesis on the Maya use of caves by the end of the 1980s. In both papers, Thompson considered several uses of caves among the Maya (1975: xiv-xlii): (1) Sources of drinking water; (2) Sources of "virgin" water for religious rites; (3) Religious rites; (4) Burials, ossuaries, and cremations; (5) Art galleries, perhaps in connection with religious rites; (6) Depositories of ceremonially discarded utensils; (7) Places of refuge, a minor use, and; (8) Other uses. As Thompson folded cenotes into the discussion of the first, second, and sixth category, he does not seem to discriminate between caves and cenotes in his essays. He also stressed that "The line between covered cenotes and caves containing water is not easily drawn" (J. E. S. Thompson, 1975: x).

Although, in sum, more interest is paid to cenotes during this period in research, it was still quite marginal.

3.4. The Programmatic Period (1980-present): the emergence and professionalization of cave archaeology as a sub-discipline

During the 1980s, the idea that caves and cenotes represented entrances or portals to the Underworld started to grow. Inspired by MacLeod and Puleston's (1978), aim at establishing a link between caves and the Maya conceptualization of the Underworld (*Xibalba*) as suggested in ethnographic sources and in the Mayan narrative *Popol Vuh* (Tedlock, 1996), William Folan (1980) suggested that the Sacred Cenote might also have been an entrance to Xibalba. While the idea that cenotes represent such entrances can also be found in the ethnographic record (e.g., Redfield & Villa Rojas, 1934: 374), several authors have more

recently argued that caves and cenotes were perceived by the ancient Maya as entrances to the underworld (e.g., Bassie-Sweet, 1996: 19, 52; Bonor, 1989b: 16-17; Brady, 1997: 603; Brady & Stone, 1986; Brown, 2005: 384, 396; 2006: 181; de Anda, 2006: 27, 33; Pugh, 2005: 50-51; Rojas, et al., 2008: 145-146; Sognnes, et al., 2010: 18, 22; Stone, 1995; Uc et al., 2004: 265).[8]

Although work on ritual cenote assemblages first appeared in the early 1980s (e.g., Pohl, 1983), it was the work of James E. Brady that stemmed throughout the last two decades of the 20th century that caused the emergence of cave archaeology as a specialized sub-discipline within Mesoamerican archaeology (e.g., Brady, 1989, 1991, 1993, 1997; Brady & Ashmore, 1999; Brady & Bonor, 1993; Brady et al., 1997; Brady & Stone, 1986; Brady & Veni, 1992). The sub-discipline of cave archaeology also encompasses the study of cenotes (see below).

In his dissertation, *An Investigation of Maya Ritual Cave Use with Special Reference to Naj Tunich, Petén, Guatemala* (1989), Brady made a thorough survey of previous research on caves in the Maya area and pointed out that there was still a serious lack of scholarship on the subject, though the field was already beginning to develop in the 1980s. The situation for cave archaeology, as he saw it at the time, was mainly problematic because archaeologists tended to leap into the conclusion that caves functioned as sites for habitation despite there being no adequate archaeological evidence or even a preferable environment for permanent residence in caves (they are too hot and damp). As a response to the current situation, Brady emphasized that he tried to develop a paradigm for future research in the field of cave archaeology. His main goal was to direct the work towards the ritual nature of caves. As Mayanist scholarly work on caves culminated sixteen years later in the two edited volumes *In the Maw of the Earth Monster: Mesoamerican Ritual Cave Use* (Brady & Prufer, 2005c) and *Stone Houses and Earth Lords: Maya Religion in the Cave Context* (Prufer & Brady, 2005c), we might conclude that Brady has been successful in establishing a sort of paradigm for the sub-discipline of cave archaeology.

In order to be able to study pre-Columbian rituals and religion Brady and colleagues (e.g., Brady, 1989; Brady, 1997; Brady & Prufer, 2005a; Prufer & Brady, 2005b) have repeatedly argued that archaeologists need to employ ethnographic and ethnohistorical analogies. For instance, the Mayan word *ch'en*, or, 'holes in the ground', is held to make up an emic

[8] It should be noted, however, that despite the fact that in more recent studies the Underworld theme is often replaced by a focus on the sacred and animate earth for *caves* in general (Brady & Prufer, 2005b; Kieffer & Scott, 2012; Prufer & Brady, 2005a), *cenotes* are usually rather perceived as entrances to the Underworld.

category of sacred places which includes "not only caves but also cenotes, grottoes, fissures, and various naturally occurring holes and depressions in the ground" (Brady, 1989: 1). Thus, caves and cenotes are often treated in a very similar manner during this period (e.g., Bonor, 1989b: 19-26; Brady, 1989: 1; 1997: 603; de Anda, 2006: 24-25; Kinkella, 2009: 1, 11).

At the end of the 1980s and the beginning of the 1990s, several other aspects of the Maya worldview were becoming established, such as the frequent association between surface structures (particularly pyramids) and caves (e.g., Bonor, 1989a; Bonor, 1989b; Brady, 1997; Brady & Bonor, 1993; Brady, et al., 1997). A significant conceptual relationship between caves and the choice of locations for settlements was first suggested by the discovery of the cave beneath the Pyramid of the Sun at Teotihuacan, State of Mexico (e.g., Heyden, 1975, 1981). It should be noted that a cave beneath a pyramid was already known to exist at Chichen Itza (Brady & Prufer, 2005a: 3-5; E. H. Thompson, 1938). Throughout Mesoamerica, the pyramid-cave complex, which later was later found at several sites, is argued to form an actual physical manifestation of the allegedly sacred and symbolic relationship between surface and sub-surface features that is assumed to be an important means for sanctifying places and for communication between different cosmic levels (Bonor, 1989a, 1989b; Brady, 1997; Brady & Bonor, 1993). At the same time, archaeologists were also becoming aware of a new type of architectural form – the man-made cave – that was now being discovered and recorded in quantities, often in direct relation to important buildings (e.g., Brady, 1989: 2; 1991, 1993; Brady & Veni, 1992; Pugh, 2005).

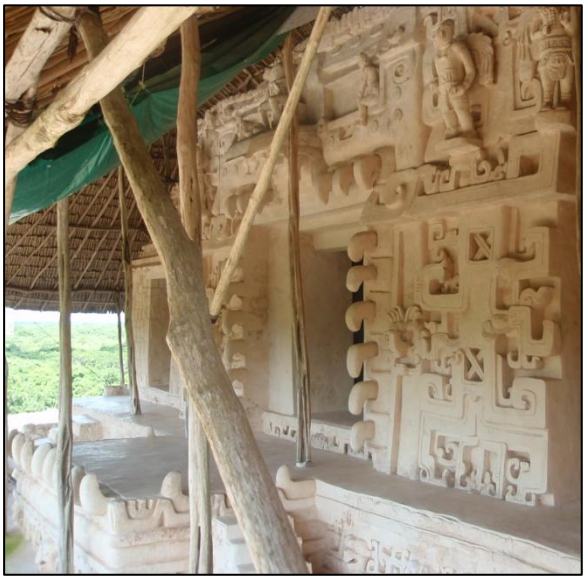

Figure #15: Anthropomorphic façade at Ek Balam, that possibly represents an entrance to a cave or portal to another sacred place (cf. Schele & Mathews, 1998: 45) (photo by author)

Following the emergence and stabilization of cave archaeology as a sub-discipline in Maya archaeology, a body of knowledge that emphasizes the sacred and ritual importance of caves and cenotes was developed and elaborated. The period from 1980 onward saw both a broadened theoretical scope and an intensification of field investigations that have documented both pre-conquest and post-conquest artifacts, skeletal remains, structures, and

even cave art inside cenotes (e.g., A. P. Andrews & Corletta, 1995; Grosjean, Rojas, & González, 2007; Rissolo, 2008; Rojas, 2007, 2010; Rojas, et al., 2008; Sognnes, et al., 2010; Strecker & Stone, 2008; Tiesler, 2005; Uc, et al., 2004).

One such perspective was sacred geography, the Mesoamerican counterpart to the Asian notion of geomancy or geopiety (Brady & Bonor, 1993; Carlson, 1981; Stone, 1995: 15). Sacred geography derives from the work of ethnographers like Evon Vogt (e.g., Haviland, 1964; Vogt, 1961; Vogt, 1964a, 1964b, 1969, 1976, 1981). Vogt termed places that were "visited and prayed to in the rituals of the people" as sacred places (1981: 119), and pointed out that mountains (Mayan: *vitz/witz*) and holes in the ground (Mayan: *ch'en*) were the most common and important places that could be termed sacred by this definition (1981: 120-122).

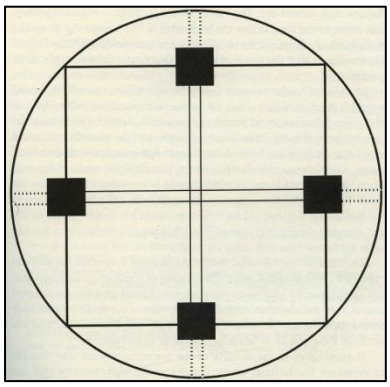

Figure #16: A model of the Maya quadripartite world with a cosmic center and "world crossroads". Retrieved from Bassie-Sweet (1996: 23)

Caves, cenotes, and other pivotal features (see Freidel, Schele, & Parker, 1993: 123-172), are furthermore argued to be defining centers of settlements, that recreate the paradigmatic pan-Mesoamerican cosmological model with four cardinal directions and a cosmic center at different levels (Bassie-Sweet, 1996; Brady, 1989: 65-67; 1997; Freidel, et al., 1993; see Figure #16). The cosmic center of the quadripartite world is believed to be defined by an *axis mundi* that connected the layers of the Maya universe (Bassie-Sweet, 1996, 2008; Freidel, et al., 1993), where the dominant layers comprise the Heaven, the Earth, and the Underworld. This idea corresponds to the layout of Maya villages in the ethnographic record (Freidel, et al., 1993: 123-172; Redfield & Villa Rojas, 1934: 114-115; Vogt, 1976). Thus, caves and cenotes have been recognized as central to Maya cosmogony and cosmology. Mountains, caves, and also water, especially when combined, are often recognized as the most important and attractive elements of the pre-Columbian Maya's sacred geography (Brady & Ashmore, 1999; Prufer & Kindon, 2005).

In regards to cosmogony, the Mayan book *Popol Vuh*, a colonial account written down by the Quiché Maya of the Guatemala highlands with roman letters telling of the origin of life (Tedlock, 1996), specifies that the fourth and successful creation of human beings was realized by mixing ground maize with water from a pool at the center of the mountain. This

would mean that mountains, caves, and watery places could be potentially conceived as sacred places of origin and fertility in addition to having connections to the Underworld (de Anda, 2006: 27).

As for the cenotes of the Yucatan, Tomás Gallareta Negrón (2007) made a brief geographical and chronological survey of the relationship between locations of settlements and cenotes, showing that Morley's (1947: 12) statement that cenotes primarily governed the distribution of settlements of the peninsula was flawed. Nevertheless, while cenotes remain important for the distribution of settlements – at least in some regions – other factors seem to have been more important than water availability, particularly since the Maya had developed and utilized a variety of techniques for the management of water (Gallareta, 2007; see also Houck, 2006).

Although the relevance of cenotes as a means to strictly satisfy domestic ends (i.e., non-ritual practices) cannot and has not been abandoned (e.g., Houck, 2006; Veni, 1990), most recent works direct their attention towards the sacred and ritual aspects of cenotes (de Anda, 2006, 2007b; de Anda, et al., 2004; Rissolo, 2005; Rojas, 2007; Rojas, et al., 2008; Sognnes, et al., 2010; Tiesler, 2005). For instance, through a combination of historical and bioarchaeological studies of skeletal assemblages from cenotes of the Yucatan Peninsula, Guillermo de Anda and colleagues have identified an array of rituals related to cenotes, including ritual treatments of the human body in relation to human sacrifices and deposits in cenotes (e.g., de Anda, 2006, 2007a, 2007b; de Anda, et al., 2004; Tiesler, 2005). Recent bioarchaeological studies of bone marks and bodily treatment have indicated that cenotes were used as aquatic cemeteries[9] in addition to being localities for sacrifices (e.g., de Anda, 2006; Rojas, 2007, 2010; Rojas, et al., 2008; Tiesler, 2005).

3.5. Closing remarks

The differences between Brady's periods and the periods presented in this study merit a final comment. While Brady's (1989: 10-31) periods are mainly distinguished by the scientific standards of *cave* research in the Maya area that correspond with gaps in the literature, the focus of this thesis has been on the perceived changes in the knowledge regarding *cenotes* in the Yucatan Peninsula. The Initial Period was characterized by the first scientific statements pertaining to cenotes in Maya research. Although the dredging of the Sacred Cenote is an important event during this period, no major changes took place other than the establishment

[9] An aquatic cemetery is the notion used to express that the dead were put to final rest in a watery context, like a cenote.

of the fact of a sacrificial and ritual use of this particular cenote. Thus, the dredging of the Sacred Cenote does not indicate a transition to a new period. In the Intermediate Period, the Sacred Cenote partially lost its unique position as the only cenote associated with rituals and sacrifice. Cenotes were, however, mostly held to be important because of their role as water suppliers. Finally, in the Programmatic Period, research regarding caves and cenotes became formalized and professionalized as a sub-discipline of Maya archaeology, while the ritual nature of these phenomena was embraced. It should be stressed, however, that the periods that have been outlined are *research-historical periods*. By that it is meant that they will not necessarily correspond to the temporal changes that we arrive at in the upcoming analysis.

The most evident changes in cenote research have appeared in the most recent period with intensified field research, the application of theoretical perspectives like sacred geography, where cenotes are regarded as sacred spaces and cosmic centers, the link between cenotes and the underworld, the use of ethnographic and ethnohistorical analogy, and the application of an interpretative framework the emphasizes the ritual use of sites such as cenotes. Thus far, we could at least say that cenotes have emerged in new fields of relations, and that this shift has particularly resulted from James Brady's (e.g., 1989) programmatic work on cave archaeology.

Chapter 4: Theoretical and Methodological Approach

The history of cenote research outlined in the previous chapter suggests a rather abrupt change in the state of the knowledge regarding cenotes in the 1980s, implying that the formation of the knowledge on cenotes might not be regarded as merely cumulative. In order to be able to understand the transformations of the state of knowledge regarding cenotes and the stabilizations of facts and research practices, it is necessary to leave the sort of Whig history presented in the previous chapter behind to displace the focus from the purely internal development of the research to the formation of knowledge and to its conditions of possibility. The goal of this chapter is thus to develop a theoretical and methodical framework that can aid the description and explanation of the formation of the knowledge regarding cenotes within Maya research and help us analyze how changes in the knowledge have come about.

4.1. Discourse theory

On a most general level, a discourse is a specific way to speak about, understand, and represent the world or a section of it (Jørgensen & Phillips, 1999: 9). Discourse (herein language) is thus not merely a neutral reflection of reality, but a device or resource which is mobilized, constructed, and maintained by various actors positioned differently to "'see' and represent social life in different ways, as different discourses" (Fairclough, 2001: 235). In such a way we might say that discourse is productive of reality.

The term 'discourse' is, somewhat paradoxically, used in an array of ways even within and across scientific disciplines (Mills, 1997: 1). Most definitions are nonetheless often rooted in the meanings which Michel Foucault employed in his earlier, 'archaeological,' works:

> (…) instead of gradually reducing the rather fluctuating meaning of the word 'discourse', I believe that I have in fact added to its meanings: treating it sometimes as the general domain of all statements, sometimes as an individualizable group of statements, and sometimes as a regulated practice that accounts for a certain number of statements (Foucault, 1972: 90)

The last definition of discourse has perhaps been the most influential in that it draws attention to the (at least partially) rule-governed nature of discourse which is believed to make identifiable different domains that group and render certain statements (the cores and primary analytical units of discourses) possible and meaningful (Mills, 1997: 7). Foucault called the principle of dispersion of statements which conform to a certain regularity *discursive formations* (Foucault, 1972: 121). In relation to discursive formations, discourse can be

understood as a certain group of statements belonging to the same discursive formation (Foucault, 1972: 121).

Methodologically, however, the most fruitful way of thinking about discourse is perhaps as "practices that systematically form the objects of which they speak" (Foucault, 1972: 54; cf. Mills, 1997: 17). Discourse can therefore be conceived as a set of linguistic and non-linguistic practices that create and maintain specific meanings of objects and other aspects of the world. Archaeological artifacts are thus discursive objects. In this respect, it should also be noted that although it is possible to speak of such a thing as an archaeological discourse, it is not the same as the archaeological discipline. Rather, a discipline might be said to form a mechanism for internal control of discourse (Foucault, 1981: 59-61).

One of the significant points about discourses is that they form particular kinds of knowledge and truth, which inevitably and necessarily means that discourses operate with practices of exclusion (Mills, 1997: 12). Any uttered statement that harbors some kind of naturalness is in fact made possible by the exclusion of other ways thinking and speaking. The implication is that what can be regarded as true is always discursively constructed, meaning that there also possibly could have existed alternative truths. The inability to normally conceive these alternative truths stems from the assertion that the set of rules immanent in any discourse are believed to be largely unconscious (Lewellen, 2003: 191). By focusing on historical discontinuities, ruptures, and systematic transformations, Foucault (e.g., 1970) was able to show that whole regimes of knowledge and truth actually have changed, rejecting the possibility of unveiling an ahistorical, transcendental knowledge (Svestad, 1995: 54-55). Knowledge is thus both contingent and relative. When analyzing discourse, we are therefore dealing with matters of *epistemological* character, bracketing off questions of ontology (Neumann, 2001: 14).

This also means that discourses never are completely closed nor totally sealed off from other discourses. Although they do exhibit a fundamental and rather self-regulative inertia, they are always open to change, informed by other discourses (cf. Neumann, 2001: 151-152). We might therefore find several discourses in opposition or at least competing to settle different aspects of reality. How to trace change (as well as how to follow periods of stabilization) will be elaborated in the section entitled 'Methodological approach.'

4.1.1. Positioning discourse in actor-network theory

Foucault's conception of discourse makes it clear that discourse does not isolate itself in the domain of spoken and written language. The statements that can be assigned to a particular discourse are rather immersed in a field of relations consisting of various types of (social) practices (both discursive and non-discursive). When analyzing discourse, attention must therefore be turned outwards to heterogeneous networks consisting of statements, institutions, strategies, tools and yet other statements (e.g., Foucault, 1972).

Thus, one of the major problems with discourse analysis is where to locate the distinction between discursive and non-discursive practices, or, the extent to which discourse constitutes or is constituted by society or reality (Jørgensen & Phillips, 1999; Schaanning, 1997). Different approaches to discourse analysis diverge at this point, a fact that also complicates discourse analysis theoretically and methodically since multi-perspective approaches would require translations between the different stances to this philosophical dilemma. In order to deal with this problem, we need to employ some methodical principles and analytical tools from the works of the sociologist (of science) Bruno Latour and actor-network theory (ANT). In fact, the strategy employed by Latour dispenses with the relevance of any prefigured division between discourse and society (Schaanning, 1997: 223).

Johnsen (2002: 40) indicates that Latour regards discourse as *strategies* or *repertoires* that are used in the construction of networks. As a parallel to Foucault, Latour rejects any assignment of a privileged position of discourse *external to* society and nature (Schaanning, 1997: 206). According to Latour, "*Discourse is not a world unto itself but a population of actants*[10] *that mix with things as well as with societies, uphold the former and the latter alike, and hold on to them both*" (1993: 90, author's emphasis). By not privileging discourse, Latour avoids operating merely within the framework of the dominant dichotomies and asymmetries that characterize the modern condition (Latour, 1993). This is achieved by employing a principle of generalized symmetry for the purpose of keeping the social flat (horizontal) so that everything can be analyzed at the same level (Latour, 2005). Generalized symmetry is based on a principle of not imposing *a priori* asymmetries onto the configuration of traditional dichotomies between such entities as society and nature, humans and objects, present and past, so that connections between such entities can be analyzed rather than assumed (cf. Latour, 2005: 76). Since neither Nature nor Society can sufficiently force the settlement of a

[10] Refer to Chapter 4.2.1.

controversy, such entities cannot be used as explanations as to why a controversy was settled. Rather, representations of Nature and Society only emerge once the controversy is settled (Latour, 1987: see particularly pp. 99, 144).

The advantage of this approach is that existing asymmetries should emerge as the results of the analysis rather than being presupposed or simply bypassed or unnoticed.

4.1.2. Statements

> A statement always has borders peopled by other statements (Foucault, 1972: 110)

Statements are the primary analytical units in discourse analysis. According to Foucault (1972: 99-118, 120-121), *particular modalities of existence* are required for a sentence or some other sequence of signs (like, for instance, a graph, an algorithm, or a figure) to acquire the status of a statement. Briefly, the requirements for a statement are that it is linked to a positioned subject and to a field of possibility which consists of previous statements, institutions, tools, and practices, which ensures that it always communicates with other statements (whether it borrows, modifies, adapts, repeats, opposes, questions, or reactualizes). Lastly, the statement must have a material existence. The crucial aspect is that statements are always linked to *something else*.

According to Schaanning (1997: 211), Latour (1987) substantiates 'something else.' What a statement relates to is every resource it manages to mobilize in order to gain 'weight' and convince others. These resources may include such things as machines, objects, instruments, and graphs as well as statements assignable to other scientific authorities. The sum of the resources it manages to mobilize constitutes the weight or value of the statement.

One of the important aspects with statements is the situated use, which, according to Foucault (1972: 55-61), does not refer to a transcendent subject but rather a position that any subject may occupy. This means that it is the position from which a statement is uttered that will judge whether or not there is a serious claim to knowledge (and if it even is a statement). Christopher Tilley's constructed example can illustrate the point of the situated use of statements (or serious speech acts):

> If an archaeologist were to say 'This find of obsidian on Melos is evidence of the operation of a prehistoric exchange system' this would count as a serious speech act,[11] whereas if Andris

[11] Dreyfus and Rainbow (1982: 45-48) argue that the manner in which Foucault conceives statements is similar to the notion of speech acts in speech act theory and propose to term Foucault's special case *serious speech acts*.

> Michalaros, a local farmer, were to make the same proposition this would count as an everyday speech act, not automatically to be taken seriously (Tilley, 1990: 296)

In other words, if we wanted to convince someone that the prehistoric people of Melos were engaged in organized obsidian trade, we would be more likely to succeed if we could refer to a statement linked to a positioned archaeologist than a local farmer. To paraphrase Neumann, the fundamental issue is that *who* is saying something is more important than *what* is being said or *how* it is being said (Neumann, 2001: 117).

4.1.3. Power

Furthermore, Tilley's example illustrates that there is an element of power involved. For Foucault, both power and knowledge were knitted together in discourse. This also means that different discourses have different claims to knowledge – they are "inherently positioned", as put by Norman Fairclough (2001: 235). However, power is not treated in its conventional fashion by Foucault. In order to deal with the modern form for power, Foucault (1999: 97-104) saw power not as a possession of any agent nor as the ability to define the options of others. Rather, he viewed power in terms of tactics and strategies, that is, as a "complex strategic situation", acknowledging that power is emerging from everywhere and is to be found in subtle and tiny mechanisms that are made possible and tolerated only by concealing large parts of how they actually work. In other words, the modern form of power can be characterized as a distribution of micro-powers. Importantly, this form of power cannot be conceptualized merely in negative terms; power is also productive of knowledge and discourse.

4.2. Methodological approach

However valuable Foucault's theoretical elaborations of discourse, his 'archaeological' method has been deemed a self-fulfilling failure (see Dreyfus & Rainbow, 1982) and his 'genealogical' method was never explicitly developed (Svestad, 2003: 12-13). Thus, for the purpose of assembling the tools needed for the analysis, it is necessary to make an incision into the works of Latour and additional ANT literature.

Latour (1987) argues that fact-making essentially is a collective process involving both humans and non-humans. Moreover, this process is fraught with techniques, strategies, and movements of resources that aim to support the production of facts. Some of these strategies, like *black-boxing* (refer to Chapter 4.2.1.), are largely responsible for the success of the sciences (Latour, 1999). What Latour does, is emphasize the role of *rhetoric* in his studies of

science and demonstrate how a variety of different practices and procedures, considered both scientific and non-scientific, are involved in the production of scientific texts and facts.

Perhaps one of the most useful tools that Latour provides with regard to this analysis is what he in *Science in Action* (1987) called *the first rule of method*. This rule, which regards our way into the analysis of the scientific enterprise, declares that we should study science in the making, and not ready-made science (Latour, 1987: 13-17). The reason for choosing this way into the analysis is that when we are dealing with science in action we should expect to find controversies that are still unsettled, whereas if we choose to go to the ready-made science, we are more likely to encounter a *black box*, that is, a properly working scientific fact where all controversies have faded out.

Thus, the methodical approach employed in this study will consist of an *analysis of the archaeological literature* as primary sources regarding the subject of cenotes. Specifically, the method consists of an *analysis of statements and the heterogeneous networks in which the statements are immersed*. By aid of some of the tools described in the next section, the analysis will try to identify the establishment of discursive practices and scientific facts and eventually how patterns emerge. As such, the approach is based on an analysis of the *translation* of statements into solid and established scientific facts.

As a methodical principle, statements should primarily be regarded as nodes in horizontal networks (Schaanning, 1997: 206-207). In such a manner, all these elements that were inextricably linked to the statement for Foucault (such as institutions, practices, tools, and yet other statements) become traceable resources through the connections established by the statement. It would also be such heterogeneous networks consisting of statements as well as other elements that uphold cenotes, that is, make cenotes what they are.

In this thesis, we will primarily follow the *archaeological* discourse that references cenotes and analyze the manner by which new elements enter the discourse and thereby alter the status of cenotes. Additionally, this study shall analyze how cenotes emerge as discursively constituted objects in various other discourses. Moreover, the set of resources that are mobilized in order to produce forceful arguments will be examined. It is also necessary to analyze how various statements are used by others and which consequences the statements entail when others comment on them or employ them. The goal of the analysis is to account for how these processes occur and how specific groups or networks of statements and other elements make up specific practices and patterns. By studying the establishment of scientific

facts on cenotes, it is also hoped that this study may illuminate what was excluded in the process and how taken-for-granted facts rest on a great deal of invisible work.

As the analysis is qualitative rather than quantitative, the choice of empirical data is based on the brief outline of the history of cenote research as presented in the previous chapter. One of the goals of the chapter on the history of research was to locate changes in the knowledge respecting cenotes temporally so that analytical focus could gravitate towards these periods. Furthermore, the history of research was launched to identify programmatic works on the subject so that particular attention could be directed towards these works in the analytical part of the thesis. As noted above, the methodical guideline for the choice of data is to study science in action, which is why the analysis needs to focus on the particular periods in which transformations occurred, and not at the point when they turned into ready-made science.

The methodological approach outlined above will be applied in Chapters 5-7 in order to address the second research question. The task of the analysis in these chapters will be to describe and explain the formation of knowledge in regards to cenotes so that we can be able to understand how the knowledge concerning the phenomena has changed (refer to the research questions as declared in Chapter 1.1.) by employing the theoretical approach and methodological perspective described above.

4.2.1. Methodological tools and terminology: black boxes, modalities, actants, and obligatory passage points

The term *black box,* as applied in science studies, refers to a situation where actors only employ the inputs and outputs of a scientific fact or a piece of machinery. As long as both inputs and outputs are produced, the black box is working properly, and the internal complexity and the historical controversies of the technical and scientific work that made the fact or the machinery work properly and successfully are made invisible (Latour, 1987: 2-3; 1999: 304). Latour argues that science consists of, and depends upon, multiple black boxes, furthermore, the ability to insert and apply black boxes is what makes science effective.

Latour (1987: 20-26, 103-104) argues that the fate of a statement cannot be assessed by what it is stating, rather it depends upon later statements, that is, how it is used by others (see also Foucault, 1972: 136 for a similiar point). In order to designate the manner in which statements are modified or qualified by other statements, Latour employs the term *modality*, where he distinguishes between *positive* and *negative modalities*:

> We will call **positive modalities** those sentences that lead a statement away from its conditions of production, making it solid enough to render some other consequences necessary. We will call **negative modalities** those sentences that lead a statement in the other direction towards its conditions of production and that explain in detail why it is solid or weak instead of using it to render some other consequences more necessary (Latour, 1987: 23, emphases in original)

In *Pandora's Hope*, Latour (1999: 93) distinguishes between the part of the sentence that modifies or qualifies it, that is, the *modifier* or *modus*, and the part of the sentence that is kept intact, that is, the inserted statement or *dictum*. According to Latour, when only the dictum is maintained, we are dealing with a scientific fact, a completely sealed *black box*. The presence or form of a modality can be used to assess how controversial the inserted statement is. In *Laboratory Life*, Latour and Woolgar (1986: 75-81; cf. Schaanning, 1997: 212) provide us with a five-fold scheme that reaches from pure speculation to taken-for-granted facts:

Type 1: Speculations and conjectures
Type 2: Uncertain claims
Type 3: Assertions
Type 4: Facts
Type 5: Taken-for-granted facts

As Schaanning (1997: 212; see also Johnsen, 2002: 57-58) points out, the goal of the scientific activity is to translate *type 1* and *2* statements into *type 4* and *5*. While *type 1* statements are only able to mobilize a small network of resources, *type 4* and *5* statements hold on to such a massive network of resources that they appear as unquestionable (Johnsen, 2002: 57).

Another important term is *actant*. Latour (1987: 84, 89) employs the term actant in order to designate whatever or whoever different actors (e.g., scientists) represent. While the term 'actor' normally is delimited to humans, actants can also be nonhuman (Latour, 1999). An actant might be another actor, an object, a laboratory, a text, an archaeological artifact, an institution, or anything else. This means that we cannot conceive agency as reserved for intentional human subjects since actants can also make people act (Latour, 2005: 71, 106-107). In other words, actors (or actants) are defined by what they do (perform) and not by their position in any preconfigured 'realm' such as 'nature,' 'society,' 'subject,' 'object' (Latour, 1999). The intent is not to endow objects with intentionality or subjectivity, but an effort to avoid employing the traditional distinction between objects and subjects in order to be able to analyze how humans and nonhumans associate and connect (Latour, 1999: 193-

194). Notably, it is necessary for there to be a relationship between an actor and an actant (Svestad, 2003: 27).

There is also the matter of the distinction between *intermediaries* and *mediators*. Intermediaries are considered unproblematic entities that transport meaning without transformation whereas mediators do not retain the meaning intact but "transform, translate, distort, and modify the meaning or the elements they are supposed to carry" (Latour, 2005: 39). What interests us, then, is when *actants* appear as mediators.

Lastly, for the purpose of the analysis, we will adopt the notion of *obligatory passage points* (Callon, 2007). Obligatory passage points designate regions that both define and disseminate the reality and whatever may be considered factual knowledge (Johnsen, 2002: 58). These points may be conceived as particularly involved in the systematic production of asymmetric relations between different discursive objects. Thus, it might be argued that these points are similar to the notion of *nodal points*.[12] According to Jørgensen and Phillips (1999: 63), it is possible to conceive nodal points as particularly involved in organizing discourse. Obligatory passage points might however be both *points* and *actants* since they have the ability to translate various elements (Callon, 2007).

4.2.2. A supplementary toolkit for the analysis of programmatic works

As elaborated above, *modalities* are important analytical tools for describing and explaining the direction of science and research (among other practices). However, for the purpose of understanding the processes that occurred in the transition to the Programmatic Period, which is marked by the complex process of the establishment of cave archaeology as a sub-discipline, we need to refine the toolkit. In that respect, Michel Callon's (2007) *four moments of translation* is of relevance. This is described as the basic framework of the ANT methodology (Johnsen, 2002: 58). Although these moments – or phases – are not neatly separated, this framework might aid the analysis of the establishment of contexts (networks) which enable different actors (scientists) to translate the status of various statements from pure speculations into operative scientific facts (Brattli, 2006: 44; Johnsen, 2002: 57-58). Once such contexts are established they can direct (or redirect) statements and research.

[12] In the terminology of Laclau and Mouffe (2001: 112), *nodal points* refer to "privileged discursive points of [a] partial fixation" of meaning.

The first phase, *problematization*, involves a double movement by which participants in the formation of a network position themselves as to *determine a set of interrelated actors/actants* and *establish obligatory passage points* (Callon, 2007: 59-60). The identity of the actors/actants is set to coincide with the obligatory passage points. Another significant aspect of this phase is the assignment of positions that makes the actors involved in the definitional work outlined above appear as indispensible to the formation of the network.

The second phase, *interessement*, is described as a process by which participants utilize different devices for the purpose of attempting to "impose and stabilize the other actors it defines through its problematization" (Callon, 2007: 62). If successful, this process actualizes the problematization phase by interesting allies and molding their identities as to create stronger links between the actors and the obligatory passage points and weaken the contact between the differently positioned actors. The goal is to situate the obligatory passage points as common interests and to make the designated actors become spokesmen for the obligatory passage points. In other words, this phase aims to transform the obligatory passage points, whether these be definitions, beliefs, or opinions, from *level 1* or *2* to *level 4* or *5* statements (Brattli, 2006: 44; Johnsen, 2002: 58).

The third phase, *enrollment*, "designates the device by which a set of interrelated roles is defined and attributed to actors who accept them" (Callon, 2007: 65). The enrollment is a successful realization of the interessement through multilateral negotiations of roles. Once actants become enrolled through these negotiations, bonds sediment and institutionalize while the network stabilizes. During this phase, different theories that were established reach a new elevation by becoming paradigmatic and anchored in some kind of undisputable order or reality, like nature, society, or science (Johnsen, 2002: 60).

The fourth and final phase is *mobilization* or mobilization of allies (Callon, 2007). Resources are mobilized in order to stabilize the network and prevent movement in the arrangement that was carved out during the last phase. Moreover, new spokesmen are both recruited and put up to trials as to whether they are representative for the established network.

4.2.3. The role of the analyst

Before accelerating into the analysis, we need to account for the position which we are to occupy as analysts. Through my own enculturation into Maya cave and cenote archaeology, the material in study has become fairly familiar and perhaps it has even been taken-for-granted as factual. Some of the facts which we are to study might just as well have passed as

self-evident, thus we must adopt a methodical perspective that allows us to study familiar material. The methodical perspective of which we speak is the *stranger's account* (Shapin & Schaffer, 1985: 6; cf. Nielsen, 2011: 5):

> We need to *play* the stranger, not to *be* the stranger. A genuine stranger is simply ignorant. (…) By playing the stranger we hope to move away from self-evidence (Shapin & Schaffer, 1985: 6, emphasis in original)

Since it might be practically impossible to distance oneself so far from the material in study as to *become* a stranger, we must conceive this role as an ideal, as well as a position we strive to occupy in order to try to adopt an outsider's perspective to the archaeology of cenotes.

4.3. Some comments and limitations

There are several reasons for invoking the notion of discourse through the work of Foucault, some of which bear mention here. One of the reasons is that the scope of this thesis will not permit a full mapping and analysis of actor-networks throughout the entire period of cenote research. Rather, the historical perspective is a priority of the analysis. Another reason is that there are some obvious similarities between Foucault's and Latour's works (cf. Schaanning, 1997: 180-226; Svestad, 2003). Thus, we might illuminate the historical dimension of Latour's work and easily employ some of the tools developed through his and others' science studies.

The scope of this thesis is mainly restricted to the analysis of scientific literature. This means that, perhaps regrettably, other discourses and networks that produce meanings and uphold cenotes are not analyzed. Such alternative discourses might be found, for instance, within cultural heritage management, indigenous groups and communities, local tourism, national and regional politics, resource management, and even the looting industry. However, the production of knowledge that happens within such discourses is not totally excluded, since these groups sometimes take the form as *actants* in the scientific disciplines. In last comment, any alternative repertoires of archaeologists not present in the scientific literature are not available for the analysis (cf. Gilbert & Mulkay, 1984).

Chapter 5: Analysis of the Initial Period (1880 – 1938)

In the Maya area, professional archaeology is usually regarded to have begun with the work of John Lloyd Stephens in the 1840s (Hammond, 1982). As Munro and Melo Zurita have argued, however, Stephens was writing from the position of a traveler, or 'discoverer', and therefore added a certain romantic gloss to the discovery and experience of visiting cenotes (Munro & Melo Zurita, 2011: 603). It is first by the end of the 19th century that we can observe that a formalized discipline with its own sets of practices, group of statements, and material record had been established (cf. Svestad, 1995). The work and publications of Edward H. Thompson (1897a, 1897b), Henry Mercer (1975[1896]), Eduard Seler (1901) and George Byron Gordon (1898), all of which made archaeological investigations of caves, can be held to testify to the formalization of the discipline.

As a category and concept, cenotes were however *not* transported unsullied throughout the centuries preceding the advent of modern archaeology. In fact, the argument that *transmutations may have appeared before the advent of modern scientific research* requires mention in this thesis:

> *With the arrival and settlement of the Spanish came a distinct new perspective on the landscape*, with a particular curiosity directed towards the apparent lack of rivers and the presence of cenotes and an underground water system. *The cenotes*, which were seen as the mythical underworld to the Maya, *were now being viewed by the Spanish with a European biological* [sic] *and 'scientific' curiosity*, with questions being asked about the depth of the cenotes, the fish species that lived in them and the possible existence of underground rivers (Munro & Melo Zurita, 2011: 592, author's emphasis)

As Munro and Melo Zurita argue above, *the Spaniards forced upon the cenotes a new type of knowledge already in the 16th century, allowing them to be connected to and formed by new types of discourses*. Thus, throughout the centuries preceding the formation of Maya archaeology in the mid and late 19th century, cenotes had already traversed a series of transmutations.

When cenotes emerged as scientific objects during the Initial Period, they were not born as an entirely new type of object, category, or concept that had to be named. Rather, they appeared as objects with a fixed and solid origin that could be traced back to the ancient Maya, and whose attributes and laws of (geological) formation could be specified by the sciences. Basically, it was during the Initial Period, cenotes were given scientific form as *natural phenomena* and *archaeological phenomena*.

5.1. The emergence of cenotes as scientific objects, part I: natural phenomena

Although the term *cenote* etymologically appeared merely as a rather harmless linguistic corruption of a Mayan word that would have been written *dz'onot* or *ts'onot* in Latin letters, the word, or notion, was now taken to constitute a distinct natural phenomenon that was subjected to a series of physical laws and natural processes. As geological phenomena, cenotes did not however fit entirely into the more familiar categories, such as caverns, underground rivers, sinks, or anything else – though some of these categories were often applied in order to describe the phenomenon. As Leon Cole argued:

> "Cenote" was the name given by the ancient Mayas to the deep waterholes or sinks of Yucatan; and since the character of these peculiar sinks appears to be distinctive, it may be well to retain the name, especially for the deep, circular, vertical-walled holes, without lateral passages, which may be considered as the type of the mature form (Cole, 1910: 324)

Some years earlier, while discussing the water features of Yucatán, David Casares (1907: 220, 223) argued that cenotes could be classified into two categories whose distinction resided in their geological appearance (covered cenotes with chambers and branches leading to deposits of water *and* open cenotes with perpendicular walls).

When Casares and Cole explained the geological formation of cenotes, the status of the Sacred Cenote as a sacrificial cenote had already been established, however this is beside the point. In fact, they were not referring to the cultural traditions associated to cenotes or even the knowledge of the Maya in regards to cenotes. They alluded to the natural processes, the physical laws, the natural attributions, and the characteristic traits that existed independently of the human world. These characteristics were to be specified in the domains of geology and physical geography (especially physiography, and hydrography).

The modern sciences were now in a privileged position which enabled them to *define* and *modify* the meanings of cenotes. To take Cole's statement, we see that it embeds a *modification* in that he proposes "to retain the name, *especially* for the deep, circular, vertical-walled holes" to the exclusion of other forms (Cole, 1910: 324, author's emphasis).

Following the emergence of the cenote as a distinct geological phenomenon, there were also, of course, several unsettled controversies (see, for instance, Casares, 1907; Cole, 1910; Heilprin, 1891; Sapper, 1896). Among these controversies was the character of the subterraneous drainage, particularly the interconnectedness between different cenotes and with the sea, the relationship between the water level of cenotes and of the sea, and the kinds

of features that actually were termed cenotes. Compare Cole's statement to that of Henry Case:

> It has already been stated that this term is bestowed indiscriminately, whether upon open holes in the ground, or underground caves, but this is decidedly incorrect, as open holes are properly called "aguadas," or as in Biblical writ, "pools" so without room for discussion, the true acceptance is an underground cave of water, although the term has been applied even to "where waters appear to the light of the day" (Case, 1911: 162)

These controversies aside, the main analytical point merely regards the emergence of the cenotes in early research as natural phenomena that were endowed with an existence independent to that of the social world (cf. Latour, 1993). This independent existence could be ensured since the social significance of cenotes was to be specified in other sciences. Yet, the problems of designation are certainly produced by human actors – even more so, if they had to bridge the linguistic derivation of the notion cenote with a particular natural phenomenon.

As a contrast to the descriptions made by Diego de Landa – who saw the cenotes as sources of water provided by God (Tozzer, 1941: 187-188) – God has been excluded as an agent in the creation of the cenotes and superstitions and myths have been removed from the descriptions of the phenomena. Elsewhere, 'the crossed-out God' and the purification from myths and superstitions are described as general characteristics for the emergence of the modern scientific enterprise (e.g., Foucault, 1970; Latour, 1993). A different kind of rationality based on empirical observation was carved out, and it was within this particular rationality that cenotes emerged as scientific objects within natural sciences. Within this rationality, even the meanings that the Maya attributed to cenotes became systematically sorted out.

5.2. The emergence of cenotes as scientific objects, part II: archaeological phenomena

On the other hand, another similar but oppositional process was occurring. Just as cenotes had become scientific objects amongst the natural sciences (geology, physical geography, and biology), they had also become objects of study for historians, anthropologists, and archaeologists, that is to say, the humanities or social sciences. Within these sciences, cenotes were not a subject of interest as an exclusive result of the geological facts that could be attributed to them; they were interesting because of their historical use by an ancient civilization (if we limit the analysis to archaeology and history). Cenotes were incrementally recognized as social phenomena or, what we for the sake of convenience, will call

archaeological phenomena (since it was their role in the past that was to be defined). Once researchers began to grapple with cenotes as archaeological phenomena, the laws of nature ceased to be of prime relevance.

Edward H. Thompson wrote in the paper *The Chultunes of Labná* (1897b):

> These water caverns, called by the natives "ɔonot," now wrongly called by the modern natives "cenotes," or water caves, furnished an inexhaustible supply of the precious fluid, and were ever sought for and utilized. Large populations grew up around some of them (E. H. Thompson, 1897b: 78)

For Thompson, there were two available methods for securing sufficient water supply: "One was to seek for water in the depths of the earth, and the other to catch it as it fell from the clouds and store it for the time of need" (E. H. Thompson, 1897b: 78). The first method was not, to Thompson's knowledge, an option utilized through the digging of artificial wells but was made available through the existence of natural cenotes. The second method was an option that was primarily necessitated in areas where neither cenotes nor other natural water sources existed. Thus, Thompson made it *socially significant* to distinguish between natural and artificial water sources and their said methods of use.

However, Thompson was not the only author to emphasize the importance of cenotes for the ancient populations. For instance, William Holmes made a similar comment on the matter:

> To the existence of these natural wells [cenotes] we undoubtedly owe the presence of the ancient peoples and the buildings of cities in this unpromising region, for there is no running water in all this part of Yucatan (Holmes, 1895: 102)

Thus, at this time, we see the emergence of cenotes not only as natural phenomena, or as a linguistic corruption of a Mayan word for that matter, but also as indispensible objects for an ancient human population. According to the knowledge at this time, the Maya would never have penetrated the northern parts of the Yucatan Peninsula were it not for the cenotes.

Although cenotes had a crucial position as sources for water, their role was not limited to matters concerning the very possibility of the existence of the Maya civilization. The mythical stories that had survived in specificity through colonial writings and in brevity through oral legends were to make up another sort of knowledge related to one particular cenote: The Sacrificial or Sacred Cenote at Chichen Itza. However, the factuality of these stories was until Thompson's dredging a matter of controversy. Holmes, for instance, employed a *modifier* in

order to qualify the history of the Sacred Cenote: "Its [the Sacred Cenote] charm is enhanced by the weird stories of human sacrifice *associated correctly or incorrectly with its history*" (Holmes, 1895: 137, author's emphasis). With nothing but the historical documentation, whose trustworthiness on this particular matter was uncertain, an extended discussion on the ritual use of this cenote was simply not possible for the entirety of the scientific field.

5.3. The unique history of the Sacred Cenote

> "(…) soon I must be either 'that clever chap who recovered the treasures from the Sacred Well in Yucatan' or else the prize idiot of the whole Western Hemisphere" (personal comment by Edward H. Thompson, reproduced in Willard, 1926: 105).

As hinted at in the history of research, Thompson's major achievement was the persuasive displacement of the Sacred Cenote from an unstable position between myth and history to a stabilized scientific fact. As pointed out above, the issue of human sacrifices and artifacts thrown into the cenote was controversial since the only sources that existed were written accounts by Spanish conquerors who's agenda prioritized 'saving' the native population through Christianity. Given this uncertainty, the statements that were produced on the issue by scientists before the dredging were highly speculative – they were curiosities that had not yet truly entered the discursive field. Thompson's goal was of course to convince others of the authenticity of the custom of human and object sacrifice.

By this time at least, the material remains of the past had already been defined as *obligatory passage points* (*nodal points*) in the archaeological discourses.[13] This means that they had a distinctive ability to organize what could be stated in general, and that archaeology had at least delegated enough indicative power to artifacts and other material remains so that they could be articulated in statements about the past. However, the archaeological remains also proliferated as a major group of *actants* in the archaeological discourse, which means that they could enter into and act upon the archaeological meshwork that produce, modify, and uphold different parts the past.

In fact, Thompson's evidence was quite brutal since he did not have to advance any theory as to what had happened at the Well (the Sacred Cenote). As the dredge brought up artifacts and bones from the cenote, all he had to do was step aside and *let the artifacts and bones speak for themselves*. Thompson's *actants*, that is, the artifacts and bones from the cenote, were articulating just as he did (cf. Latour, 1987: 73-74 on this strategy). He was able to do this

[13] It might probably be argued that there is no archaeology without the material remains.

because of the presence of a field of possibility wherein the material remains were capable of producing and modifying the past. In fact, the artifacts and bones that were recovered from the cenote acted more reliable as evidence than the word of living human beings (Spanish conquistadors) for the archaeological community. Quite to the contrary, it was the 'silent' archaeological remains uncovered from the cenote that made the difference in that they altered the status of the Spanish documents:

> What Landa, Cogolludo and all other writers had narrated from mere heresay [*sic*], one of the distinguished members of this [American Antiquarian] Society, Mr. E. H. Thompson, has had the satisfaction to realize, bringing to light the truth of those statements, by diligent and intelligent work, the results of which I will not mention, as that grateful and honorable task belongs exclusively to him (Casares, 1907: 226)

Furthermore, Sylvanus Morley stated that "Recent archæological investigations substantiate the sacred character of this cenote and the fact that human victims were thrown into it" (1913: 73). Moreover, Morley employed the evidence from the dredging operations as one of scientific reasons for launching a large scale archaeological project at Chichen Itza (*positive modality*): "The fact that Chichen Itza was the holiest city of the Maya, in short, "The Mecca of the Maya World," considerably increases its archæological importance" (Morley, 1913: 73). Thus, Thompson had apparently no problem with convincing others that the Sacred Well *really was* a sacred well or cenote. The lists of Thompson's findings and contributions go on and on (e.g., Arnold & Frost, 1909: 92; Cole, 1910: 325; Saville, 1922: 57; E. H. Thompson, 1992; J. E. S. Thompson, 1927: 63-64).

In the statements cited above, the *modifier* had dropped entirely so that the Sacred Cenote could be presented as a place of human and artifact sacrifice without further qualifications. There is a transformation from *type 1* to *type 4* and *5* statements (compare Holmes' statement from Chapter 5.2. with those presented above). The subsequent statements (like Morley's) consist almost exclusively of *positive modalities* since they directed the attention away from the conditions of production and towards the production of new knowledge.

5.4. Summary discussion regarding cenotes in early research: a marginal but divided object

During this period, cenotes were first given a scientific form. Similarly to what Asgeir Svestad (1995: 182-185) argued in his study of the emergence of archaeology in Scandinavia, we may, at the turn of the 20th century in Middle America, speak of both archaeology and

geology as disciplines which had developed their own sets of practices, groups of statements, and field of objects. For archaeology, practices like excavations, descriptions, publications, and categorizations can be viewed as discursive events that systematically enclosed an entire prehistoric field (Svestad, 1995: 184).Whereas the archaeological practices were enclosing a human past, the natural sciences like geology simultaneously embraced a region of nature. Through it all, mechanisms of exclusion became operative for both disciplines.

The sorting and 'purification' of phenomena into a natural and a social world with different and isolated sets of laws and forces (defined in separate repertoires) has been described by Latour (1993) as one of the main characteristics in the modern constitution. As far as the sciences were concerned, cenotes belonged to two different realms and their laws and forces were guaranteed not to interfere with each other. While Latour's argument on this practice is far more extensive than the one presented here, it suffices to observe that the distinction between cenotes as natural phenomena and cenotes as archaeological phenomena (refer to Figure #17, Chapter 6.4.) was one of the effective means that led to these differing repertories.

Rather than altering the discourse about cenotes, we find that Thompson's dredging operations carved out a unique history for one particular cenote which was linked to the cultural history of the peninsula as a whole. Even though major publications pertaining to the material from the Sacred Cenote did not appear before the Intermediate period (Coggins, 1992; Coggins & Shane III, 1984; Hooton, 1940; Lothrop, 1952; Proskouriakoff, 1974; Tozzer, 1957), Thompson's dredging as well as the correlations found between the historical and the archaeological record and collective support of the archaeological community lodged the Sacred Cenote in a specific position. The latter was a result of it being the only profoundly discussed cenote by both archaeologists and historians at this point in time (e.g., R. L. Roys, 1933: 173-176). Ralph Roys' brief remark in reference to an ethnohistorical source where Antonio de Ciudad Real refers to human sacrifice at a cenote near a pyramid in his description of Mayapan in 1588 is quite telling: "Ciudad Real apparently confused the Mayapan cenote with the one at Chichen Itzá" (R. L. Roys, 1933: 175n6).

Inevitably, perhaps, the major questions that were put forth by the emerging archaeological communities did not regard the use of cenotes, but rather such things as the antiquity of the ruined cities, the origin of the native civilization as well as major migrations. It can be concluded that during this period cenotes mainly occupied *marginal positions* in archaeological and historical discourses.

Chapter 6: Analysis of the Intermediate Period (ca. 1938 – ca. 1980)

The transition to the Intermediate Period was marked by the belief in an extended cenote cult. In other words, a link between the Sacred Cenote and the cenotes as a category was forged, and the picture of cenotes underwent a transformation in that they were now functionally divided into ritual and utilitarian cenotes. Thus, the task of this chapter is to analyze this transformation enter into the formation of knowledge pertaining to cenotes.

6.1. The collective production of the extended cenote cult

The idea of the extended cenote cult[14] seems to derive from Scholes and Adams' publication of the Quijada-documents, which included a section on the proceedings against native idolatry in 1562 (Scholes & Adams, 1938: 71-129). However, these proceedings were highly controversial at the time they were carried out (see Clendinnen, 1982; Scholes & Adams, 1938; Scholes & Roys, 1938; refer to Chapter 3.3. for an outline of the controversy). The testimonies in discussion below are those of Sotuta, which were obtained under torture, and the Hocaba-Homun hearings, which were presumably obtained without torturous methods. These testimonies and hearings regarded a revival of the custom of human (and animal) sacrifices that were carried out in such locales as the town church, the house of the cacique, or at an isolated *milpa*,[15] whereof most of the victims were deposited in cenotes (Scholes & Adams, 1938; cf. de Anda, et al., 2004).

Given the controversial nature of these proceedings, the major problem that presented itself to France Scholes and Ralph Roys[16] with regard to this particular episode – and thus the practice of human sacrifices and deposition of victims in cenotes – was whether the testimonies that were obtained under torture were true or false (see Scholes & Adams, 1938: lxvii; Scholes & Roys, 1938: 598). After a brief discussion of some minor points, such as whether torture was actually used during the Hocaba-Homun hearings, Scholes and Roys forwarded what can be regarded as their major arguments *in favor of* the validity of the Sotuta testimonies. The first argument regards an analysis of both the Sotuta and the Hocaba-Homun testimonies which "reveals that witnesses who described a given case of sacrifice were in agreement on many of

[14] The *extended cenote cult* refers to the phenomenon of human and object sacrifice at cenotes. By *extended*, it is additionally meant that the cenote cult is not confined to the Sacred Cenote.

[15] *Milpa* means both slash-and-burn agriculture and a field cultivated by this method.

[16] France Scholes was author of the lengthy introduction to the Quijada-documents. He also co-authored the paper 'Fray Diego de Landa and the Problem of Idolatry in Yucatan' (1938) with Ralph Roys.

the details, such as time, place, and participants" (Scholes & Roys, 1938: 599). The second major argument regards the plausibility of the incidents described in the testimonies:

> Another powerful argument in favor of the general validity of the testimony is the fact that it confirms, supplements, and clarifies our knowledge of Maya religion derived from other sources (Scholes & Roys, 1938: 600)

As we may observe in the statement above, Scholes and Roys strengthen their arguments by activating former statements regarding the practice of human sacrifice, the disposal of victims in cenotes, and the mixture of Maya and Christian beliefs. In other words, the weight of their statement is gained by interacting with an already existing group of statements, among which we find those that formed the discourse on the Sacred Cenote.

This leads Scholes and Roys to state the following: "We are convinced, therefore, that a large part of the evidence must be accepted as true" (1938: 600), and thereby call for a detailed discussion on the testimony regarding idolatry and human sacrifice. By means of accepting the testimonies as generally valid, they could now infer motivations for human sacrifices and substantiate the knowledge on the sacrificial victims. Furthermore, they were now able to argue that the *cenote cult* was more widespread: "The custom of throwing live victims into the *cenote* at Chichen Itza is, of course, well known; but it now appears that the *cenote* cult was not confined to that famous religious center" (Scholes & Roys, 1938: 615). In fact, their argument *needed* the Sacred Cenote to work as an *actant* that supported the factuality of the testimonies. In turn, the dredging of the Sacred Cenote had previously transformed the status of the colonial documents that spoke of a custom of human and object sacrifice at this particular cenote (refer to Chapter 5.1.; see also Clendinnen, 1982 about this point).

However, in order to be able to understand the dynamics behind the emerging belief that the cenote cult was an extended phenomenon, we must also examine the fate of Scholes and Roys' statements, and not only their line of argument. As Latour argued, fact-making is essentially a collective process (refer to Chapter 4.2.), and as Inga Clendinnen (1982: 328) has formerly pointed out, Alfred Tozzer helped transform the status of the fact in discussion. In his annotated *Landa's Relación de las Cosas de Yucatán* (1941), Alfred Tozzer wrote:

> But can the testimony be considered in general reliable? Scholes, after discounting some exaggerations, answers the question in the affirmative. He shows that the testimony agrees with what we know from other sources. This point comes out very clearly when we see how easily their data have been fitted into the background of Maya life as described by Landa and other early authorities and shown in the present volume. The mixture of heathen and Christian

> doctrines and ritual is exactly what might have been expected. The earliest testimony taken without torture and that from Spanish sources agree with that collected under pressure. The thousands of idols collected and destroyed could not have been fabricated out of the imagination (Tozzer, 1941: 81n344)

Although Tozzer first turned his attention towards the conditions of production (*negative modality*), he accepted their line of argument and in fact *added* strength to the validity of the documents by taking the side of Scholes and Roys. Furthermore, as these statements can be assigned to the high-ranking positions these subjects held, there is a considerable element of power involved in their choice of side in the dilemma. Perhaps this point comes out most clearly if we were to imagine that Tozzer chose the other side in the dilemma.

After accepting Scholes and Roys' argument, Tozzer turned his attention away from the conditions of production (*positive modality*), and applied the material recorded in the testimony as "circumstantial evidence" for the existence of an extended cenote cult as well as for other aspects like methods of sacrifice and the disposal of victims, who the victims were, purpose of the ritual, and progression of the ritual (e.g., Tozzer, 1941: 115-117nn533,535, 119-120n545, 180-182nn947-949). In his major publication on the subject, *Chichen Itza and Its Cenote of Sacrifice* (Tozzer, 1957), the controversy has become even more opaque since there is now only a minor reference to the prior discussions respecting the validity of the testimonies in his annotations (Tozzer, 1957: 271n30). Of course, the testimonies were not Tozzer's sole evidence, but they did form an integral part of the resource pool which was mobilized in order to illuminate the cenote ritual and the cenote cult.

In subsequent publications dealing with this material (e.g., Madsen, 1967: 385-386; R. L. Roys, 1962: 43; Ruz Lhuillier, 1965: 453; J. E. S. Thompson, 1959: 123; 1975: xxv), the controversy regarding the validity of the testimonies is completely gone – a *black box* has come into operation. That is, until Inga Clendinnen (1982) chose to open the *black box* surrounding the nature of the testimonies. However, in order to stick with the subject of this analysis, we must continue to focus on the formation of knowledge on cenotes through following the archaeological discourse.

6.2. The configurations of utilitarian and ritual cenotes in archaeology

As pointed out in the previous chapter, the material remains constitute *obligatory passage points* in archaeological discourses. The consequence would be that we cannot assume that the archaeological practice welcomed a practically symmetrical relationship between written

and material sources. Tozzer had also expressed his concern regarding what archaeology had actually achieved in terms of reconstructing the prehistory of Middle America:

> In proportion to the wealth of material, the help archaeology has given to the social history of the Mayas is disappointing. In contrast, may I speak of the aid history has given to archaeology in the Middle America field? (Tozzer, 1937: 157)

While there seems to be a self-conscious acknowledgement that history has the upper hand in the relationship between the two disciplines, the archaeological discipline endeavored to organize its way around a material past and thereby sort out its directions. With regard to cenotes, we may not consequently assume that only the historical sources could construct the knowledge pertaining to cenotes. Nor can we assume that a mere juxtaposition of the historical and archaeological sources alone would account for the knowledge regarding cenotes since we cannot omit the set of practices that are engaged in the processes of formation of knowledge. In the previous chapter, we already saw the difference in status of the Sacred Cenote before and after Thompson's dredging and articulation of the material remains. However, we need to analyze the relationship between the statements and the larger discursive formations that were taking place during the period.

Alongside the established culture-historical archaeology, an early wave of functional-processual archaeology anchored in American archaeology during the 1940s and 1950s (Trigger, 2006; Willey & Sabloff, 1993: 152-208). This wave was inspired by some of the developments in functionalism that emerged in anthropology in the 1920s (Trigger, 2006: 385).

Beginning in the late 1930s, the preoccupation with chronological ordering and the limited contributions of archaeology to the wider understanding of culture and human behavior became a growing concern within American archaeology (Willey & Sabloff, 1993: 152, 154-156). There was also a critique of the overemphasis on elites and ceremonial centers, which led to the disregard for studies about the life of Maya commoners (Sabloff, 2004). These criticisms and discussions of the goals of archaeology as well as its theoretical and methodical foundations were voiced not only by archaeologists but also ethnologists and anthropologists (e.g., Kluckhohn, 1940; Steward & Setzler, 1938; Taylor, 1967[1948]). A more decisive concern with the function of the material remains emerged from these discussions – particularly in relation to context – as there was also a need to translate the material remains

into behavior (Willey & Sabloff, 1993: 156). With the analytical terms presented here, function becomes one of these emerging *obligatory passage points*.

Amongst the approaches that sprung out of the "contextual-functional approach," as Willey and Sabloff dubbed it, there were settlement pattern studies (Willey & Sabloff, 1993: 153, 172-176). Settlement pattern studies can be traced back to the 1950s in Maya archaeology, and have been one of the most important and influential archaeological methods since the 1960s (Houck, 2006). Gordon Willey was particularly responsible for the development of these studies. He asserted that settlement patterns "offer a strategic starting point for the functional interpretation of archaeological cultures" (Willey, 1953: 1). For Maya archaeology, Willey posed that one of the most important questions regarded the relationship between ceremonial centers and the living community (Willey, 1956a, 1956b).

Turning back to the analysis of cenote literature, the work at hand follows three related discussions pertaining to cenotes – the development of a ceramic chronology, the investigation of cenotes through the Mayapan project, and Eric Thompson's (1959, 1975) publications on caves and cenotes – before returning to the issue of settlement pattern studies.

6.2.1. The construction of ceramic chronologies and their role in determining the function of cenotes

> Archaeological ceramics are notably good working material for the recovery of chronology as well as prime indices for the study of trade, cultural borrowing, and social patterning (Brainerd, 1958: 1)

In an attempt to defend the importance of the chronological ordering of ceramics, George Brainerd (1951, 1958) argued that the establishment of a chronological sequence must be conceived as a separate stage of archaeological analysis that aims only to anchor the material in a time-space framework. Cultural interpretations would, according to Brainerd, only be possible once such an independent time-space framework was established. What is apparent is that there was a pressing concern for moving the analysis *beyond* the scope of chronological reconstructions (cf. Brainerd, 1951). However, this analysis is not interested in the establishment of principles for an independent chronological ordering of ceramics, but the relationship that was forged between cenotes as contexts and the function of various types of artifacts.

Prior to Brainerd's posthumous monograph *The Archaeological Ceramics of Yucatan* (1958), several authors had appreciated the potential cenotes had in yielding proper stratigraphic

evidence for the reconstruction of chronological ceramic sequences (e.g., Brainerd, 1942; Kidder, 1930: 103; Roberts, 1931; R. E. Smith, 1953). Among the sources from which the pottery he analyzed derived, cenote collections had some particular qualities:

> In the absence of streams and lakes, cenotes and caves were the principal source of water in areas where they are found. (…) *A drawback to the study of cenote collections, particularly evident in certain periods, is a prevalence of water vessels over other shapes*. This makes cenote collections somewhat difficult to compare with ruin samples of the same date. (Brainerd, 1958: 7, author's emphasis)

Without any mobilization of references to the work of others, Brainerd *stabilized cenotes as contexts which usage was linked to the procurement of water*. The function of cenotes was thus primarily defined by the presence of water.[17] On the other hand, classification of the pottery was also used to infer the function of the context in which they were found.

In his monograph, Brainerd (1958) gradually moved his analysis towards reconstructions of culture history (chapters V and VI). Under the subheading 'Forms,' attention is also given to the usage of different types of vessels (Brainerd, 1958: 79-88). For instance, as Brainerd (1958: 81) pointed out, a category like 'Unslipped ceremonial wares' was unambiguously linked to a ceremonial function, whereas other categories were equally unambiguously linked to utilitarian functions. An example of the relationship between the find context, artifact function, and cultural interpretation is found in his treatment of an early deposit from the Mani Cenote:

> Our earliest evidence of man, the Early Formative substage collections from the Mani Cenote, tell us that these people hauled water in 3-gallon 30-pound loads, in pointed-bottomed, narrow-mouthed vessels decorated by pattern burnishing (Brainerd, 1958: 89)

Earlier, however, the function of these vessels was additionally qualified by their form:

> This vessel [of the Early Formative deposit at the Mani Cenote] must unquestionably have been used as a portable water container; the small mouth, diameter about 255 mm., would make other use difficult (Brainerd, 1958: 82)

Another example regards the reconstruction of the usage of the Sacred Cenote through the classification of ceramics. Although the Sacred Cenote was not excavated stratigraphically, Brainerd reconstructed the following cultural sequence on the basis of the ceramics:

[17] This sentence will make more sense once compared to the results of the analysis in the next chapter.

> The Early Mexican[18] and Florescent deposit described above is composed of *utilitarian pottery, not ceremonial*. The preponderance of jars and basins in comparison to bowls and grater bowls suggests that the deposit was formed by the use of the [Sacred] cenote as a water source rather than as a ceremonial center. Strongly reinforcing this conclusion is the absence in the cenote deposit of the so-called *pedestal incensarios* which characterize both Early Mexican and Florescent times, and *which were used ceremonially*. (…) Of the identifiable Late Mexican ceramics, *a considerable proportion* (…) *is believed to have been ceremonial in use*. (…) Coarse Slateware, the preponderant pottery of the Middle Mexican substage (…) is completely unrepresented in the Cenote sample. (…) *It therefore seems evident that the Sacred Cenote at Chichén Itzá was little used as a water source by Middle Mexican times* (…) *and that the practice of throwing pottery ceremonial vessels into the cenote was not common until the Late Mexican substage* (Brainerd, 1958: 45, author's emphasis)

In other words, the ceramics had provided a chronological backdrop for the cenote cult through functional classification of the pottery into the metacategories utilitarian and ceremonial.

Alfred Tozzer (1957: 200) also supported a late introduction of the cenote cult with aid of Brainerd's study of ceramics. According to Tozzer, the cenote cult was introduced a couple of centuries after the first Mexican[19] immigration, which was thought to occur around year 1000. Eric Thompson, on the other hand, believed that it was actually the cenote cult which attracted the Mexicans to Chichen Itza (J. E. S. Thompson, 1954: 114), and he also supported his evidence for a greater antiquity of the ritual with some pieces of jade:

> When this cult began is not surely known. Some carved jades dredged from its muddy bottom are certainly of Classic workmanship. One, carved at Piedras Negras, bears a Maya date equivalent to A.D. 706, and a jade bead, almost surely carved at Palenque, bears a Maya date equivalent, to A.D. 690. (…) Personally, I am inclined to think [the cenote cult] was in full swing before the Itzá arrived, but received fresh impetus under the Itzá. Sacrifice to large sheets of water was a widespread and ancient custom in America (J. E. S. Thompson, 1954: 113)

[18] The Early, Middle, and Late Mexican, and the Florescent are some of the regional chronological stages for Yucatan that emerged out of Brainerd's ceramic analyses. According to Brainerd (1958: 3-4), the Yucatan Florescent stage, which predated the Yucatan Mexican stage (which was further divided into three substages), terminated between 889 and 987. Cf. Chart 22 in Brainerd (1958: 372-373) for various correlations between Maya and Christian calendars.

[19] Cultural groups of Central Mexican origin. The name of the nation state Mexico has a pre-Columbian origin in a Nahua Aztec tribe called Mexica.

Although these statements are fraught with speculations, some patterns begin to emerge. Primarily, we observe that the cenote cult is linked to specific *discursively constructed* categories of artifacts (ceremonial/utilitarian) which can be assigned not only a chronological fixation but also a *generalized function*. For instance, a certain group of ceremonial ceramic wares as well as jades are held to designate a ceremonial function, whereas another group of "jars and basins" represent a utilitarian use. The utilitarian use, as represented through ceramic categories by Brainerd and Tozzer, also seems to exclude the ritual use. The status of cenotes thus becomes *linked* to the network of statements regarding ceramic chronologies and the functions attributed to different types of artifacts, whether or not they be ceramics.

Although Brainerd's study of ceramic chronologies is obviously linked to the various other studies of ceramic typologies, there is also a describable link to the emerging discursive formation of functionalism. As noted above, his main goal was to reconstruct ceramic chronologies as an independent time-space establishment. But even though he had to lodge the chronological ordering as a separate part of the archaeological analysis, Brainerd does not entirely escape the discussion of the usage or function of the pottery.

With regard to the formation of knowledge on cenotes, the preliminary hypothesis that can be put forth is that the most relevant separation that occurred through these practices of classification of the material remains was between 'ritual' and 'utilitarian.' Although this detour through the chronological analysis was necessary in order to examine how the classificatory practice of this particular category worked, the analysis must now move on to a most relevant discussion of the cenotes: the Mayapan project.

6.2.2. The Mayapan project, and its ritual and utilitarian cenotes

The Mayapan project, which was initiated by the Carnegie Institution of Washington (CIW), directed some attention to the large number of cenotes that were mapped both within the walled city of Mayapan and in the immediate vicinity of the city. In the final report, a total of 26 cenotes were confirmed within the city wall and one was found directly outside the wall (Pollock, 1962: 2; A. L. Smith, 1962: 210). Edwin Shook confirmed that the reason for investigating cenotes was to determine "which the Maya had used for water supply and which had associated constructions or contained evidence of ceremonial rites" (1952: 249-250).

That the idea of the extended cenote cult was carried into the Mayapan project as an 'artifact' of the cultural history of the area, is clearly articulated by Philip E. Smith: "The main question

raised by Str. Q-153[20] was whether or not there had been a cenote cult in Mayapán as at Chichén Itzá" (2011[1955]: 239-240). Given that he focuses on the problem of deposition of sacrificial victims (none were found at the time of the publication of his report and Cenote Chen Mul had only minor pools located inside the branches of the cenote), it is also evident that the cenote cult is most profoundly associated with sacrificial rites in the same form as those documented in Chichen Itza. In other words, the cenote cult at Chichen Itza became a resource for the investigation of such an extended cult at Mayapan. The archaeological fact that was established with aid of E. H. Thompson's dredging regarding sacrificial rites at the Sacred Cenote (refer to Chapter 5.3.) became *even more important* during the investigations of cenotes at Mayapan, particularly after the cenote cult was *transformed* into an extended phenomenon through the work of Scholes, Roys, and Tozzer (refer to Chapter 6.1.).

For the report in the discussion above, entitled 'Excavations in Three Ceremonial Structures at Mayapán,' P. E. Smith states the following about the objectives of the excavations:

> This area clearly had been the ritual heart of the city, and it was considered that careful digging in certain types of structures, followed by analysis of the results and comparisons with other types, might throw light not only on the function of the structures but also on the activities carried on in the ceremonial center and perhaps on the stages of growth of the center (P. E. Smith, 2011: 239)

In P. E. Smith's, there are clear references to the aspects of function, context ('the ritual heart of the city'), and cultural behavior as well as the value of producing comparative knowledge. Despite the assertions of such potentials associated with the wider transformations that were occurring in American archaeology, P. E. Smith does not associate his work to any of these wider debates in the form of literary references.

Maya archaeology had focused almost exclusively on elites and ceremonial centers, this has resulted in the exclusion of more mundane matters was, and was one of the concerns clearly expressed in the Mayapan project that also echoed throughout broader critiques within the field. According to A. L. Smith, who wrote the final report on 'Residential and Associated Structures at Mayapan' (1962), Harry E. D. Pollock[21] momentarily realized the potentials for using the Mayapan project to compensate for this lack of attention. Discussing the large concentration of structures mapped at Mayapan, Pollock remarked "that the vast majority of

[20] A structure which is "sometimes referred to as the Cenote Temple" located adjacent to the opening of Cenote Chen Mul (P. E. Smith, 2011: 239).

[21] Pollock was director of the Mayapan project.

them are of the secular type, dwellings and associated constructions" (A. L. Smith, 1962: 169). During the project, Pollock stated the following in the CIW Year Book: "It has been felt for some time that one of the most promising areas of study at Mayapan is the domestic economy, the way of life, of its ancient inhabitants" (Pollock, 1953: 249), an observation that was reiterated the following year:

> Early in the course of our work at Mayapan it was realized that one of the outstanding opportunities offered at the site was a study of remains of houses, for the most part presumably the dwellings of ordinary people, a side of Maya archaeology that had been sadly neglected (Pollock, 1954: 263)

Beyond the recognition of Pollock's observations, there is also a clear reference to the growing interest paid to settlement pattern studies (e.g., Willey, 1953; Willey, 1956a, 1956b) present in the introduction of A.L. Smith's report (1962: 171). According to A. L. Smith, the distribution of settlements at Mayapan was also partially explained by the very phenomenon that concerns this analysis:

> A good water supply was all-important to a city of the size of Mayapan, and the choosing of this particular location was probably in part due to the great quantity of cenotes to be found there (…). At Mayapan all the cenotes, except 3 that were associated with ceremonial groups, were accessible to all. (…) The large number of cenotes in the southwest part of the site probably accounts for its being so thickly settled (A. L. Smith, 1962: 265)

While A. L. Smith clearly articulated a relationship between settlements and cenotes in terms of their role as water suppliers, he also pointed out that three of the cenotes at Mayapan, Ch'en Mul, X-Coton, and Itzmal Ch'en, showed signs of religious use (1962: 210-211, 265). In accordance with Shook's statement concerning the goal of examining the cenotes at Mayapan for the purpose of determining their prior use as either water suppliers or associated with rituals, *the cenotes are clearly designated by a functional divide*. However, how was knowledge about their function generated?

As already evident in the latter statement by A. L. Smith, the first indication of any ritual use of cenotes seems to be an association between cenotes and *structures that are already defined as ceremonial* at the center of the ruins of Mayapan. The cenotes were most thoroughly treated by Robert E. Smith, as he published two explicit reports on the subject (R. E. Smith, 2011a[1954]; 2011b[1953]). R. E. Smith regarded cenotes as fulfilling a double function: "In a land lacking rivers and lakes, cenotes served the ancient Maya of Yucatán both as important sources of water and as sacred places where man could propitiate the gods" (R. E. Smith,

2011a: 135). The association between Cenote X-Coton and ceremonial structures was also an important factor that supported the ritual function for R. E. Smith:

> The greater part of the season was spent in investigating Cenote X-Coton, in the southeast corner of Square T at Mayapan (…). This location was selected because of the apparent importance of the cenote in prehistoric times. *The position of two ceremonial structures and a major gateway in the city wall in relation to the cenote, as well as the presence of artificial constructions on the floor of the cavern, suggested that the erstwhile inhabitants of Mayapan laid considerable stress on this natural feature* (R. E. Smith, 1952: 251-252, author's emphasis)

In 'Cenote X-Coton at Mayapán' (2011b), R. E. Smith reached the following conclusion:

> In spite of the utilitarian character of much of the pottery, there is little reason to doubt that Cenote X-Coton was used ceremonially as well as simply for water. The principal indications of its ceremonial use are the platform, the leveled eastern section with its plaster floor, the possibility that a considerable part of the cenote floor at the south was leveled, the masonry stairway leading to water, the presence of carved stone objects, especially an idol, and the use of caves for burial (R. E. Smith, 2011b: 51)

In order to lend more weight to his argument for the (additional) ceremonial use or function of Cenote X-Coton, R. E. Smith refers to artificial structures located inside the cenote, and burials as well as groups of artifacts. Although such a double function is rarely described for cenotes during this period, even in Smith's report we find that *a section of the material remains is already capable of designating a domain of ceremonial practices that differs in character from a domain of utilitarian practices*. In general, the association(s) to different types of structures (residential/secular vs. ceremonial) as well as artifacts that are functionally determined to belong to either utilitarian, religious or ritual realms are mobilized in order to determine the function of phenomena like cenotes. In fact, both the associated structures and the artifacts undergo a functional classification which separates them into ceremonial/ritual or secular/utilitarian. In other words, statements about the function of cenotes interact with a much broader separation of the ritual from the utilitarian and thereby inscribe themselves unto an already regulated practice. Thus, this practice is *linked to* the discursive formation described as functionalism.

From the discussion above, it can be argued that once a process of functional classification or interpretation has been traversed, archaeological remains can be turned into *actants* in support of either a utilitarian or a ritual function of associated cenotes. Despite the fact that the texts discussed above carry no explicit mobilization of archaeological or anthropological texts that

advocate functionalism, function seems to operate as an *obligatory passage point* in the formation of the knowledge pertaining to the cenotes at Mayapan.

Attention should also be turned to R. E. Smith's evidence for the ceremonial function of the platform inside the X-Coton cenote:

> *The function of this platform seems to have been ceremonial*. This is suggested by its central position in the cenote, by a leveled area covered by a plastered floor at the eastern end of the structure, and by the adjacent stairway leading down to water. The considerable proportion of *incensario* [emphasis in original] sherds from the structure should also be noted. In last analysis, possibly the most pertinent evidence, although negative, is simply *that in design and location the platform seems capable observing no other purpose than that of ceremony* (R. E. Smith, 2011b: 46, author's emphasis)

Apparently, the better argument is provided by *an exclusion of utilitarian uses* (refer to Chapter 7.4.). However, it is clear that very few cenotes could be qualified as ritually important cenotes. Only three of the 26 cenotes were thought to possibly have fulfilled such a function at Mayapan (e.g., A. L. Smith, 1962: 210-211). Tatiana Proskouriakoff (1962: 113, 128-129) even states that only Cenote X-Coton showed definite evidence of ceremonial use.

A final example is provided by Gustav Strømsvik's (2011[1956]) survey of the Cave of Dzab-Na near Tecoh as part of the Mayapan project. This cave contained several cenotes (understood as pools that penetrate the water table inside the cave formation). In his interpretation of the cave/cenote, Strømsvik reported that some nearby platforms or mounds indicated that

> there was a small settlement here, dependent, perhaps, not on the cave, but on the cenote as a constant source of water. (…). The cave would have served as a safety refuge during times of unrest. Quite aside from the legend mentioned earlier, Dzab-Na was so considered as late as 1942. There is reason to believe that such periods were many and occurred from the earliest times (Strømsvik, 2011: 449)

The local legend that Strømsvik chose not to emphasize stated the following: "this cavern is connected with caves in Mayapan, but legends of underground passages are extremely common in Yucatán" (Strømsvik, 2011: 447). Neither the find of a black wooden statuette, which he described in detail and asserted to have had an unknown ceremonial function, made Strømsvik even consider a ritual use of the cave/cenote. Hence, we generally find few leaps into interpretations of cenotes as ritual places. Besides, local beliefs are systematically corrected in the production of knowledge on the past.

6.2.3. Eric Thompson's publications about the role of caves and cenotes

Eric Thompson's two papers on the Maya use of caves (1959, 1975), which saw a new dawn during the Programmatic Period, offer some comments respecting cenotes that are of interest for the analysis. However, in order to respect this thesis' theoretical and methodological approach, *we cannot base this section of the analysis on the Programmatic Period's practice of grouping caves and cenotes* (refer to Chapter 7.1.). Thus, the focus shall center on what Thompson actually states about *cenotes*, not caves in general. Regarding the relationship between cenotes and caves, Thompson wrote:

> The line between covered cenotes and caves containing water is not easily drawn. One might say that if the entrance leads to the water table, the structure is a covered cenote; if the water is not sufficient to support a settlement, that is if it is not an interconnected part of the underground water system, then it should be classified as a cave, but local nomenclature is not consistent (J. E. S. Thompson, 1975: x)

While it has clearly been established that the term cenote does not adhere to one specific definition, there is a generalized geological definition, and Thompson's distinction between caves and cenotes was deeply rooted in the capacity to provide sufficient water to a settlement.

In his second paper concerning the subject of Maya caves, Eric Thompson (1975) arranged the use of caves into eight different categories (refer to Chapter 3.3.). Six of these primarily focused on various ceremonial or religious uses. Within these eight categories or uses, cenotes figured as examples in three. These three categories were, as enumerated by Thompson, (1) sources of drinking water, (2) sources or "virgin" water, and (6) depositories of ceremonially discarded utensils. In his article from 1959, Thompson also mentioned that "The sacrifice of children to deities of the water was, of course, a common occurrence, but I know of no other association of this cult with a cave, except for cenote sacrifices" (J. E. S. Thompson, 1959: 123).

The statement cited above pertaining to the distinction between caves and cenotes gains importance when related to Thompson's first category of caves – as sources of drinking water:

> There is no need to add to what has been written on this use except to note that as a source of drinking water, the more accessible a cave, the better; for the other main uses of caves, inaccessibility was of prime importance. Settlements grew up only where there was easy access

> to unlimited supplies of water, which in fact meant access to the water table (J. E. S. Thompson, 1975: xiv-xv)

However ambiguous Thompson's distinction between cenotes and caves may be, it does in fact coincide with his distinction between the use of caves as sources for drinking water and their alternative uses. Thus, it is evident that Thompson is in agreement with the general picture of the necessity of cenotes for supplying the inhabitants with sufficient water, particularly since he also states the following: "Had it not been for this subsurface water supply, northwestern Yucatan would have been largely uninhabitable. (…) Settlements grew up beside such water sources" (J. E. S. Thompson, 1975: ix).

As noted, cenotes were also discussed among Thompson's groups (2) and (6). His argument for the ritual and religious uses of cenotes mainly regards their inaccessibility, that is to say, that the sources of water are reached through long and narrow passages inside the feature and/or that the cenotes in discussion are found at a distance from settlements. However, in Thompson's second group, the only cenotes under discussion are those for which such a use had been ethnographically documented due to its alleged post-conquest survival (J. E. S. Thompson, 1959: 125; 1975: xxi). These are used to support his evidence that ritually utilized 'virgin water' (Mayan: *zuhuy ha*) was procured from caves and cenotes during the prehispanic era. In fact, both of his papers heavily relied on ethnographic and ethnohistorical accounts.

His argument for the ritual use of "The great cave or cenote of Chac" (J. E. S. Thompson, 1975: xl), placed under group (6) is of particular interest. Although he stated that this cenote was used by neighboring settlements as a water source during the 19th century, he also argued that it must have formerly served a ritual purpose:

> The great cave or cenote of Chac (…) is hardly the place to make fetching water a pleasant task, although it was regularly used for that purpose when [Henry] Mercer and [John Lloyd] Stephens descended its difficult passages. The water has to be carried just about half a mile (810 m) along a narrow and at places very low passage, and then some 30 m up eight ladders through a narrow, spiral, and nearly vertical hole to the surface (J. E. S. Thompson, 1975: xl)

Large quantities of potsherds were discovered inside the cenote/cave. As there were several specimens of polychrome pottery among the finds – pottery that was too 'handsome' for obtaining water – Thompson put forth the following argument for the ritual use of Chac, primarily as a place of devotion for the rain gods:

> There are four points worth bearing in mind: First, it is unbelievable that these beautiful jars should have been made for fetching water from this cenote under conditions which must have produced a very high breakage rate, whereas drawers of water at other cenotes and caves used plain, unslipped jars. Second, the cenote or cave is called Chac, which is the name of the ancient Maya rain gods. Third, the designs on the polychrome jars are aquatic: falling water and frogs, which were the pets of the Chacs. Fourth, women did not enter the cave. It will be remembered that it was in caves or cenotes not visited by women that the Maya performed their rites (J. E. S. Thompson, 1975: xli)

Apparently, Thompson operated with the same major domains that Smith employed above: ritual and utilitarian, where a common principle is that *one type of use excludes the other type of use*. The distinction between these two uses – as established within the works discussed above – makes them appear as worlds unto themselves. This separation has also made it possible to argue that a ritual use can be favored if an argument can exclude the utilitarian use by aid of the fixation of the material remains within the ritual or religious realm. Note also the length of Thompson's argument for a ritual use of the cave/cenote Chac. In order to turn the polychrome jars into *actants* that could support the role of the cenote as a ritual cenote, *Thompson needed to mobilize massive resources*. Such a mobilization was not needed in order to support the idea of cenotes as water sources that made the Yucatan habitable.

Two points briefly need to be repeated about Thompson's papers since they became crucial during the Programmatic Period. He emphasized the physical cave feature of the cenote (e.g., inaccessibility) and he incorporated ethnographic observations into his interpretations as perceived survivals of pre-Columbian functionary uses. In fact, Thompson himself has been particularly hailed for his papers regarding the ritual use of caves during the Programmatic Period (cf. Brady & Prufer, 2005a; Kieffer & Scott, 2012).

6.3. The role of settlement pattern studies

Since the 1960s, settlement patterns have been profoundly important within Maya research (Houck, 2006), although their emergence within the field can be traced back to the 1950s. Although such studies can employ a very wide scope, they have tended to consider cenotes as indispensable for the establishment and distribution of settlements throughout the northern Yucatan because of their reliable water carrying capacity. As Morley stated some years before the proliferation of settlement pattern studies, "In a country as devoid of surface water as northern Yucatan, these *cenotes* were the principal factor in determining the location of the ancient centers of population" (1947: 12). The location for Mayapan was also thought to have

been chosen because of its cenotes, as they could serve as a reliant water supply (Pollock, 1962: 15). The cenotes of Ake were surveyed since they "were the only reliable sources of water for the large community" (L. Roys & Shook, 1966: 46). Even in the 1980s, we can add that Wendy Ashmore, who discusses methodical and theoretical issues related to settlement patterns studies, notes that as natural counterparts to other cultural water-management features, cenotes "obviously should be – and usually are – among the environmental data recorded in settlement surveys" (Ashmore, 1981: 44). "*Resource-management* features are associated with exploitation of physical and biotic aspects of the environment" (Ashmore, 1981: 44, emphasis in original).

In fact, statements corroborating the intrinsic relationship between resources like water and agricultural land and the distribution of settlements are quite ubiquitous during the 1970s and 1980s (e.g., Adams, 1980; Harrison, 1981; Marcus, 1983; Matheny, 1976, 1978; Scarborough, 1983; Turner & Harrison, 1981). Although cenotes have received a rather modest amount of attention compared to *bajos* (swamps) and other water facilities, they tend to be lumped under the more general category of water (e.g., Ashmore, 1981: 44; Marcus, 1983: 463). Overall, within these perspectives as well as within settlement pattern studies we also encounter a more solid link to processual archaeology (Ashmore & Willey, 1981: 16). However, since these processual archaeological resources are not mobilized directly in the treatment of cenotes, it suffices to say that the discourse on settlement patterns has at least functioned to uphold cenotes as the only reliable sources of potable water in the areas where they are found. Within this discourse, cenotes come as prefigured objects that are part of the societies' (natural) resource pool. *This constitutes a stable, taken-for-granted and uncontroversial fact that consequently rarely if ever is problematized* (*type 4* and *5* in the scheme presented in Chapter 4). As this fact was not opposed, usually no references are added in support of it, and we do not find any *modifiers* of this dictum.

In such studies, cenotes have had a sometimes active and a sometimes passive role in relation to the perceived distribution of settlements across the northern Yucatan Peninsula. Moreover, cenotes have come to form part of the resources for settlement subsistence. Thus, settlement pattern studies stabilized the status of cenotes as water suppliers.

Due to the importance that settlement pattern studies continue to have within Maya archaeology, they may operate as a massive, stabilizing device for the role of such phenomena as cenotes. Although we find discussions of an extended cenote cult and the ritual use of

cenotes, these leaps into alternative explanations of the function of some cenotes never did anything to erode the general picture of cenotes as providers of water for purely utilitarian ends. Rather, this uncontroversial fact is always presented in the discussions of cenotes, just as it was mentioned earlier. Thus, the developing discourse about ritual cenotes discussed under the previous subheadings was a rather marginal discourse emerging in opposition to the hegemonic discourse on cenotes.

6.4. Summary discussion concerning the second divide: utilitarian and ritual phenomena

> Even the best of archaeologists fall back on the label "ceremonial" for any unusual specimen, the use of which is problematical (Tozzer, 1937: 152-153)

In the discussion pertaining to the function of cenotes, it becomes clear that during this period there was a second divide in the cenote discourse (see Figure #17). Although R. E. Smith assigned both a ceremonial and a utilitarian function to the Cenote X-Coton at Mayapan, it is quite evident that different types of objects, structures, features, and functions are linked to either a domain of utilitarian phenomena or to a domain of ritual phenomena. Moreover, *these two domains are designed as to be in opposition*, that is to say, if one side of the dichotomy can be demonstrated, the other side can be excluded or rendered irrelevant. The production of the opposition furthermore means that the discourse that develops on either side attempts to cover and explain completely different sections of the world in such a manner that either side does not mix with the other. In other words, we may say that the work of these archaeologists contributed to the construction and of two poles ('utilitarian' vs. 'ritual') that have the ability to organize discourses and explain different sections of the world. The most striking discursive practice that produces and upholds the opposition between utilitarian and ritual phenomena is the process of sorting.

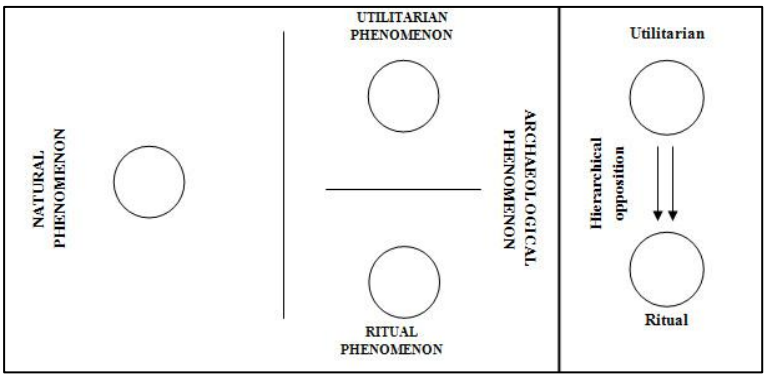

Figure #17: Illustration of oppositions. Left: Illustration of the first and second division in the cenote discourse. The first opposition pertains to cenotes as natural and archaeological phenomena. The second opposition regards cenotes as utilitarian and ritual phenomena. Right: Illustration of the hierarchical or asymmetrical relationship between the 'utilitarian' and 'ritual' pole

It must be stressed, that the dichotomy that is produced cannot be characterized by a merely symmetrical relationship between the two poles (refer to Figure #17). In fact, Jacques Derrida (1981) has argued that oppositions are always characterized by a conflicting and subordinating structure:

> (…) in a classical philosophical opposition we are not dealing with the peaceful coexistence of a *vis-à-vis*, but rather with a violent hierarchy. One of the two terms governs the other (axiologically, logically, etc.), or has the upper hand (Derrida, 1981: 41)

In the opposition between utilitarian and ritual uses, the former is endowed with a marked hegemony. Basically, we find that no justification is needed for statements regarding the use of cenotes as sources for procuring drinking water (or for other utilitarian or domestic uses[22]). This was a taken-for-granted fact that was never disputed. On the other hand, any statement concerning the ritual use of cenotes needs to mobilize massive resources in order to have a chance to convince others. This was perhaps best illustrated in Robert Smith's discussion of the platform inside Cenote X-Coton, where the 'best' argument for the ritual function was "*that in design and location the platform seems capable observing no other purpose than that of ceremony*" (R. E. Smith, 2011b: 46, author's emphasis). Similarly, Eric Thompson had to discount utilitarian purposes before he could argue that the cave or cenote Chac was used ritually, and he stated that *inaccessibility* was of prime importance for the uses of caves and cenotes as something other than as water sources.

The subordination of the ritual pole is also explained by the fact that it is heavily underdeveloped. In fact, the interpretation usually stops at 'ritual purpose' or at 'cenote cult.' The ritual pole functions mainly as an assemblage for poorly understood features, artifacts, structures, and activities that could not properly be explained by 'familiar' behavior, whereas the utilitarian categories and activities are coupled with 'normal' and easily 'explainable' behavior. Thus, the *actants* that contribute to uphold utilitarian cenotes (such as water, utilitarian artifacts – among them particularly the utilitarian ceramics – and Maya settlements), vastly outnumber the *actants* that help to uphold the ritual cenotes (such as the platform and ceremonial ceramics).

[22] In reference to discussions during the 1980s, Brady (1989: 2-3) remarked that "archaeologists frequently wanted a justification for the treatment of the cave [Naj Tunich] in a ritual rather than a domestic context."

In the light of the analysis, the Intermediate Period should be set to begin around 1950. Although the Quijada-documents and the collective work of archaeologists and historians gave birth to the idea of the extended cenote cult, it is first and foremost the emerging link between the broader changes in the archaeological discipline and cenote research that marks a change in the conceptualization of the phenomena (refer to Chapter 8.1.). Thus, the emphasis on the *function* of cenotes can be taken to define the beginning of the Intermediate Period.

Chapter 7: Analysis of the Programmatic Period (ca. 1980 – present)

The role of cenotes as essentially water-providers for settlements is also partially paralleled in the final period. As we saw in the last chapter, cenotes were primarily mapped as parts of the natural resource base in settlement patterns studies into the 1980s. However, the directions that were carved out by James Brady's program of cave archaeology challenged this persistent view. Since the state-of-the-art practices within the sub-discipline of cave archaeology have already been stated (refer to Chapter 3.4), the analysis presented here concentrates on how these changes were made possible.

James Brady's dissertation, *An Investigation of Maya Ritual Cave Use with Special Reference to Naj Tunich, Petén, Guatemala* (1989), was the first and major *programmatic* publication on the study of Maya cave features. In fact, several of Brady's works can be regarded as programmatic for Maya cave archaeology (e.g., Brady, 1991, 1997). When addressing the issue of cave archaeology, Brady put forth a series of problems that had to be tackled before there could be a dawn for a subfield of cave archaeology. The problems he referred to were, in essence: the consent that caves were unimportant in Maya archaeology; that caves were mainly perceived as places for habitation; that neither interpretative frameworks nor research questions existed, and; that there was a lack of dialog between investigators engaged in the study of caves (Brady, 1989: 1-10):

> Confronted by this array of problems, I gradually began to envision the Naj Tunich report as the vehicle for attacking many of the obstacles that stood in the way of the formation of a subfield of cave archaeology. *I have attempted to create a paradigm*, in the sense used by Thomas Kuhn (1970), around which the field could form. In the Kuhnian sense, a paradigm is a work, rather than a theory, whose implications *redirect research* in the field. *The basic thesis of the Naj Tunich study is that Maya cave utilization is ritual in nature* (Brady, 1989: 7-8, author's emphasis)

As mentioned (refer to Chapter 3.4.), Brady was quite successful in creating such a program or paradigm. In this chapter there is a description of the processes by which the epistemological foundation to the subfield of cave archaeology was established. First, however, the interlocking between caves and cenotes is uncovered.

It is necessary to state that the professionalization of cave archaeology as a sub-discipline has fostered more extensive, intensive, detailed, and problem oriented projects on caves. Major cave projects like Naj Tunich, the Petexbatun Regional Cave Survey, the Western Belize Regional Cave Project, and the Yalahau Archaeological Cave Survey, to mention some, have

contributed to both a large body of data and increased interpretative efforts on the subject matter. Thus, this is no attempt to undermine such a progression, but rather an effort to understand some of the basic underlying principles that has made this proliferation and accumulation of statements on caves and cenotes possible.

7.1. The grouping of cave features and the establishment of an authoritative history or research at the birth of the new sub-discipline

In the 1980s, Juan Bonor (1987; 1989b: 19-26) attempted to construct a typology of Maya caves. He argued that neither the morphological classifications of underground features developed in the field of geology, nor the linguistic classifications deriving from studies of the Mayan languages, which referred mainly but inconsistently to the presence of water, could sufficiently aid an archaeological typologization of such features. Considering the term *cenote*, Bonor noted that while cenotes always had to contain water, the Yucatec Mayan[23] terms *aktún* (Eng.: cave) and *ch'e'n* (Eng.: sink, vertically-walled cavities containing water) were also sometimes applied to cavities containing water. Furthermore, Bonor noted a discrepancy between the manner in which researchers applied the term *cenote* and its linguistic meaning:

> Si tenemos en cuenta la idea de *cenote* generalmente aceptada por los investigadores, debemos remitirnos a estos lugares sólo como suministradores de agua con fines domésticos, salvo, claro está, el *Cenote* Sagrado; pero si aceptamos el significado de los vocablos mayas en un sentido estricto, el panorama cambia radicalmente (Bonor, 1989b: 22-23)
>
> If we consider the idea of the *cenote* that is generally accepted by researchers, we should refer to these places only as providers of water for domestic purposes, except, of course, the Sacred *Cenote*; but if we accept the meaning of the Mayan words in a strict sense, the picture changes radically (author's translation)

Instead of establishing a typology in the categories that could be constructed morphologically, linguistically, or out of the accepted ideas in the research community for that matter, Bonor argued that any archaeological typology with such features had to prioritize its function: "(...) creemos que el interés del arqueólogo se centra en los aspectos ocupacionales de la cueva, y éstos se resumen en (...): función doméstica y función ceremonial" (Bonor, 1989b: 25) (Eng., (…) we believe that the interest of the archaeologist is focused on the occupational aspects of the cave, and these are summarized in (…): domestic function and ceremonial function –

[23] Note that these translations are of Yucatec Mayan.

author's translation). Bonor worked out a series of attributes that could indicate either a ceremonial or a domestic function (cf. Bonor, 1989b: 24). Thus, he directed the attention away from the linguistics and the geomorphology of the subterranean features and towards whatever function could be inferred through archaeology. The important point is that the traditional distinction between such features as caves and cenotes, however vague, was not archaeologically important in the first place, meaning that there is a tendency towards grouping such features.

Brady's (1989) approach to the various underground features was similar in many respects, although his assertion of caves as essentially ritual made a crucial difference (refer to Chapter 7.2.). Whereas there were tendencies towards alternating between the employment of terms like *cenotes* and *caves* in preceding periods, we witness a more self-conscious grouping of the underground features with Brady's work. In the first page of his dissertation, Brady states:

> I decided early in the study that I had to look at the cave in terms of an "emic," Maya, category of "ch'en[24]," meaning a hole. This included not only caves but also cenotes, grottoes, fissures, and various naturally occurring holes and depressions in the ground (Brady, 1989: 1)

There is a similar statement in his more widely cited article 'Settlement Configuration and Cosmology: The Role of Caves at Dos Pilas' regarding the 'emic' approach to the notion of caves (Brady, 1997: 603). His references for the 'emic' approach are Laughlin (1975: 132), which is a dictionary on modern Tzotzil Mayan (i.e., the highlands of Chiapas) and Vogt's (1969: 375) ethnographic study of the Tzotzil-speaking community entitled *Zinacantan: A Maya Community in the Highlands of Chiapas*. Vogt wrote:

> CH'EN is likewise a Tzotzil variant of a proto-Mayan word still found in many Mayan languages and designating natural holes in the ground, whether these be caves, limestone sinks, or waterholes (Vogt, 1969: 375)

Moreover, Vogt remarked that *ch'en* and *vits* (meaning mountain or hill) were valued for their sacredness, and not for their economic significance. However, in order to not accelerate the analysis, it can be stated that the ethnography and ethnotaxonomy of modern Mayas is coupled with an 'emic' approach to studies of the ancient Maya.

[24] While Brady's references are to Tzotzil Mayan, his group includes all of Bonor's Yucatec Mayan terms discussed above (*aktún* – cave, *ch'en* – well, *dz'onot* – cenote).

The establishment of a *joint history of research* for all cave features was an even more significant matter in the grouping of cave features. It has been argued that the allegedly neutral role associated with the tradition of writing about the history of research masks its purpose as a legitimizing and perpetuating device for the archaeological practice (Brattli & Svestad, 1991; Svestad, 1995). The role of the history of research as a legitimizing device for the emergent sub-discipline is also observable in cave archaeology. In fact, Brady's dissertation included the first history of research on the subject, "so that future work can be judged within an historical and developmental framework" (Brady, 1989: 8). Within his dissertation, Brady established a link backwards in time that acted to group and reactivate all former statements that regarded cave features so that a legitimate space for a sub-discipline centered at cave features could be carved out. Its directions were thereby sorted out at its birth in the late 1980s and early 1990s.

In his research-historical chapter entitled 'A Survey of Maya Cave Archaeology,' Brady (1989: 10-31) *did not* distinguish between such features as caves and cenotes; Edward Thompson's dredging of the Sacred Cenote was juxtaposed to the explorations of caves by the same Thompson (1897a), Henry Mercer (1975), George B. Gordon (1898), and Eduard Seler (1901) to constitute the characteristic traits of Brady's 'Early Period' of cave research. In the same manner, the Mayapan project was discussed as the "first substantial contribution" by the CIW in matters pertaining to caves/cenotes along with other cave investigation on non-cenotes during Brady's 'Recent Period'. Regarding the Sacred Cenote, Brady wrote:

> Finally, *the dredging of the Cenote of Sacrifice* at Chichen Itza from 1904 to 1907, verifying Landa's description of offerings being thrown into the sacred well, *was important to Maya cave studies because cenotes are a form of cave* and have the same relation to the underworld in Maya thought. (…) The dredging of the cenote at Chichen Itza demonstrated the ceremonial nature of these features at a time when most archaeologists viewed caves strictly as habitation sites (Brady, 1989: 13, author's emphasis)

The crucial point is that the link between the dredging of the Sacred Cenote and early *cave* investigations as established within Brady's history of research is an invention that belongs exclusively to the Programmatic Period. Thus, it was through the establishment of an *authoritative history of research*[25] for a subfield of *cave archaeology* that cenotes became shackled to the emerging sub-discipline. In other words, this emerging sub-discipline of cave

[25] Note Dominique Rissolo's comment on Brady's history of research: "an authoritative review of the historical development of the cave literature is available in James Brady's dissertation (1989)" (Rissolo, 2001: 25).

archaeology had carved out its own history of research which both established and defined cave features as a group, which in turn, transformed the status of cenotes.

Thus, the employment of the history of research can be perceived as a device that aids the production of a common repertoire for caves, cenotes, and various other cave features. At this point, the "emic *ch'en*" is *defined* as an *obligatory passage point* that coincides not only with caves but also with cenotes and other cave features. As the main element regarding the grouping of cave features is that current discursive practices allow *translations* of the knowledge on caves onto the knowledge on cenotes, and vice versa, we also see that the designation of the "emic *ch'en*" is not only set as a point but also as an *actant* that is able to translate the knowledge formed on either caves or cenotes. This definitional work, which includes elements of power, forms a part of Callon's *problematization phase*. As a realization of this transformation, Timothy Pugh states the following sixteen years later:

> *Caves* were also strongly connected with sacrificial death. A well-known example of *cave sacrifice* occurred at Chichén Itzá, where persons were thrown into a large water-filled *cenote* (Pugh, 2005: 51, author's emphasis)

As new statements employ the link between caves and cenotes, the pairing of the two terms becomes gradually more solid. In fact, the grouping of cave features becomes even more evident in the *subsequent* practice of aligning, discussing, and translating the sacred or ritual significance of such features more or less indifferently in elaborations of theoretical figures and general models, such as in discussions of landscapes, worldview, sacred geography and as references to entrances to the underworld and sacred spaces (e.g., Ashmore, 2004; Brady, 1997; Isendahl, 2011; Kinkella, 2009; Prufer & Kindon, 2005; Pugh, 2005). Although there are still *discussions* as to the similarities, differences, and parallelism between caves, cenotes, wells, and other features in terms of their geology, linguistic distinctions, function, and conceptual relationship, these discussions tend to gravitate towards an acceptance of the thesis of grouping cave features on the basis of an 'emic' categorization (e.g., Brown, 2005: 384-385; 2006: 174-175; de Anda, 2006: 24-25; Rissolo, 2001: 12-13).

This is not to say that the notion of the cenote has been abandoned by the joint treatment of cave features. As we shall later see, there are additional particularities, such as the presence of water, that constitute the knowledge that is held about cenotes and allows their partial distinction from caves. However, it is concluded that cenotes have been *embedded* the cave feature discourse. With respect to this preliminary conclusion, it is important to understand

the additional changes and processes that occurred when the sub-discipline of *cave archaeology* was formalized and professionalized, since they are directly linked to the formation of knowledge within cenote archaeology.

In conclusion, the *emic ch'en* or the *cave feature*[26] emerged as *a new object* from the process of grouping caves and cenotes. Caves were now to be defined in relation to the cultural meaning of the actual physical limestone cavity, that is, the *emic ch'en*. Quite apart from earlier practices, the cave feature was not confined to the naturally developed caves; even artificial or man-made caves (cf. Brady, 1993; Brady & Veni, 1992; refer to Chapter 3.4.) were forged into the production of the cultural meaning of the cave feature. Moreover, this definition of the phenomenon relegated the archaeological remains found inside the caves to a secondary position. Of course, the archaeological remains could not be neglected; however, they might be viewed differently once the cave feature was defined. Through the grouping, even water – an element so crucial in determining the role of cenotes for the ancient Maya – was deemed secondary to the cave feature. In the next section, we shall see how this new object is given meaning.

7.2. The overturning of the domestic-ritual dichotomy

Some fifteen years after the emergence of the sub-discipline of cave archaeology, two of the major figures, James Brady and Keith Prufer stated:

> Since archaeological remains found in caves *unequivocally* represent the remains of ritualized actions of a religious nature, caves represent the single best context for the archaeological investigation of Maya religion (Prufer & Brady, 2005b: 2, author's emphasis)

During the last decade, it appears that the specialized sub-discipline of cave archaeology in Mesoamerica has reached a consensus on the ritual nature of caves. Apparently, Brady's 1989 thesis that states 'caves were ritual in nature' has undergone a transformation from a *level 1* or *2* speculation or claim to a stabilized scientific fact immersed in a massive and resourceful network. How else could the material remains found in caves *unequivocally* be the direct evidence of ritualized behavior? Such a consensus is most evident in the edited volumes *In the Maw of The Earth Monster* (Brady & Prufer, 2005c) and *Stone Houses and Earth Lords* (Prufer & Brady, 2005c), and stated explicitly to exist by Brady:

[26] Just as the *emic ch'en* includes cenotes within the sub-discipline of cave archaeology, we will also take this term to include cenotes for the remainder of the thesis. Additionally, the term *cave feature* will be used synonymously to the term *emic ch'en*.

> It is recognized cross-culturally that the dark zone of caves is generally reserved for religious ritual. The growing sophistication in reading cave context also permits researchers to increasingly establish cave function in the twilight and light zones as well. *The consensus among Maya cave specialists is that, by and large, these were purely religious spaces. Thus, the artifacts within the cave can be taken as forming a ceremonial assemblage* (Brady, 2005: 116, author's emphasis)

As we have already mentioned in previous chapters, such a consensus did not exist before this latter period. In Brady's statement above, the consensus also works as a resource for directing the argument towards the discussion of cave artifacts within a ritual framework.

The construction of such a consensus cannot however, if we accept the theoretical approach that is championed in this thesis, be conceived of as a neutral retrieval of an absolute truth. *Constructions of consensus always involve elements of power*. In order to illuminate this element of power, Iver Neumann (2001: 27) points to an example by Derrida (1988: 149-150) that any change in the opinion by a subject that leads it to accept a new standpoint does not occur as a consequence of the fact that there is a direct relationship between the new standpoint and an absolute truth. Rather other elements, like persuasion, material conditions, coercion, and, consequently, power is present in such changes in standpoints (Neumann, 2001: 27). According to Kieffer and Scott, the Society for American Archaeology meetings from 1997 onward "served the important function of enculturating members into the evolving [Mesoamerican cave] paradigm" (2012: 24). Given the existence of such a consensus, we can also envision the difficult task of asserting a different standpoint, such as 'caves were not ritual spaces.' Such a 'dissenter' would face not only a community of scientists that uphold the ritual role of caves, but also the vast assembly of resources that they might mobilize in order to defend their position (Latour, 1987). In other words, the reality, or objectivism, of 'ritual caves,' is ultimately produced and held together by a heterogeneous assemblage of peoples, resources, things, and energies (cf. Shanks & Hodder, 1995: 19).

Moreover, the distribution of power involved in the construction of the consensus becomes well illustrated when we examine the positions that cave archaeologists have created. In the introduction to *In the Maw of the Earth Monster*, Brady and Prufer (2005a: 6-7) point out that one of the changes that followed the formation of specialized cave archaeology was that the critical examination and highlighting of the archaeological data has been emphasized by the field investigators who have been committed to the interpretation of the caves:

> This orientation is evident in art history in the contrast between Andrea Stone's work and that of Karen Bassie-Sweet. The core of Stone's (1995) book is data that she collected herself, augmented by a careful combing of published sources. She is clearly mindful of cave context and comfortable with archaeological data. Bassie-Sweet (1991, 1996), on the other hand, had little experience with caves at the time she was writing and rarely uses archaeological data. The highly speculative nature of her proposals also appears to be a throwback to earlier interpretive efforts (Brady & Prufer, 2005a: 7)

In other words, there is a struggle for situating the cave archaeologist as the most apt for making statements about caves in Mesoamerica. This statement illustrates the strengthening of the network ties between the roles defined for *cave archaeologists* and the authorized production of knowledge on the subject. Moreover, cave archaeologists appear as *indispensible* for such a formation of knowledge. Hence, the reference to the consensus among Maya cave archaeologists must be conceived as a strategic maneuver that aims to make cave archaeologists appear as a unified whole. In the ANT sense, this is an attempt to assemble and *mobilize* as many allies as possible that act as such a unified entity through a few spokespersons (cf. Callon, 2007; Latour, 1987). At this point, we have reached Callon's *mobilization phase*.

The goal here is thus to analyze the construction of this consensus and try to be able to understand how it was made possible to stabilize such a fact like 'the cave context is essentially ritual'. The essential question posed for the analysis is thus *how a context for engendering secure knowledge on the subject of ritual cave features could be established*. How has statements and practices been *directed* towards the production of such knowledge?

As demonstrated in the analysis of the former period, there was an asymmetrical relationship between 'utilitarian' and 'ritual' cenotes (which also applies to caves, if we translate Brady's formulation of the 'problematic view of caves as habitational' – see below). The most pertinent distinction between the former periods and this period was undoubtedly the change in the position and interpretation of cave features. Brady's main thesis was that "Maya cave utilization is ritual in nature" (1989: 8), and it was within such a ritual context that Brady wanted to discuss the artifactual assemblages and other material remains that could be documented within Maya caves. However, if former interpretative practices resided within a dichotomy between utilitarian and ritual uses, which also happened to be hierarchal, what was it that led to a change in such a dominant pattern? How was it that the perception of caves as 'utilitarian' or 'domestic' was almost completely eradicated?

7.2.1. The formation of ritual cave features and the proliferation of the ethnographic Maya as *actants*

The ritual vs. utilitarian dichotomy – during this period sometimes formulated as ritual vs. domestic – was a controversial matter for Brady. If this controversy subsides at some point, and the proposal that caves were essentially ritual comes to be taken as a scientific fact, that is to say, turned from a *type 1* or *2 statement* to a *type 4* or *5* stabilized fact, then Brady would have to turn his attention towards the conditions of production found in cave literature (*negative modality*). This way, it would be possible to weaken the (old) network upholding the domestic function of such features. Additionally, he would have to strengthen the (new) network upholding the ritual function of said features. During this phase, the *problematization phase*, the cave feature – which included caves, cenotes, grottos, fissures, and various other holes in the ground – is assigned as a *new object* (refer to Chapter 7.1.). Moreover, the new object is turned into an *actant* that can be positioned and defined within the new network. However, a few more *actants* and *obligatory passage points* were necessary in order to deconstruct and destabilize the old network.

One of these groups of *actants* or *actors* was the archaeological community, which not only lacked dialog but also held that caves were generally unimportant and were primarily used for habitation (Brady, 1989: 1-10). As we saw in the statement cited in the opening of this chapter, Brady visualized that the *interest* of actors would emerge once the set of problems identified in the opening of his dissertation were tackled. By dealing with this set of problems, Brady attempted to create and define a *set of positions* for specialized cave archaeologists that would meet no obstacles when investigating Maya ritual caves. Thus, as this set of problems is linked to the alleged interest of the archaeological community, this process constitutes the *interessement phase*. Once 'ritual cave features' emerged as factual entities, the positions from which such features could be studied, would stabilize, and the formation of knowledge could be directed towards securing knowledge regarding the diversity of the subject matter.

Among the problematic issues addressed by Brady there was the issue of habitation: "viewing caves as habitation sites represents the most fundamental problem in Maya caves studies" (Brady, 1989: 3). By citing (i.e., mobilizing) what he called 'introductory texts to archaeology' that stated that caves rarely if ever were used for habitation (Burkitt, 1956; Chard, 1975; Knudson, 1978), Brady (1989: 3-4) argued that the physical environment of the Maya lowlands did not favor habitation, since it is likely that residency within caves only would have occurred in places with a much cooler climate. Moreover, he argued that there

was no archaeological evidence for habitation in caves, since "Habitational sites often develop a characteristic midden in front of the cave or rockshelter mouth where garbage has been thrown" (Brady, 1989: 4). Lastly, Brady points out that there is a tendency towards favoring habitation as a cave function:

> Finally, it needs to be pointed out that there is no reason to assume occupation in the absence of evidence of ceremonial utilization. The burden of proof is clearly on the archaeologist for whatever interpretation is made, and one can no longer propose habitation as cover for the fact that one does not know what was occurring (Brady, 1989: 5)

In Brady's dissertation, one of his main strategies was to mobilize resources that could destabilize the network that was upholding the use of cave features as habitational units and to rebuild the cave function as something else. This movement of resources from a 'domestic function' onto a 'ritual function' can be conceived as part of the construction of a repertoire for cave archaeology. This is particularly evident since we also find that these points have been *repeated* as well as *strengthened* by technical data (e.g., humidity measurements) later on by various cave archaeologists (e.g., Kieffer & Scott, 2012; Prufer & Brady, 2005b).

In his chapter 'The Use and Meaning of Caves', Brady (1989: 32-71) takes Eric Thompson's (1975) eight categories of cave use as a point of departure and divides them into utilitarian and ceremonial uses. This strategic transformation of Thompson's original eightfold scheme gave volume to the religious and ritual aspect of caves:

> While the utilitarian uses of caves can easily and usefully be separated from one another, the same cannot be said for the ceremonial categories that Thompson set up. The underlying basis of all these categories is a belief system in which caves represent sacred space and Thompson's categories simply reflect behavioral celebrations of that fact. As such, most of his categories could have been incorporated into his discussion of caves as a place for religious rites. *Clearly this was the most important use but his elaboration of several minor subcategories tends to obscure that fact* (Brady, 1989: 34, author's emphasis)

With time, this transformation becomes even more opaque, as Kieffer and Scott state that "Thompson's syntheses are significant in that he explicitly discounts habitation (…) and all of his principal uses of caves were for ritual" (Kieffer & Scott, 2012: 18).

By letting Thompson define whatever utilitarian functions and meanings cave features could potentially have, all that remained was the need to remove utilitarian uses from cave features while *adding* as much as possible to the ritual and religious uses. With regard to Thompson's

most important utilitarian category, 'Sources for drinking water', Brady offers the following *generalized argument*:

> Two points need to be made about the use of cave/cenotes as water sources. First, the importance of caves as water sources appears to be restricted to northern Yucatan where finding drinking water is a more acute problem. (…) Secondly, the use of a cave/cenote for drinking water does not rule out it having sacred connotations as well. A number of authors have recorded ceremonies directed to the town well (Brady, 1989: 33)

The last sentence in the quotation above is strengthened with references to ethnographic studies (Redfield, 1941: 117; Redfield & Villa Rojas, 1934: 342; Vogt, 1964b; 1981: 133). That apparent utilitarian uses suggested by the position of a cenote close to the center of a village do not exclude that it could have sacred connotations is also reactivated in another paper (Brady, 1997: 604) and accepted, and thus strengthened, by other archaeologists investigating cenotes (e.g., de Anda, 2006: 31; Rissolo, 2001: 31, 341; 2005: 346-347). While this issue will be addressed later, the fact that a utilitarian function is not incompatible with a ritual function is as much a construct as the imposition of a crucial divide between such functions.

After discussing and dismissing the other utilitarian uses as major functions of caves, Brady uses the remainder of the chapter (Brady, 1989: 34-71) to discuss and elaborate different ceremonial and religious uses and meanings of caves that mainly derive from the ethnographic and ethnohistorical record. In the remainder of the dissertation, the archaeological remains of Naj Tunich are interpreted within such a ritual framework (Brady, 1989: 72-426).

Given the scope of this thesis, it would be almost impossible to examine all his examples in detail. However, the actual decision to include ethnography in the interpretation of the meaning of caves is an important element in the formation of the dominant discourse on Maya caves and cenotes. In fact, Brady (1989) favored an interpretative framework that derived from *iconographic*, *ethnohistorical*, and *ethnographic* data in order to be able to understand the use and, particularly, the meaning of caves. He saw this as a *requisite* for the development of a subfield of cave archaeology, and worked as a means for highlighting the sacred, ritual, mythical, and religious position of caves as a contrast to the former interpretational regimes that had dominated Maya archaeology pertaining to caves. In other words, at this point Brady *defined yet another set of actants whose position was coupled to the cave features*. Clearly, these *actants* were also set as *obligatory passage points*. Although ethnographic analogy had

been applied earlier in Maya archaeology (e.g., MacLeod & Puleston, 1978; J. E. S. Thompson, 1959, 1975), the significant difference was that Brady's statement was *programmatic*. As part of the *problematization phase*, the ethnographic and ethnohistorical Maya are both *defined as obligatory passage points and as actants* that are able to modify the knowledge concerning cave features.

However, Brady discusses, in a brief paragraph, the controversial nature of the employment of ethnographic data, which regards Kubler's (1973) argument of 'disjunction' (Brady, 1989: 57-58). In regards to Kubler's argument against the use of ethnographic analogy, Brady refers to Willey (1973) and Nicholson (1976) who argue for continuity in Mesoamerican belief systems, and concludes that his "study tends to side with those who stress the continuity of Mesoamerican beliefs while still recognizing the value of Kubler's warnings about disjunction" (Brady, 1989: 58). Importantly, the use of ethnographic analogies is presented as an unsettled controversy and a dilemma. Since Brady sides for the use of such analogies, at least for basic ideas (1989: 58), we may consider the entire chapter to form a statement for the employment of ethnographic and ethnohistorical data, primarily for the reconstruction of the meaning but also the use of caves. In order to assess Brady's statement concerning the use of ethnographic analogy in the reconstruction of the meaning of cave features, we must consider the fate of this statement.

We should note that Andrea Stone, author of another important publication on caves, *Images from the Underworld: Naj Tunich and the Tradition of Maya Cave Painting* (1995), does not feel entirely comfortable with *black-boxing* the use of ethnographic analogy, and opens a discussion on the subject before choosing a side:

> (…) ethnographic data from many areas and time periods in Mesoamerica have been culled to paint a broad picture of the role of caves in Maya culture. It is an unabashedly pan-Mesoamerican approach that makes liberal use of ethnographic data from all corners of Mesoamerica past and present and so may require some justification (Stone, 1995: 11)

Although Stone does not refer to Brady in this particular discussion, she presents the same papers (Kubler, 1973; Nicholson, 1976; Willey, 1973) as pros and cons for the use of ethnographical analogy, and chooses to side with those who favor continuity in Mesoamerican belief systems. Another example regarding the modification of this dilemma is: "Despite objections to this method from Kubler (1973), in Mesoamerica cultural continuity allows for

particularly strong analogical arguments" (Moyes, 2005: 270). 'Mesoamerican cultural continuity' is presented here as a dictum, that is, a scientific fact by Moyes.

Strength to the thesis of continuity is also gained from other authors who favor continuity (e.g., Freidel, et al., 1993) while we witness a general proliferation of the ethnographical analogies and data organized as to support and *mix* with archaeological data and interpretation within cave studies (e.g., Bassie-Sweet, 1996; Bonor, 1989b; Brady, 1997; Brady & Ashmore, 1999; Brady & Bonor, 1993; Brady & Prufer, 2005c; Brown, 2006; de Anda, 2006; Prufer & Brady, 2005c). In other words, there is a considerable amount of situated representatives that make ethnographic data act in the construction of archaeological interpretations and facts. Thus, the initial dilemma, which implied that there was a choice between believing in disjunction or continuity in Mesoamerican belief systems, has by and large disappeared. All these *positive modalities* act to transform and stabilize the thesis of continuity as factual.

In fact, we observe that cave archaeologists are *black-boxing* the use of ethnographic analogy and data in most cases That is to say, that in order to effectively proceed to interpretations by use of analogy or to contextualize caves and cenotes in Mesoamerica, archaeologists refrain from making the internal complexity of using such analogies transparent. As long as the ethnographic analogy 'fits' with the archaeologically represented material, the inner workings need no specification or explanation. It is, however, also evident that statements involving such analogies usually embed various *modifications* of their factuality (*modalities* are emphasized in the quotations below). The following statements can exemplify this practice:

> *Although there is no direct evidence, it can be assumed that* the [local] legend of the feathered serpent in the [Sac Uayum] cenote [at Mayapan] is of preconquest age (Brown, 2005: 394, author's emphases)

> In addition to early Spanish accounts, modern ethnography is also used in the reconstruction of ancient Maya belief. Based on the synthesis of ethnographic accounts with archaeological data, *we find that* Maya prayer rituals *were* (*and are*) enacted in locations such as agricultural fields, public plazas, caves, water sources, and at home [*references to ethnographic studies in Kinkella, 2009*] (Kinkella, 2009: 49, author's emphases)

> Mountains, caves, and bodies of water *are today* important foci for ceremonies, settlement and social organization. Comparable observations *were* documented by the Spanish early in the conquest period (…). *Not surprisingly*, such focus *seems* detectable much earlier, as well, in the archaeologically tangible remains of ritual and in the location and orientation of architecture (Brady & Ashmore, 1999: 128, author's emphases)

> To the Maya, caves *are* portals to the underworld or Xibalba, and thus *are* sacred but dangerous places (…). For example, in the Yucatán caves *are believed* to house disease-producing forces [*reference to ethnographic study in Lucero & Gibbs. 2007*]. Items imbued with sacred and dangerous qualities *are* deposited in caves. For example, the Lacandon Maya disposes of terminated or deactivated god pots – *incensarios* [emphasis in original] – in caves *because they are* still considered dangerous objects [*reference to ethnographic study in Lucero & Gibbs, 2007*]. In Amatenango, Chiapas, the Maya *believe* that "dangerous spirits" live in caves and hills [*reference to ethnographic study in Lucero & Gibbs, 2007*] (Lucero & Gibbs, 2007: 49, author's emphases)

Although the associations made between cenotes and *actants* in the shape of the ethnographic Maya (whether these be from another study or from local beliefs) involve massive *translations*, these are almost completely masked in these statements.

As touched upon in the section about the grouping of cave features (refer to Chapter 7.1.), ethnographic analogy is legitimized by its pairing with an 'emic', 'non-Western,' and consequently 'superior' model of the ancient Maya:

> Disdaining the use of ethnographic analogy, archaeologists further cut themselves off from non-Western models, particularly those historically connected to the very civilization they are studying. What one sees being applied are very uninformed and inexplicit models of religion drawn primarily from personal experience (Brady & Prufer, 2005b: 366)

The dilemma that was previously categorized as a decision between belief in 'disjunction' and 'continuity' is *replaced* with a dilemma between an 'emic' and a 'Western' approach. A 'Western' ('etic') perspective is held as both logically and morally inferior to an 'emic' perspective in approaches to the study of the ancient Maya world views. We must conceive this moral dilemma as a tactical device that was produced in order to impose and stabilize the role of the ethnographic Maya in the network. As an element of the *enrollment phase*, ethnographic analogies become *anchored* in a paradigmatic emic perspective.

Another perpetuating device for upholding the significance for the ethnographic models in cave archaeology is the representation of the tardiness of archaeology to recognize the progressions within ethnography (e.g., Brady, 1997; Brady & Prufer, 2005b). Thus, not only have the caves and cenotes changed with the construction of ethnographic analogies; the legitimizing strategy has also undergone a transformation.

In fact, a whole population of contemporary Maya groups, be it the village of Chan Kom in Yucatán (Redfield & Villa Rojas, 1934) or the Zinacantecos of the Highlands of Chiapas

(e.g., Vogt, 1969, 1981), has emerged as a group of *actants* in the interpretative framework that is applied to cave features (including cenotes). As *actants*, the ethnographic Maya regularly make a supportive performance for archaeologists that translate and uphold caves and cenotes as ritual phenomena. More specifically, these *actants* populate the current discourse on cave features, *mix* with the archaeological remains, and thereby vastly increase and transform the repertoire that is available for cave archaeology. Once these groups emerged as *actants* and were *enrolled*, they had to be taken seriously, which is why they also act to form pre-Columbian Maya caves and cenotes in the discourse of cave archaeology. This direction did not only forge a connection in time, between the past and the present, but also a geographic connection between the cultural groups in all of Mesoamerica.

In the previous periods, these ethnographical groups and local communities had largely been excluded, marginalized, or rendered passive by the archaeological discourse – except to form a certain group that represented our knowledge on the 'survivals' of such things like the cenote cult (e.g., Tozzer, 1957). However, in the Programmatic Period, they were viewed as active participants in the formation of the knowledge on such cave features as cenotes. This process constitutes the *enrollment* of the ethnographic and ethnohistorical Maya groups, and the modern local Maya communities alike, as allies to Maya cave archaeology, all of which are held to have common interests (cf. Callon, 2007; Latour, 1987). Once enrolled and stabilized into roles in the enlarged network, these groups are consolidated as a part of the repertoire available for cave archaeologists through the work of ethnographers. The statements enlisted above demonstrate how the ethnographic Maya have become unproblematic and highly mobile resources for the elucidation of the role of cave features. However, it is important to note that it is only through the channelization of *spokespersons* from cave archaeology that these groups are *represented*. Ultimately, these spokespersons authorize, define, modify, and translate what will and will not be stated.

In conclusion, the production of the ritual context of caves was made possible by the folding of ethnographic and ancient Maya world views and perceptions of landscape combined with a subordination of 'traditional' utilitarian uses. In other words, *the listing of meaning of the cave feature* (the new object) is one particular aspect that has been forged with the aid of the ethnographic and ethnohistorical *actants*.

7.2.2. Positioning sacred cave features in mainstream archaeology

What becomes obvious from the analysis above is that 'the sacred' (herein ritual, religion, ideology, cosmology) became positioned as an *obligatory passage point* in the archaeological discourse on Maya caves and cenotes during the Programmatic period. In the dominant discourse in cave archaeology, we find that privileged signs like 'the sacred,' 'ritual,' 'holiness,' 'ideology,' and 'cosmology' constitute focal points that assign at least a partial fixation of meaning to landscape and some of its topographically distinctive groups of features (mountains, caves, cenotes), contexts (like the cave and cenote context), pre-conquest practices or behavior, and artifacts, structures and other remains of human activity in such places. Since this practice of centering 'the sacred' and 'the ritual' also involves either opposing, subordinating, or marginalizing of such notions as 'utilitarian' and 'domestic,' we find that these latter notions rarely create the meaning of a cave feature. Thus, 'utilitarian' and 'domestic' are by and large excluded as producers of meaning.

Another characteristic trait is the reduction in significance of the opposition between nature and culture. More precisely, this process is configured as a rather symmetrical assignment of meaning to natural features and constructed features that assures a partial invalidation of the dominant dichotomy between nature and culture. This practice is exemplified by the indicative power assigned to topographical features like 'the dark zone,' 'size,' 'spatial constrictions,' 'water pools' as well as other 'topographically loaded' features. Basically, this procedure replaces nature and culture with the 'sacred' as a partial center that can assign meaning.

It is, however, vital to recognize that the emphasis on such ideological aspects in cave archaeology also coincide with and are *linked to* mainstream Maya archaeology and the upsurge of post-processual archaeology, wherein we find a more articulated and legitimate position for such elements in the archaeological discourse.

Although it is perhaps striking that we find no references to postprocessual archaeological works in Brady's dissertation, during the following years there were attempts to impose a relation between the sub-discipline of cave archaeology and the larger archaeological community. One most important example regards the alteration of the methods of surveying, an example that also demonstrates that the formation of knowledge on cave features is not limited to the domain of written literature:

> The primary focus of the PRCS [Petexbatun Regional Cave Survey] was to systematically investigate the role of caves in prehistoric Maya sacred geography by assessing the extent to which the placement of surface architecture was determined by the location of cave features (Brady, et al., 1997: 354)

As Brady noted before the realization of PRCS, former "settlement pattern surveys (…) have consistently failed to record features which may have been of ideological significance in prehistoric populations" (Brady, 1991: 1). Brady argued that factors like mythology and religious beliefs might just as well have determined the placement of settlements as did ecology and resources (Brady, 1991, 1997). Thus, he argued that "Research designs are needed that are specifically constructed to detect the role of ideology and cosmology in settlement location and configuration" (Brady, 1997: 602). As ethnographic data pointed to caves, particularly when associated with mountains and water, as sacred landmarks, the mapping of such features should accordingly form an integral part of research programs (Brady, 1991, 1997). Both of these papers forcefully *link* the proposed scheme for field investigations of ideological aspects to the postprocessual critique of processual archaeology and the current archaeological debate on the elements of ideology and cosmology:

> In recent years there has been a growing critique of processual archaeology for its failure to deal with ideological factors in archaeological reconstruction (see Watson & Fotiadis, 1990) (Brady, 1991: 1)

> The above discussion has attempted to contribute to the ongoing debate on how archaeologists deal with the role of ideology and cosmology in settlement patterns (Brady, 1997: 614)

We must conceive of the production of links within broader archaeological debates as a device utilized in order to elevate cave archaeology to a field of secure knowledge. These statements not only draw on the repertoire of the discursive formation of postprocessual archaeology but also mold a common goal for the sub-discipline of cave archaeology and main-stream archaeology. There are obvious similarities with the phase described as *interessement* in the moves that situate the study of cave features as one 'solution' to broader archaeological problems of investigating ideological aspects of the past. Moreover, stronger links between *obligatory passage points* (ideology/cosmology and ritual caves) and different *actants* (ethnography, cave archaeologists, and the archaeological community) are engendered while we observe attempts to turn *obligatory passage points* (ritual cave features) into solid facts. However, in order to sediment the connection between cave archaeology and main-

stream archaeology, this strategic move *needed* the successful realization in the field (e.g, Brady, et al., 1997).

The most salient link to the discursive formation of postprocessual archaeology is nonetheless found in the introduction to *Stone Houses and Earth Lords*. This link is describable as a *mobilization* of the postprocessual critique of the foundation (e.g., positivism, logical empiricism, nomothetic generalizations) and limited scope (e.g., eco-materialism, cultural evolutionism) and consequently the near exclusion of the theme of religion in processual archaeology (see Prufer & Brady, 2005b: 2-6). Not only do they anchor onto the repertoire of postprocessual archaeology, Prufer and Brady also mobilize allies in mainstream archaeology for the purpose of cementing the importance of caves and the position in the network of those who have studied them:

> The mainstream acknowledgment of the importance of caves as features in the social landscape owes much to those investigators who have focused their research on subterranean spaces (Prufer & Brady, 2005b: 2)

Although no references to particular works that acknowledge the importance of caves are recorded in the statement above, such an acknowledgement exists in mainstream archaeology (cf. Demarest, 2004: 202-205; Sharer & Traxler, 2006: 655, 726-727). However, the important aspect is that cave archaeology is identified with the voluminous and powerful group of mainstream archaeology. Again we also see the repetitive work of positioning cave archaeologists as indispensible in the network.

7.2.3. Context above objects and behavior: Utilitarian activities become ritual activities

In regards to the establishment of ritual caves, another striking reorientation that appears is the emergence of the *context* (here the 'cave feature') as an *obligatory passage point* that has gained superiority over the material remains within caves and cenotes. Following Renfrew and Bahn (1991: 359-360), Prufer and Brady point out that "Methodologically, the study of religion in archaeology *necessitates* identifying artifacts or contexts that can be *unequivocally* associated with ritual activity" (Prufer & Brady, 2005b: 9, author's emphasis). Although no literary references to the importance of context aside from Renfrew and Bahn are present, we know that context is one of the obligatory passage points in postprocessual archaeology (e.g., Hodder & Hutson, 2003). Through the eradication of utilitarian functions of caves, the construction of a repertoire for cave archaeology and the *enrollment* of the ethnographic Maya and specialized cave archaeologists alike, the claim that cave features were essentially *ritual*

contexts has been translated into a stabile fact. With these resources at hand, *cave features*, which *already* had been stabilized as ritual in nature, had been transformed into a religious and ritual *context*. With such a stable context, *the translation of the material remains* found inside caves within a purely ritual or religious framework could thus be realized (see Prufer & Brady, 2005b: 9-11):

> We base our assessment of the ritual function of caves in part on the voluminous body of documentary sources indicating that the use of caves *excluded* secular activity. As mentioned previously, many of these sources date to the dawn of Western imperialism in the New World (Prufer & Brady, 2005b: 10, author's emphasis)

> When all evidence is considered, it is clear that cave contexts are religious. With caves established as *singularly unambiguous religious contexts*, all of the artifacts and paraphernalia found within the caves can be interpreted within the framework of religious ritual (Prufer & Brady, 2005b: 11, author's emphasis)

It is vital to note that the *translation* of the material remains inside caves as the remains of ritualized behavior makes the *cave context* a most salient *mediator*.

The acceptance of 'the sacred' and 'the ritual' nature of caves and cenotes has directed attention towards the production of new knowledge (*positive modalities*) such as ritualized water procurement and ritualized mining in caves and cenotes. This direction grants context the upper hand in the relationship with artifacts as well as activities or behavior. As the following examples demonstrate, the work of discourse is to reduce possible meanings of the archaeological data, since context, and not artifacts, is the privileged provider of meaning in the relationship that is produced between the two elements.

In his dissertation, *Ancient Maya Cave Use in the Yalahau Region, Northern Quintana Roo, Mexico*, Dominique Rissolo (2001) addressed some familiar issues such as the distinction between caves and cenotes and their use by the ancient Maya. Rissolo's "primary goal was to isolate the ritual function of the caves and identify evidence of their specialized appropriation" (2001: 6). According to Rissolo (2001: 30, 341), the traditional focus on caves and cenotes as water sources is not surprising because of the apparent situation of the distribution of water sources across Yucatán. However, as his area of enquiry, the Yalahau Region, is defined as a water-rich environment, Rissolo asked: "Given the accessibility of surface water in the region, were the caves reserved for ceremonial purposes? If so, what are the material correlates of *ritualized water collection*?" (2001: 6, author's emphasis). Even more so:

> Because caves in the Yalahau were not the only, indispensable water source, nor even the most accessible one, *we would not expect evidence of cultural activity to be associated with simple utilitarian water collection*. As already noted, archaeologists have tended to focus on caves/cenotes as water sources to the exclusion of all other functions. While it has been pointed out that cenotes used for drinking water are also important ritual features in the ethnographic literature (Brady, 1997: 604), this point seems to have had little impact on archaeological thinking. *The removal of the function as water source from the caves of the Yalahau region allows us to separate the ritual function from the utilitarian function*. The ritual pattern isolated here allows us to identify the underlying meaning carried by these features. Those insights can then be applied to cave/cenotes throughout the peninsula to provide a more comprehensive appreciation of their multifaceted significance (Rissolo, 2001: 341)

First, we note that in Yucatán, the total elimination of utilitarian purposes is more difficult than in other parts of Mesoamerica given the scarcity of water, meaning that the question of investigating the ritual role of cenotes and caves in this region is also methodological. Second, and of primary importance for this section, *when the process of isolating the ritual function has been traversed, we observe that such 'utilitarian' and mundane activities like procuring water emerge as ritual activities*.

Another example, which can be mentioned in its brevity, regards mining. As Brady and Rissolo state, "We contend that the collection of natural materials from caves is categorically different than physically similar activities conducted at the surface" (Brady & Rissolo, 2006: 471).

A final example regards ceramics. In the article 'Glimpses of the Dark Side of the Petexbatun Project,' Brady and colleagues addressed the issue of domestic and ritual function for ceramics (Brady, et al., 1997: 361; see also Brady, 1989: 211-241, 406-407; Brady, 2005: 116). According to the authors, the Cueva Sangre at the site Dos Pilas, Petén, Guatemala could be used to assess attempts to isolate domestic functions of caves on the basis of high percentages of domestic ceramics. These categories of domestic ceramics consisted of unslipped and monochrome slipped wares.

> The Cueva Sangre provided a good context for examining the basic premises underlying these studies in that all ceramics were recovered from the dark zone of the cave and in conditions too wet to allow a reasonable argument for there having been habitation. The supposed domestic types make up nearly 90% of the identifiable Late Classic ceramics (…). This strongly argues that unslipped and monochrome slipped ceramics were being used in ritual contexts and that the presence of these wares is in no way indicative of a "residential" function (Brady, et al., 1997: 361)

Following this line of argument, the authors asked: "If the typological distinctions made by ceramists do not correspond to domestic versus ritual function, what can be said about ceramic function in the cave setting?" (Brady, et al., 1997: 361). According to the authors, ceramics should thus be able to hold a variety of functions, including ritual or ceremonial functions, "that have to be determined by context and evidence of use" (Brady, et al., 1997: 361).

In all of the above examples, context – the cave feature – is endowed with a prior meaning that is positioned above artifact or activity. Although the artifacts and structures that are documented inside the cave features receive much attention (the point is most certainly not that they are neglected in the research), a border is drawn for the possible interpretation of these by the establishment of the ritual context.

This kind of work can be understood not only as a consequence of the ritualization of context, but also as discursive work that systematically removes the utilitarian or domestic function by disrupting its basis that thereby alters the discourse on caves and cenotes. In a sense, there is a double paradox in that archaeologists need to *exclude* the domestic function of artifacts in order to *isolate* their ritual function and at the same time traverse a secondary process that *determine* a ritual function of the artifacts through a *prefigured* ritual context. Despite claims that utilitarian uses do not exclude sacred connotations, the hierarchical dichotomies between ritual and domestic and between context and artifact thus become most forcefully reestablished. The difference between the Intermediate Period and the Programmatic Period with respect to the configuration of the ritual vs. utilitarian/domestic dichotomy is the inversion of the asymmetrical relationship between the poles.

7.3. Kieffer and Scott's 'The Mesoamerica Cave Paradigm'

> (…) historical descriptions are necessarily ordered by the present state of knowledge (Foucault, 1972: 5)

As for demonstrating the major differences between the results reached in the study at hand and earlier efforts to understand not only the history of cave (and thereby cenote) research (e.g., Brady, 1989; Brady & Prufer, 2005a) but also the establishment of cave archaeology as a sub-discipline of Maya archaeology, a recently published paper by Crystal L. Kieffer and Ann M. Scott (2012) will be analyzed in this section. Accordingly, this is also the one and only *published* paper discussing the *Mesoamerican Cave Paradigm* (Kieffer & Scott, 2012:

24). Although this paper discusses some aspects that are similar to those analyzed above, it constitutes a part of the empirical material that is studied in this thesis nonetheless.

In their paper, which is entitled 'The Mesoamerican Cave Paradigm: Its Historical Development,' Kieffer and Scott state that they "will examine whether a [Mesoamerican cave] paradigm exists and, if it does, will attempt to define and critically evaluate it" (Kieffer & Scott, 2012: 17). A paradigm is understood in a Kuhnian sense in that it includes an "entire constellation of beliefs, values, techniques, and so on shared by the members of a given community" (Kuhn, 1970: 175; cf. Kieffer & Scott, 2012: 17). Their focus is particularly with the way in which such beliefs make those who work within a paradigm view the world in a particular way which is different than those who stand on the outside, and how the paradigm thus redirects or revolutionizes the discipline, goals, and methods (Kieffer & Scott, 2012: 17). As such, it might have been expected that the results of their analysis did not differ much from those obtained in the analyses presented in this study. However, this is not the case.

In order to locate the paradigm historically, Kieffer and Scott review the history of Mesoamerican cave archaeology. Although perhaps only a minor point, they apply the same historical periods that were already defined for the field by Brady in his dissertation (1989), albeit with some minor modifications for the most recent developments.[27] The manner in which the history of research is presented and conceived is, however, of major interest. For the Early Period (1840 – 1914), Kieffer and Scott note that "The period also stands out for its missed opportunities" (2012: 17). Among those "missed opportunities" they list the "failure" of not recognizing the Sacred Cenote as a cave feature, the "failure" to recognize the relationship between surface architecture and caves due to Edward H. Thompson's (1938) delayed publication of his report on the High Priest's Grave,[28] and the lack of syntheses (Kieffer & Scott, 2012: 17-18). For the Post-War Period (1950-1980), they list Eric Thompson's (1959, 1975) publications as the most important contributions to cave studies, and state that

> Thompson's syntheses are significant in that he explicitly discounts habitation saying, "Most caves in Central America are too damp to be suitable for long residence" (J. E. S. Thompson, 1959: 129) and all of his principal uses of caves were for ritual (Kieffer & Scott, 2012: 18)

[27] Kieffer and Scott (2012) operate with the Early Period (1840 – 1914), the Middle Period (1914 – 1950), the Post-War Period (1950 – 1980), the Foundation Period (1980 – 1997), and the Recent Period (1997 – present).

[28] This report concerns E. H. Thompson's investigation of a burial shaft/subterranean feature underneath a structure at Chichén Itzá.

What is noteworthy about their presentation of the 'History of Mesoamerican Cave Archaeology', as the section is entitled, is how similar it is in many respects to the authoritative history of cave research that was first produced by Brady in 1989, and moreover how well it resonates with the historical overviews of cave archaeology that later were presented by Brady and Prufer for the two edited volumes on the subject (e.g., Brady & Prufer, 2005a; Prufer & Brady, 2005b). The crucial point, then, is that Kieffer and Scott's history of research agree with the history of research that is seen from the perspective of the very paradigm they try to detect, define, and critically evaluate. Thus, we find such statements on the "missed opportunities" of the Early Period like "Edward Thompson's dredging of the Cenote of Sacrifice was widely known within the field *but the cenote was not recognized as a cave feature*" (Kieffer & Scott, 2012: 17, author's emphasis), and how central Eric Thompson was in the Post-War Period, when he discounted habitation and that "all of his principal uses of caves were for ritual" (Kieffer & Scott, 2012: 18). As we saw earlier in the analysis, these facts are deeply rooted in the discourse of the Programmatic Period.

Such a history of research is clearly produced and maintained by hindsight and moreover ordered by more recent scientific standpoints and historical versions (cf. Foucault, 1972: 5). Rather than merely focusing on the cave studies of the period in their actual historical context, the history of research resembles the 'pathological history' of the emergent sub-discipline of cave archaeology. In presenting and emphasizing such points in the history of research, the authors rather inscribe themselves in the dominant discourse that was described for cave archaeology in the Programmatic Period.

No matter how fraught their history of research are with statements that have been inserted more recently, Kieffer and Scott conclude that there is a Mesoamerican Cave Paradigm (2012: 19). The paradigm, they suggest, "is constituted around four basic propositions" (Kieffer & Scott, 2012: 19):

- *Caves were used primarily for ritual*
- *Caves must be understood from an indigenous perspective*
- *Caves played a significant role in Pre-Columbian society*
- *Cave Archaeology can address wider theoretical issues*

At the surface level, these "propositions" might seem to correspond to the results of the analysis of the Programmatic Period. Beneath, however, lies a whole set of practices, devices, and *black boxes* that mask the manner in which they work to uphold such propositions.

First of all, that "caves were used primarily for ritual" has by far been transformed into a fact since it first was proposed by Brady in his dissertation. In other words, this is not some loose proposition that can merely be escaped and torn away at any point in time. It is also interesting to note that Kieffer and Scott do much to defend the ritual function of caves. In fact, they have even obtained a lot of data on average temperatures and average relative humidity in order to illustrate Eric Thompson's (1959: 129) claim that caves were too damp for habitation. As a closure to this "proposition," they remark:

> One of the reasons that cave habitation remains a viable proposition among critics, *in our opinion*, is precisely because archaeologists have not seriously considered the implications of habitation (Kieffer & Scott, 2012: 20, author's emphasis)

Their critical evaluation of the paradigm is thus, in fact, a critical evaluation of the "pre-paradigmatic approach," since there is always a present set of justifications that can support ritual uses and simultaneously exclude domestic uses. In other words, a *context of justification* which is ready to be used has already been constructed for the sub-discipline of cave archaeology. Among these justifications, Kieffer and Scott also mobilize the repertoire available from Maya ethnography by referring to examples extracted from such data in order to illustrate possible ritual functions of artifacts traditionally associated with domestic uses. In the paper, Kieffer and Scott reestablish the dichotomy between ritual and domestic as well as between artifact and context in its hierarchical form for their analysis of the Mesoamerican Cave Paradigm. Kieffer and Scott (cf. Brady, 2005: 116, for the same point) write:

> The older approach accepts the existence of utilitarian artifacts whose function is inherent in the object and the presence of such artifacts is then used to determine the function of a site or activity area. The cave paradigm rejects the notion of artifacts having inherent function. Hayden and Cannon (1984: 96) note that in living societies "artifacts rarely function in the utilitarian, social, or ideological domain to the exclusion of the others" so function is contingent on context (Kieffer & Scott, 2012: 20)

If the cave context has now been categorized as an *a priori* ritual context, are we not dealing with an "inherent function" for *context* (as opposed to *artifacts*)? It should at least come out as a paradox that the very basic form of argument about 'inherent function' that the authors hold to reside on the 'outside' of the paradigm is found to pervade the 'inside' of the paradigm in the same logical pattern. The implication is that we must conceive the very production of such an inside/outside scheme as a mechanism for internal control of the discourse which aims to define, impose, and stabilize agencies and roles as well as distribute identities.

As for their second proposition, "caves must be understood from an indigenous perspective," the analysis of the Programmatic Period has uncovered a much more complex picture. According to Kieffer and Scott

> A second distinctive element of the Mesoamerican Cave Paradigm is its extensive and unapologetic use of ethnographic and ethnohistoric analogy *to create emic models* of the meaning and, to a lesser extent, the function of caves (Kieffer & Scott, 2012: 20, author's emphasis)

While Kieffer and Scott are, naturally, quite aware of the massive invasion of ethnography into the sub-discipline of cave archaeology, there is no conflicting relationship identified between the use of ethnographic and ethnohistoric analogy and the *construction of emic models*. In fact, their paper bears no mention to the massive and sometimes problematic *translations* that are involved in the employment of this repertoire. Quite on the contrary, Kieffer and Scott focus on the *achievements*, *insights*, *results*, and *corrections* that have been gained from the use of ethnographic and ethnohistorical analogy in their evaluation of their second proposition. In a sense, then, the ethnographic Maya are conceived as *intermediaries* transporting meaning without transformations, when instead they should be treated as *mediators* translating the meaning and knowledge not only onto different kinds of cave features but also onto the reality of cave features in the past.

Although the analysis at hand has brought forth a complex process for ensuring the *enrollment* of the ethnographic Maya as *actants* in the sub-discipline of cave archaeology, a most crucial element was the strategic moves employed in order to establish a scientific context in which the ethnographic and ethnohistoric analogies could be employed as relatively certain representations of past conditions. Among these moves, we found the gradual *black-boxing* of Mesoamerican cultural continuity and the relocation of a gap between the past and the present through the thesis of Mesoamerican cultural continuity to a gap between *emic* and *etic* models. The strategic movement was to anchor the ethnographic Maya in the secure knowledge of *emic* models while creating a gap by identifying Western scientific models on religion with *etic* models. It is therefore also interesting to note that Kieffer and Scott neither remark nor discuss Mesoamerican cultural continuity.

Finally, between the two remaining propositions, the latter must be conceived primarily as part of the positioning of the sub-discipline of cave archaeology in relation to the wider archaeological community. In the analysis at hand, various efforts to situate the sub-discipline

as well as elements of Callon's *interessement* and *mobilization* phase in relation to this particular aspect were identified.

In conclusion, we must conceive Kieffer and Scott's paper on the Mesoamerican Cave Paradigm as joining the ranks of devices upholding, strengthening, and legitimizing the hegemonic discourse of the sub-discipline of cave archaeology (including its authoritative history of research) rather than accepting their promise of a critical evaluation of the foundation onto which the paradigm is supposedly anchored. The architecture of Maya cave archaeology had a more subtle design.

7.4. Summary discussion: The incorporation of cenotes in cave archaeology

The transformations that took place during the Programmatic Period are found to have a describable design that doctored not only a context for establishing secure knowledge on cave features like cenotes but also a set of positions that could ensure and define the desired knowledge. Among these transformations, we found the interesting case in which the establishment of an authorized history of research for the sub-discipline of cave research that *diverged* from the analysis of the cenote research in the Initial Period and the Intermediate Period presented in this study. The difference resides precisely in that cenotes were immersed in broader definition of caves not only as a requisite for the object of study for the sub-discipline but also in its historical development.

The changes that occurred in the cenote research as a consequence of the formation of cave archaeology as a sub-discipline mark the most distinguished event in the history of cenote research. Thus, cave archaeology also designates cenote archaeology during the Programmatic Period. One of the pivotal differences between this period and former periods is the development of a completely different *repertoire*.

It is clear that the efforts to redirect research on cave features involved a series of tactical translations. Among these we found the *translation* of the statement that "caves were ritual in nature" from an assertion to a scientific fact, the folding of the ethnographic present and the archaeology of cave features, the invention of cave features as a new object and ritual context, the construction of a legitimizing history of research, the positioning of cave archaeologists, and the establishment of new hierarchical dichotomies. In order to identify these transformations, we saw not only the effect of *modalities* aiding and stabilizing the translations, but also *elements of power* emerging through the careful selection of *actors* and

obligatory passage points that aimed to direct statements towards the production of knowledge on ritual cave features.

Cave and cenote archaeology emerged in a rather empty space of Maya archaeology, meaning that there were few governing principles that were imposed from the outside and that could regulate the formalization of the sub-discipline of cave archaeology. Naturally, traditional archaeological principles and scientific standards also applied to cave archaeology. Nonetheless, this situation meant that the sub-discipline had a unique chance to carve out its own directions, which it definitively did. In this process, however, we observe that some governing principles crystallized already at the birth of the sub-discipline, such as the definition of the cave as a ritual context and the grouping of cave features. Perhaps the apparent lack of controversies in the discipline can be explained by its development and dispersion within a space that was not highly regulated.

What characterizes the latter period of cenote research is the extent to which it has been organized by its incorporation in the discursive practices of the sub-discipline of cave archaeology. The grouping of cave features includes not only diminishing significance of the distinctions between cenotes and caves as well as other cave features as physical figures in archaeological interpretations, but also the grouping of all former statements on either feature, be it in the field of archaeology, ethnohistory, history, art history, folklore, or ethnography. Moreover, this grouping casts the cenotes as a new object that was to be defined primarily according to its karstic cave feature, and not according to the presence of water.

During this period, we have also witnessed an almost complete reversal of the ritual-domestic opposition. To be explicit, this overturning has been complete for the sub-discipline of cave archaeology, though it is not entirely complete for the current knowledge regarding *cenotes* (e.g., we saw that Rissolo needed a detour in order to isolate the cave/cenotes as ritual). In essence, the overturning can be described as a reestablishment of the dichotomy in an inverted hierarchy (refer to Figure #18).

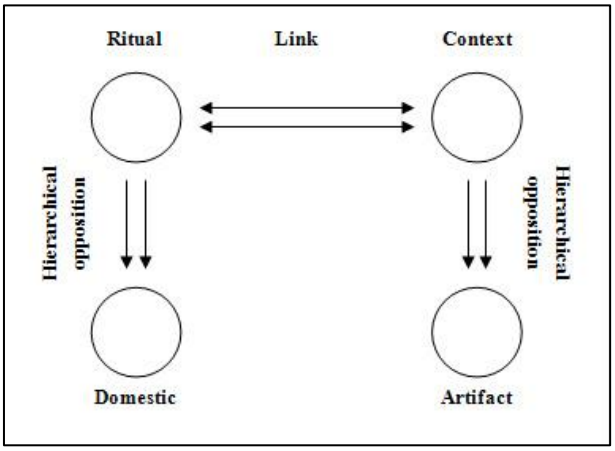

Figure #18: Illustration of the hierarchical or asymmetrical ritual-domestic and context-artifact oppositions in their inverted pattern. Compare with Figure #17, Chapter 6.4.

Instead of escaping the dichotomous scheme, the dichotomy is reestablished to exclude the utilitarian function of caves from the discourse. The threshold for interpreting caves, including the archaeological material found in caves, within a ritual and religious framework is now so low that almost all remains of activities within caves are considered in a ritual context. Thus, we find significant mechanisms of exclusion for a former existence of 'utilitarian' caves, and conclude that such a production of meaning is precisely founded on such mechanisms of exclusion. It is interesting to note that presumably "domestic" and "utilitarian" activities and artifacts emerge as ritualized.

With regard to *cenotes*, we find a proposition, or rather a promise or guarantee, that any indication of domestic activities related to cenotes should not interfere with the investigation, theorizing, and discussion of the ritual, religious, and sacred significance of the features and the remains that are found within them. Such a guarantee is quite different from the underlying principles that were uncovered for the preceding period. Moreover, what can be concluded is that the threshold for the formation of knowledge on the sacred and ritual aspects of *cenotes* is also significantly lowered in that there are no significant obstacles for leaping into ritual explanations. Rather, the repertoire of *cave archaeology* is always present and available for the formation of knowledge regarding *cenotes*.

Chapter 8: The Formation of Knowledge on Maya Cenotes – Discussion and Conclusion

Although the research questions presented for this thesis have been addressed in Chapter 3 and throughout Chapters 5, 6, and 7, some remaining issues require further discussion. The discussion and conclusion to this thesis focus on the changes that occurred in cenote research in reference to the formation of cave archaeology as a specialized sub-discipline, since, in this study, it is argued that these changes mark the most distinguished phenomenon in the history of cenote research.

Since the analysis uncovered that the authoritative history of research produced and maintained within cave archaeology is a construct that embedded cenotes in the definition of the emic *ch'en*, we must also discuss the issue as to whether the formation of knowledge on cenotes has been cumulative. This question is important as it relates to the research questions submitted for this thesis – particularly the second one – as well as the theoretical approach to the study of the formation of knowledge pertaining to cenotes. This chapter will open with a discussion in reference to the relationship between the periodization that was applied in Chapter 3 and the formation of knowledge regarding cenotes.

8.1. Rearrangement of the historical periods of cenote research

In the review of the history of research as presented in Chapter 3, this study proposed the following historical periods of cenote research: The Initial Period (ca. 1880 – 1938), which witnessed the first statements regarding cenotes made by archaeologists. Another period might just as well have been distinguished as a consequence of E. H. Thompson's dredging of the Sacred Cenote. Such a period was not distinguished since the general picture of cenotes as indispensible for the peninsula's water supply did not seem to change. Rather, the Quijada-documents were proposed to identify the beginning of The Intermediate Period (1938 – ca. 1980) due to the proliferation of the idea of the extended cenote cult as regarding *a series of cenotes*. Finally, the Programmatic Period (ca. 1980 – present) was proposed in this study as the third and final period of cenote research. This period was marked by the emergence of a specialized sub-discipline for cave and cenote archaeology.

An important rearrangement of the periodical scheme presented in Chapter 3 is proposed in this discussion in light of the results reached in the analyses in Chapters 5-7. The rearrangement is in reference to the formation of knowledge pertaining to cenotes.

Firstly, it becomes very clear that E. H. Thompson's dredging of the Sacred Cenote does not create a new period. The results of the dredging, in collaboration with the collective consensus among archaeologists that the Sacred Cenote was a sacrosanct place of sacrifice, situated the Sacred Cenote as a unique phenomenon within the cultural history of Yucatan. However, the discourse about cenotes *as a group of archaeological objects* was not altered.

Secondly, the Intermediate Period is set to designate the temporal period in which cenotes become embroiled in a *functional division* with respect to utilitarian and ceremonial uses. While the collective work of Scholes, Roys, and Tozzer released the idea of an extended cenote cult (refer to Chapter 6.1.), the publication of the Quijada-documents did not alter the discourse as to define a space for a functional division between cenotes assignable to an archaeological practice. Rather, such an archaeological practice was first identified during the 1950s (refer to Chapter 6.2.). During the Mayapan project (refer to Chapter 6.2.2.), for instance, the preferred ordering of the knowledge pertaining to cenotes resided in their functional divide. However, in reference to settlement pattern studies (refer to Chapter 6.3.), cenotes were most important for their place within the generalized category of water sources in the Intermediate Period. This central position was maintained well into the 1980s and even in recent years cenotes have come to be mapped, investigated and discussed as a means to acquire greater knowledge about mundane and domestic aspects pertaining to cenotes (e.g., Gallareta, 2007; Houck, 2006).

Lastly, in this study, it is argued that 1989 should be set as the end of the Intermediate Period since the analysis presented in Chapter 7 discloses Brady's (1989) dissertation to mark the beginning of the Programmatic Period. Thus, the crucial point is that the *programmatic transformations* that occurred within the latter period have dramatically altered the formation of knowledge pertaining to cenotes, despite the fact that one cannot exclude the importance of cenotes for non-ritual purposes. Although the very basic need that living organisms have for water cannot be omitted in reference to the purpose of cenotes, the majority of the literature regarding cenotes is dedicated to various rituals and religious themes associated with these geological formations (e.g., Brown, 2005; de Anda, 2006, 2007b; de Anda, et al., 2004; Pugh, 2005; Rissolo, 2001, 2005, 2008; Rojas, 2007, 2010; Rojas, et al., 2008; Sognnes, et al., 2010; Tiesler, 2005).

In light of the issues discussed above and the analyses carried out in this study, the following temporal arrangement is proposed:

- The Initial Period: ca. 1880 – 1950
- The Intermediate Period: ca. 1950 – 1989
- The Programmatic Period: 1989 – present

These periods correspond to shifts within the *formation of knowledge* pertaining to cenotes.

8.2. Hierarchical dichotomies – structural features within the formation of knowledge

Amongst the complicating matters that require further discussion is the manner in which the formation of knowledge pertaining to cenotes has been organized. One of the defining aspects for the formation of knowledge respecting cenotes was *the imposition of purifying dichotomies* that accounted for particular aspects of the knowledge about the subject. As observed during the analysis, the Initial Period was marked by the establishment of a division between the natural sciences and the social sciences (refer to Chapter 5.4.). Such a divide was also identified in the formation of knowledge pertaining to cenotes as they were both to be defined as natural and social (or archaeological) phenomena. As the natural sciences like geology and physical geography operated with a completely different repertoire (e.g., physical natural laws) from that of archaeology and history (e.g., cultural history), secure knowledge about cenotes was only ensured as long as such a dichotomy was maintained (cf. Latour, 1993).

As for the Intermediate Period, it was marked by the imposition of a second purifying dichotomy onto cenotes (refer to Chapter 6.4.). As the function became an issue that secured knowledge about past cultures and behavior, knowledge was acquired about cenotes as a means for determining whether they had served *utilitarian* or *ritual* purposes. However, as demonstrated in the analysis, this secondary opposition was arranged to take the form of a hierarchy (refer to Chapter 6.4.). This hierarchical opposition had assembled secure knowledge on caves and cenotes associated with utilitarian aspects such as habitation (caves), water procurement, mining, and extraction of various resources to the marginalization of ideological aspects.

When challenged by the emergent sub-discipline of cave archaeology during the Programmatic Period, the hierarchical opposition that was distinctive of the Intermediate Period was *overturned*. While the element of water in cenotes could not be excluded as important for serving purely domestic matters, several of these utilitarian and domestic

aspects mentioned in the last paragraph were challenged to such an extent that they were either abandoned or marginalized. Another interesting aspect was that material remains that traditionally indicated behavior related to domestic activities were interpreted within a ritual framework. Thus, ritualized water procurement, ritualized mining, and ritually utilized artifacts emerged as a result of the establishment of the *emic ch'en* as a purely ritual context. As pointed out in the analysis (refer to Chapter 7.4.), the ritual-domestic dichotomy has been reestablished as an inverted hierarchy. In fact, a series of additional oppositions have also been operative in the Programmatic Period. Amongst these are the oppositions between context and artifact, emic and etic, and continuity and disjunction.

In sum, these dichotomous schemes seem rather indispensible, despite assertions that ritual and domestic functions are not mutually exclusive. The major point however, is that these hierarchical oppositions are most effective as means for excluding sets of alternative interpretations and/or truths. Discourse formations organized around one side of these oppositions will inevitably undermine the other side.

8.3. A cumulative formation of knowledge about cenotes? A discussion

The issue as to whether or not the acquisition of knowledge about cenotes has essentially been cumulative is another complicated matter. From the analyses and discussions in the previous chapters, several obscuring aspects in the formation of knowledge pertaining to cave features have been illuminated. Above all, it is argued in the present study that the specific history of research, as conceived, authorized, and maintained within the sub-discipline of cave archaeology, is essentially a construction and a mechanism that folded cenotes into the formation of a new object designated as the *emic ch'en* (i.e., *cave features*). Notably, the ordering of the knowledge employed in the specific history of cave research, juxtaposed the cultural-historical knowledge about cenotes and caves during research-historical periods in which no apparent relation between the phenomena was indicated beyond the point of geological description in the analysis presented in this thesis. In addition to stabilizing this new object that consisted of a variety of cave formations, the movement assigned the emerging sub-discipline of cave archaeology a developmental and legitimizing history of cave research.

Given that the *emic ch'en* embedded cenotes, a whole series of *translations* of knowledge about any cave formation included in the *emic ch'en* onto cenotes was made possible. This

aspect alone makes it rather impossible to speak of the formation of knowledge concerning cenotes as merely cumulative.

In fact, in the work at hand it is argued that the process marked by the transition to the Programmatic Period can be characterized as a sort of *rupture* in the formation of knowledge pertaining to cenotes. Despite the fact that parts of the knowledge created in former periods are still valid, the Programmatic Period's establishment and configuration of a new repertoire that were lodged in a new but secure epistemological foundation marked a most distinctive transmutation of the formation of knowledge about cenotes (as well as caves). Moreover, the new repertoire and epistemological platform allowed the establishment of a *solid connection* between ethnography and Maya cave archaeology that has also supported a series of *translations* in the conception of cave formations like cenotes. By folding the ethnographic Maya into the network that forms and upholds caves and cenotes alike, another set of formerly unavailable interpretations have been made possible. Amongst the things that were made possible by the new repertoire, was the reinterpretation, that is to say, the *ritualization*, of a major body of the archaeological remnants. Knowledge about the ritual functions and religious meanings of these features has not merely been added to the knowledge created during the preceding periods – several elements were also cut off and excluded from the discourse. Thus, *it is precisely the sub-discipline of cave archaeology's establishment of a new epistemological foundation and context of justification for securing knowledge about cave features that characterize this rupture between the Intermediate and Programmatic Period*. This establishment has functioned to redirect statements towards the ritual nature of cave formations like cenotes. In the Foucaultian sense, a new *historical a priori* was established during the Programmatic Period.

Given this rupture, this thesis argues that the formation of knowledge pertaining to cenotes (and caves for that matter) has *not* been fundamentally cumulative. Rather, both the knowledge about cenotes and the formation of knowledge pertaining to cenotes are contingent to the present scientific context and the repertories that are available in such a context.

8.4. Concluding remarks – the contribution of this thesis to the study of cenotes

This thesis has contributed to an understanding of the formation of knowledge on cenotes and how the knowledge on the subject has changed. First and foremost, this is the first analysis of the entire history of archaeological research on cenotes. Although the sub-discipline of cave

archaeology has already established an authorized history of research, no attempt to study and analyze the history of research on cenotes as phenomena had been previously undertaken.

During this study, it has been demonstrated that the knowledge about cenotes was truly altered through the formation of cave archaeology as a sub-discipline of Maya archaeology during the Programmatic Period. Before this *programmatic turn* in the formation of knowledge regarding cenotes, the research dedicated to cenotes had no apparent directionality. Apart from the unique position represented by the Sacred Cenote, cenotes were *unstable* as ritual objects but *stable* as utilitarian water sources within the field of archaeology. The work at hand has contributed to a better understanding of this programmatic turn through the analysis of the *engineering* of the epistemological foundation and repertoire found in the sub-discipline of cave archaeology.

It is therefore conveyed that the greatest contribution of this thesis has come forth as a result of the analysis of the very architecture and describable design of the epistemological platform of the specialized sub-discipline of cave archaeology. One of the most interesting conclusions reached is the extent to which the process of establishing an epistemological foundation for the sub-discipline could be described, and how well this establishment has worked to redirect statements towards the production of knowledge on ritual cave formations like cenotes. As cenotes were shackled to the *emic ch'en*, the sub-discipline aimed to redirect research not only for caves but also for cenotes. Thus, the analysis has led to the understanding of the manner in which a process of definitional work has determined *actants*, *obligatory passage points*, and *identities* in a new and massive network of people, energies, and resources. By consolidating these entities' positions within the network with the aid of a series of devices, the epistemological platform was constructed, as well as a context of justification, a new repertoire, and a set of positions for the archaeological practice. By carving out positions that could realize this definitional work, it was also argued that a considerable element of power was involved in the process (refer to Chapter 7.4.).

It has become very clear that the question that was presented at the opening of this thesis regarding the distinction between cenotes and caves is above all a *research-historical question*. In fact, during this study it has been argued that through the introduction of the *emic ch'en* as a new object, it has become *more* difficult to distinguish caves from cenotes (refer to Chapter 7.1.). On the basis of the preceding chapters, this study can also provide a statement on the issue of Mesoamerican cultural continuity – since we have returned to this issue time

and again. In this regard, it may be said that many of the studies within the field of cave archaeology have *added* to a Mesoamerican cultural continuity – an aspect that differs to there existing continuity. Above all, the analysis has demonstrated that the issue of Mesoamerican cultural continuity is in fact another research-historical issue. Across a series of *more recent translations* the Mesoamerican cultural continuity has been established as a taken-for-granted scientific *dictum*. In other words, Mesoamerican cultural continuity acts as the implication rather than the actual reason that the controversy regarding ethnographic analogies has been settled. It is also quite obvious that the enrollment of the ethnographic Maya, whose identity was set to coincide with the *emic* study of sacred and religious landmarks such as caves and cenotes, has *strengthened* the thesis of continuity.

Additionally, this study has provided an alternative understanding to the history of cenote research prior to the emergence of cave archaeology and described the processes in detail by which the conditions of possibility for a new type of knowledge on cave features like cenotes were established through the programmatic turn of cave archaeology. Moreover, the analyses presented in the work at hand have gone far beyond the surface level of the Mesoamerican Cave Paradigm as described by Kieffer and Scott (refer to Chapter 7.3.) so that they could uncover a set of powerful devices that were designed and set in motion in order to establish the epistemological platform for cave archaeology.

Finally, this thesis has highlighted the importance of not only studying the formation of knowledge pertaining to a subject in its historical context but also the significance of following the formation of knowledge through a long span of historical transmutations. Only by stressing the historical dimension was it possible to uncover the strange links made between caves and cenotes in the authoritative history of research regarding cave features. Moreover, had the study focused on the discourse of the sub-discipline of cave archaeology and been based on the analysis of recent literature exclusively, we might have encountered a series of carefully sealed *black boxes* instead of being able to illuminate such things as the *translation* of Brady's (1989) statement regarding the ritual nature of caves (including cenotes) into a solid scientific fact.

8.5. Future perspectives

Finally, I leave the reader with my opinion regarding the current practices in cenote research by pointing out some future perspectives. I think it is important not to take this analysis as a mere critique of the direction that has been carved out for the formation of knowledge on

cenotes, but as an attempt to understand both the weaknesses and strengths in the current field through the examination of the formation of knowledge. Although there are many aspects that I find to be more negative about the current situation, there are also many positive aspects. Above all, and among the most positive aspects of the state of cenote research, I hope that this trend of increased research efforts, including publications of the results, will continue. There is certainly progress in that there is an increased interest in research on the cenotes – both above and under water.

Among the more negative aspects are the sometimes extreme reliance on ethnographic analogies and the overemphasis on the ritual nature of cave features (this aspect is in particular reference to *caves*) to the near exclusion of multiple other possible meanings. In that respect, I hope that the role of ethnography and its implications may seriously be assessed one more time. Although we might always struggle with the positioning and understanding of the role that ethnography plays in archaeology, I only hope to avoid experiencing a sort of "tyranny of the ethnographic record" (Wobst, 1978). Furthermore, I hope that the chronological as well as the geographical and cultural differences may be embraced above the similarities. One interesting approach might be to employ historical archaeology as a methodological approach as in the spirit of Frands Herschend (1997), which in essence includes, asking the (ethno)historical material and the archaeological material the same questions.

In the context of this analysis, I also hope that the difference between cenotes and caves may be reassessed. It is of particular interest to the author whether there might be any differences between open cenotes and covered cenotes, since the former are almost completely filled with water and the latter regularly have extensive dry surfaces. For me, one of the most intriguing questions regards whether the Maya obtained potable water from the cenotes in which they carried out human sacrifices, and if so, why?

Finally, as cenotes are watery places, it might have been interesting to integrate some of the knowledge that has been formed within water management studies (e.g., Lucero, 2006; Lucero & Fash, 2006b; Scarborough, 2003; Scarborough & Isaac, 1993). I suspect that the reason why cenotes have been studied so little by archaeologists that are interested in water management is partially explained by the fact that the definition of water management by and large excludes the study of "natural" phenomena such as cenotes: "Functionally, *water management* is society's interruption and redirection of the natural movement or collection of

water" (Scarborough, 2003: 39, see also Lucero & Fash, 2006a: 4). Although these studies tend to view water as a scarce resource within the tropical environment, a bridge between the notion of sacred geography and water management has apparently already been formed in Wendy Ashmore's proposition that "Subsistence resources are intrinsic parts of the sacred landscape" (Ashmore, 2009: 186).

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