Lauri Jokinen

Tracing a Transforming Landscape in South Western Benin
An Environmental History of a Collective Family Domain 1960-2016

UPPSALA
UNIVERSITET

Master’s thesis in Global Environmental History
Abstract


This master’s thesis discusses the environmental history of a collective family domain in South Western Benin Republic from 1960 to 2016. Research material was collected through fieldwork in 2014 and 2016 focusing mostly on collective and personal oral histories, and participatory map making. The results of the fieldwork were analysed through a relational theoretical view of landscape to find out whether transformations in the landscape between 1960 and 2016 could be related to the uptake of rice farming in the early 1970s. The conclusion is that while some transformations could be directly linked to the uptake of rice farming, a consideration of wider spatial and temporal scales shows that transformations in the research landscape are part of transformations on broader scales. The uptake of rice farming thus appears as a less dominant factor of transformations in the landscape when broader spatial and temporal scales are considered. The research also included experiments with co-creative fieldwork methodology, which broadened the created research material beyond the initial research focus and offered unique insights to the relation between people and the landscape in the research area.

Keywords: Environmental History, Deforestation, Landscape Transformation, Benin Republic, Dahomey Gap

Master’s thesis in Global Environmental History (60 credits), supervisor: Paul Lane, Defended and approved spring term 2017-02-06
© Lauri Jokinen
Department of Archaeology and Ancient History, Uppsala University, Box 626, 75126 Uppsala, Sweden
Acknowledgements

I would like to thank the whole Agbedonu family collective for making this thesis possible, and I would especially like to thank Mr Leon Dekadje for his commitment and enthusiasm. Mr Joseph Tehoungoue also showed interest in the research and I thank him for his assistance. I also wish to thank my wife Juliette and all of my family, both in Benin and Finland. Without their support I could not have finished this thesis. I greatly appreciate the dedication of my supervisors Professor Paul Lane and Anneli Ekblom throughout the process of creating this thesis. I wish to thank Professor Paul, Anneli and the whole staff at the Department of Archaeology and Ancient History at Uppsala University for welcoming us students among them as colleagues and supporting and inspiring us throughout our studies. I thank my fellow students in the Master’s Programme in Environmental History for their camaraderie and solidarity. I especially want to thank my classmate Mr Ghide Gebremichael for his unconditional friendship and support. Uppsala University has also financially supported me in this thesis work through a travel grant for which I am grateful. Finally, I would also like to thank Finnish taxpayers for funding my education.
Contents

Acknowledgements ......................................................................................................................... 4
List of Figures ........................................................................................................................................ 7
List of Abbreviations .......................................................................................................................... 8
Introduction .......................................................................................................................................... 9
  1.1. Where the Work Started ........................................................................................................... 9
  1.2. Introduction to the Research Area ............................................................................................. 10
    1.2.1 Locating the Research Area ................................................................................................. 10
    1.2.2. General Information and Statistics .................................................................................... 12
  1.3. Introduction to Relevant Scientific Literature .......................................................................... 12
    1.3.1. Landscape Change in Africa ............................................................................................... 12
    1.3.2. Landscape Change in Benin ............................................................................................... 14
    1.3.3. The Dahomey Gap ............................................................................................................. 15
    1.3.4. Ethnographic Introduction to Some Aspects of Hwatchi Culture ....................................... 16
    1.3.5. Other Relevant Sources ..................................................................................................... 17
The Research Question, Theoretical Background and Research Aims .................................................. 19
  2.1. Introducing the Research Question ............................................................................................. 19
  2.2. Theoretical Background ............................................................................................................. 19
    2.2.1. Temporality of the Landscape and Remembering ............................................................... 19
    2.2.2. From Change in Nature and Culture, to a Transforming Landscape .................................... 21
    2.2.3. Reconsidering Ingold .......................................................................................................... 23
  2.3. The Research Question and Research Aims ............................................................................. 23
Methodology ....................................................................................................................................... 25
  3.1. Exploratory Fieldwork of 2014 ................................................................................................. 25
  3.2. Fieldwork of 2016 .................................................................................................................... 26
    3.2.1. Collaboration with Mr Leon and his Family Members ........................................................ 26
    3.2.2. Research Design ............................................................................................................... 27
    3.2.3. Realising the Fieldwork .................................................................................................... 28
    3.2.4. Methods in the 2016 Fieldwork .......................................................................................... 29
  3.3. Co-Creation ............................................................................................................................... 31
    3.3.1. Co-Creation in Current Scientific Literature ..................................................................... 32
    3.3.2. Modernity/Coloniality ....................................................................................................... 34
Landscape of the Agbedonu Family Collective’s Domain .................................................................... 35
  4.1. Origins of the Agbedonu Family Collective ............................................................................. 35
  4.2. Environmental Changes .......................................................................................................... 36
    4.2.1. Vegetation ......................................................................................................................... 36
    4.2.2. Animals ............................................................................................................................. 38
    4.2.3. Water ................................................................................................................................. 40
    4.2.4. Soil/Land ........................................................................................................................... 41
  4.3. Spiritual Life / Religion ............................................................................................................ 42
    4.3.1. Origin of Vodun in the Domain ......................................................................................... 42
    4.3.2. General Findings about Vodun ....................................................................................... 43
    4.3.3. The Sacred Forest .......................................................................................................... 44
    4.3.4. Christianity ...................................................................................................................... 46
List of Figures

Figure 1: Location of Benin in West Africa p.9
Figure 2: Locations of Mono Department, Commune of Grand Popo, and Sazue Arrondissement p.10
Figure 3: Location of the Research Area within the Arrondissement of Sazue p.10
Figure 4: Ground Map of Domain 1960 p.36
Figure 5: Animal Remains at the Mortuary and Abandoned Cages p.38
Figure 6: Aspects of Spiritual Life p.44
Figure 7: Ground Map of Domain 1960 p.48
Figure 8: Ground Map of Domain 1972 p.49
Figure 9: Ground Map of Domain 1973 p.49
Figure 10: Ground Map of Domain 1992 p.50
Figure 11: Ground Map of Domain 2016 p.51
Figure 12: House Area 2nd Generation p.52
Figure 13: House Area 2016 p.53
Figure 14: Satellite Image of House Area 2016 p.53
Figure 15: Traces of Charcoal Making p.55
Figure 16: Remains of a Forge p.56
List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>Before Present</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>INSAE</td>
<td>Institute National de la Statistique et de l’Analyse Economique</td>
</tr>
<tr>
<td>MCD</td>
<td>Modernity/Coloniality/Decoloniality</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Governmental Organization</td>
</tr>
<tr>
<td>PPP</td>
<td>Purchasing Power Parity</td>
</tr>
<tr>
<td>RNIE</td>
<td>Route National Inter-États</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
</tbody>
</table>
Introduction

This Master's Thesis is the result of work going back to 2014 when I was first introduced by my brother-in-law to a farmer called Mr Leon in the village of Sazue in south western Benin Republic, and we had some recorded talks with him. In the course of the thesis I will explain how the work started, what its purposes became, how it was realised, how I have been making sense of the knowledge produced through this work, and what I have found this work could tell about what has been researched. To begin this introductory chapter I describe the beginning of the research work as I present a narrative composed from the results of the first interviews with Mr Leon. The introductory chapter then continues with general information about the context where the research is set. The second chapter presents the research question and research aims together with a discussion of the main influences on the theoretical basis of the research. The third chapter, on methods, describes how I planned to answer the research question and how that plan was realised in the form of a field study. The fourth and fifth chapters present the findings from the field study. The sixth chapter analyses the findings to see how the results can be meaningful and understood with reference to the theoretical basis, so that knowledge could be produced from those results in order to answer the research question. Finally, at the end of the sixth chapter I reflect on the entirety of the thesis work to see its end results, its successes and failures, and what could be drawn from the process.

1.1. Where the Work Started

During my second stay in South Western Benin, I became interested in some rice fields I had seen by the main coastal road Route National Inter-États (RNIE) 1, due to their large size compared to other fields of any crops I had seen in the area. I mentioned this to my brother-in-law and he said he could take me to meet some rice producers. We then went to meet a farmer called Mr Leon at his rice field, a fraction of the size of those fields I had seen before. Mr Leon told us about his rice farming, and we returned for a second visit where Mr Leon and one of his elder brothers told us about the history of rice farming in their collective family domain. Especially the story about the history of rice farming was so interesting to me that I thought it could become the topic of my master’s thesis. After returning to Europe and eventually Sweden, I refined the scope of my research and chose to focus on the history of Mr Leon and his family and specifically the landscape of their collective family domain. By ‘family domain’ I am referring to the land to which members of Mr Leon’s extended family have routine access; my use of the concept thus resembles, but is not identical to, the medieval notion of a demesne.

What most caught my attention in Mr Leon’s story was the history of rice farming on their collective family domain. According to Mr Leon, following encouragement by a foreign agricultural extension officer his father had arranged the clearing of a substantial area of forest on the family land in order to establish rice fields. At the same time knowledge about charcoal making had arrived with workers who came to fell the trees. According to Mr Leon this clearing of the forest and start of cutting trees in order to make charcoal eventually resulted in what he called the total deforestation of the present day. The history of the family domain and rice farming by Mr Leon’s family is presented in detail in chapters four and five.
From my university studies I was already aware that deforestation was a major topic in African environmental history, and I was interested to see how the case of Mr Leon and his family might relate to that existing body of scientific literature. Based on the knowledge that I had gained from those first visits to Mr Leon and his family, I formulated my research question and prepared the research design, both of which are introduced in more detail in the following chapters. As already mentioned, the main aim of the research is to understand transformations in the landscape since 1960, and the role of the uptake of rice farming in those transformations. The research question is based on a hypothesis that the uptake of rice farming has a central role in the transformations of the landscape. Before moving on to the research question it is important to consider the research area and some relevant scientific literature in a little more detail.

1.2. Introduction to the Research Area

Here I will provide a brief introduction to the research area, first locating the area with the help of maps, and then looking at some general information and statistics which are available mostly at the national level.

1.2.1 Locating the Research Area

The area of research is situated in the arrondissement of Sazue, which is a part of the commune of Grand Popo in the Mono department in south western Republic of Benin. Benin is a West African country neighboured by Nigeria to the East, Togo on its western border, and Burkina Faso and Niger in the North (Fig.1). Fig.2 shows the location of the Mono department in Benin, and the location of the commune of Grand Popo within the department, also highlighting the location of the arrondissement of Sazue within the Grand Popo commune, and Fig.3 approximates the extent of my research area on a map of the Sazue arrondissement.

![Figure 1. Location of Benin (shaded grey) in West Africa. Map modified by author, Original Map Copyright: d-maps.com, accessed at http://d-maps.com/m/africa/west/west09.gif](image-url)
Figure 2. Locations of Mono Department, Commune of Grand Popo, and Sazue Arrondissement. Map Copyright: Institut Geographique National Benin and Geoimage Solutions Inc, access granted by Mairie du Grand Popo.

Figure 3. Location of my Research Area within the Arrondissement of Sazue. Map copyright Institut Géographique National Benin and Geoimage Solutions Inc, access granted by Mairie du Grand Popo.
1.2.2. General Information and Statistics

It is useful to look at some general information about Benin as a country, and relevant statistics, in order to have some context for the more specific topical introductions that will follow. The Republic of Benin was first established as an independent state under the name of Dahomey in 1960 (Lansford 2015, p.145). Before independence Dahomey was a French colony, Behanzin, the last king of the Dahomey kingdom having been deposed by the French in 1900 (Seely 2009, p.30). At its height, the kingdom of Dahomey covered much of what is today west and central Benin (Seely 2009, p.30). Following independence Dahomey suffered from political instability and there were five military coups d’état in 12 years (Lansford 2015, p.146). The 1972 military coup brought to power Mathieu Kérékou, and in 1974 Marxist Leninist rhetoric was adopted and Dahomey was renamed the People’s Republic of Benin. Kérékou ruled until a National Conference was held in 1990, which resulted in the presidential elections of 1991 where Nicéphore Soglo was elected president (Seely 2009, pp. 30-33, 63). Kérékou was later elected president in 1996, and re-elected for a second term in 2001 (Lansford 2015, p.147). Former head of the West African Development Bank Boni Yayi served as president from 2006 until 2016. During the fieldwork I also saw campaigning for the 2016 presidential elections, where businessman Patrice Talon was elected president (Central Intelligence Agency 2017).

Benin has an area of 112 622 square kilometres (Central Intelligence Agency 2017), and according to the final results of the 2013 census published by the Institute National de la Statistique et de l’Analyse Economique (INSAE), the national institute for statistics and economical analysis, the population of Benin is 10 008 749 people (INSAE 2015, p.10). The arrondissement of Sazue, where the research area is located has a population of 4445, and the village of Sazue, a smaller unit within the arrondissement, which contains but is not limited to the research area, has a population of 1370 people (INSAE 2016, p.58). Benin has a purchasing power parity (PPP) adjusted gross domestic product (GDP) per capita of US$ 2056 (The World Bank 2017), and according to the latest available data 63.5 percent of the population are living on less than one PPP adjusted dollar a day (PNUD Bénin 2016, p.45). The economy of Benin is dominated by agriculture with cotton as the main export crop (Lansford 2015, p.146), and according to data from 2010, 45 percent of total employment was in agriculture (The World Bank 2017). Major religions in Benin with their population shares according to 2013 estimates include Islam 27.7%, Catholic 25.5%, Protestant 13.5%, and Vodun 11.6% (Central Intelligence Agency 2017).

1.3. Introduction to Relevant Scientific Literature

1.3.1. Landscape Change in Africa

There is a considerable body of research focusing on landscape change in Africa, and I would see that literature as the main scientific context for this thesis. In this section I discuss some of the scholarly works I consider to be most relevant to debates concerning historical analysis of landscape change in Africa. The main themes to be discussed are reconsidering established and taken for granted narratives, and considering landscape change from local scales and perspectives.

As will be apparent from the findings presented in chapters four and five, perceived deforestation seems to be an important part of how especially Mr Leon describes change in the researched landscape. Narratives regarding deforestation clearly have a central role in the work of James Fairhead and Melissa Leach, whose publications from the late 1990s Munro and van der Horst (2016, p.706) describe as seminal. In their 1996 book titled Misreading the African Landscape Fairhead and Leach discuss their research in the Kissidougou prefecture of the West African
country of Guinée. The findings from the research forced them early on in their work to question the rather well established narrative of increasingly diminishing forest, of which only relics around the villages remain. However, as Fairhead and Leach present in a 1995 article based on the same research as their book, they found that the forest islands around the villages, instead of being relics of a destroyed forest, have been created from savanna by the local population.

As their findings from archival material, aerial photographs and satellite images, and especially accounts from the local population forced Fairhead and Leach (1996) to question the narrative of deforestation in the case of Kissidougou, they were also able to identify larger discourses and power structures that can be seen to have created similar deforestation narratives elsewhere in Africa (see also McCann 1999; Maddox, Giblin and Kimambo 1996) and especially in the forest-savanna mosaic zone of West Africa. Indeed, in a 1996 book edited by Leach and Robin Mearns titled *The Lie of the Land: Challenging Received wisdom on the African Environment*, various authors focus on reviewing and challenging what Leach and Mearns (1996) call environmental orthodoxies, covering cases from various locations in the different regions of Africa. I would say that an overarching environmental orthodoxy applied to all of (sub-Saharan) Africa, derived from Leach and Mearns (1996), seems to be one of environmental destruction, desertification, degradation of farmland and perhaps above all deforestation. Fairhead and Leach (1996) trace these narratives of environmental destruction back to their colonial roots (Fairhead and Leach 1996, p.14), but also show how the environmental degradation discourse has become an important part of local and regional power struggles in Kissidougou, and especially national environmental policy in Guinée (Fairhead and Leach 1996, pp.24, 278).

There is an important relation to the theoretical background introduced in chapter two, especially the works of Hinchliffe (2007) and Rojas (2016), as Fairhead and Leach (1996, pp.5-7, 273) write about the importance of the divide and opposition between nature and culture in western scientific thinking for creating and upholding the narrative of an extensive pristine natural forest decimated by human activity (culture). Another common argument that Fairhead and Leach (1996, pp.271-2) found in literature on African environmental change is that in the past, traditional social structures in local communities would have worked to maintain the extensive forest cover, but recent exponential population growth and breakdown of traditional systems governing resource use have lead to uncontrolled deforestation and environmental degradation. These I would say are some of the main arguments that Fairhead and Leach set out to question and disprove in their works (see also Giles-Vernick 2002 on questioning established narratives). Writing in 2016 Munro and van der Horst still found the main arguments of Fairhead and Leach valid, although based on their results from focusing on the specific case of Sierra Leone Munro and van der Horst found that Fairhead and Leach’s dismissal of previous ideas might be too absolute.

I would see that the conclusions of Nyerges (1996), also writing about a region in Sierra Leone, support the questioning of established narratives regarding environmental change in West Africa, and Nyerges (1996) also refers to the research by Fairhead and Leach in Kissidougou. To me the main contribution of Nyerges (1996, pp.139-40) is that he shows environmental change in his research area during the last five hundred years and more, as not linear or exponential change in a single direction from an original equilibrium, but as a process of change with multiple local trajectories. Quoting terms used by Fairhead and Leach (1994) Nyerges (1996, p.140) states that “the vegetation and ecology of the western African region needs to be understood in terms of ‘a history of continual transition’ and as ‘the unique outcomes of particular histories’”, thus rejecting the established sweeping conclusions regarding the region and in fact the continent. In this thesis I am as well looking at the (very) particular history of a collective family domain. However, before moving to the level of the specific research area I will continue discussing landscape- and environmental change with specific reference to Benin.
1.3.2. Landscape Change in Benin

The established narrative of extensive and continuous deforestation in West Africa discussed above can certainly be found also in literature focusing on Benin at the national scale. According to Gornitz and NASA (1985, p.316) Zon and Sparhawk reported in 1923 “a 50 mile wide coastal plan covered by around 1.12 million ha of dense tropical forest”, and Aubreville found in 1937 that the coastal forests of Benin had nearly all disappeared. Gornitz and NASA (1985, p.287) themselves refer to Benin as one example of “extremely rapid deforestation of the tropical forest zone”. Gornitz and NASA (1985, p.316) refer also to Persson (1974) who found that Benin had 200,000 hectares of closed forest in 1971. The 1981 report on tropical forest resources by the Food and Agriculture Organization of the United Nations (FAO) states that in Benin the impoverishment of woody vegetation, essentially due to pressure from shifting cultivation, overgrazing and bush fires, continues at an inexorable manner. Also charcoal making is mentioned as one cause of deforestation (FAO 1981). The area covered by closed broadleaved forests in 1980 is estimated at 47,000 hectares (FAO 1981), a dramatic difference to the estimates of Persson.

A 2001 assessment of the worlds remaining closed forests based on satellite data, by the United Nations Environment Programme (UNEP) found that Benin had 1,658,600 hectares of closed forest (density > 40%) in 1995 (UNEP 2001, p.41). This great difference to the other estimates most likely has to with differing methodologies and most importantly different definitions of closed forest. However, the report does state that “FAO figures seem to underestimate the extent of the global forests when compared to other assessments” (UNEP 2001, p.32). According to FAO reports Benin had an annual deforestation rate of 1.3% between 1981 and 1990 (FAO 1993), 2.3% between 1990 and 2000 (FAO 2001), and 2.5% between 2000 and 2005 (FAO 2005).

In their 1998 book Reframing Deforestation Fairhead and Leach dedicate one chapter to Benin. They find the established narrative of a once extensive closed tropical forest in the coastal and southern region progressively destroyed and degraded by human action equally questionable as in the case of Kissidougou in Guinée. Reviewing historical sources starting from the 16th century Fairhead and Leach question modern interpretations of those materials and find many persistent assumptions about change in forest cover in Benin to lack reasoning. There are three main arguments that Fairhead and Leach (1998, p.102) review and find groundless: “(a) the idea that trees in their forest form grew in forests; (b) the idea that islands of forests are relics of a larger expanse of forest; and (c) the idea that bush fallow is degraded forest”.

The first idea Fairhead and Leach (1998, p.102) disprove by referring to research that shows the species of trees cited in the literature can grow into a similar form both in the forest and in the open. Fairhead Leach argue that forest islands in Benin, seen according to the second conventional idea as relics of the once extensive forest, are instead results of human action. According to Fairhead and Leach (1998, pp.103-10) many if not most of these forest islands are likely to have originated from trees planted around villages as protection and for spiritual and other purposes, and are growing on soils enriched by the organic materials associated with human settlement. Thus these forest islands, according to Fairhead and Leach are more likely, also in the light of findings from elsewhere in West Africa (Sheridan and Nyamweru 2008), to have been created by human activity, rather than being the last remains of a larger forest. In more recent works Frausin et al. (2014) and Fraser et al. (2014) have confirmed connections between daily practices of people in rural Sierra Leone and Guinea, and the forming of rich soils called African Dark Earths, and these soils were shown to benefit tree cropping among other production activities. Also the idea of bush fallow being degraded forest is turned on its head by Fairhead and Leach (1998, pp.111), as they suggest that “savannas might have ceded to a forest vegetation” (see also .
According to Fairhead and Leach (1998, p.111) “all analysts of Benin’s vegetation stress unre- lenting forest decline”, apart from their analysis I suppose. Based on my reading of Fairhead and Leach (1994, 1995, 1996, 1998) and the other literature on landscape change in West Africa and Benin more specifically, I would say that the assumption of an extensive closed forest having existed at some point in time is the most fundamental basis for all the narratives regarding rampant deforestation in West Africa, including Benin. Obviously, if a vast forest never existed during the time period in consideration, be it since the year 1900 or 1500 depending on the author, it is not possible to construct a narrative of massive deforestation. This is why it is profound that Fairhead and Leach (1998) even question the existence during historical times of a once extensive closed tropical forest in the coastal and southern region of Benin. This discussion is certainly part of a slightly wider topic in research on landscape change focusing on what is called the Dahomey Gap.

1.3.3. The Dahomey Gap

The Southern regions of Benin are part of the Dahomey Gap, “a savanna corridor interrupting the zonal West African rain forest” (Salzmann and Hoelzmann 2005, p.190) creating a gap between the Central- and Western African rainforests. According to Sayers et al. (1992, p.97) the gap “may result directly from the dry climate (cold sea currents create an area of low rainfall along the 150 km wide coastline), or possibly from the concentration of human activity in an area where the drier conditions favour agriculture”.

Gayibor (1986, p.36) claims that it seems likely that the forest extending from Liberia to Nigeria would have originally also covered Togo and Bénin. Gayibor (1986, p.13) interprets a historical source from 1588 as evidence that a dense coastal forest was still present at that time. He further argues (Gayibor, 1986, p.36) that due to climatic change, especially reduced rainfall, the forest in this area became degraded and more vulnerable to further climatic change and human activity. In Gayibor’s (1986, p.27) view it is the fragility of the forest cover that was the main reason for savannisation, since neighbouring regions such as Asante, Yoruba and Ibo, have not lost their forests that have rapidly replenished despite strong demographic pressure.

Dupont and Weinelt (1996, p.273) analysed “[p]ollen and spores from a deep-sea core located west of the Niger Delta”, and recorded “an uninterrupted area of lowland rain forest in West Africa from Guinea to Cameroon during the last Interglacial and the early Holocene”. Dupont and Weinelt (1996, p.286) attribute the observed decrease in rainforest and woodland and the increase in Elaieis guineensis (oil palm) in the surface samples, representing the last one or two centuries, to human activity, reflecting “the impact of modern agriculture on the vegetation of Western Africa”. For their article Salzmann and Hoelzmann (2005, p.191) looked at results from a pollen analysis from “Lac Sélé ... about 90 km north of the coast of southern Benin”. According to Salzmann and Hoelzmann (2005, p.190) “[t]he palaeorecord from Lac Sélé suggests that the role of humans in shaping the West African savannas has been overestimated”. The authors are confident that the Dahomey Gap and spread of the oil palm can now be attributed to climatic conditions rather than human impact (Salzmann and Hoelzmann 2005, p.190), in rather direct opposition to the findings of Dupont and Weinelt (1996).

According to Salzmann and Hoelzmann (2005, p.190) “a semi-evergreen rainforest” prevailed in Benin between 8400 and 4500 years before present (BP), but abrupt climatic changes resulting in drier conditions between 4500 and 3400 BP led to the rain forest transforming into Sudano-Guinean savannas. A change towards wetter conditions between 3300 and 1100 BP brought about a forest-savanna mosaic rich in “pioneer tree taxa including the oil palm Elaieis guineensis” (Salzmann and Hoelzmann 2005, p.190). Salzmann and Hoelzmann (2005, p.190) again observed that after 1100 BP drier conditions transformed the landscape into the open savanna found today. In a recent study, Demenou et al. (2016) researched the genetic origins of Distey-
monanthus benthamianus (African or yellow satinwood), a deciduous tree that occurs widely across tropical West Africa, in the Dahomey Gap area, and referred to the findings of Salzmann and Hoelzmann (2005). The authors found it likely that climatic change, the dry period between 4500 BP and 3400 BP observed by Salzmann and Hoelzmann (2005), reduced forest cover in the Dahomey Gap and resulted in the distinct genetic populations they observed in their study (De-menou et al. 2016, p.1029).

The findings of Salzmann and Hoelzmann (2005) (see also Vincens, et al. 1999; Lézine, et al. 2013; Maley 2001) make a very strong case against the assumption of the existence of an extensive closed forest in the Southern regions of Benin during historical times, discussed in section 1.4.2. This gives added weight to the criticisms of Fairhead and Leach (1998) regarding the established narratives on Benin’s forest history. It is therefore crucial to pay attention to this understanding established here, both regarding established narratives and their critique, as well as the latest findings on change in vegetation cover in Benin as I analyse the findings from the field-work in chapter six. However, vegetation change is not the only relevant topic in existing scholarly literature that needs to be covered to support the analysis of research findings.

1.3.4. Ethnographic Introduction to Some Aspects of Hwatchi Culture

This section provides a brief ethnographic introduction to the Hwatchi (alternatively Ouatchi or Watchi) based on Klaus Hamberger’s (2011) book La parenté vodou. Other relevant ethnographic and anthropological studies of peoples in Southern Benin and Togo include, for example, work by Roberto Pazzi (1968, 1979a, 1979b, 1984) and Albert de Surgy (1975, 1988, 1994, 2004) but I rely exclusively on Hamberger’s work (2011) and his coverage of three topics: kinship, origin stories and Vodun, since this thesis is not predominantly an ethnographic study.

Hamberger (2011, p.23) describes the Hwatchi as a patrilocal society where land is inherited through the paternal line, whereas the maternal line functions as a community of defence and mutual support and joint responsibility. The divide between patrilineal and matrilineal societies is artificial according to Hamberger (2011, p.22), and he sees matrilineal and patrilineal kinship as tools that are used in West African societies simultaneously and in varying combinations. Hamberger (2011, p.21) sees the symbolic logic of the Hwatchi as constructed through dichotomies of paternal and maternal relations, and the most fundamental common denominator of these symbolisms is the knowledge of how to have children. As the basis of the whole symbolic logic, dichotomies of the paternal and maternal are not limited to the biological, and extend to every aspect of social organisation from labour and religion to architecture (Hamberger 2011). In terms of heritage, land and other immobile property is inherited via the paternal line, whereas mobile possessions are passed down through the maternal line, at least, this was the case historically. (Hamberger 2011, p.23).

What Hamberger (2011, p.23) calls ‘parenté’, which I translate as ‘kinship’ or ‘relation’ in English, is described in terms of being of the same father or same mother. As mentioned above, in the Hwatchi symbolic logic the dichotomies of parental and maternal are not limited to the biological, and being of the same mother or father is not understood only in terms of genealogy. Being of the same father, in addition to sharing a common male ancestor, is also associated with co residence and spatial proximity, and being of the same mother has a wider connotation of joint responsibility as stated above. Therefore it is possible that two people who live in close proximity, but are not genealogically related, can be referred to as being of the same father. Likewise two people who are not related, but are for example very close friends, might be referred to as being of the same mother (Hamberger 2011, pp.22-25). Hamberger (2011, p.69) sees kinship for the Hwatchi not in terms of a system, but of a logic. In this logic maternal and paternal are not to be seen as two particular relations, but two ways to think the same relation, under the aspect of contiguity or the aspect of substitution.
For the purposes of this thesis, when I write about Vodun I am first and foremost referring to Vodun as individual beings and I am less focused on Vodun as a religion or belief system. According to Hamberger (2011 p.316) unlike what translating Vodun as ‘divinity’ would imply, the Vodun do not inhabit a world separate from the world of humans. A Vodun is a physical being that has a specific place, even if not permanently then at least for a time, since a Vodun can also move. Hamberger (2011, p.316) sees this localisation as setting the Vodun apart from God, ‘Mawu’ in the Hwatchi language, and the spirits of the dead, as these cannot be situated within space and time. Vodun on the other hand can always be situated, and also often have to be situated in order to be identified. This is because most individual Vodun are not named, at least not publically, apart from according to the generic name of Vodun and the place where they are situated. For example, one could speak of the Heviosso at the house of the Agbedonu family. According to Hamberger (2011, p.317) after long trying to establish a classification of the different Vodun, a pantheon, many anthropologists have come to realise that Vodun cannot be classified into ideal categories. Rather, Hamberger (2011, p.317) highlights the necessity of understanding Vodun through their individuality, and physicality, their embeddedness in time and space.

The physicality of Vodun and their connection to place is perhaps the most relevant aspect found in Hamberger’s (2011) work for this study. Hamberger (2011) also discusses aspects such as the typical physical compositions of different categories of Vodun, their diets, and especially the networks of relation where both Vodun and humans are embedded, and the interactions between humans and Vodun. I want to also point out that according to Hamberger (2011, p.319) a Vodun cannot exist without humans. Or more moderately put, a Vodun cannot act without responding to, or addressing a human action.

To conclude this brief introduction to certain aspects of Hwatchi culture I refer to origin stories as presented by Hamberger (2011). As a part of his fieldwork Hamberger collected origin stories from the different families in his research area, all resembling, and some very similar to the origin story presented in section 4.1. Hamberger (2011, p.84) refers to the story about the city state of Notsie, which was ruled by the evil tyrant Agokoli who had imprisoned his people with a huge earthen wall. The different Ewe peoples, including the Hwatchi, often in their oral histories trace their origins to an escape from Notsie, as do some of the Hwatchi families that Hamberger worked with. There is an officialised version of this story taught in schools in Togo, and I would say that it is partly why Hamberger (2011, pp.83-4) discusses it although many of the origin stories he collected from families either make no mention of Agokoli, or the escape from Notsie has a minor role in the story. Gayibor (1984) offers a more profound discussion on the story of Agokoli and its apparently recent popularisation in the 1970s.

1.3.5. Other Relevant Sources

In this section I briefly discuss various sources relevant for the analysis of the project’s findings. These cover four different topics: historical change in exports, ironworking, perceptions of climate change and flooding of the Mono River.

Manning (1982) has documented the economic history of Dahomey between 1640 and 1960, and it is clear from his work that throughout this period Dahomey had significant connections to the global market. Between 1640 and 1860, slave exports dominated Dahomean foreign trade, and as the slave market ceased to exist, agricultural exports, mainly palm kernels and palm oil, took over. According to 2015 data from the World Trade Organization cotton is now the top exported product by value, with ‘palm oil and its fractions’ at less than 7% of the export value of cotton (World Trade Organization, 2017).

Ironworking is mentioned in the findings in section 5.4.2. Archaeological research has documented ample evidence of iron production and ironworking being independently invented in
West Africa by 3300 BP (Killick 2004, p.110). Sites which point to industrial scale production volumes have been discovered, and precolonial West African iron production is known to have supplied extensive trade networks (Warnier and Fowler 1979; de Barros 1986; 1988, Killick 2015), with also European merchants trading iron along the coast (Nyerges 1996, p.133). The decline of West African iron production has conventionally been attributed to an inability to compete with European imports (Goucher 1981, p.179). However, Goucher (1981) points to the importance of considering the environmental impacts from the fuelwood needs of large scale iron production operations. In Goucher’s (1981) view deforestation due to climatic change and exploitation of forest resources were crucial factors that lead to the decline of West African iron production. Also Nyerges (1996, p.134) and Bayon et al. (2012) make connections between iron production and deforestation in West and Central Africa respectively.

Sanchez et al. (2012) surveyed local communities’ perception of climate change in Benin, and their findings show that in the South of the country respondents reported changes and increased unpredictability of rain patterns and an increase in destructive floods. Tree loss was the most commonly cited explanation of the observed changes, with God as the second most common (Sanchez et al. 2012, p.122). According to Sanchez et al. (2012, p.122) the participants in the research did not mention climate change, and in general perceived climate as something that was beyond their influence.

Ago et al. (2005) studied the impact of the Nangbeto hydroelectric dam, constructed in 1987, on flooding of the Mono River, almost 120 kilometres north from my research area. In their conclusions Ago et al. (2005, p.11) find that the increased magnitude and frequency of risk of floods, and especially increased damages from floods cannot be connected to the hydroelectric dam. Instead, Ago et al. (2005, p.11) point to increased rainfall since the late 1980s, anthropic pressures and population growth. As examples of anthropic factors Ago et al. (2005, p.11) mention soil degradation, deforestation of riverbanks and floodplains, increase in cultivated areas, and increase of habitation in non-constructible areas. Amoussou et al. (2012, p.805) on the other hand found that diminished rains in the 1970s and 1980s correlated with “deficits of flow, and consequently deficit in net discharge”. With only a minor increase in rainfall of 2% from 1988 to 2000 when compared to 1961-1987, an excess flow of 37% on the Mono was calculated. The nearby Couffo river where there are no dams experienced no surplus however, pointing towards the significance of the Nangbeto dam in explaining the increase of discharge measured on the Mono River (Amoussou et al. 2012).

This chapter recounted the start of the research work and the inspiration for the project. My research area was then introduced with the help of maps, general statistics and historical information. The chapter continued with an introduction to scholarly literature on landscape change in Africa and Benin specifically, with also a section on the Dahomey Gap, and an ethnographic introduction to certain aspects of Hwachtchi culture based on Hamberger (2011). As a final section, references to literature on historical change in exports, ironworking, perceptions on climate change and the flooding of the Mono River were presented. The following chapter focuses on the research question and theoretical background of the study and subsequent chapters then present findings from the fieldwork. In the final chapter the findings are analysed and conclusions are presented.
The Research Question, Theoretical Background and Research Aims

In this chapter I will briefly introduce the research question, and then move on to presenting and discussing the theoretical background for this research. After establishing the theoretical frame, I return to the research question in order to present how the research aims were derived from relating the research question to the theoretical background.

2.1. Introducing the Research Question

Based on the two talks with Mr Leon and his elder brother, and the theoretical literature that I present below, I have formulated my research questions as follows:

1. What kind of transformations in the landscape where Mr Leon’s family dwell can be traced since 1960?
2. Can those transformations be related to the uptake of rice farming?
3. If so, then how?

These three questions are interlinked and depend on each other. The aim of the first question is to gain an understanding of the landscape’s transformation as a whole. The second question focuses on the importance of the specific event of the uptake of rice farming for the transformation of the landscape, and the third question looks into the specific relations that connect the uptake of rice farming to transformations in the landscape. The fieldwork that was realised as a part of this research focused on producing material that could answer the first question. The research design of the fieldwork is presented in chapter three, and the findings from the fieldwork are presented in chapters four and five. In chapter six I analyse the findings and seek answers to the second and third questions. I will not discuss the research question here beyond this brief introduction. I return to discussing the research question at the end of this chapter, and in chapters three and six. For now, I will focus on establishing a theoretical background for this research, which will help to define the most important concepts used, and to situate this research within a wider body of theoretical literature regarding the study of landscape transformation.

2.2. Theoretical Background

2.2.1. Temporality of the Landscape and Remembering

The focus of this study is on landscape change, and for the theoretical conception of landscape in this work I draw heavily from the seminal article “Temporality of the Landscape” by Tim Ingold (1993). In his article Ingold aims to work towards an understanding of landscape that could bring closer together the disciplines of archaeology and anthropology, and bridge the gap between what Ingold (1993, p.152) describes as the naturalistic and culturalistic views of landscape. This effort to work beyond the conceptual divide between nature and culture is very important for my own study, as analysis of my material clearly requires an inclusive conception of landscape that covers what might more conventionally be seen as cultural and natural aspects of the landscape,
When discussing temporality, Ingold (1993, p.157) likewise wants to erase a separation between two concepts, chronology and history. Ingold (1993, p.157) sees separating chronology and history as an opposition between a system of dating (chronology) and a series of events (history). Temporality, in Ingold’s (1993, p.157) conceptualisation combines chronology and history. Through the concept of temporality time is seen less as an abstract system of measurement, and more as being “immanent in the passage of events” (Ingold 1993, p.157) and events are not independent of each other separated into chronological order, but all events retain something from the past and contain expectations for the future. According to Ingold (1993, p.57) from the perspective of temporality historicity and chronology “merge in the experience of those who, in their activities, carry forward the process of social life”. Collectively, these activities that comprise and carry forward the process of social life make up what Ingold (1993, p.157) calls taskscape.

Taskscape could arguably be seen as a cultural aspect, it is the activities and the social organization of people as they are physically present and performed in the landscape. However, through highlighting that social organization of people is not something separate from the landscape, by refusing the separation of inner and outer worlds, Ingold (1993, p.154) manages to dissolve the nature culture divide. In my view of Ingold’s theory, landscape and taskscape should not be seen as being on an equal level, since taskscape is contained within the totality of the landscape. Taskscape to me is a concept that helps to place the temporality and cyclicity of transforming social organization within the landscape, along with those cycles and transformations conventionally seen as natural ones, such as planetary, climatic, and geological cycles.

Ingold (1993, p.158) writes that “the taskscape is to labour what landscape is to land”. Based on my reading of Ingold, I would see land and labour as things that can be measured; land in hectares and labour in value, whereas landscape and taskscape cannot be measured. Landscape is the ensemble of related features that contains all units of land that might be measured. Likewise, taskscape is the ensemble of related tasks, containing all the labour that might be measured as value. For practical reasons we might make a spatial delimitation and call it ‘a landscape’, as has been done when choosing the research area in this study. This delimitation is still arbitrary from a theoretical point of view, and the features and taskscape of the designated research area remain related to those of the totality of landscape.

Ingold’s (1993) theory provides the basis for how I see that the history of a landscape can be researched. If the present forms of landscape and taskscape are considered to retain something from the past, then it should be possible to make conclusions about past transformations of the landscape from studying its present forms and taskscape. I would say Connerton (1989, p.13) considers the same issue when he states that “what the historian deals with are traces”. In this study, the main focus is on the memories and perceptions of Mr Leon and his family members, more than traces in the current forms of the landscape. I consider memories and perceptions as being part of the taskscape, since remembering could be viewed as a social activity, especially if we think about remembering in terms of social memory, as defined by Connerton (1989).

I connect remembering as an activity to the taskscape with the help of Connerton (1989, p.4) who sees remembering as happening through performances. In his approach Connerton (1989, p.4) brings together recollection and bodies, anchoring in my view remembering to the physical reality of the landscape and the activities of the taskscape. Much of the material from the field study is based on narratives related to me by Mr Leon and his family members, and Connerton (1989, p.17) describes narrative histories as a “feature of all communal memory”. It should be noted, however, that for various reasons in this project a very limited sample of people relative to
the actual number of family members residing in the family domain participated in the research. Based on Connerton (1989, p.17) I would say that there is still a possibility that the narratives related to me by participants in the research might be somewhat conditioned by the wider family community, even if not always representative of it. This is because as Connerton (1989, p.17) argues, in a community such as a small village (like the research area of this study), “individuals remember in common” to a high degree.

This is in the very basic form the theoretical premise to the thesis. Landscape in the present retains something from the past in its forms and taskscape, and the individual memories of a person, or the collective memory of a community, that dwells in the landscape can be explored in order to make assumptions about the history of the landscape’s transformation. In the following section I expand on some related issues in order to create a robust framework to support the theoretical premise presented above. In particular it is necessary to establish how a community and the landscape in which they live are related so that transformation of the landscape would leave observable traces in a ‘communal memory’. Furthermore, a more detailed understanding of the relationship between change and retention in the transformation of the landscape is required if I wish to make the claim that a personal or collective memory can retain something that could allow an external observer to draw some conclusions about the landscape’s history.

2.2.2. From Change in Nature and Culture, to a Transforming Landscape

If I am to assume that traces in the sociality of human activity (taskscape), more precisely memories, can tell us something about the history of the landscape as a whole, then it is necessary to establish the relation between social organization and the rest of landscape. Here I will initially refer to Marx, through his discussion of the relation between the concepts of nature and labour. Inglis (2012, p.32) states that in Marx’s method of historical materialism the natural world, as in material conditions, is the primary influence and condition on human life. According to Wolf (1982, p.74) Marx saw a difference between labour and work. Work is to Marx simply activity where energy is expended to produce energy, whereas “labour is always social, for it is always mobilized and deployed by an organized social plurality” (Wolf 1982, p.74). Ingold’s (1993) concept of taskscape refers in my view to the ensemble of all the related activities that carry on social life, and therefore I would say all work, and therefore also labour is included in the taskscape. Still, it is important to note again that the concepts of taskscape and labour are not interchangeable. Labour is work measured in value, “subsumed under the common denominator of money” (Wolf 1982, p.74), whereas taskscape is not concerned with value but instead with the “rhythmic, patterned social interaction” (Hicks, 2016) that is part of the transformation of landscape.

In Marx’s (1976 [1867]) theory on creation of surplus value he discusses labour, and it is, according to my interpretation, specifically through labour that the relation between social organization and the rest of the landscape can be established. In the first volume of the 1976 English translation of Capital Marx (1976, p.283) states: “Labour is, first of all, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature”. This metabolism is the foundation to how I will establish the relation between social organization and the rest of landscape. In the previous quote the divide between man and nature, or culture and nature, is very apparent. However, I would argue that the stretch from Marx’s theory to Ingold’s, where the nature-culture divide is dispensed with, is not too wide and can be overcome. Marx (1976, p.283) continues on the relation of man and nature like this:

“He [(man)] confronts the materials of nature as a force of nature. He sets in motion the natural forces which belong to his own body, his arms, legs, head and hands, in order to appropriate the materials of nature in a form adapted to his own needs. Through this movement he acts upon external nature and changes it, and in this way he simultaneously changes his own nature”.

21
In this passage the connection between social organization and landscape is apparent to me, but it requires that where Marx writes about nature we think about landscape, and where Marx writes about man we think about social organization. In this way a relation is established, when social organization acts upon landscape, as one of the forces in landscape, in order to recreate itself. As social organization acts upon the landscape, the landscape is transformed, and at the same time social organization as a part of the landscape is transformed as well.

The problem of the nature-culture divide still remains, since even though Marx (1976) can be seen to consider the human body as a force of nature, and man’s nature being changed as a result of change in external nature, nature remains exactly that, external. It seems then that to Marx man is somewhat external to his body and his nature, or rather that in the capitalist mode of production these divisions are created through alienation. According to Ollmann’s (1971, p.47) interpretation of Marx’s theory of alienation, the unity of reality is broken into separate spheres through alienation, and when an individual’s relations to nature and society are removed from their “real context” those relations are distorted. The division between man and nature also reflects the one between mind and body, or between culture and nature, a divide that according to Rojas (2016, p.372) “separates the subject that knows from the object to be known”. So even though with the help of Marx (1976) it is possible to establish a relation between social organization and the rest of landscape, I still have not been able to establish social organization as a part of landscape.

Ingold (1993) wants to join nature and culture within the concept of landscape as a totality, but the conventional separation between nature and culture seems to be long lived, as for example Hinchliffe (2007) and Rojas (2016) still have to question the nature-culture divide. Rojas (2016, pp.371-2) criticizes the nature-culture divide as a foundation for the colonial logic of modernity that places “moderns” (Westerners) in a justified position of hegemony over non-moderns (non-Westerners). An important part of this thesis work has been to explore means to overcome conventional scientific views and practices that reproduce such hegemonies, and I will discuss this issue more in the next chapter in section 3.3. In order to overcome the theoretical nature-culture divide, I now turn to work by the geographer Steven Hinchliffe (2007).

In his 2007 book Geographies of Nature Steven Hinchliffe wants to salvage the concept of nature from apparent irrelevance through rejecting essential categories and instead working through an idea of hybridity. Hinchliffe (2007, pp. 8-9) proposes looking at the relation of nature and society through a perspective of co-production, where nature and culture make one another. Hinchliffe (2007, p.53) rejects the idea of essence, meaning that there cannot be ‘pure’ nature or culture. Instead Hinchliffe (2007) places both nature and culture inside a hybrid geography of difference, where being is relational and no essential categories exist. However, as Hinchliffe (2007, p.56) argues this relational view easily ends up with a completely flat homogenous universe, and without difference and transformation we cannot have space and time.

In order to avoid a flat universe Hinchliffe (2007, p.69) suggests that although existing in relations, things are not exhausted by their relations, that something is always withheld. Still, this is not a return to essential categories; Hinchliffe (2007, p.69) rejects fixed identities and instead argues that things have histories, and also geographies. To me this means that things have a history of transformation in space, which creates difference in a network of relations. It is also apparent from Hinchliffe (2007, p.62) that this network of relations is material, and contains landscape as well as social organization, the two terms I am trying to connect here. Hinchliffe (2007, p.62) states that “minds are part and parcel of the world, not control centres that somehow rise above it and dictate to it”. In this way it is possible for Hinchliffe (2007, p.62) to claim that “[c]onsciousness then is but a particular kind of movement in this material continuum”.

In my view these arguments by Hinchliffe (2007) support Ingold’s (1993) theory where the social organization of activities (taskscape) is contained within the material totality of the land-
scape. With this theoretical base I feel that I have established the connection between social organization and the landscape, through situating social organization as specific movements within the material totality of landscape. If social organization is seen as movement within the material totality of landscape, then I would make the claim that something about the history of this movement should be visible in the present state of landscape. If specific shapes and compositions of the landscape, such as rock formations or ruined houses, can tell a geologist or archaeologist something about the landscape’s past, I would then argue that shapes and compositions of the taskscape, such as memories and oral histories, can equally tell us something about the history of the transformation of the landscape.

Based on all the above I have come to the conclusion that in researching the past we are ultimately always dealing with the history of transformation of the totality of landscape. However, it is possible to identify specific movements within that transformation, even if those movements are related to all others. Therefore, I am expecting to find in the collected research material traces of specific movements or transformations in specific categories such as vegetation cover. I am equally expecting to find relations between transformations in all the specific categories, giving some kind of insight to the transformation of the totality of landscape in the specific space of the research area.

2.2.3. Reconsidering Ingold

Since my theoretical background for this thesis relies heavily on Ingold (1993) it is necessary to take a critical look at his writing in order to be aware of some of the shortcomings others have found in his reasoning. In a recent article Dan Hicks, despite finding lasting value in the arguments put forth in Ingold’s paper, finds Ingold confusing “a modern western academic discipline with some imagined ideal pristine non-western indigenous culture” (Hicks 2016, p.12). I would see this critique emerging from Ingold claiming that “[t]he knowledge born from this practice [(archaeology)] is thus on a par with that which comes from the practical activity of the native dweller” (Ingold 1993, p.152). Here it seems that Ingold forgets his and other archaeologists’ position, and the embeddedness of the discipline within western science.

Even if I am attempting to find ways to work beyond the nature-culture divide like Ingold (1993), and attempting to have a more than Western influence on the material through the research methodology, as I will present in section 3.3, I do recognize my position within Western academia and its structures of knowledge production. Hicks (2016, p.19) states that “archaeology can never be a form of knowledge that stands wholly outside Western thought and science” and demands that archaeology as a discipline must “embrace its Modernity as a principal object of enquiry” (original emphasis). Even though I am not an archaeologist, I would extend Hicks’ argument to my research, and this is why I have in section 3.3.2 attempted to reflect on the connection between modernity, Western scientific knowledge production, and reproduction of global hierarchies. According to Hicks (2016, p.12) Ingold’s paper “has been criticized as failing to consider power, inequality and the historical specificity of social relations”, and I will return to these issues in section 3.3 as well as in the analysis in chapter 6.

2.3. The Research Question and Research Aims

Here I return to the research question in order to define specific research aims before presenting the methodology that was constructed to help answer the research question and realise the research aims. As presented in the previous chapter, the research question can be stated as:
What kind of transformations in the landscape where Mr Leon’s family dwells can be traced since 1960, can those transformations be related to the uptake of rice farming, and if so then how?

This can be divided into a number of questions which all assume certain aims for the research. I will go through what I see as these.

The first part of the research question is about transformations, what kind of transformations in the landscape where Mr Leon’s family dwells can be traced since 1960? As I am working with an inclusive concept of landscape, these transformations could involve almost anything, but there are certain things that have been focused on in the research. These are, specifically the forms of the landscape and activities that change those forms. The aim here is to understand how the physical forms of the landscape, including vegetation cover, have changed, and what have been the processes and activities, and changes in those, that have contributed to those changes in landscape forms. Practically, this has translated into research aims such as, understanding the change in the extent and composition of plant cover and understanding change in production activities and, how that ties into change in plant cover.

Within the first part of the research question there is already another question contained, as it references the landscape where Mr Leon’s family dwells. So, where does his family dwell? Do they dwell in the areas they move through most often, the areas where they work, the areas they own or have access to? This question was purposefully left unanswered at the beginning of the work in order to see what kind of geographical focus for the research might emerge from the research process itself. Therefore, defining a geographical focus for the work was a research aim in itself, and I will discuss the resolution in chapter six.

A third question extracted from the research question would be: can those transformations be related to rice farming? Here the aim is to test whether the findings can support a view that the uptake of rice farming was an important event that was essential to the transformations that have taken place. Therefore, the temporal scale of the research has been adjusted to cover the decade before the uptake of rice farming, and extending up to the present day. Some of the gathered material concerns times long before rice cultivation, but this helps to understand the historical context in which rice farming was eventually started.

Finally, the last component of the research question asks if there are connections between the uptake of rice farming and transformations, and if so, what those are. The aim here is parallel to the previous question, understanding whether the uptake of rice cultivation could be seen as a central node in the web of relations that is the transformation of the researched landscape. Taken together these questions come to form the focus of my research, the aim of which is to understand what kind of transformations have taken place in the researched area, and whether the uptake of rice farming is connected to those transformations to an extent that it could be seen as a focus, or central node, of transformation.
Methodology

In this chapter I present the methods used to meet the research aims. The chapter mostly focuses on describing and discussing the fieldwork realised during the first half of 2016 in the village of Sazue in South Western Benin Republic. The 2016 fieldwork is of central importance because most of the material used in this thesis was collected then. I also had the most interesting and serious methodological reflections regarding the 2016 fieldwork. Other than the 2016 fieldwork, I also discuss the methodological aspects of an exploratory fieldwork phase undertaken in 2014.

3.1. Exploratory Fieldwork of 2014

The initial fieldwork undertaken in 2014, inspired me to undertake a more extensive field research as a part of my Master’s Thesis, so it is worth reviewing the circumstances in which this was undertaken and how this initial phase was organized. I was staying in south western Benin from September to December in 2014. During that time I visited two farmers in the village of Sazue, who were both recommended to me by my brother-in-law, who had been working with them before on agricultural extension. I was taken to them because they both produced rice at the time, and I had expressed interest in rice production having seen a rice field that was remarkably large for the area, and conspicuously placed by the main coastal road. At the moment I had not yet started studies in my master’s programme, but I was already looking for possible topics and inspiration for my master’s thesis. As I was taken to each of the farmers by my brother-in-law, he introduced me as a student who was interested in learning about rice farming in the area. During both visits the farmers would tell their story, and within the boundaries of my proficiency in French, I asked some further questions on the basis of what I understood from their story. My brother-in-law also contributed to the conversations. The first of the two farmers we met was Mr Leon, and that meeting was my first introduction to the people and the place that came to shape this thesis.

I became very interested in the story about the history of rice farming in Mr Leon’s family. We therefore agreed on a second visit, where his older brother was also present, since I had expressed specific interest in the story of how rice farming began in that area. This was again, a rather free flowing discussion, where Mr Leon and his brother would bring up subjects that came to their mind from beginning with the history of rice farming in the area, and I would just follow my personal interests and curiosity by posing questions, rather than using any set of prepared questions. With the material gathered in these three informal discussions, sound recorded with the permission of everyone present, and afterwards transcribed by me, I started to develop the research questions for my Master’s Thesis, and from there I also planned a more extended fieldwork with clearer objectives. However, Mr Leon together with all his family members that contributed to the field research in 2016 continued to shape the narrative that I first established based on the material from 2014. Therefore, Mr Leon with his family members should be seen as co-authors of this thesis, although in this written work all choices regarding presentation and framing are mine.
3.2. Fieldwork of 2016

As explained above, I had planned in advance for the fieldwork of 2016 and prepared a research design. The fieldwork and its design could be seen as an attempt at balancing two aspects, or ambitions. The first ambition was to plan and realise the field research in a way that might allow local perspectives and concerns to shape the material in such a way and to such an extent, that it might have a real effect on the end product of the research, this thesis. Here I mean real in the sense that local perspectives could actually steer the research into directions that I would not have found relevant or planned in advance. An important inspiration here is the work of Giles-Vernick (2002) with the Mpiemu people of Central Africa. The second ambition, I would say, was to plan and organize the research in advance, and create a structure and working practices that would make the work efficient and productive in order to ensure that enough material was collected to be able to write a master’s thesis, and also that the material would fulfil necessary scientific requirements. As I will explain below, it was eventually not too difficult to combine these two ambitions into what I would describe as a successful work, and that is most of all thanks to Mr Leon

3.2.1. Collaboration with Mr Leon and his Family Members

The role of especially Mr Leon and his family members in the realisation of this work cannot be overstated, and therefore I see it as necessary to introduce them and their role briefly before going to more detail on the 2016 fieldwork. Mr Leon and his family members belong to the Agbedonu family community, which had already been founded, perhaps, by the mid-17th century and is now running in its eighth generation. The Agbedonu family community inhabit the domain conquered by their ancestor Agbedonu, from whom the community took their name. The domain is situated in the village of Sazue, the northernmost arrondissement of the commune of Grand Popo in south western Benin Republic. Mr Leon, by all means my main research partner, was born in 1964 as the last son for his father Mensanh, and the first son for his mother, one of Mensanh’s several wives.

As a boy Mr Leon worked on his parents’ fields, attended school first in Sazue, then in the nearby town of Comé, and eventually went to high school in Cotonou, the biggest city and commercial capital of Benin. At the time, in the early 1980s, the school system had problems to the extent that they could not pay teachers and so schools were vacant. In 1984, following his father’s instruction, Mr Leon therefore left the school and started to learn a profession in Cotonou. He received his diploma and did an apprenticeship as a fridge repairman, before returning to the family domain in the village in 1992. By that time the national conference initiated in 1990 had concluded a transition to democracy and presidential elections were held in 1991. Mr Leon had been called to return to the village by his aging father who wanted his youngest son by his side. Mr Leon settled back in the family domain and took up farming. I will discuss Mr Leon’s farming activities more in chapters four and five. I would say Mr Leon has had the most influence on this work apart from me. Mr Leon was influential in deciding the specific research topics, the relevant informants, visited sites, and in many other aspects of the research. Mr Leon also seems to have an important role in the family community. His agricultural activities seemed to me as the most dynamic in the family domain, and in a legal struggle concerning a sacred forest connected to the family (see section4.3.3), Mr Leon was the main representative of the family. In sections 3.2.3 and 3.2.4 I discuss in more detail the roles in the fieldwork of Mr Leon and his family members, and also how our research collaboration took place in practice. Before that however, I present the research design.
3.2.2. Research Design

In developing the research design in 2015, I defined the purpose of the fieldwork as providing material that could help create answers to the research question. When the fieldwork began, the research question was formulated as follows: “What kind of transformations in the landscape where Mr Leon's family dwells can be traced since 1960, can those transformations be related to the uptake of rice farming, and if so then how?” This was formulated on the basis of the exploratory fieldwork done in late 2014, and this preliminary research also informed the research design for the final fieldwork, not only through the research question but more directly as well. From the exploratory research I learned that in the late 1960s and early 1970s seemingly large areas of forest in the area were cut in order to prepare land for sowing rice; charcoal production was also introduced around the same time. This is why the uptake of rice cultivation seemed to be an important factor in the changes of that landscape. Guided by this preliminary knowledge, a main focus for the research was to see if the assumed importance of taking up rice cultivation for the changes in the landscape could be confirmed or challenged. The fieldwork's overall purpose of answering the research question was divided into several different objectives regarding the material to be produced. The research design was then made according to these objectives. The main objectives were thus to:

- Assess the usefulness of the research question
- Define the spatial scale of the study and confirming the temporal scale
- Trace changing forms of the landscape since 1960
- Trace changing tasks since 1960

The Research Question

Since the research question was formulated based on knowledge gained from a very limited amount of material gathered in 2014, it was clear that as material would be gathered during the 2016 fieldwork, the research question should be continuously reconsidered. This idea of allowing the research question to transform also necessitated avoiding a very rigid plan to be followed, and rather using a looser structure of principles and focuses of interest to guide the research. Another aspect of the research that further necessitated a looser research design was my commitment to the idea of co-creation in research, requiring me to plan the research in situ with Mr Leon. I will return to discussing the ideas of co-creation at the end of this chapter.

The Spatial and Temporal Scales

When the research question and design were formulated, the spatial scale of the study was defined as the landscape where Mr Leon's family dwells, and to define that landscape more tangibly would require collecting material in the field. There was no plan to collect specific information that would allow me to define a spatial scale for the study. Rather, the idea was to listen to how Mr Leon and other family members talk about the landscape and how it has changed, in order to have some understanding of what they actually mean by landscape. From this meaning of landscape I then hoped to be able to define a limited geographical area as the spatial focus of the study. Already when I was working on the research design it was clear to me that multiple spatial scales would be relevant to the study, but the fieldwork was designed with the intention to focus on a very local scale.

The preliminary temporal scale in the research design was defined to be from 1960 until the present day, based on the information from the exploratory fieldwork of 2014. However, due to the objective of trying to confirm the validity of the temporal scale, I did not actually bring up this scale while working with Mr Leon and other family members. The temporal scale was rather
designed as a guide for me to have some focus while I was working through already collected material, and trying to see where the research could be moving. According to the research design I was then to confirm the validity of the preliminary temporal scale based on the accumulating material, and the directions taken by the research work.

Tracing Changing Forms of the Landscape

A very important objective for the fieldwork was to collect material that would help understand change in the forms of the landscape, including tracing changes in vegetation, fauna, shapes of the land, water courses, cultivated land, and built environment, so that these changes could be described and then analysed regarding their assumed connection to the uptake of rice farming. The major issues to be examined here were change in the forms of the land itself, as in soil and rock, changes in the forms of watercourses and other water related features, changes in vegetation and fauna, and changes in the built environment. To learn about these changes, material was to be collected through interviews and conversations, map-making, observing and chatting, and documented through photography and written notes.

Tracing a Changing Taskscape

In order to gather material on the transformation of the taskscape the research design included the same methods as for tracing the forms of the landscape. As the theoretical basis of this work assumes that the taskscape is contained within the landscape and changes as a part of the transformation of the totality of the landscape, I then assumed that through enquiry into the forms of the landscape there would emerge connections to the taskscape as well. The focus in the research design was mostly on interviews and conversations, and less focus was placed on directly observing the present taskscape, or physical traces of its transformation.

3.2.3. Realising the Fieldwork

Here I briefly describe what I found to be the most important aspects of the practical realisation of the fieldwork. I focus on what could be called the logistical side of the research, in terms of its practical organization and realisation.

In 2016, the fieldwork began as I invited Mr Leon and his wife as representatives of the family to plan the fieldwork. I presented them my objective for the work, which was to produce material for a master’s thesis. I told Mr Leon and his wife that I would like to work on the history of the landscape where they live, building on the work we had started in 2014, and I presented the research design. I then asked Mr Leon and his wife to think about how the research could be realised in a way that would be interesting and perhaps even useful for them. Mr Leon and his wife expressed interest in the research and we agreed to meet at their fields on later date to begin the fieldwork. When we met on the field, I asked Mr Leon to suggest topics that we should cover in the research, and we would usually agree on the topic of our next working day beforehand, so that Mr Leon could ensure that people he saw as key informants regarding the topic would be present. Under Mr Leon’s instruction I also compiled a list of sites and artefacts we should see, and he organised our visits to each site, and had appropriate members of the family describe artefacts.

In this way, I visited Mr Leon and the family thirteen times altogether for the research. We would have agreed on the date of each visit during the last visit, or on the phone. I would take my motorcycle in the morning and drive the 25 kilometres to reach Mr Leon either at his fields, or at his house. We would work until early afternoon, Mr Leon would provide us with something to eat, and then we would continue, usually finishing around four or five in the afternoon. At
most times I would have my notebook in hand for taking field notes, during discussions I would record with a sound recorder, and when we were creating maps, visiting sites, walking in the landscape, or examining artefacts I would take pictures with a digital camera. The working days followed this basic structure, but their contents were quite different. Sometimes just Mr Leon and I would be working more or less alone, and sometimes there could be a couple dozen family members participating more or less actively. On some days we would stay at Mr Leon’s house and discuss topics there, and on other days we would go walking around the family domain.

Undertaking the fieldwork was generally very easy, because Mr Leon had quite a clear idea about what kind of topics we should cover, who we should talk to, what we should see, and where we should visit. Mr Leon would also have an idea of the agenda of each day ready when I arrived in the morning, so we could just start working after a brief chat and overview of what he had planned for the day. Mr Leon also did work on the research in my absence. Sometimes after we had covered a specific topic, he would contact members of the family between our research days, often to verify if they agreed on what he had been telling me. When I came back he would then report on the discussions he had had with family members. Mr Leon also facilitated the participation of many family members, especially the oldest members of the family. Mr Leon made efforts to explain the purposes of the research, and very importantly, the voluntary and non-remunerated nature of participation. I would say that the participation from other family members was made possible only by the enthusiasm and influence of Mr Leon. Without the personal commitment and interest of Mr Leon to doing research, this fieldwork effort could never have been realised with the same extent of co-creative methodology. Before discussing co-creation in the 2016 fieldwork, and in research more generally, I briefly describe the 2016 field methods.

3.2.4. Methods in the 2016 Fieldwork

During the 2016 fieldwork, material was collected through interviews and conversations, chatting, map-making, observing, and through photography. Most of my time was spent on interviews, conversations and chatting, and map-making. To have some comparison, I would say that for the preliminary fieldwork in 2014, the material I recorded can best described as collected through interviews. I set out to meet the farmers with a few questions I had prepared, and most of the time would be spent listening and recording the farmers’ accounts on their and their family’s history with rice farming. The encounters with the farmers were not very interactive and produced mostly quite straightforward chronological accounts.

In preparation for the 2016 fieldwork I felt more confident with my French and overall communication skills in the context of the site, and I planned to try to participate more actively when doing interviews, so that they would become something closer to a conversation. This would mean moving from following prepared questions to following what people were saying and searching directions for the discussion from there; a method often referred to as unstructured interviewing in literature on anthropological methods (Bernard 2006, p.213; Davies 1999, p.94). During the fieldwork this approach enabled topics outside the agenda of the interview to emerge and often these topics would be very relevant to the research. A more conversation-oriented approach also made it possible to gather other kinds of material than chronologies, stories and descriptions; for instance, conversations would bring about questions without obvious answers, gaps in knowledge, and issues more open to interpretation. Conversations would also produce more comments regarding feelings and attitudes than stricter interviews. However, I do not think the conversations would have been possible without the basic knowledge, the groundwork done in the more interview style encounters.

I also mentioned a third type of exchange apart from interview and conversation, namely chatting. By chatting I am referring to moments of talking where the research agenda was not the prominent reason to talk, although always present in our minds. These moments would often
occur when an interview or conversation drew to its close, the recorder would be switched off, and there would still be a bit of time before the food was ready to be served, or perhaps at the moment of leaving the site a puncture was found on the motorcycle tyre and there would be a wait for the mechanic and chatting would commence. How I see that chatting has benefited the research is partly quite similar to the conversations, by bringing up new relevant topics, revealing feelings and attitudes. I would also say that chatting helped build rapport and was the easiest way for family members who didn't know about the research before to learn about it and contribute. As mentioned above, chatting would happen often with the sound recorder off, and therefore it could not be transcribed. However, during chatting or immediately afterwards, I would make notes. Most often it was not exact phrases that were important material gathered from chatting, but rather insight to attitudes, revealing new topics to be brought up later, and I would say that such things could be sufficiently captured in the field notes.

I became interested in participatory map-making methods when reading about the use of Global Positioning System (GPS) devices in participatory mapping in Congo (Vitos et al. 2013; Lewis 2012). However, instead of GPS devices the participatory map-making in my research was realised with what I call ground maps, maps constructed on the ground from whatever elements are found nearby. I developed the method drawing from my experiences in creating maps with the same technique for different purposes during my military service. The purpose was to represent the landscape at different points of time and thus determine whether change in the landscape could be observed by comparing the maps. Creating the maps was done by Mr Leon and family members on site. When I first introduced the method to Mr Leon I said I would like to try to create maps about the area at different times, and we could build the maps on the ground with any material we find, such as stones or sticks, to represent what they thought should be represented. Mr Leon quickly understood what I was going for and started to collect materials. At this point I sat down and left Mr Leon to work with a few family members that were present. After having collected some materials, and having decided the time at which the area should be represented, they started to arrange the first features on the map, such as the road and a path. As they would come up with new things to represent, they would again search for appropriate materials. For example some blue plastic net was cut into a long piece to make the river, seeds to represent different cultivated plants, and leaves to mark the forest. Each time Mr Leon and the other family members placed a new object on the map they would explain to me what it represented and I would take notes. This continued until Mr Leon and the family members were content and thought no other things were necessary to represent on the map. Then I would photograph the map from above, after which it could be admired briefly before the materials were collected and stored for the next time, when we would make a map representing the area at a different time.

In many ways the methods employed in map-making are similar to those discussed in scholarly literature on participatory map-making (Plantin 2014; Soini 2001; Wario, et al. 2015). Based on my very brief review of relevant literature, drawing maps on paper seems more common than ‘building’ maps in the way Mr Leon and his family members did, as I did not find any reference to use of such a method. A more extensive look at the literature would likely yield references to similar methods, but in any case I want to promote building maps as an alternative to drawing. A clear advantage in building maps is that representations on the map are easily moved, adjusted or replaced, and my assumption is that people who are not used to working with pens might be more comfortable with placing objects to create a map. The method also produced a very hands-on activity that might accommodate the simultaneous contribution on the same map of more numerous participants than mapping by drawing.

I would say the map-making sessions were the most participatory part of the fieldwork, especially the first of two sessions that took place in the area with all the houses. That specific session was done outside in a central place where family members would easily see us, and people could come and go as they pleased. I would argue that the location was essential to the extent of
participation that was achieved. Even though the main contributors to the work were the oldest members of the family, every generation was represented. The map making session became in some sense a mix between working on the map and chatting between the family members. In addition to explaining to me what they were representing on the map, the eldest family members would also explain these things to children and youngsters who were present. Since the sessions did not include only map-making, but also conversation about what was being represented on the map, related topics would easily emerge, such as discussion on the family lineage or history of the Hwatchi people. I recorded most of these conversations during map making, and made notes of the conversations that were not recorded. With the benefit of returning to same site each time, I could write down topics I would find from reviewing the recorded conversations and field notes, and then with Mr Leon we could see whether we thought they were important topics to look into.

Further methods used in the study include observation and photography. I have not done the kind of intensive observation that anthropologists might do. I did not take time specifically for observation, perhaps sitting somewhere and writing notes. My observations were made during the course of other research tasks, or during waiting times, seemingly idle moments that would often happen, I would say, due to the nature of how things happen in Benin. These would most often be the same moments when chatting emerged, that I described above. On the other hand it could be said that photography has been used as an observation tool, and for recording observations. For this purpose, Mr Leon and I would, for example, take a walk through the family domain. Mr Leon would explain different things that came to his mind from what we saw and where we passed. I would take notes, and especially photographs. I took the photographs first of all to record what I saw in the landscape, but when viewed, the photographs also serve to remind me of thoughts and realisations that I might not have written down at the time. Photographs were also taken of artefacts and structures, mostly within the house area, but also in other locations within the family domain. A small experiment was also made with video recording. I gave my mobile phone to a youngster and he recorded a video of me and Mr Leon walking through the house area along the main path, continuing to the convent of Heviosso, which neither of us entered. Photography was used as well to copy some photographs Mr Leon had had taken in the past.

3.3. Co-Creation

I set out to do the fieldwork with the design and methods presented above, and especially the research design might seem quite loose and undefined. As mentioned above, this looseness of the research design was meant to produce a structure that would accommodate co-creation. By co-creation I mean, for the purposes of this thesis, a research methodology where people who might in a more conventional understanding of research be defined as informants, or objects of research, should actually participate also in planning and organizing the research. I would say that a goal of co-creation is to question the conventional subject-object divide in research, and to produce methodologies that could bridge that gap in practice. I designed the methods for the 2016 fieldwork, and participated in realising them, with the ambition of realising a fieldwork effort guided by ideas of co-production, in order to explore means of improving the possibility for local perspectives influencing and guiding the process of data collection and production. In practice, this ambition of local perspective influencing the process of data collection meant for the 2016 fieldwork that Mr Leon had a major role in planning and realising the research. Mr Leon decided most of the subjects that were discussed, came up with and contacted family members with relevant knowledge regarding each topic, and also planned the research logistically to the extent that usually all I needed to do was to show up. I have been introducing co-creation here more in terms of practical research methodology regarding the 2016 fieldwork, but it is necessary to also look into co-creation from a wider perspective of current scientific literature.
3.3.1. Co-Creation in Current Scientific Literature

This section provides a brief overview of current peer reviewed scientific articles that discuss issues I have found relevant regarding what I have above presented as co-creation. From this review it seems that different authors refer to slightly different concepts, mainly co-production of knowledge and co-design, which I found to include the most important aspects of what I call co-creation in this work. Below I discuss my impressions drawn from the different articles I have reviewed, looking into the framing of their concepts and how they correspond to what I describe here as co-creation.

Most of the articles reviewed seem to be concerned with environmental issues, and wider topics related to sustainable development. Co-production of knowledge is proposed as conducive, and even necessary, to producing appropriate knowledge for the purposes and needs of especially local sustainable development. According to Clark et al. (2016, p.4571), in order to meet the needs of sustainable development we need to improve knowledge production in at least two ways. Produced knowledge needs to be more effectively put to practical use by society, and society’s needs have to be more efficiently transformed into research problems. To craft this kind of “usable knowledge” Clark et al. (2016, p.4752) suggest it is necessary for scientists to work together with a wide variety of academic and non-academic partners. Reyers, et al. (2015, p.7363) base their article on experiences from a project where participants were brought together “from research organizations, NGOs [(non governmental organizations)], public and private sectors, parastatals, and civil society”, in order to co-create knowledge for natural disaster risk reduction. The authors promote this kind of knowledge coproduction as a way to better work with such complex systems as are involved in reducing risks arising from natural disasters.

Mauser et al. (2013) discuss knowledge co-production for sustainability, more specifically within the framework of the United Nations (UN) Future Earth initiative. They suggest that improved collaboration is needed between different scientific fields or disciplines, and that knowledge co-production for sustainability could benefit from transdisciplinarity, which would mean the inclusion also of non-academic stakeholders in the knowledge production process. Nel et al. (2015) refer to a conservation planning project that made use of concepts of knowledge co-production with the goal of improving implementation of the produced conservation plans. They also called for moving beyond the conventional view of researchers uniquely producing knowledge, which is then used by society. It seems that Nel et al. (2015) would rather promote knowledge co-production where other stakeholders than researchers also participate in the process of knowledge production, and not only in the application of produced knowledge. Shaffer (2014) has looked into knowledge co-production in local environmental monitoring, and draws experience from a project where local residents in rural Tanzania participated in monitoring the local climate and environment. According to Shaffer (2014, p.329), collaboration between scientists and local residents is crucial in order to be able to work at scales where the produced knowledge actually corresponds to people’s needs. Tengö et al. (2014) discuss the need to create mechanisms to organize research in ways that would allow knowledge production for ecosystem governance to benefit from the contributions of various knowledge systems. However Tengö et al. stress that knowledge co-production has to happen without power inequalities compromising the integrity of any of the involved systems.

Many of the other authors seem to share these concerns regarding power differences in knowledge co-production, but I would argue it is also a subject where we can start to see some differences in the different authors’ approaches to co-production of knowledge. According to Clark et al. (2016, p.4573), it is important in knowledge co-production to consider the relations between knowledge and power, because working with the knowledge of local stakeholders researchers can either validate or discredit that local knowledge. Mauser et al. (2013, p.426) highlight the need to maintain existing diversity in research and knowledge systems and also language, while
working to reduce inequality in terms of money and power between partners in knowledge production from what the authors term “the developed and developing worlds”. Shaffer (2014, p.316) also brings up the need to pay attention to power dynamics in knowledge co-production. All of the concerns and views on co-production of knowledge found in the literature I have presented thus far are somewhat relevant regarding the methodology of the research undertaken for this thesis. From what I have presented above regarding the literature on knowledge co-production, it seems that most if not all of the cited authors might find agreeable the definition by Armitage et al. (2011, p.996) of knowledge co-production as “the collaborative process of bringing a plurality of knowledge sources and types together to address a defined problem and build an integrated or systems-oriented understanding of that problem”. In many ways that definition is also relevant to this thesis, as it could be seen that different knowledge types have been brought together. In my view it is not only that what could be seen as my Western knowledge and what might be named as the local or traditional knowledge of Mr Leon and the family were brought together. The more important and interesting factor to me was that different knowledges seem to already have been brought together especially in Mr Leon’s own knowledge, as he seems to easily utilise, combine and mix concepts and logics from what could be seen as both Western scientific rationality, and traditional local worldviews and knowledge.

Regarding the problem solving aspect of the definition of knowledge co-production by Armitage et al. (2011, p.996), I would say the focus in this work has been less on solving a specific problem and rather on the process of knowledge production itself. Arguably, defining aspects of landscape change in a specific time period is a valid problem that the research has aimed to understand, but perhaps not so much from a systems oriented perspective as stated in the definition, but rather by looking at landscape change from its experiential aspects. Due to the research focus on lived experience, it became often obvious during the field work that although I, Mr Leon and his family members could fluently discuss most issues and shared many concepts, there seemed to be many aspects in the worldviews informing their experiences that are not easily, if at all, translatable into something understandable within what could be called the Western rational knowledge world that I could be seen to inhabit. This even though, as I mentioned above, Mr Leon seemed to combine these two knowledge worlds with ease.

Therefore I have found very relevant for this work the views of authors who in their discussions on co-production of knowledge focus on meetings and working together of what might be called Western knowledge, and indigenous or traditional knowledge (Nel et al., 2015). There are some observations and reflections in the literature that have been especially important to me in doing this research. The first is the recognition of Western knowledge and indigenous or traditional knowledge as occupying what could be seen as different knowledge worlds. According to Parsons et al. (2016), it is important to recognize and acknowledge differences in epistemology and ontology. Another important issue is to recognize that what we might call traditional or indigenous knowledges are constantly changing and evolving, which often involves adopting Western rational knowledge within the ontological and epistemological structures of the traditional or indigenous knowledge system (Nel et al., 2015). These kinds of processes should not necessarily have to mean traditional or indigenous knowledge giving way to Western knowledge, although due to existing power structures this is often the case. Those power structures have to do with the essentially colonial roots of Western science and knowledge production, and their effect on interaction between what might be called Western and other knowledges. It is necessary to critically evaluate the history of relations between Western and other knowledges in order to work towards avoiding the continuous reproduction of colonial relations in knowledge production. In order to understand the colonial undertones of western scientific knowledge production it is necessary to briefly discuss the connection between modernity and coloniality.
3.3.2. Modernity/Coloniality

In this section I will briefly present ideas about coloniality, a concept perhaps most strongly developed and published by authors in the modernity/coloniality/decoloniality (MCD) research program (Rojas, 2016, 376). I want to highlight the connection between modernity and coloniality, and the effects of that connection on knowledge production. The purpose of this is to make clear the awareness and attention necessary when such research as this thesis is to be made, where Western knowledge works in connection with other knowledges. According to Maldonado-Torres (2007, p.243, my italics) coloniality “refers to long-standing patterns of power that emerged as a result of colonialism, but that define culture, labor, intersubjective relations, and knowledge production well beyond the strict limits of colonial administrations”. This is why even after colonial administrations have been disbanded coloniality is still reproduced. In fact, coloniality is seen as an inseparable aspect of modernity, with the rhetoric of modernity serving to continuously reproduce the hierarchies that make up coloniality (Quijano, 2007; Escobar, 2007; Rojas, 2016).

My focus here is on knowledge production, and one of the central topics in literature on coloniality seems to be coloniality of knowledge. There is some variation in exact terms used by different authors, but my general interpretation of the literature is that modernity is seen as aiming at universality or totality, meaning that the knowledge produced by modernity, Western rationality, is seen as the only valid form of knowledge (Escobar, 2007; 2008; Maldonado-Torres, 2007; Quijano, 2007; Mignolo, 2011; Rojas, 2016). The divisions between nature and culture and moderns and non-moderns are at the foundation of the logic of coloniality (Rojas, 2016) and create the justification for the totalising project of modernity. The knowledge produced by non-moderns, which does not correspond to the logic of Western rationality, is deemed as invalid and the concerns of those people can be omitted. These dynamics have continued from the colonial era until the present day, and still affect knowledge production, with Western rationality having the power to either validate and thus consume, or dismiss traditional and indigenous knowledges (Quijano, 2007).

It is extremely important that the dynamics in knowledge production that have disempowered non-modern peoples and dismissed their knowledge are discontinued. Due to the negative connotations of the term non-modern, which arise from continuously reproduced colonial hierarchies, other more positive terms such as alternative modernity (Escobar, 2008) have been used. The purpose is to promote pride over the realisation that despite its rhetoric modernity has not achieved totality, with cultures and communities across the globe drawing also from something other than modernity, thus inhabiting countless alternative modernities. In my view the Agbedonu family domain could be seen as one example of a space of an alternative modernity. The methodology of the 2016 fieldwork realised for this research project was an effort at exploring means for knowledge production that might not reproduce the existing colonial hierarchies of knowledge. In order to realise research that would not contribute to reproducing colonial hierarchies in knowledge production Parsons et al. (2016, p.102) stress the importance of issues such as inclusivity and research reflexivity, establishing relations with research partners, adhering to cultural norms and active listening to shared oral histories. I see all of these issues as being considered in the research design and methods presented in section 3.2 above.

This is a very brief and partial take on the ideas put forward in literature on knowledge co-production and coloniality, but I believe it serves to highlight some of the central issues, and also gives some context within academic literature for the main concerns of the research methodology presented in this study.
Landscape of the Agbedonu Family Collective’s Domain

In both this and the following chapter I present the findings from the fieldwork, including both the fieldwork of 2014 and that of 2016. The findings are divided into two chapters that correspond loosely to the concepts of landscape and taskscape introduced in section 2.1.1. This division is not strict, since by definition the taskscape is contained within landscape. The division is rather made to more easily group findings under themes, and in the discussion chapter this separation should dissolve as I move towards discussing the transformation of the landscape as a totality. It should be noted that any direct quotes from Mr Leon or his family members presented in these two chapters have been translated from French to English by me.

4.1. Origins of the Agbedonu Family Collective

Since people are a part of the transforming totality of landscape, the histories of people are part of the history of landscape and vice versa. This is why the history of the Agbedonu family community is important for understanding the history of the research landscape, which is their family domain. The oral history of the Agbedonu family, related to me by Mr Leon and elder members of the family, gives insight to the beginning of the relation between the family and their domain. The narrative, which I have compiled from transcripts of interviews and my field notes, begins in the mid 17th century with Agbedonu, the ancestor who is considered the founder of the family.

According to Mr Leon’s elder brothers and sisters, long ago, perhaps sometime in the 17th century, Agbedonu, the founder of their family, escaped from a place called Notse in what is today Togo, ruled by an evil king called Agokoli. Agbedonu escaped together with other Hwatchi people, in a manner resembling closely the origin stories discussed in section 1.3.4. Agbedonu together with his brothers crossed the Mono River and travelled until reaching Ouamako in today’s Benin. From Ouamako Agbedonu made hunting and fishing trips to the floodplains of the Mono River in the west, and also started to cultivate there, benefiting from easier access to water compared to Ouamako (Field Notes, 9/5/2016). Mr Leon recounts the story of Agbedonu coming from Ouamako to the domain like this:

“Even [when] Agbedonu he comes here he returns again to Ouamako. He comes to cultivate, he comes to do fishing. There is land he cultivates, there is water permanently here, yet over there in Ouamako there is no water. The water is higher here during the flood, the water comes and it leaves fish also. It’s not [like] today when, when we do not find anything. In [that] time there is fish in there, there is everything. He is looking for all that. It is that which brought him up to here. To better conclude that is what I have felt” (Mr Leon, 14/4/2016).

Sometimes Agbedonu would stay many days on his trips, and eventually he decided to settle in the area, and conquered a domain for himself and his family, his first son Tetega having already been born in Ouamako (Group Conversation 14/4/2016). As an elder brother of Mr Leon put it: “At the time they didn’t sell land. If you found it you occupied it” (Other Elder Brother, 14/4/2016, my translation) Altogether Agbedonu had five sons: Tetega, Amegnonkoun, Agbehoubio, Agun and Tossou. The four oldest sons each built their own houses, and Tossou took over the house of Agbedonu, and from these five brothers were formed the main branches of the family until today (Group Conversation, 14/4/2016). An elder brother of Mr Leon explained:
“Agbedonu has five sons. For the daughters, we cannot name them” (Elder Brother, 14/4/2016). According to my understanding from living and doing research in south western Benin this is because commonly lineage is counted only in terms of sons. Daughters are married away from the family and are thus not considered as continuing the lineage.

The oral history about Agbedonu’s conquest of the family domain is essential to the identity and cohesion of the people living in the domain, since it is that narrative which unites them into the same family. Many family members do not live in the domain, for example two of the elder brothers of Mr Leon who participated in conversations are living abroad in Gabon and Cote D’Ivoire. Still it seems to me that all family members identify as descendants of Agbedonu and consider the family domain as a home. Heritage appears as central to how people in the family experience their identities, it I might argue that perhaps no person is seen, or experiences themselves, foremost as an individual. Rather, family ties, and especially lineage could be seen as integral parts of people’s identities in the family. According to my observation and interpretation, in the case of the Agbedonu family, and south western Benin more generally, being part of the lineage, and thus the family, also means being part of a somewhat hierarchical system of rights and responsibilities. A general simplification could be that older members of the family have authority and responsibility towards younger members, as well as responsibility towards the very old. The Agbedonu family domain is not a separate unit of local governance, there is no customary royalty, and apparently no specific religious authority since the passing of Mr Leon’s father, there seems to be no official authority figure in the family. However, the abovementioned informal age-based structure still seems to apply. As discussed in section 1.3.4. also for the Agbedonu family, the concept of family itself seems quite inclusive as the terms of relation, such as father, sister, aunt etc. are not always defined in strictly genealogical terms.

Connection to the lineage is at the same time a connection to the specific landscape of the family domain, through the conquest by Agbedonu, and very importantly through what the family calls the mortuary. The mortuary is a building dedicated to worship of the ancestors. One of Mr Leon’s elder brothers explains how: “We adore Vodun, and our ancestors” (Elder Brother, 14/4/2016). Through the mortuary and the ceremonies performed therein the ancestors can be seen to have a continuous physical presence, in addition to their spiritual presence, in the landscape of the family domain, I discuss the mortuary in more detail in sections 4.2.2. and 4.3.2.

4.2. Environmental Changes

As mentioned in the introduction to this chapter, despite an overall purpose of engaging landscape as a totality, for the purposes of more coherent presentation I have initially organized the findings according to themes. Therefore, in this section I will describe changes in the landscape that have to do mainly with changes in vegetation, animals, water and soils.

4.2.1. Vegetation

When discussing vegetation I will focus on presenting findings related to vegetation before rice farming. Preparations for rice farming were started in the early 1970s. Later changes in vegetation from the 1970s until present day are discussed in chapter five, in order to better illuminate possible relations between the uptake of rice farming and transformations in the landscape. Collected material regarding vegetation in the landscape before 1960s is very scarce, much due to the apparent lack of formal documentation. However, from 1960 until present there are several different kinds of material collected on the change in vegetation. Ground maps were used as a methodology (see section 3.2.4.) through which family members could express their experience of landscape change in the family domain. Conversations recorded as sound and field notes, as
well as photographs made and collected also helped us reconstruct landscape change in the family domain. Here I will present some material, mostly from oral accounts, regarding the landscape before rice farming, and in its present state. As an example of the ground maps I have presented below the map depicting the landscape in 1960 (fig.4).

Figure 4. Ground Map of Domain 1960

Mr Leon and one of his older brothers described how in the 1970s land for the rice fields was cleared of a forest. Mr Leon explained how: “It was forest that they destroyed manually. With the machete they cleared, difficult. There were trees. Me I ... [inaudible] say that it was pristine forest they destroyed” (interview, 5/10/2014). In another conversation with Mr Leon, the forest was shady and you could find water and fish in there (Field Notes, 7/6/2016). Mr Leon also described how: “Before it was other trees not acacia. Big trees. At least three species that I know, which made our forest” (interview, 5/10/2014). It might be likely that trees of those species were also cut when old trees of a sacred forest close by were felled. In documents from the departmental forest authority regarding the case of the sacred forest, the three species are specified as *Ceiba pentanda*, *Milicia excelsa* and *Cola cordifolia* (Procès-verbal de l’audience, 29/4/2014) and I will discuss the forest more in section 4.3.3. Another tree, only mentioned by its local name, aonka, had apparently also been common in the landscape the floodplain is still called Aonkatoe after this kind of tree (Field Notes, 7/6/2016).

According to my own observations in the landscape, it seems that Acacia is currently the most common tree. The Acacia now common is non-indigenous to the area. Mr Leon explained in an interview (5/10/2014) how: “It is until 2004 – 2005 that there was a program of acacia. And they did it all over, the government. It is in that time the people planted acacia and that is why you see some heads of acacia on the site”. An old man we met from the neighbouring family community, Mr Joseph, showed us pictures of an Acacia nursery he used to work on in the past. However, it seems that at least Mr Leon does not consider the current tree cover a forest, as he says: “We regret it [(cutting the forest I assume)] now, because there is total deforestation” (Mr Leon, 5/10/2014).

Another interesting account regarding vegetation was given by an old man in Mr Leon’s family. In my field notes I write how the old man told the story that “When the ancestors were in the forest, they could discuss with the plants to find the ingredients for medicine” (Field Notes, 25/4/2016). I quote the old man directly in my field notes, speaking about medicinal plants as
follows: “Now we don’t even find them [(the medicinal plants)] in the bush. The Europeans saw all our secrets and took plants to grow in Europe and make medicines” (Field Notes, 25/4/2016). Mr Leon also raised the issue of the loss of medicinal plants in another conversation. He asked the question whether a specific medicinal plant is harder to find nowadays because it has been used to prepare food, rather than only in medicinal purposes, as the rules of Vodun, the local religion, would require (Field Notes, 25/4/2016). In the same conversation we also made a list of factors that Mr Leon, the old man and another person slightly older than Mr Leon found to contribute to what they perceived as inhibition of forest regeneration. The list included: charcoal making, carpentry, bush fires, flood water, cattle, agriculture and illegal logging enabled by corruption (Field Notes, 25/4/2016).

4.2.2. Animals

According to Mr Leon and some elder members of the family, many animals used to be found in the landscape, that are not found anymore. In what the family calls the mortuary, a building where ceremonies for the ancestors are conducted and artefacts from past times are preserved, we saw remains of many different animals, mostly horns and skulls of what seemed with my very limited experience to be at least antelopes and related animals, and caimans (see fig.5). Based on a conversation with Mr Leon I documented in my field notes caimans are not found any more, but animals of a related species can still be found. Also, in the mortuary there used to be hog skulls as well, but those and many other remains stored in the building have already disintegrated (Field Notes, 9/5/2016). Mr Leon and his elder brother remembered that in the forest that was cut to prepare the rice fields there used to be many animals. Mr Leon translated and continued on his brother’s account like this:

“He said that in the forest that they destroyed, there are antelopes in there, there are deer, there are warthogs. Well, there are even foxes, all that. They are in the forest. [(Mr Leon continues with his own words)] Now we don’t find anymore, there is no longer. It is rare that you will find some deer. It is already more than five years since I ever saw a deer. It is in the time of my father that there are lions and others. In their time they knew antelopes, everything” (Mr Leon, 5/10/2014).

Mr Leon also related how an elder brother of his used to be a hunter, and for the last ten years he could not find anything else to hunt than agouti, a local name for cane rat (Field Notes, 9/5/2016). While walking around the village I also noticed how elephants and guns have been painted on the facade of the mortuary building, but the presence of elephants in the landscape in the past is not indicated in any way in the collected material. Elephants were not brought up in the conversations at all. However, hippos were found in the area until 10 to 12 years ago. In connection with the mentioning of hippos it was also related how ‘even white tourists’ would come to see them. After us discussing animals that used to be in the landscape in the past, Mr Leon went to consult an older man from the family, who also joined us in that conversation. The man mentioned that until the 1950s or 60s there were also water buffalo in the landscape, and that those cannot be seen in the area today (Field Notes, 9/5/2016).

As conversation expanded with the new member, Mr Leon and the older man went on telling me that the hunters who could tell about all the animals that have disappeared from the landscape are already dead. The animals were already disappearing in the 1960s, even before the forest was cut. Regarding the disappearance of the animals Mr Leon and the older man claimed that the animals had escaped excessive hunting across the river to Togo. In the past, the hunters would light fires when chasing the animals, also in the forest, and when people blamed them for forest fires, the hunters would claim it was the red tortoise that lit those fires. Mr Leon also told me that there used to be many pythons, every night there would be one behind his house, but that nowadays he doesn’t see them anymore. In the 1990s the pythons started to be commercialised and
young men began to hunt the pythons and collect their eggs. Mr Leon claims that especially people from a local evangelist church caught pythons, since for Vodun followers it is forbidden to catch and sell them. Mr Leon’s assumption is that the pythons were taken to Togo and exported from there (Field Notes, 9/5/2016). Though many animals have disappeared over time there is one type of animal that has increased in numbers. Mr Leon reported claims that birds have increased since the forest was cut down, as he explains it: “When you have destroyed the forest it is as if you invite the birds” (interview, 5/10/2014). Other than the increase of birds, the stories related about wild animals are almost exclusively about their disappearance and loss.

Different fish traps and their preparation were also observed, suggesting that there are fish in the water courses. Mr Leon was also growing fish in a water reservoir dug in the fields (Field Notes, 9/5/2016). Other animals encountered during the fieldwork were a tortoise and various birds and insects, and the tracks of presumably a cane rat, apart from that there were not many observations regarding animals present in the landscape. This is mostly due to the focus of the research being more on family members’ own experiences regarding animals in the landscape, rather making my own observations.

The material also contains some findings regarding domestic animals. During my visits I saw various domestic animals in the family domain, including goats, chicken, doves and ducks. Abandoned cages for domestic animals (see fig. 5), also suggest that possibly rabbits or cane rats, were kept in the recent past (based on my observations of similar cages in other sites in south western Benin). In a conversation of farming Mr Leon pointed out that, keeping domestic animals is different these days from the time of his father. Before there were no veterinarians but the needs of the animals were easily met with what was found at the house or fields. The animals would not get sick and they reproduced well. Nowadays, as explained by Mr Leon, it is necessary to know a vet who can tell what to give to the animals, and you need to buy products at the store, like food and medicines. In addition there are differences in prices today in comparison to the past. Mr Leon claims that the animals were cheaper to buy in the past and that villagers could exchange animals with other people directly without needing money (Field Notes 9/5/2016).

![Figure 5. Animal Remains at the Mortuary and Abandoned Cages](image)

During our fieldwalks at least one herd of cows was also observed and photographed grazing within the family domain. However, the owners and herders are not members of the family, and even though many reside in nearby towns, their origin is in the North of Benin or Niger. Once I came across a group of men, not members of the Agbedonu family, just outside the family compound skinning two cows they had purchased from the herders and slaughtered there.
4.2.3. Water

The material contains some findings also regarding water, mostly having to do with flooding and rains. In the area of the family domain there are two main rivers, Mono and Sazue, which both flood periodically, but according to Mr Leon “It is the Mono which does more damage. The Mono has force and it ruins lots of things” (Mr Leon, 19/2/2016). While walking with Mr Leon on his field (interview, 19/2/2016) he described the flood like this:

“Where we are now, before getting here [a small hill in the middle of the field] you will have water up to here [showing the level of his chest] over there [points to the vegetable field]. It is the Mono itself that floods like that. Sazue comes but Sazue does not take much area like that. When there is a lot of rain it is in that moment Sazue floods, but its flood doesn’t occupy all [of] the surface. It takes only the canals, it can go through there [points at the large ditch by the road]”

Mr Leon explained further how in the time of his father the flooding of the rivers used to be predictable:

“In the seventies when I knew my mother in the fields [and] my father, the flooding of the Mono is periodic. They knew in five years there would be inundation. It is like that the nature was before. ... Sometimes it takes three years and other times five years”.

It is clear from not just the memories of Mr Leon but also information from many other informants that the flooding patterns of the river have changed, but on different occasions I have been given slightly different details of changes in the river. During my visit to Mr Leon in 2014 he said the following:

“Now it has changed [so] that each year we do not know anymore when the Mono will come. And it is in 2012 now that we feel it started to get less, it was more frequent before. So, in 2012 the flood is not (inaudible), in 2013 there is not even the flood. We did not find water” (Mr Leon, 26/9/2014).

Discussing the river and floods two years later, in 2016 Mr Leon (interview, 19/2/2016) gave the following story:

“After the years 75 until 80, until 84-85, it is other things we knew again. The inundation became every year and that is what caused many people to leave the lowlands”.

On another occasion in 2016 when flood intervals were discussed by Mr Leon, myself and an older man from the family. Together they described the intervals of the floods like this: 1980-1990: five years, 1990-2000: two years, 2000 onwards: one year, but currently it has been several years without inundation (Field Notes 7/6/2016). Considering the different information on floods it is difficult to reconstruct flood events, as I do not have any exact measurements or other data. However, it seems clear from the collected material that there is an experience of the floods turning from predictable to irregular over time, and changing at some point to have become very frequent. Recently however, there had apparently been several years without a flood, although by the end of my stay in Benin in 2016, as the fieldwork had already been finished, I heard reports of severe floods in areas very near to the coast. The material also points to an experience of rains becoming more unpredictable over time. Apparently in the time of Mr Leon’s father people could rely on the rainy seasons starting close to certain dates. Describing the agricultural practices of his parents’ time Mr Leon (interview, 19/2/2016) explained:

“In that time they didn’t produce during the dry season. ... They waited for the water of the rain. In that moment also the climate was regular. In time we knew two seasons, the big season and the small season. The big season that starts from 15 March and which ends towards August. And the small season starts from 15 September and which ends at 15 November” (Mr Leon, 19/2/2016).
The current unreliability of rains is apparent from Mr Leon having lost his rice crop repeatedly to lack of rain (interview 26/9/2014). In 2014 Mr Leon also directly addressed climate change, saying that:

“No we do not know anything. There is climate change. It is four or five years that I have felt it well. Because we do not even control the situation” (Mr Leon, 26/9/2014).

Other environmental changes that have affected water quality is related to salinity levels in the water. Mr Leon (interview, 29/9/2014) explained how the European Union (EU) had financed a project where wells were bored and motor pumps provided, but the water in the wells became unusable due to salinity. To counter this problem, Mr Leon had a reservoir dug with help of funds from foreign aid:

“That is when the idea came to me, why don’t we at least block the return of the [flood] water. A big reservoir. With three million [CFA francs] they made (inaudible) of 50 times 30 [meters]. I have dug a canal to direct water into the reservoir. It is with machine they made it [(the reservoir)]. It takes ten days to fill up. It is only for the products of the off season [(dry season)] that I asked for the reservoir” (Mr Leon, 29/9/2014).

As he explains above, Mr Leon uses this big reservoir, together with a smaller one, to store water from the flood season to use for irrigation during the dry season. However, as Mr Leon demonstrated during the research, due to the lack of flood he has been forced to pump water from River Sazue. Water is pumped via the smaller reservoir, into the larger reservoir in order to have water for the irrigation of his vegetable plots.

4.2.4. Soil/Land

According to Mr Leon and one of his elder brothers (interview, 5/10/2014) when rice was first planted by their father the soils of the rice fields were very rich thanks to the leaves that had been falling from the trees of the forest. They gave the account that the soil is becoming slightly poorer, but due to the floods that had been coming they have not needed fertilizer.

“In their time they benefited very much from the domain, the soil was richer than currently. Very rich, right now it is becoming slightly poorer. It is because there is water that comes every time that we have not started to use fertilizer. In their time it was the leaves that the trees had dropped that were still there. And the rice produced well, they benefited from that”

Still today soil quality is good and Mr Leon (interview 29/9/2014) also explained that: “The soil is naturally very rich, the compost is [put on the fields] for water. If there is rain there is no need [to apply compost]]. A reported current problem with the soil involves diseases that kill tomato plants. Mr Leon explains how:

“And it [(referring to a traditional variety of tomato)] produced very well until in 84-85 we noted that the tomato does not give anymore. And now our land does not suit tomato at all. ... The people of research told us that there are a lot of diseases in our soil. There are fungi, there are nematodes, and so on. So each time if we want to do the tomato [we] should treat the soil [with fungicide] well before starting” (Mr Leon, 19/2/2016).

Currently Mr Leon is participating in research to find solutions to this problem, and he cultivates specific varieties of tomatoes and uses specific production inputs according to the instructions of agricultural researchers. Mr Leon also keeps detailed records of the plants’ condition and achieved harvests.

In the material there are also references to instances of shaping the land in the area. A more recent example being the excavation of Mr Leon’s water reservoirs, and another being Mr Leon’s
father having organised the work to fill in land on the river bank next to the area with all the houses, in order to build a house for himself. Mr Leon’s elder sister remembers that she as a child was carrying on her head baskets full of a specific ash, a by-product of local soap making, which was used mixed with soil to fill in the river bank, because water didn’t erode the ash as easily as normal soil. Thus, today Mr Leon’s house stands on land claimed from the river (Field Notes, 21/4/2014). Another example of forming the land or soil could be the traditional houses and other buildings, with walls crafted from specific local soils. In the village I also observed the reverse process of house becoming soil again, which was evident in the ruins of a building uninhabited since 1993 (field notes, 21.4.2016).

4.3. Spiritual Life / Religion

The research material contains an extensive amount of findings regarding spiritual life and religion. I would say these findings are very useful and interesting for understanding landscape change, and especially for understanding how people dwelling in a specific landscape might experience change in that landscape. I have separated the findings on spiritual life and religion into various parts, the first part focusing on the origin of Vodun, the local traditional religion, regarding the family Agbedonu in their domain.

4.3.1. Origin of Vodun in the Domain

An older man in the family gave the story about the history of Vodun with regard to their family domain (this took place together with Mr Leon and another man slightly older than Mr Leon) (Field Recording, 31/5/2016). The same story was given on another occasion with many of Mr Leon’s elder brothers and sisters present (Field Recording, 14/4/2016). I asked whether their ancestor Agbedonu brought any Vodun with him or if he had found them in the domain, and Mr Leon replied: “Yes it is here that they found Vodun. It is Agun that has found, his [(Agbedonu’s) son Agun” (Mr Leon, 14/4/2016). On another occasion Mr Leon (interview, 31/5/2016) described the discovery of Vodun in the domain in more detail:

“What is the origin of Vodun first of all. Our ancestors made the discovery, because it is something that is ... it is a miracle. You can pass here, it can be in the field that you work on since a long time, and you will never find similar things there. One day, arriving to the field, he sees well rounded stones, and there is a hole in there [(in the stones)]. Very round pierced stones. ... Yet, at the time there was nobody in the zone that could carve stones like that” ... “When they saw that they said what, that it is a miracle. [They said] I pass through here and I never found such things. Where does it come from? Somewhere it falls from the sky like that. ... In other places we don’t know if it is the ground that, it comes out like that, and they will see the bokono [(diviners)] to consult, to know what it is. There they said that it is Vodun Heviosso who has arrived like that. And it is for him [(Agun)], it is because of him that the Vodun has arrived. Because Vodun proves that you will be my [(Vodun’s)] supreme chief, and you will do what concerns me and you will become chief like that. And that is how the people discovered Vodun” (Mr Leon, 31/5/2016).

The Vodun was thus found by a member of the family through physical objects discovered in a specific location on the family domain, and in order to avoid serious repercussions the needs of the Vodun would need to be fulfilled. To know the specific needs of the Vodun they would need to consult the bokono, who can contact the Vodun and learn about its needs through divination. Mr Leon continues recounting the history of Vodun in the domain like this:

“And they [(diviners)] told him [(Agun)] that he had seen something, and that what he saw was Vodun. And he had run away. If he would not quickly do the necessary ceremonies
then he would not stay alive long. ... Like that the people have an origin of Vodun, that is how they started worshipping Vodun. And they start [re]searching the Vodun, what should you do for him? You should give him food, what is it that we could give him, and what are his rules ... Because the Vodun are different. ... And they couldn't finish installing the Vodun before Agun passed away. ... He couldn't install the Vodun before dying, so the responsibility rested now with his brothers. Because they consulted, they had all heard already what exactly the Vodun wants. Now they all contributed together and they installed the Vodun” (Mr Leon, 31/5/2016).

Since the Vodun had revealed itself to Agun, he and the whole family were responsible to fulfil its needs. As Agun failed to install the Vodun and perform the correct ceremonies quickly enough, he was punished with death by the Vodun. Therefore Agun’s responsibility fell to the rest of the family and they would have to complete the work of installing the Vodun or another person would die. The height of the importance and costs of correctly installing the Vodun are apparent from this account by Mr Leon:

“You know in that moment, in their time. They didn’t have much means to install [the Vodun], and to find the necessary means to everything that the Vodun had demanded, they were obliged to take a son of their sister, to deliver, you see that there is slavery and everything at that time, to deliver [the boy] to somebody else in order to find the necessary means [to install the Vodun]” (Mr Leon, 31/5/2016).

With Agun already killed by the Vodun there was high pressure on the family to complete installing the Vodun, which meant they were willing to pay a heavy price to avoid further punishment from the Vodun. In my field notes from the same day as the above conversation took place I noted how Mr Leon and two older men described what happened after Agun’s passing. As Agun had died before the installing the Vodun, it was Tossou, the youngest son of Agbedonu that became the chief of the Vodun. Apparently Tossou became arrogant and in a meeting with all other chiefs from the area he ate a specific kind of local catfish, although eating that fish is strictly forbidden to Vodun followers. On the third day after the incident Tossou died (Field Notes, 31/5/2016). This is, expressed in a more concise manner, the history of the origin of Vodun in the Agbedonu family domain, as related to me by Mr Leon and other family members.

4.3.2. General Findings about Vodun

As stated in section 1.3.4, Vodun are individuals, but can also be classified into general categories, and they physically present in the landscape. This clearly applies also to the Vodun in the Agbedonu family domain. In my field notes I describe how Mr Leon and two older men from the family explained that Vodun is the land, soils and the plants (Field Notes, 31/5/2016) and here is a summary of this account. The categories of Vodun are numerous, when discussing the discovery of Vodun Mr Leon says: “If it is Heviosso there, if it is Sakpata somewhere there you will know that it is Sakpata. If it is Dan, you will know it is Dan. If it is Legba, you must know that it is Legba” (interview, 31/5/2016). As Mr Leon explained in section 4.3.1., the different Vodun are given different things to eat and drink (interview, 31/5/2016). One plant was shown to me and I was told that without the plant you cannot install Vodun (see fig.6). The plant grows on trees and does not touch ground (Field Notes, 31/5/2016). Mr Leon (interview, 31/5/2016) described the benefits of discovering Vodun as follows:

“When they have made the discovery [of Vodun] what is the good that is in there? The good that is in there, if it is for example for me that he has found [Vodun], in my collective, the Vodun has said that he is there to save the whole collective. To guard their security, to open for them the means to live correctly and to make a living in peace, if they have
made the necessary ceremonies that he wants, he will save everybody. It is like that. That is the good that they do”.

I documented some rules coming from Vodun, related to me by Mr Leon and two older men from the family. After installing Vodun you cannot use certain trees and leaves, and you cannot use certain wood to make fire. You are not allowed to do bad within the family, and you cannot respond to bad with bad. If you try to use the Vodun for bad you will perish yourself. You are also not allowed to eat certain things, certain things can only be cooked when away from the house, and sweeping at night must be done with a specific broom. There is also a rule that forbids using the hoe when working on the fields every six days, during the market days of the nearby towns of Se and Adjaha (Field Notes, 31/5/2016).

There are (at least) four different Vodun of four different categories in the domain; Heviosso, Agba, Egun and Kinlinsi. Vodun Heviosso was found by Agun, as already discussed above, and is located in the convent. Currently the convent appears not to be functional, having declined after the passing of Mr Leon’s father (Field Notes, 26/5/2016). Before the adepts of Heviosso would have held ceremonies, and for example taken in children deemed as the Vodun’s children to live in the convent and eventually become adepts (Field Notes, 31/5/2016). Vodun Agba is located across the road from the house area. The research material contains no findings on the origin of Vodun Agba in the domain, but it is depicted in the ground map that represents the house area in the time of the sons of Agbedonu (fig.12). Two small hut-like structures in the house area are dedicated to Vodun Egun, as those sites have been used for metalworking, and Egun is the Vodun of metal. Kinlinsi is a Vodun installed close to Mr Leon’s house, also marked in the ground map representing the house area in 2016 (fig.13).

Although it appears that it is not the site of a specific Vodun, ceremonies of worship are also held at the mortuary, but these ceremonies are specifically related to the ancestors of the family. These ceremonies are performed by the women, while men are observers. Artefacts such as chairs and tools used by the ancestors are stored and displayed in the mortuary. According to an older man in the family in the mortuary they also used to have old bows and a machete made by the ancestors (Field Notes, 25/4/2016).

There is also one place marked with the red black and white cloths representing Vodun, where a tree used to stand. Some remains of the tree that are arranged as a small pile on the ground in what could be described as an alleyway, are passed only from one side, the other side blocked with a stake. With each new moon the stake is turned to the other side, and in this way the remains of the tree are passed on alternate sides each month.

4.3.3. The Sacred Forest

One important site with Vodun is a sacred forest that was cut down in 2014. The forest consisted of a few large old trees and some younger ones. The forest itself was a Vodun, and at least one specific old Iroko tree was recognized as a powerful deity. The three Vodun installed in the forest were Dan, Dontete and Ague. According to Mr Leon’s personal account, and the official letter sent to the departmental court by the family, the forest was cut by members of a local evangelist church, who claimed the trees were cut as a part of an electrification project to make room for power lines. Cutting the trees was considered an open act of ‘war’ against their traditional religion and customs by the family. The matter was taken to court, but no sentence was passed, which Mr Leon accounts to the involvement of the local mayor (Field Notes, 26/5/2016; Lettre a Procureur, 30/5/2014; Procès-Verbal de l’Audience, 29/4/2014). The particularities of this case cannot be known without hearing the other side(s), but the conflict does show the political importance of the sacred forest and the particular trees both for the Agbedonu family and the people who cut them.
Mr Leon was a witness and involuntary participant in the event of the felling of the tree. He had been alerted to the site when the people had come to cut the trees, but being there alone with an old man from the family he was not able to stop the large crowd that had come to fell the trees. There was also a specific personal connection between Mr Leon and the old Iroko tree that was seen as the Vodun or divinity Dontete. According to Mr Leon’s account his mother had given birth already several times, but never to a boy. Giving birth to at least one boy was very important in the Hwatchi and wider culture of the area. Mr Leon’s mother therefore secretly went one night to ask the Vodun Dontete, the old Iroko tree, for a boy child. Eventually she gave birth to a boy, Mr Leon. Mr Leon claims that his name should actually be Lokossou, a name for children given by Iroko trees. However, as Mr Leon recounted, his mother forgot that she had asked the Vodun for a boy, so she never remembered to make a consultation to know how she should thank the Vodun. Much later the mother fell sick and no cure was found, until she eventually remembered having asked the Vodun for a boy. The consultation was made, followed by ceremonies according to what the Vodun had required and the mother recovered from her sickness.

Figure 6. Aspects of Spiritual Life. In the above collage, the top left photo shows one of the round pierced stones of the kind found by Agun as described in section 4.3.1. Top middle photo shows the remains of a tree that are passed from a different side each month, mentioned in section 4.3.2. The top right photo is of the plant necessary for installing Vodun, mentioned in section 4.3.2 as well. Bottom left is a photo of Vodun Kinlinssi, also mentioned in section 4.3.2. Bottom right is a photo of Dontete, the sacred Iroko tree discussed in section 4.3.3., photo courtesy of Mr Leon.
4.3.4. Christianity

From the above account it should be clear that the traditional religion, Vodun, is practiced and respected in the Agbedonu family, but there are also people in the family who practice Christianity. Mr Leon’s elder brother relates how:

“Presently we the descendants of the family Agbedonu, there are others that worship Vodun, now there are Christians, there are Catholics, there is diversity, you make your choice. If you so prefer you go to the mass, if you want to you continue with the Vodun” (Elder Brother, 14/4/2016).

It seems to me that the restrictions and rules regarding following either Vodun or Christianity are not necessarily always very strict. For example Mr Leon, who seems very passionate about the traditional religion and committed to it, also has images of Mary and Jesus at his house, and attends a Beninese Christian church called Christianisme Céleste. Still, there is a political tension between Vodun and Christianity. Mr Leon claims that the missionaries were, and are, against Vodun and more trees are being cut because Christians do not follow the prohibitions of the traditional religion (Field Notes, 31/5/2016).
5.1. History of Rice Farming in Sazue, and More Specifically the Agbedonu Family Domain

When visiting Mr Leon and his elder brother in 2014, I asked them about the history of rice farming in their area. Mr Leon translated his brother’s account to me and also added some information. What follows below is from this conversation that was held 5/10/2014. The elder brother of Mr Leon explained how and why rice farming started as follows:

“No what is it that pushed them to do rice? In time they did manioc, maize, everything, but because there is each time inundation, there is too much water and each time they are victims, they do not make good harvests. That is how the white [agricultural] officer arrived and asked them to, instead of each time doing the maize and the manioc, do rice. That rice fits the lowland, that it is destined for the rice instead of doing maize and manioc. So that is what brought them the rice” (interview, 5/10/2014).

It was not only Mr Leon’s father that took up rice farming. I was told about the people who took up rice farming that “They numbered ten, something like that, because the ladies also did. That way they took something like 20 hectares. They were about 12 in number” (interview, 5/10/2014). The local producers received guidance on cultivation techniques, but otherwise assistance was apparently limited. Mr Leon and his elder brother gave the story as follows:

“What they did was only the advising. They would advice on the technique, everything, God knows everything, but not financial means. Each time he [(Mr Leon’s father)] goes to the field he is with him [(the agricultural officer)]. They also brought the dehusker, the machine. But it was again by foot. They brought the machine and installed here, the plinth is still there. After the dehusking, it is the sales that they did not arrange. That is what discouraged them and they left rice” (interview, 5/10/2014).

Despite good harvests Mr Leon’s father and other producers gave up on rice farming due to difficulty of sales. “They said they would rather do a bit of maize and manioc and save it, rather than do rice which responds well to the lowlands but doesn’t sell” (interview, 5/10/2014). Mr Leon at the same occasion developed on this explaining how the difficulty of selling rice in his father’s time had to do with low demand: “In time many people did not like rice so, it is now. Now many people like rice. Yet, in time it was not like that. Rice was only prepared for celebrations” (interview, 5/10/2014). Mr Leon explained also how his elder brother recounted a problem with the dehusker:

“Before the whites would bring the dehusker. When they started the first campaign they brought the dehusker until here. After that they brought it again, after that now they [(the
local rice producers)] didn’t find. The transported their rice now until (inaudible) or Adjaha. And that was one more problem. They did something like ten kilometres, they walked to find a machine. And when they did that, the next year nobody produced [rice] anymore” (Mr Leon, 5/10/2014).

Since the distance to the dehusking machine increased to the extent that the cost and trouble of getting the rice to the machine became unaffordable Mr Leon’s father and the other rice producers from his area could no longer continue with the production. Mr Leon estimated that his father produced rice from 1973 until 1977 (Mr Leon, 29/9/2014), and eventually Mr Leon took up rice farming himself. As he explained:

“In 1974 I was already on the rice field with my father ... In 1998, it is in that moment that I said, should again, because I had kept the idea since. ... In that time I had noticed that rice in addition to maize is surely consumable, a lot of people like rice. But I had also noticed that rice was more expensive than maize on the market. There I said, in time father tried rice and that didn’t work, I could try again and see if, ... that is when I decided ... that is how I started again in 1998” (Mr Leon, 29/9/2014).

The experience from his father’s initial work with rice production had remained with Mr Leon. With the changing market situation he was inspired to try it himself. As Mr Leon describes, he has had many difficulties in his rice production:

“And without lying to you, doing [rice production] from 1998 until 2012 I have only made two good harvests. I have only made two good harvests because of ... There was flooding of the Mono River in 1998, rice on two hectares and everything was under water. ... And in 1999 I tried again, but I only did one hectare. And there was no rain. Everything became dry. Like that I left [rice production], but in 2006 I took up production again. I said maybe the sowing is late, I should sow quickly. So, in 2006 I sowed in dry [land]. In March, until April fourth already. It stayed there until May when there was the first rain. And it started to work. That way everything was good, and the rice was very beautiful. I have pictures here. And what happened? There was a flood again. We only harvested half a hectare, the rest was under water.

2007 was the same, I noticed there was flooding on those years and I didn’t harvest much. 2008 was the same, 2009 was the same, 2010 I didn’t sow. Well, 2011 was the same, and 2012 I also counted the time and I was thinking are we going to have a flood this year, no I don’t think so. It is in that moment in 2012 that I did three hectares. The three hectares, by luck I harvested one and a half hectares. There I saw that everything that I spent came back and I even won a little on the one and a half hectares. The rest one and a half was in water again. 6600 kilos on the one and a half hectares. ... 2013 I did three hectares again, by bad luck we didn’t get rain. There was no water, nothing. Everything was lost” (Mr Leon, 26/9/2014).

It is obvious that Mr Leon had a strong desire to produce rice as he kept trying despite the crop failing more often than being harvested. On the other hand it is also obvious that Mr Leon is not willing to risk everything just to make rice farming work. At the time of making the first interview in 2014 on 26th September, Mr Leon was harvesting rice he had sown and apparently this was the last time he cultivated rice, since in 2016 during the fieldwork Mr Leon had not sown any rice.
5.2. Landscape Changes Related to Rice Farming

In section 4.2.1. I discussed vegetation in the landscape at both ends of the temporal scale of the research, in 1960 and in 2016. One of the aims of this thesis is to discuss transformation in the landscape that might be seen to relate to rice farming. In this section I will present findings based on the ground maps. As explained in section 4.2.1. the ground maps were created with Mr Leon and the family members on the ground from different materials found nearby to depict their perception of the landscape. The ground maps represent the family domain in different times from before rice farming, until today, when rice farming seems to have been once again abandoned for the time being. Below I present the ground maps in chronological order starting with the map representing the domain in approximately the year 1960. The different objects represented on the map, are marked with numbers and next to each map there is a list where the number-marked objects are named. Below each map I present briefly what is depicted in the map, and especially the changes in relation to the previous map, based on notes I made in the course of map-making.

Figure 7. Ground Map of Domain 1960

The first ground map (fig.7) that was made depicts the landscape somewhere in the 1960s, well before the work on opening the rice fields began. Most of the landscape seems to be depicted as ‘forest’, with several smaller areas marked as mixed fields with variations of oil palm, manioc and maize. Two main paths are also represented, as well as the limits of the family domain. The Sazue River and a smaller canal extending towards the family domain are placed on the map. The area with all the houses is marked with a single stone, and the site where Vodun Agba has been installed is represented as well.
The second ground map (fig.8) represents the landscape in approximately 1972, at the time when land had been cleared for the rice fields. The map shows, delimited with red chilis, the area which was cleared, leaving only a small area around Vodun Agba represented as forest. Another small patch of forest that was not marked on this map, but which Mr Leon wanted to be added later after inspecting the map, would be found between the house area and the nearest fields to the left of the house area in the map. Oil palm plantations within the area cleared for rice fields were also cut. The cut trees were not uprooted as it would have been too laborious, and so the tree stumps were left standing.

Figure 9. Ground Map of Domain 1973
The third ground map (fig.9) shows the landscape in 1973. The only changes in this map compared to the previous maps is the installation of rice where the forest had been cut, and the maize and manioc in the field most to the left of the map being replaced by rice. The tree stumps were still standing even with rice growing on the fields.

![Figure 10. Ground Map of Domain 1992](image)

The fourth map (fig.10) takes us almost 20 years forwards in time, representing the landscape in 1992, when Mr Leon moved from Cotonou back to the village. In this map, all of the area that was marked as rice fields in 1973 is now filled with grass and leaves representing bush, with a clear distinction made between the forest represented in the 1960 ground map (fig.7) and the bush shown in this map (fig.10). Maize, manioc and oil palms are placed only in the areas closest to the houses, with their cultivated area represented as smaller than in 1973. The small forests around Vodun Agba, and between the houses and the closest field are still represented in this map.

The fifth and final ground map of the domain (fig.11) represents the landscape in the year 2016, at the time of the map making exercise. This map shows how Mr Leon with other family members cleared large areas of the bushed land for cultivation. These, and all other represented fields are only marked with one plant, which represents the change from mixed cultivation to sowing each plant in separate plots. The green chilis on the map represent irrigated vegetable cultivation. Two reservoirs have been dug and a small shack built on a hill formed from the soil excavated to create one of the reservoirs. Two wells have been bored and the trees between the road and Vodun Agba have been cut, with some forest or bush still represented as standing between the houses and the nearest field. Some areas that were represented as fields with mixed cultivation of

---

1In this map it looks like a hole was created in the forest surrounding Vodun Agba, but it is just that wind had moved the leaf marking the forest and it had gone unnoticed at the moment of documenting the map.
maize and manioc, and also marked as having oil palms, are in this map represented as bush or small forest, still with a pronounced difference to the forest represented in the first map.

In summary, the ground maps first produce an image of an initially extensive forest in the 1960s that is then being cut down for large rice fields in the 1970s. Those rice fields are then abandoned along with some of the other fields as well, and the landscape becomes overgrown with bush until the 1990s. Eventually Mr Leon and perhaps other family members as well return to the domain and the old fields are partly re-cleared, and new installations are made for irrigation, such as wells and reservoirs. The ground maps also specify certain important features of the landscapes, such as the house area, Vodun Agba, Mono River, Sazue River, a road and a path, and the domain limit. These features are present in all the maps and thus seem to be important to how Mr Leon and the family members perceive the landscape.

5.3. Land Use

The results of the mapmaking and interviews also contain some interesting and relevant findings regarding cultivation practices more broadly that I find relevant to discuss in connection with the taskscape. When we were looking at Mr Leon’s tomato plants at his field, we started to discuss differences between the cultivation practices in his parents’ time and today. One important difference is in the seasonality of production. Mr Leon described how:

“In the time of our mothers, they had a time to do tomato. They did not know the cultivation of counter season. Cultivation in the Sun, no. They waited for the rainy time ... In that time they did not produce during the dry season. It is because they did not know the system of irrigation all that, no. They did not bring water. They waited for the rainwater” (Mr Leon, 19/2/2016). Past and present annual rain patterns are discussed in section 4.2.3.
Mr Leon described the mixed cultivation practices and rotation of crops at the time of his parents, in comparison to today’s methods and I have compiled his account below:

“They did the rotation. That is to say, if [my] mother wanted to do tomato in the past there, maybe during the big season she will do maize there. And after harvesting the maize now she installs the tomato, because tomato is of three months [growing time until harvest] ... Now [(still talking about the past)] normally they do, in the course of the big season, they do maize and in the small season she does tomato at the place. When she will harvest her maize, that is when she will do a bit of tomato, a bit of okra, market gardening. And September there, until November, they start feeling the drought. At that moment all that they have installed produces well. And they start to sell, and by December there they stop. They wait now, until February or March to prepare the soil again, or there is somewhere they do manioc” (interview, 19/2/2016).

The cultivation of manioc in the time of Mr Leon’s parents seems to have involved mixed cropping methods, which were not observed in Mr Leon’s current cultivation practices:

“When they had sown the maize, 15 to 20 days later they remove the weeds. It is in that moment they start to plant the manioc stems there. It stays under the maize until after the harvest [of maize] they do again they remove the weeds and leave the manioc. The manioc takes the place like that and it becomes a field of manioc. They leave it like that because the manioc does until eight months [before harvesting]. Maize and tomato are three months” (interview, 19/2/2016).

As presented in section 4.2.4. Mr Leon currently combats pests and plant diseases using pesticides and fungicides, which his parents did not use (interview, 19/2/2016). Occasionally Mr Leon has also been able to hire a tractor driver to prepare his fields, mainly the rice fields, ahead of season. In the time of Mr Leon’s parents even the largest rice fields were prepared by hand with hoes, as no tractors were available in those days (interview, 26/9/2014; 5/10/2014).
As already discussed in section 5.2, varying areas of the family land have been used for cultivation, and the cultivated plants have also changed. Two other ground maps were also created that indicate changes in land use (fig. 12 and fig. 13). The two ground maps representing the area of the domain where all the houses have been built in the time of the sons of Agbedonu, and today, show a clear increase in the number of buildings and the area occupied as what could be called living quarters. The ground map of the house area in 2016 can be compared to the satellite image (fig. 14) of the same area, also from the year 2016. In the satellite image the density of the houses is clearly visible, and this physical proximity reflects the tightly knit social aspect of the family community, and the spatial proximity that Hamberger (2011) associates with paternal lineage among the Hwachi, as stated in section 1.3.4.
5.4. Charcoal and Iron

As has already been discussed in section 1.1. the start of charcoal making in the family domain coincides with the opening of the rice fields. Thus in a sense charcoal making could be seen as a part of the taskscape of rice farming. Here I will present findings related to charcoal and its production and I will also briefly present some findings on iron working.

5.4.1. Charcoal

Mr Leon (interview 5/10/2014) describes the start of charcoal making in the family domain as follows:

“Before they did not have the idea of making charcoal. It is at the moment of the destruction of the forest that the [idea of making] charcoal arrived. Because they destroyed vast areas of forest to do rice [farming]. In time my father and my mother did not know how to make charcoal. Our father, he employed many occasional workers to work for him and they had the idea of making charcoal. That is how it arrived here. It is the Togolese [occasional workers] that had the idea”.

Even though in the time of Mr Leon’s parents the family members did not know how to make charcoal, they were familiar with it. In my field notes I have written down observations from a talk with Mr Leon and an older man from the family. Apparently the people in the family knew about charcoal, as they had seen in it at markets, people already used it as a fuel in towns, and there was even a locomotive which transported people and palm kernels that used charcoal as fuel. When the workers from Togo used left over wood from clearing the fields to make charcoal and sold it for money, people in the family also learned how to make charcoal. It was especially the women that took to making charcoal (Field Notes, 31/5/2016). Charcoal making continued, and Mr Leon mentions it as a reason for deforestation:

“What else has destroyed the forest [than opening the rice fields]? It is charcoal making. Because it is the misery that brings all that. The poor what do they have? They have nothing, what do they have to eat? Yet there is wood there. They have gone to transform the wood into charcoal to go and sell. To gain something. It is like that they advanced until the forest is finished” (Mr Leon, 5/10/2014).

Charcoal making is clearly still practiced, as during one walk in the landscape we encountered three different sites where charcoal had already been made or was going to be made. In some sites the trees had been simply cut, one had apparently been burned first and the trees felled thereafter. In another site, trees had been cut and piled, the ground burned, and a field of maize prepared and sawn with the stumps standing amidst the maize stalks. Other than for charcoal, wood had also been cut and bundled to be used or sold as firewood.

Traces of charcoal making can be seen in the photographs (fig.15) taken during a walk around the family domain. The top left photo shows Acacia trees that have been cut in preparation of charcoal making. In the top right photo wood has been piled and partially covered, almost ready to be burnt to charcoal. In the bottom left image small burnt tree stumps can be seen amidst growing maize. The bottom right image shows a site where wood has been burnt to charcoal, and the charcoal harvested, leaving ash and charcoal powder on the ground. As we toured the landscape and found felled trees and traces of charcoal making it was obvious that Mr Leon is not entirely content with the practise and sees it as contributing to environmental degradation. It should be noted that Mr Leon himself does not fabricate charcoal and thus it is not a source of income for him, as it is for some of his family members.
5.4.2. Iron

From the interviews, conversations and mapmaking there are no indications that ironworking would be currently practiced in the family domain, but there are some findings that suggest ironworking has been practiced in the past. During a talk with an older man from the family whom we met with Mr Leon, he gave the information that their ancestors used to fabricate their own tools, such as hoes and machetes, from iron that they bought from the whites. The old man explained that iron was mined from local mines, then bought by the whites and sold back as iron bars. According to the old man it was also the whites that brought their ancestors the idea of the forge and taught metalworking. However, looking back at the discussion on indigenous iron production in West Africa in section 1.3.5. it seems likely that at some point in history there would have been indigenous iron production close to this area. Close to the entrance to the house area there is a small hut-like structure that covers the remains of a forge (fig.16), and the place is connected to Vodun Egun, the Vodun of iron. Mr Leon and the old man also remembered that in the mortuary there used to be a machete made by the ancestors, which was of a different design than current ones. Unfortunately that machete has been lost to rust (Field Notes, 25/4/2016).
Figure 16. Remains of a Forge
Discussion

In the previous chapters I have presented and discussed theoretical approaches to understanding landscapes and the advantages and challenges to co-creation of knowledge. In chapter 3 I elaborated on fieldwork methodology and methods of co-creation, explaining how the research was designed to answer the research question, and finally I have presented the findings from that fieldwork focusing on landscape changes more broadly and the taskscape of rice farming specifically. In this chapter I will attempt to draw together the discussions in previous chapters analysing the findings in light of the research question(s) and drawing from the introduced theoretical background to help me connect and interpret the various findings presented in the two previous chapters. The analysis chapter will be presented below in two parts. The first part focuses on the research question through looking at answers that can be drawn from the findings. The second part of the analysis focuses on interpreting findings that do not easily contribute answers to the research question, or rather findings that the research question is not appropriate for analysing. In this way the second part of the analysis seeks to understand the shortcomings of the research question, and create a more complete understanding of the findings than is possible within the framework of the existing research question. In that final part of the analysis I will especially discuss the significance of the co-creation inspired research methodology for the outcome of this thesis work.

6.1. Answering the Research Question

Before presenting any kind of answers to the research question it is necessary to have another look back at the research question itself and the assumption implied therein. As presented in section 2.1. the research question is: What kind of transformations in the landscape where Mr Leon's family dwells can be traced since 1960, can those transformations be related to the uptake of rice farming, and if so then how? As I introduced the research question I divided it into three separate questions:

1. What kind of transformations in the landscape where Mr Leon’s family dwells can be traced since 1960?
2. Can those transformations be related to the uptake of rice farming?
3. If so, then how?

The first part of the research question is quite straightforward and answers can be drawn rather directly from the findings presented in chapters four and five. As I stated in the end of section 2.2.2. I expect to see relations between all the specific transformations, but what the second part of the research question assumes is that the uptake of rice farming would have some sort of a central role amongst the related transformations and direct connections could be made between the uptake of rice farming and transformations in the landscape. This assumption is what the second part of the research question is asking to confirm. The third part of the research question then asks to describe the specific relations through which the uptake of rice farming can be connected to the transformations in the landscape.
6.1.1. Identifying Transformations in the Landscape Since 1960

In this section I am focusing on the first question in the three-part division of the research question: What kind of transformations in the landscape where Mr Leon’s family dwells can be traced since 1960? First of all I will need to interpret the findings to establish what is should be meant by Mr Leon’s family. Second, I will need to establish what I understand as the landscape where Mr Leon’s family dwells. After establishing the meaning of Mr Leon’s family, and the landscape where they dwell, I will move on to discuss the transformations.

Defining Family and Landscape

For the purposes of this thesis Mr Leon’s family and the landscape where they dwell are both best defined by starting with the story of the origin of the Agbedonu family collective. I am taking the moment of Agbedonu’s conquest here as establishing both the family and the landscape. This is because throughout the findings Mr Leon and other members of the family refer to themselves as members of the family Agbedonu, and to Agbedonu as the founder of the family. Mr Leon and other family members also repeatedly referred to the family domain, the area conquered by Agbedonu and today collectively owned by the family. Thus already in the course of the fieldwork I found it relevant to define Mr Leon’s family, as the Agbedonu family, the descendants of Agbedonu, and the landscape where they dwell as the collective family domain. Up to this point I still see these as the most relevant definitions for the purposes of this research.

The relevance of these definitions can, and of course should be questioned. For example, not all members of the Agbedonu family live within the family domain, and such key informants as two elder brothers of Mr Leon live in countries not even neighbouring Benin. However, I would say that already the fact that family members residing far away visit the family domain, and consider themselves members of the family Agbedonu, speaks for the relevance of the definition. Still, not all the activities of family members take place within the domain. Mr Leon privately owns land and has production activities elsewhere, but during the research his and other family members’ focus was from the beginning on the family domain. The main hypothesis in the research question has to do with rice farming and both Mr Leon’s and his father’s rice production took place within the family domain, further confirming the relevance of considering the family domain as the landscape where Mr Leon’s family dwells. On the other hand it could be said that Mr Leon’s family, especially if considered to be all descendants of Agbedonu, dwells in a multitude of landscapes, and one of those is the family domain. I would still see choosing the family domain out of all of those landscapes as relevant, because the family domain might be the only landscape that all family members share, regardless of where they live or have activities.

Transformations in the Landscape since 1960

Now that the meanings of Mr Leon’s family and the landscape where they dwell have been established for the purposes of this thesis I can move on to answer the first part of the research question: What kind of transformations in the landscape where Mr Leon’s family dwells can be traced since 1960? The findings from the fieldwork were presented in two separate chapters titled landscape and taskscape of the Agbedonu family community. As I wrote in the end of the theory section, even if the material provides findings on various specific topics such as vegetation cover and land use, I am expecting all of these to be related as aspects of the totality of landscape. This is why I am looking at findings presented in both the landscape and taskscape chapters. I will first go through the specific transformations, and then I will look their relations to each other.

Some of the main transformations indicated in the research material would have to do with vegetation cover. The ground maps presented in section 5.2 illustrate the felling of forest in the early 1970s for opening the rice fields, then the abandoned rice fields becoming overgrown, and finally the partial re-clearing of the old rice fields. The research material contains findings point-
ing to the increasing difficulty to find in the landscape what Mr Leon and the family saw as ‘original’ or ‘indigenous’ species of trees, and medicinal plants. Acacia is now seen as the dominating tree species as a result of a government reforestation program, although Mr Leon sees the landscape as completely deforested due to the combined effects of opening the rice fields, charcoal making, bush fires, cattle grazing and carpentry. One more example of transformation in the vegetation cover is the destruction of the sacred forest, which I will return to later as it is a case that came to illustrate well the complexity of the web of relations that is the landscape of the Agbedonu family domain.

Other transformations observed in the material would include the various species of animals that have disappeared from the landscape, although this development is seen as having started already before the 1960s, and the increase in birds after forest loss. Domestic animals were reported as needing more specific care than before, such as specific feeds and medicines. Also the rain and flood patterns are seen to have changed, becoming more unpredictable. Land use has transformed as farming methods have changed from rainfed and mixed cultivation to include more irrigation, monocropping and use of pesticides. For the purpose of storing water for irrigation Mr Leon had two reservoirs dug on the fields that he fills with water from the flood or water pumped from the Sazue River. Since the mid 80s there is a disease in the soil affecting tomatoes, reportedly connected to repeatedly growing tomatoes on the same fields. One more transformation in land use is the start of charcoal making in the early 70s and signs of charcoal making were observed also during the fieldwork in 2016.

Above I listed very concisely the various transformations in the landscape found in the research material and I will now reflect on what kind of narrative about transformation in the landscape these findings could be taken to provide. The findings altogether, and especially Mr Leon’s statements, can be taken to create a narrative of deforestation and environmental degradation, very much resembling the conventional narratives on environmental change in West Africa and Benin discussed in section 1.3. Another narrative could be that of climate change, as Mr Leon and the family members reported increasing irregularity of rains and floods. Especially Mr Leon repeatedly brings up deforestation and climate change when discussing the history of the landscape during his lifetime.

I have no reason to doubt the memories of Mr Leon about his experience of the big trees and the shady forest, but we have to remember that Mr Leon’s experience of the landscape’s history is unique to him. Mr Leon’s particular life experiences, such as education, having lived in the country’s biggest city, and his livelihood in agriculture will have given him a different experience about the landscape of the family domain than for example the poorer members of the family who seek income through charcoal making. For instance, I first met Mr Leon through my brother in law who was working as an agricultural expert in a project supporting local producers, and in section 4.2.4 I mentioned the research on tomatoes that Mr Leon participates in. Through participation in such projects it is likely that Mr Leon has been exposed to such narratives related to deforestation and climate change that might give him a perspective on transformations in the landscape that differs from the perspectives of family members who have not been to school or participated in such projects as Mr Leon. The resemblance between Mr Leon’s narrative on change in forest cover, and the established narratives described in sections 1.3.1 and 1.3.2 might be partly due to Mr Leon’s participation in such activities as mentioned above. As mentioned in chapter one, the respondents of Sanchez et al. (2012) did not mention climate change, thus it would seem that the discourse is at least not entirely prevalent in Benin. I am therefore trying to be cautious to not make unwarranted conclusions from the material. It should be remembered that the purpose of this thesis to examine means of researching the history of a landscape through personal experiences of people, rather than provide quantifiable data. Therefore it is not possible to take for example Mr Leon’s statements about climate change or complete deforestation to directly represent more than his personal experience.

60
6.1.2. Connecting Landscape Transformation to the Uptake of Rice Farming

Above I listed briefly the different transformations in the landscape found in the research material and here I will start to analyse those transformations with regard to possible connections to the uptake of rice farming. This analysis is divided into two parts, and I will begin by looking at how transformations in the landscape could arguably be connected to the uptake of rice farming. In the second part I will look at the opposite argument, how transformations in the landscape could be seen to not be directly related to the uptake of rice farming.

Perhaps the transformation that is most clearly related to the uptake of rice farming is felling of the trees that were cut to open and prepare the rice fields. This removal of trees from many hectares of land at once perhaps also contributed to the already ongoing loss of certain animal species and the increase in birds observed by Mr Leon. The lack of trees in the area might have also changed the behaviour of floodwater in the landscape and enabled erosion in natural canals restricting drainage and contributing to destructive effects of the floods. After the abandonment of the rice fields the non-cultivated parts of the landscape transformed to bush, and this can be related to the uptake of rice farming, since without the initial removal of trees this bush would not have formed. From Mr Leon’s comments presented in section 5.1. it is clear that the original uptake of rice farming in the landscape was an important inspiration to why Mr Leon reopened parts of the bushed fields to start cultivating rice and other crops. In the case of this specific landscape the introduction of charcoal making is also directly related to the uptake of rice farming, as the work on the opening of the rice fields brought in occasional workers who brought knowledge about charcoal making with them. The cutting of trees also produced an excess of wood which provided an excellent opportunity for the charcoal making knowledge to be practiced, thus exposing locals to the craft and inspiring them to adopt the practice of charcoal making.

It seems quite clear that the uptake of rice farming was a significant event in relation to the transformations mentioned above, although it might not be the only explaining factor. There are also several transformations that are not as easily related to the uptake of rice farming, and some transformations where it is very difficult to find a direct relation to the start of rice production. To begin with, the forest displayed in the ground map of 1960 (fig.?) was not cut only to open the rice fields. It is apparent from the material that the forest was cut for building and carpentry materials, as well as for charcoal making. Arguably charcoal making arrived as a result of the uptake of rice farming as I stated in the paragraph above, but I would also argue that even without the arrival of seasonal workers to open the rice fields, the knowledge about charcoal making would have made eventually made it to the research area. I say this because the research material shows that in the early 1970s, even though the family members did not know how to make charcoal they knew what charcoal was since they had seen it at markets and people already used it in the cities. Also, since the people with knowledge about charcoal making did not come from further than across the Mono River, I would say it is safe to assume that people in the research area would have eventually learnt how to make charcoal even without the uptake of rice farming.

Above I partly related the loss of certain species of animals to the uptake of rice farming, but the research material shows that the loss of species was already happening at least already in the 1960s, a decade before rice farming. Furthermore, Mr Leon and the family members explained the loss of these species more through indiscriminate hunting, rather than loss of habitat. Also the more recent loss of pythons can be attributed to foreign demand for the animals, and perhaps partly to changing local religious norms. Whereas globally and regionally deforestation might be connected to changing rain patterns, the causation might not be unanimously agreed on, and on the local scale it is even more difficult to make causal connections between vegetation change and rain distribution. This is why I would say it is too much of a stretch to connect the cutting of trees for opening the rice fields, to the increasingly unpredictable rain patterns, even if also San-
chez et al. (2012) found that people in Benin related changing rain patterns to loss of trees. I stated above that the behaviour of floodwater might have change with the removal of trees from a large area on the floodplain, but I would not draw direct connections between the increasing unpredictability and destructiveness of floods, and the removal of trees from this specific area, since changing and destructive flood patterns seem to be an issue in the whole Mono basin (Sanchez et al. 2012; Ago et al. 2015). Furthermore, based on the brief look at the very limited research on the Mono River in section 1.3.5. the scientific literature seems a bit divided on the causes of destructive floods. Ago et al. (2005) emphasize increased rainfall and land use practices, whereas Amoussou et al. (2012), while not focusing specifically on the destructiveness of the floods, seem to find a connection between the construction of the Nangbeto dam and increased discharge of the Mono River.

It is also difficult to find relations between the uptake of rice farming and other changes in agricultural practices. The change towards monocropping and the seemingly resulting disease on tomatoes, and the use of pesticides are not easily connected to the uptake of rice farming. It might be that rice was the first monocropped plant, but rather being applied from rice to maize and other crops, I would argue that the changing agricultural production methods are results of agricultural extension projects, such as the one my brother in law was working when he first introduced me to Mr Leon. Pesticides were also not used during the initial rice farming in the 1970s. I would rather explain the use of pesticides by increased availability and affordability. I would interpret Mr Leon reporting an increase in the use of medicines and feeds for livestock as a further indication of the increased availability of agricultural inputs.

It might be argued that the uptake of rice farming connected the local producers to a wider market and this connection induced change in cultivation practices. This assumption is not convincing since I already showed in section 1.3.5. that the area has been connected to the global market for hundreds of years, and palm oil and kernels of the oil palm, a plant indicated in all the ground maps, were important exports. An elder member of the family also remembered when the nearby railroad was still active and the train transported palm kernels. A further indication of market connection is that the same elder man told me and Mr Leon that their ancestors used to buy iron bars from the Europeans. I would therefore assume that people in the landscape had a connection to the regional and global markets since a long time before rice farming, and also market oriented agriculture might have been practiced in the form of growing oil palms. Even if Benin’s foreign trade relations might have declined during the Marxist-Leninist regime that period certainly did not erase experiences from the long history of connections to global trade networks.

I connected the landscape becoming overgrown with bush to the abandonment of rice farming, and therefore it is in a sense connected to the uptake of rice farming as well. However, it is perhaps not only due to the abandonment of rice farming that the landscape was overgrown. According to Mr Leon after the 1970s many people left the floodplains, and the ground maps (figs.? and ?) also show that in addition to the rice fields also fields with maize, manioc and oil palms were abandoned. The landscape becoming overgrown might then have to do also with a general decline in agricultural activities, rather than being explained only through the abandonment of the rice fields. Also the reopening of the fields by Mr Leon is not entirely explainable through inspiration from the original uptake of rice farming. Mr Leon returned to the village in 1992, but he didn’t start rice production until 1998, so he would initially have cleared fields for other crops than rice. At the time of fieldwork Mr Leon had not sown rice at all. Even though Mr Leon seems to often identify as a rice producer and is visibly proud of the history of rice farming in the landscape, financial sustainability concerns still heavily affect his production choices and this might be why he seems to be investing into irrigated vegetable production. I would also argue that the government sponsored acacia reforestation program mentioned in section 4.2.1. was more connected to the national and regional narratives of deforestation discussed in chapter one, than local loss of trees from opening the rice fields.
My conclusion from this discussion would be that while it is possible to directly connect the uptake of rice farming to certain transformations in the landscape, it cannot be considered as a specifically crucial event regarding all the transformations observed in the research material. I would say this is due to the research landscape not being isolated from the rest of the world. As I stated in section 2.2, the research area is an arbitrary delimitation when landscape is considered a totality, and the research area therefore has relations beyond its imposed limits. Even if the uptake of rice farming is in some ways an influential event at the local spatial scale of the research area and within the limited temporal scale chosen for this study, processes of transformation on those scales are connected to transformations in the regional, national and global (even universal) spatial scales, and an infinitely more extensive temporal scale. For example, local rain patterns are connected to global climatic transformations, and recent changes in cultivation practices are connected to a long history of agricultural production and trade. It seems then that I cannot give a simple and definitive answer to the research question, but I would not necessarily say the research question should have been changed. I find that the research question was a very good point of entry that invoked an enthusiastic response from Mr Leon and perhaps motivated him to work for this research effort to the admirable extent he did. However, as I will discuss below, under the direction of Mr Leon the collection and production of the research material came to involve much more than answers to the research question.

6.2. Beyond the Research Question

I begin this second part of the analysis with an evaluation of the usefulness of the research question with regard to understanding local landscape change in the specific context of the research. I then offer examples of the kinds of insights that could have been omitted with a strict focus on the research question, and how the research design might have allowed for findings that did in fact produce such insights. My focus here is to evaluate the overall success of the research effort. This means reflecting on the research not just in terms of answering the research question, but to consider learning that might even be seen to go beyond the research question into more fundamental issues.

The research methodology, through enabling especially Mr Leon to take considerable responsibility and steer the production of research material, allowed for findings that go beyond both the spatial and temporal scale of the research question. Such findings would be at least the family’s origin story, the case of the destroyed sacred forest, and most of the findings on Vodun, such as the origin of Vodun in the family domain. The original research design was not focusing on Vodun, and I personally did not want to propose it as a research topic, however Mr Leon and the family members directed the research to that direction on many occasions. Looking at the material now the findings on Vodun can be considered crucial to understanding the researched landscape and its transformations, and especially to understanding the experiences of family members.

As Hamberger (2011) found in Togo, also in the research area the Vodun are clearly individuals with histories and inseparably connected to the landscape. From the stories about the origin of the Agbedonu family and the origin of Vodun in the landscape, it seems that the histories of the Vodun and the people are very much intertwined. I believe this layer of relations between the people and the landscape would have been missed if I had strictly followed a predesigned plan. I would argue that the significance of Vodun to Mr Leon’s and the family members’ brought them to repeatedly raise this topic, and by not attempting to direct the research somewhere else I was able to produce with Mr Leon and the family material on issues that were perhaps genuinely important to them. It is also important to note that as the Vodun are individuals, people also seem to have personal relationships to them. For example in a sense Mr Leon could be seen to consider
that the old Iroko tree, a Vodun named Dontete, was to thank for his birth. Through such affiliation with Vodun the landscape might take very different meanings to Mr Leon and the family than I could have observed by making measurements or maps of the landscape by myself. This is why I would say Hicks (2016) was right to criticise Ingold (1993) for claiming that the activity of the archaeologist is on a par with the activity of the native dweller. Of course archaeologists can be seen to be separated from the native dwellers by more or less time, but from my experience in this research effort I would say that even when walking in the landscape together with Mr Leon our experiences would always be different to the extent that I would never claim them to be on a par. Fortunately this does not need to mean that my experience would have been less valid than Mr Leon’s. Through combining what I could record of Mr Leon’s and the family members’ experience into the research material and my own experience, I believe I have been able to create a more interesting and insightful thesis than would have been possible by myself.

6.3. Concluding Remarks

To conclude I will first reiterate the conclusions of the two previous sections. To answer the research question, I would say that especially on the local spatial scale, and the time scale of the research, the uptake of rice farming can be seen as an important event regarding many transformations in the landscape. However, due to the researched landscapes relations to transformations on the regional, national, global and even universal spatial scales in many ways the event of the uptake of rice farming becomes less significant. The transformations within the temporal scale of the research are also related to transformations on much more extensive temporal scales, and therefore it becomes more difficult to view the uptake of rice farming as a specific isolated event. I would rather say that a consideration of more extensive temporal and spatial scales gives a better understanding of the transformations within the scales chosen for the research, and helps to avoid the over-emphasis of specific events.

I also found that the methodology of the research helped to expand the collected research material beyond the focus of the research question. The methodology seemed to enable some, or even considerable influence on the field research process by Mr Leon, and it is likely that also the collected research material contains traces of the perspectives and experiences of Mr Leon and the family. How much of that has made it to this final document I cannot know, but I do claim that some of the topics on which material was collected were definitely chosen by Mr Leon and the family members and due to this the research process all the way to this final thesis document took directions that it would not have with a more predetermined research plan. I would say the research methodology was in many ways a successful exploration of doing research with an approach inspired by the ideas of co-creation as presented in chapter three. I do recognize that this thesis, specifically this document, is my creation in the sense that I am responsible for any views presented and all interpretations that have been made. In this sense the thesis is strictly a product of Western scientific knowledge production, to once more dispel Ingold’s (1993) claims of being on a par with the experience of the local dweller. The methodology however, was to me an interesting meeting between knowledges and worldviews, which I hope further research can build on. This is why the experience from performing the methodology of this research is to me the most important contribution I am making with this work, and that would never have been possible without the contributions in time, patience, interest, kindness and understanding by Mr Leon and everybody in the Agbedonu family who participated in this research.
References


