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Ethnoarchaeology of the Incense Trade in Tigray, northern highland Ethiopia

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Ethnoarchaeology of the Incense Trade in Tigray, northern highland Ethiopia

by

Getachew Meressa Nigus

A THESIS

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Abstract

Since ancient times, frankincense and myrrh have been traded across Northeast Africa, the Near East and circulated through the Red Sea, the Indian Ocean, and Mediterranean Sea. The incense trade is almost invisible, and little is known of how incense was produced, distributed, and consumed within ancient states and how incense was integrated into local and regional political economies. This dissertation is an ethnoarchaeological investigation of the political economy of the contemporary incense trade in the Central and Northwestern Zones of Tigray Regional State, northern highland Ethiopia. Significantly, there are both elite and non-elite incense trades in this region. The elite trade of frankincense is controlled by government sanctioned international and parastatal companies that use non-mechanized production, processing, and distribution practices. Frankincense is targeted for international consumers but also supplies the Ethiopian Orthodox Tewahedo Church within the country. Women form the largest labor sector processing frankincense, but they also trade, produce, distribute, and consume non-elite luxury aromatic plant materials for daily household rituals using different incense burners than those found in the church. While the contemporary and ancient incense trades cannot be considered as identical, the contemporary trade provides insights into how incense production and trade are integrated into the regional political economy and how the trade reproduces class and gender inequities that have deep historic roots. Anthropologists must consider international incense trade more broadly, including at the levels of local production and consumption, and by considering the role of this trade in the production and reproduction of social inequalities and power structures at all social scales. The study also provides a cost-effective method for African researchers to identify incense residue.

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Dedication

This dissertation is dedicated to my late grandfather, *Liqe Kahnat* (Reverend) Wogahta Gebru for providing me with proper church schooling; my uncle, Haile Selassie Wogahta for introducing me to formal education; and to my late father-in-law, Colonel Belete Desta for his encouragement and support he rendered to me.

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CHAPTER 1: INTRODUCTION

1. 1. Description of the Study Area

This dissertation is an ethnoarchaeological investigation of the contemporary incense trade in the Central and Northwestern Zones of Tigray Regional State in northern highland Ethiopia (see Map 1.1). Incense is an aromatic gum, resin or plant material that is burned to produce a sweet-scented smoke. It is a commodity sought in both the ancient and contemporary world for rituals and other practices (Baldi 2014; Shackley 2007). Today, there are two types of incense trade in Tigray: an elite trade of frankincense and myrrh, and a non-elite trade in aromatic wood and plant materials. The study focuses on three market centers: Adwa and Aksum in the *Maekelawi Zoba* (Central Administrative zone), and Shire Inda Selassie in the *Semien Mi'irabawi Zoba* (North-western zone) of Tigray. These study sites are selected for ethnoarchaeological study based on their long-standing archaeological, historical, and commercial centrality in Tigray.

The intent of the study is to provide an understanding of the social, economic, political, and material context of the contemporary incense trade that can inform archaeologists of the complexity of incense production, processing, and distribution at local and regional levels. To inform on past practices, it is essential that ethnoarchaeological observations are carefully situated in their historic context to the greatest extent that available data allows. This enables researchers to determine how present and past practices are similar and different in relevant ways. In this chapter, I present historic information on the incense trade in the research study area, and in Chapter 2, the archaeology and history of the incense trade is presented at the regional level. I begin with the selection and history of the study area.

Adwa is located approximately 1000 km from Addis Ababa, Ethiopia's current capital. The total area of Adwa is 2303 km² (Berhane 2016:49) with a total population of 67,000, of which 35,000 are females and 3200 males (Tigray Bureau of Urban Development, Trade, and Industry 2019). Adwa is one of the most densely populated areas in Tigray (Dragan et al. 2003:861-862). The city is surrounded by chains of mountains, except to the west.

The 4th century CE inscription of Adulis has a reference to 'Aua' which McCrindle (2010:61) assumes to be either Adwa or Yeha. Yeha is situated 25 kms southeast of Adwa. Yeha¹ is an ancient religious town in Central Tigray since the early first millennium BCE, and it is a location of considerable archaeological attention, including its ancient pre-Christian temple and monastery (Fattovich 2009; Hahn et al. 2021; Japp et al. 2011; Köster 2021; Michels 2005; Pietsch and Kühn 2017; Weiss et al. 2016; Harrower et al. 2020). Adwa flourished in the early first millennium CE during the period of the Aksumite kingdom, if not earlier. Emperor Gebre Meskel (r. 534- 548 CE) granted Adwa as the *gult* (estate) of Abba Gerima monastery in the 6th century CE (R. Pankhurst 1982:192). Adwa has five old churches (including Mariam, Mikael, Gebriel, Medhanie Alem, and Selassie) located in the heart of the city. The Adwa churches constitute the nuclei of the town's social life, trade, and urbanization (R. Pankhurst 1982: 222-223).

After the 17th century, when Gondar became the capital of the Ethiopian kingdom and trade routes were reoriented between Gondar and Massawa (R. Pankhurst 1964:66; R. Pankhurst 1982:193), Adwa became an important node in trade between the two destinations and was the

¹ In the pre-Christian period, Yeha was the center of religious rituals of the god Almoqua, proclaimed as the supreme god of Yeha (and Sabean) (D. Phillipson 2012:24). The same site later became the monastery of Abba Aftse, one of the Nine Saints who converted the populace to Christianity in the 5th and 6th centuries CE (D. Phillipson 2012:130).

seat of Tigrayan governors from the 18th through the 19th century (R. Pankhurst 1982:193). One prominent occupational group in Adwa were the *Slamge*, which refers to the Muslim traders-quarter within the predominantly Christian community (Wolde Aregay 1984: 61). Adwa was also the important site of the Battle of Adwa in 1896, when Emperor Menelik II and Empress Taytu defeated the Italian colonizing forces, making Ethiopia the only country in Africa to successfully repel European colonization (Zewde 2002:77-79).

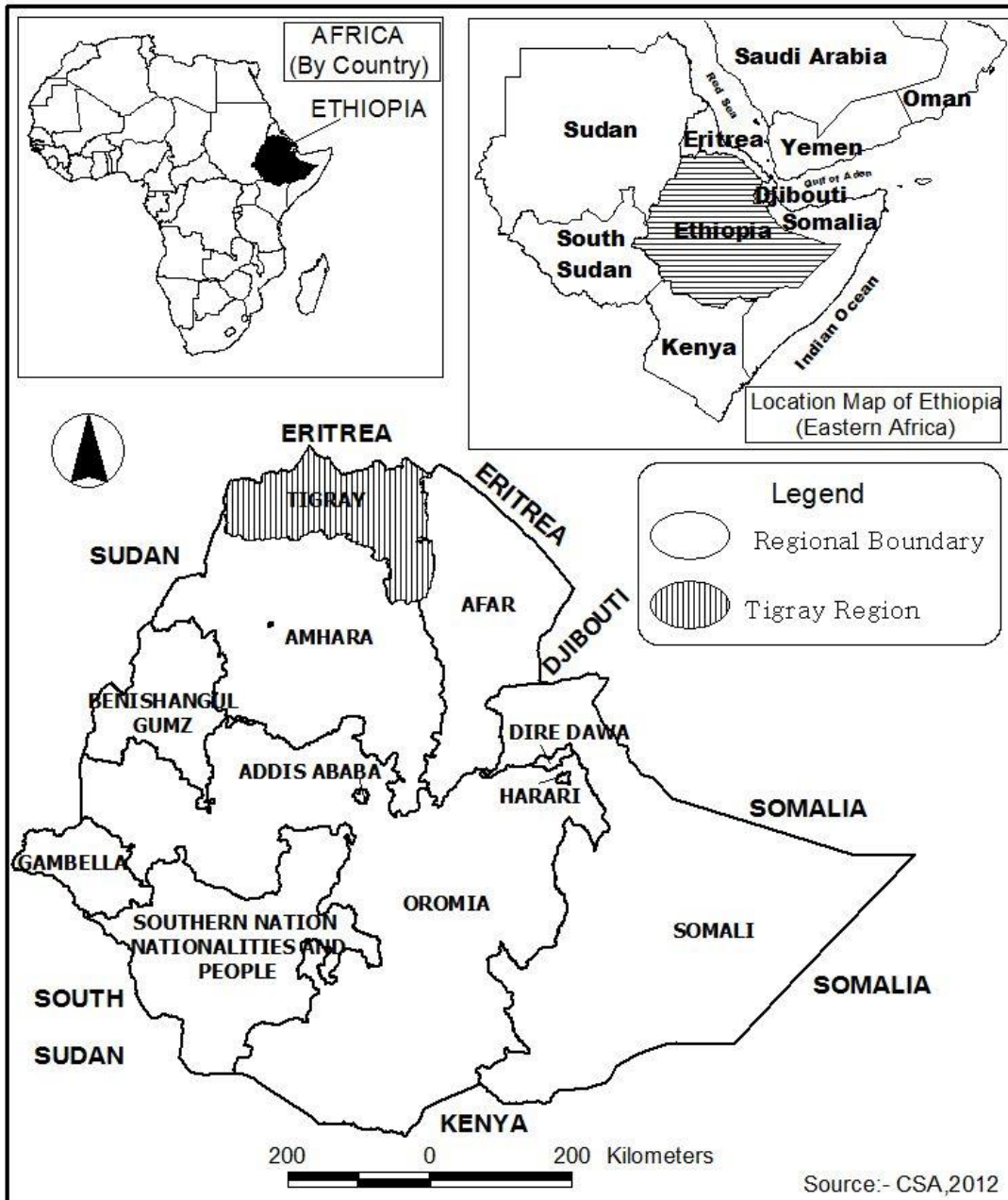
Aksum is found to the west of Adwa and Yeha. The city has a total population of 74,000 people, of which 38,000 are women and 36,000 men (Tigray Bureau of Urban Development, Trade and Industry 2019). The total area of the city is 3200 km² (Weldehaweria et al. 2016:2). Aksum consists of five *kebeles* (Berhe et al. 2017:3) and shares boundary with Mereb-lekhe *woreda* in the north, Na'eder Adet in the south, Wukro Maray in the west, and Adwa in the east (Kassa 2019:1). Aksum was the center of the Aksumite kingdom (120/40 BCE to CE 850) (Bard et al. (2014:285) and it remains the holiest Christian center in Ethiopia (Phillipson 2012:47). The archaeological and historical value of Aksum is discussed at length in Chapter 2.

Shire Inda Selassie is a strategic junction linking key trading routes that connect Tigray with Gondar, Sudan, and Eritrea. Shire Inda Selassie is the main city for both Shire Inda Selassie *woreda* and the Northwestern Zone of Tigray Regional State, located 50 kms to the west of Aksum on the Aksum-Gondar main highway. It is situated on the route between Tigray and Sudan in the west, and Amhara Regional State to the south (Finneran 2005:8). The city has an area of 18,325 km² with a total population of 78,000 (Tigray Bureau of Urban Development, Trade and Industry 2019).

Shire was the seat of a medieval polity between the 14th to 16th centuries that was described by James Bruce (1790:343) in the 18th century as a kingdom that stretched from Aksum to the

Tekeze River. Shire was the major producer of cotton cloth, which was distributed throughout Tigray as a medium of exchange. Incense was an alternative medium of exchange in Tigray in the late 18th century, and Inda Selassie remains a hub for frankincense production and processing in western Tigray. Shire Inda Selassie is also the location of ancient monasteries and churches, including Debre Abbay, Debre Maryam, and Qoyatsa (Henze 2007).

This study focuses on contemporary production, distribution, and consumption of frankincense, myrrh, and aromatic plant materials. The contemporary trade is historically situated, including in long-term societal structures, specifically patriarchal and class structures that unequally impact the opportunities of different categories of men and women involved in the incense trade.



Map 1.1. Study area

1. 2. Research Questions

The study attempts to answer the following four research questions:

1. How does the incense trade integrate ordinary people into social hierarchies and larger scale economies in the history of the study area?

2. What is the lived experience of the women engaged in the processing and trading of incense and aromatics?
3. Are there material differences between elite and non-elite contexts of incense use?
4. How can the material evidence of the incense trade be determined through residue analysis of burned incense?

1. 3. Rationale of the Study

To date, there are few archaeological and ethnographic studies of the region's internal trade routes (but see Apaak 2008; Gebrelibanos 2012; Lyons et al. 2018; Michels 2005; Sernicola and L. Phillipson 2011; Woldekiros 2014; Wolf and Nowotnick 2010) and fewer of how the production, distribution, and consumption of local luxury goods were integrated into the political economy that linked ordinary people into the interests of the state (but see Lyons 2021). However, there is economic and developmental literature on aspects of contemporary incense production that are relevant to this study (e.g., Fitwi and Lemenih 2011; Gebremedhin 1997; Woldeamanuel 2012). The long-term history of the incense trade in Ethiopia's northern highland states is not entirely clear, because incense is an 'invisible trade' that leaves little direct material trace except as residue when found in ancient incense burners (see Finkelstein 1988:247).

1. 4. Significance of the Study

This research provides a detailed study of elite and non-elite people's participation in the local and regional production, distribution, and consumption of different types of incense used by local elites and non-elites as luxury products. For the purposes of this dissertation, the elite are defined as the Ethiopian state and the Church, and non-elite as ordinary urban and rural people. Studies of ancient trade in incense focus on incense consumption in international trade. Uniquely, this study provides a nuanced understanding of the participation of different social

groups and social scales within the luxury trade, and how societal structures of gender within the region's historic political economy and patriarchal power structure continue to be reproduced in this trade. In particular, the study focuses on women who play a significant role in processing, distribution, and consumption of incense. There are certain patterns in the use of incense products across social groups in the study area. Aromatic and low-quality frankincense are consumed at the household level whereas high-quality frankincense is consumed by the church. This signifies material consumption difference as an index of social, political, and economic hierarchies.

Second, the study integrates the economic marginalization of women in Tigray's urban livelihood, which is much less studied than that of rural women. This monolithic understanding of women's economic challenges fails to expose women's marginalization in non-agricultural practices.

Third, the study provides a contemporary description of the incense trade that documents contemporary social and economic practices and provides comparative data to track similarities and differences in the incense trade into the more ancient past. In particular, the study provides a clearer understanding of different agents involved in the contemporary non-mechanized incense trade, that may provide archaeologists with greater insight into how these types of luxury trades contributed to the development of social complexity within early state political economies in northeast Africa.

Fourth, the incense trade can be traced using a number of technical approaches. However, many of these technologies are too expensive to be deployed by African scholars. For this reason, the residue analysis on incense conducted in this study offers a more accessible method of analysis for African researchers at a modest cost.

1. 5. Structure of the Dissertation

This dissertation is organized into 11 chapters. Chapter 2 presents the pre-history, history and contemporary contexts of the study area. Chapter 3 presents the history of incense trade in the Horn of Africa and the Red Sea region. Chapter 4 presents the theoretical framework of the dissertation. Chapter 5 describes the methods used for research design, data interpretation, and analysis. Chapter 6 presents information on incense collection and transportation. Chapter 7 investigates the incense processing and trading system in detail. Chapter 8 analyzes implications of the incense trade for household economy and gender relations. Chapter 9 discusses the significance and use of frankincense and myrrh in church rituals and the persistent demand of the church for high quality frankincense. Chapter 10 provides laboratory experiments and the analysis of phytoliths, starch and charcoal recovered from incense burners collected in the study area. Chapter 11 concludes the study.

CHAPTER 2: ETHIOPIA, TIGRAY, AND INCENSE TRADE

Incense has been a commodity sought and traded by polities in the northern highlands of Ethiopia for the past 2500 years. Indeed, the incense trade underpins sociopolitical development in this region because it reproduces the unequal social and political relationships that entangled ordinary people, the church, and the state. The history and ethnoarchaeological study presented here shows a continuity in important aspects of this trade in which the church and state maintain control of the consumption of high-quality incense as a source of secular and ritual power, where the church anticipates a form of incense tribute from ordinary people, particularly women, and where ordinary congregants experience incense in church services, the burning of incense at life-crises events, and the use of poorer quality incense in their daily lives as medicine, balm, a medium of divination, and in family rituals. The enormous consumption of incense is participated in by all members of Tigrayan society, but the experience and economic benefits of its production, processing, and distribution further reproduces long-term broader societal inequities structured by patriarchy and class-based hierarchies. This chapter presents a sociopolitical history of Tigray, the political relationship between people, state and church, and the patriarchal system that structures men and women's differential access to valued economic resources broadly.

2. 1. Archaeological Context

The three study sites and the rich historic region of Tigray are the focus of archaeological (Apaak 2008; Bard and Fattovich 2010, 2013, 2015; D'Andrea et al. 2008; Fattovich 2009, 2012a,b, 2019; Finneran et al. 2000; Harrower and D'Andrea 2014; Harrower et al. 2019; Japp et al. 2011; Michels 2005; D. Phillipson 2008, 2009a,b, 2012; L. Phillipson 2009; Sernicola and L. Phillipson 2011; Sulas et al. 2009; Wolf and Nowotnick 2010) and ethnoarchaeological research

(Lyons 2007a, b; 2009, 2014, 2021; Lyons and D'Andrea 2003; Lyons and Freeman 2009; Lyons and David 2019; Woldekiros 2014) of the ancient Pre-Aksumite and Aksumite polities.

The study area is the location of the development of some of Africa's earliest states: the Pre-Aksumite polities (ca. 800 to 360 BCE) and the Aksumite kingdom (120/40 BCE to CE 850). Bard et al.'s (2014) chronology for the Aksumite kingdom is adopted herein. Curtis (2008:337) attributes the stimulus for the rise of these states to their central position in the important ancient trade 'superhighways' of the Nile Valley, Red Sea, and Rift Valley that connected East Africa (including the Horn of Africa), the Nile Valley, the Mediterranean, and southwest Asia. This location held a strategic advantage that facilitated the expansion of long-distance trading networks across the highlands, beginning in the first millennium BCE, that led to increased social complexity in what is now northern Tigray (Bard et al. 2000; D'Andrea et al. 2008; Fattovich 1990, 1994, 1997, 2000, 2009, 2010, 2019; D. Phillipson 2003, 2012). The Pre-Aksumite polities of the first millennium BCE are not fully understood, but may have been a federation of kingdoms with the largest polity, called Damaat, centered in Yeha (Brandt 1997:72; Fattovich 2010:147; D. Phillipson 2012). The Pre-Aksumite polities are considered indigenous developments but have south Arabian (Sabeian) influences, which are generally viewed to be of short duration and restricted to elite contexts (Fattovich 2009:287; D. Phillipson 2009a:258-259; 2012). Why the Pre-Aksumite polities collapsed is unknown (Fattovich 2012a:33), and the relationship/transition between the Pre-Aksumite and Aksumite polities remain unclear, although recent research at Beta Samati near Yeha suggests a greater continuity than was thought previously (Harrower et al. 2019).

The Aksumite kingdom developed around Aksum in the last centuries BCE and the first few centuries CE (Fattovich 2019:251; D. Phillipson 2012). Although Aksum is important as one of

Africa's earliest states, it is the least understood (Harrower et al. 2019). Aksum's territorial boundaries are unknown, but it is generally accepted that its sphere of influence included the northern highlands of Tigray, adjacent areas of highland Eritrea and sites in northwestern Tigray at Wukro Maray and Inda Selassie, sites south of Mekele, and the southern Eritrean lowlands, including the Red Sea Port of Adulis. However, Aksum's political and economic control of these regions is unclear (D. Phillipson 2012).

D. Phillipson (2012:47-48) states that Aksum rose to power in the first seven centuries CE, largely through its important and far-reaching international trade network that extended from the interior of Africa and the Nile Valley to the Red Sea and the Indian Ocean trade. Aksum was not a peripheral state in these networks, but instead was highly influential in the southern Red Sea region, and it was an important trading partner with Rome in the Indian Ocean trade (see Dugast and Gajda 2014:277; Fattovich 2019; Krishnan and Ballavally 2017; Phillipson 2012; Seland 2012, 2013, 2014).

Aksum's power was based in long-distance trade. Aksum controlled the collection of luxury goods from the African interior and their distribution into international trading networks (Fattovich 2019:272-273; Manzo 2005:64; D. Phillipson 2012:202-207) that connected Aksum and the Ethiopian hinterland with ancient Egypt, South Arabia, the Roman Empire, India, and China (Bard et al. 2014:285; Blue et al. 2008:302; Casson 1989: 53; 20; Raunig 2004:87).

Cosmas Indicopleustes, the author of the 6th century CE *Christian Topography*, states that merchants from neighbouring regions visited the Ethiopian hinterland to procure ivory and frankincense, and then to export these commodities by sea to South Arabia (McCrindle 2010:51-52, 372; R. Pankhurst 2004:20). Citing Casson (1989:20), DiBlasi points out that incense and other items were traded in Adulis, the Aksumite kingdom's port on the Red Sea. Taib (1982:2)

claims that Ethiopia was trading frankincense with the Ancient Egyptians and Phoenicians for more than four millennia, although without presenting persuasive evidence. However, the evidence available implies that incense has been in use and traded within the northern highlands of Ethiopia since Pre-Aksumite times. The presence of incense burners in central and eastern Tigray archaeological sites reinforces this assumption. Procopius of Caesarea, a contemporary of Cosmas, states that for the burdenless traveller, the inland journey from Aksum to Aswan took one month, and from Aksum to Adulis up to fifteen days. The Aksum-Aswan inland route connected Aksum and Egypt (Phillips 1997:441-442), and Aksum traded with neighbouring Napata and its successor Meroe in modern-day Sudan (Hatke 2013:13, 33; Hakem 1981:316). The importance of Aksum's role in international trade, and the influence of their Roman trading partner is evident in Aksum minting its own coins, including gold coins based in the Roman tri-metallic coinage system between the 3rd and 7th century CE (Kobishanov 1981:386; D. Phillipson 2012:183).

Important in this study is that Aksum's kings converted to Christianity in the 4th century CE (Bowersock 2013: 63; D. Phillipson 2012:51-65; Seland 2012: 80), and the conversion of the countryside followed in the 5th and 6th centuries (Haas 2008:117). The introduction of Christianity in the 4th century CE is assumed to have augmented the consumption and commercialization of frankincense (Fitwi and Lemenih 2011:47). Islam was introduced into the region in the early 7th century (Ahmed 2001:58; Shinn and Ofcansky 2013:395). Considering the wide use of incense in different cultural and religious rituals of Muslims in Ethiopia, the introduction of Islam also augmented the use of incense.

Aksum's decline after the 8th century is attributed to multiple factors, including climate change, environmental degradation (Butzer 1982:34; Darbyshire et al. 2003:537), the spread of

Islam around the Red Sea coast that isolated Christian Aksum's direct access to the Red Sea trade (Fattovich et al. 2000:71; Fattovich 2019:276; D. Phillipson 2012:210), and the spread of the Justinian Plague after the 6th century, which disrupted trade routes (Fattovich 2019:276).

Following Aksum's decline, the center of political authority shifted southward under the rulership of the Zagwe dynasty at Lasta, who were considered political usurpers and were ousted by the Solomonic Dynasty in the 13th century (Tamrat 1977:112, 122-123). The Solomonic Dynasty legitimated its authority through its claim of direct descent from Ethiopia's Queen of Sheba (Makhda) and King Solomon, whose son, King Menelik I, is purported to be the first king of Aksum (Phillipson 1998:127, 2009b:22), (although the dates are off by 1000 years). The Solomonic Dynasty founded the Ethiopian State (CE 1270-1974), a hierarchical and tribute-taking empire that eventually ruled Ethiopia's northern, central, and southern highlands. The last emperor, Haile Selassie, was overthrown by a socialist regime called the Derg in 1974 (Zewde 2002:235), a military coup that triggered a civil war from 1974 to 1991 when the Federal Democratic Republic came to power. During this civil war, Tigray was the site of considerable wartime violence and famine that disrupted trade and agricultural production. Trade routes were disrupted again after the 1998-2000 border dispute with Eritrea and were briefly reopened and closed again in 2020 with the current state of violence as of this writing.

2. 2. Cultural Context

2. 2. 1. Administrative Structure

Tigray is one of the ten ethnic-based Regional States of Ethiopia (Mengisteab 2001:21) and shares its border with Eritrea to the north, Republic of Sudan to the west, and the Amhara and Afar regional states of Ethiopia to the south and east, respectively (Hadgu et al. 2013: 89). Tigray consists of six zones, which are further subdivided into 47 districts (*woredas*). Each

district contains an average of 15 *tabias* and has a population of roughly 40,000 residents. The district is further classified into smaller administrative units known as *tabias* which consist of groups of three to four villages. They are administered by *baitos* or people's locally elected councils. The lowest informal administrative unit at the village level is called a *kushet*, from which members of the *baitos* are elected (ACAPS 2021:7; Hendrie 1999:34).

2. 2. 2. Population Size and Composition

The 2021 population of Tigray is estimated at 5,685,598, of which 50.7% are women and 49.3 % are men (OCHA accessed 06/06/2021) . The population is predominantly rural, although urban centres have expanded since the end of the previous civil war (1974–1991). The population's majority is ethnically Tigrayan and speakers of Tigrigna, a Semitic language. Other minority ethnic groups include the Irob, Cushitic language Saho-speakers, and the Raya, a multilingual ethnic group who speak Rayegna, (a language that combines Oromiffa, Tigrigna, and Amharic), Kunama, Oromo, Afar, and Agaw (Fosse 2006: 19; Gidey et al. 2015: 495; Nigus 1998:1-2; Gebru et al.1994:8). Minority ethnic groups also speak other languages spoken by people who share borders with Tigray Regional State. Tigray's population is 92.2% Orthodox Christian, 1.7 % Muslim, 2.1% Catholic, and 4.0% other (ACAPS 2021:5, 23).

2. 2. 3. Economic Activity

Agriculture is the mainstay of the Ethiopian economy, as 85% of its population is engaged in cultivation of plants and breeding varieties of domesticated animals (Bewket and Conway 2007:1467). More than 80% of Tigray's population relies on rain-fed agriculture, which uses traditional methods of non-mechanized ox-plough cereal cultivation, and livestock rearing (Gebrehiwot and van der Veen 2013:106; Woldehana 2002:124-125). The types of cereals grown in the area vary according to agroecological zones. Cultivated crops include teff, wheat, barley,

maize, finger millet, sorghum, pulses, and beans (Gebru et al. 1994:8). Animal husbandry, particularly of oxen, is an essential source of energy for ploughing and threshing (Gebregziabher et al. 2006:131); Commerce and trade are another important occupation. It is believed that 16% of the population are wholesale and small-scale traders, craftworkers, hairdressers, and tailors (Woldehanna 2002:127).

In the context of Central Tigray (the study area), Hagos et al. (2002:13) state that the Central Tigrayan agricultural economy does not reach the subsistence level at the end of the 20th century, even in times of adequate rainfall. Citing Gebru et al. (1994), they note that the number of households that can feed themselves for 4 to 6 months of the year amounts to 42% of the population and that only 17% are food self-sufficient. A more recent study in Tigray finds a reduction in poverty attributed to growth in the sectors of agricultural, investment and services in the past two decades (ACAPS 2021:13). In the period 2011-2016, the poverty rate dropped from 31.8% to 27%, but the 2016 poverty rate in Tigray remained higher than the national average (23.5%) (ACAPS 2021:13; World Bank Group 2020). In 2019, Tigray's GDP per capita for income was 735 USD ([Spotlight on...Tigray, Ethiopia: pathways to progress - Geographical Magazine](#). Accessed on 06/06/2021) versus 855.8 USD ([GDP per capita \(current US\\$\) - Ethiopia | Data \(worldbank.org\)](#). Accessed on 06/06/2021) for Ethiopia, overall. In addition, poverty rates in rural Tigray (31.1%) are twice that of urban Tigray (14.2%) (World Bank Group 2020), and Tigrayan women are more vulnerable to poverty than men: 43% of women and 22% of men experience poverty (ACAPS 2021:13). Factors responsible for poverty include large family size, literacy status of the household head, and access to credit and non-farm income (Afera 2015). In 2021, the average percentage of households headed by women is 34% of total households in

Tigray, considerably higher than the national average of female-headed households (25%) in 2016 (ACAPS 2021:23; UNICEF 2019:5).

Land tenure systems in highland Ethiopia are complicated (Crewett et al. 2008). In the 14th century, Emperor Amde Tsion (1314-1344) and his son, Emperor Seyfe Ar'ad (r.1344-1371) claimed all the land, resources, and the right to extract tribute/taxes from the land used by their subjects (Tamrat 1972:98). From that point forward, emperors used temporary land grants to reward loyal followers and confiscated land to punish dissidents (Crummey 2000; R. Pankhurst 1968; Zewde 2002). The state also gave permanent land grants to the church (Crummey 2000; Tamrat 1972). Despite the emperor's claim to all land, in practice, kin-based groups held heritable land as first settlers of a local area and others had access to village land (R. Pankhurst 1968). People without land had very low social status and were forced into tenant farming for the wealthy or had to practice socially despised crafts and other low-status occupations (Lyons 2014; R. Pankhurst 1968; A. Pankhurst 2003). During the imperial period, state control over land and economically valued resources was a significant part of the political economy at all social levels. Under the late Imperial regime, the 1960 civil code granted landlords (including the church) exclusive rights over the land, harvest (as rent), and forest resources (Tsighe 1995:77). This situation was different in Tigray, where access to land rights continued to be based on ancestry (*rist* system), where both males and female siblings have equal land rights. In practice, male siblings tended to appropriate inherited land indirectly by investing their labor (Crummey 2000; Tamrat 1972). This pattern of elite and kin-based land ownership (*rist* system) structured the political economy that disempower women until 1974 when the Imperial state was overthrown by the socialist Derg regime.

In 1974, the Derg government nationalized all land and forest resources, and redistributed usufruct rights to this land to peasants (Dinka 2016). This transformed peasants from their status of tenancy to rich landholders who were, in turn, tenants of the state (Berhanu and Poulton 2014:202; Kebede 2002:119; Rahmato 1984:17). The Derg policies resulted in a civil war between 1974 and 1991. Ultimately, the Derg was defeated, and the Democratic Republic of Ethiopia was established under the Tigrayan dominant political coalition of the Ethiopian People's Revolutionary Democratic Front (EPRDF). The EPRDF retained nationalization of all land and only granted usufruct land rights to farmers and larger concessions to foreign enterprises (Berhanu and Poulton 2014:202; Kebede 2002; Rahmato 1984).

However, land is not equally allocated to all rural farmers, nor is land ownership a guarantee of power. Both the Derg regime and the EPRDF redistributed land to peasant farmers, including equal allotments of farmland to men and women. The last land distribution in Tigray occurred in 1991. This has resulted in the landless status of thousands of men and women who were either too young for land allocation in 1991 or were born after 1991. This landless population has migrated to urban towns and cities to make their living, or they have resorted to the historical alternative of producing despised crafts in their village (Lyons 2014, Lyons and David 2019).

Land remains a source of social and political value, and women without male labor to plough the land are unable to maximize land production. Furthermore, land allocations to men and women are very small in Tigray, and most families cannot produce enough food to support the household year-round (Holden and Tilahun 2020). Men with ox-teams effectively increase their access to land at the expense of female landholders (Dokken 2015; Lyons 2014).

Tigrayan patriarchal perspectives characterize women as “weak farmers” because they cannot plough the land. Social norms prohibit women from ploughing their land with oxen, and so women must give away 50% of their harvest to male sharecroppers who own ox-teams and plough their land for them (Dokken 2015; Gebre-Egziabher 2013; Lyons 2014; Rahmato 1984). During the civil war and in areas under Tigray People’s Liberation Front (TPLF)² control, female-headed households did engage in ploughing when men were at war, but that practice was abandoned because of the negative impact of increased labor burdens on women and patriarchal resistance from the community (Gebre 2011:50). Similar prohibitions are observed by the Arsi Oromo of Meqi, who attribute cultural metaphors drawn between women and the earth. Both are viewed as carrying the man’s fruit, and hence, a woman ploughing the land is equated with ‘a woman tilling a woman’ (Aboma 2006:71).

Access to rural land is dependent on permanent residency in a village (Adal 2001). This disadvantages women who abandon their land at marriage when they move to their husband’s village. In Tigray, married women only have indirect access to parental land, which is often only registered in the name of the male household head (usually the father) (Gebre-Egziabher 2013). A daughter often loses access to family land allocation and inheritances during marriage if she moves to the bridegroom’s family residence (common in Tigray) (Adal 2001). Only a very few female-headed households inherit lands from their family and/or from deceased spouses (Fafchamps and Quisimbing 2002). Women are also denied land as widows and divorced women in their husband’s villages if they migrate to urban areas for work (Dokken 2015). Women often

² The TPLF was a guerrilla army from Tigray that ousted the communist Derg Military Government of Ethiopia in 1991. The TPLF was the principal party within the Ethiopian People’s Revolutionary Democratic Front coalition that ruled Ethiopia from 1991–2018, and they dominated the Tigray Regional State government. They also controlled a lot of Tigray’s political economy until 2018.

abandon the patrilocal residence where their ex-husbands live, and social custom dictates that women do not claim land after divorce (Adal 2001:13-14). However, the same custom lets divorced men maintain the land and marry other women. The only way a divorced woman could stay in the patrilocal village and share land with her ex-husband is if she has his children (Adal 2001:14).

2. 2. 4. Education

The first rudimentary formal education began in Tigray within mission schools in the 1840s (Yirgou 1996:38). A more structured formal public education, however, started in the early 1940s (Asmelash 2014:164). Prior to 1974, women were generally excluded from formal education and constituted “a missing piece in the development puzzle” (Teferra 1986:5). Women also experienced very early marriage (Gebre et al. 2020). Although famine and civil war impacted women’s education, especially for rural women, women’s education improved steadily during the successive Derg and EPRDF regimes. A literacy campaign was launched by the Derg in the country in general, and education was provided by the Derg and the TPLF in areas they controlled during the civil war. Despite these scenarios, women remained much more disadvantaged compared to men (Mjaaland 2013:11). Recent data indicate that 2.7% (even higher than the national 2.4%) of Tigrayan women have obtained more than secondary education, compared to 5.1% of Tigrayan men. Female literacy is recorded as 51% compared to 79.9% of men (ACAPS 2021:23). This relative disadvantage in education is reflected in the current study.

2. 2. 5. Summary

This chapter provides the historic back-ground of the study area, which is the location of the development of some of Africa’s earliest states: the Pre-Aksumite polities and the Aksumite

kingdom. These states rose because of their strategic location in the trade between Eastern Africa (including the Horn of Africa), the Red Sea, southwest Asia and the Nile Valley, which included the trade in incense – a material sought after by ancient states in the broader region.

Agriculture is the mainstay of most contemporary Tigrayans. More than 80% of Tigray's population relies on agriculture, which uses ox plough cereal cultivation, and livestock rearing. Sixteen percent of Tigray's population is engaged in trading and craftwork. Women's access to land is impeded by patriarchal structures that limit their access to valued economic resources, including land and oxen. Women were largely excluded from formal education and had the burden of early marriage. This trend has improved, as Tigrayan women have had better access to education for the past 30 years. Nevertheless, women continue to face economic challenges in controlling economic resources including land, leaving them vulnerable to poverty when widowed or divorced. The sociopolitical context of Chapter 2, is further developed in Chapter 3 in the presentation of the physical geography of the study area, its potential in incense production, and the history of the incense trade in northeast Africa.

CHAPTER 3: INCENSE TRADE

This chapter discusses the physical, natural environment, and historical contexts of the incense trade in northern Ethiopia. It shows the suitability of northern Ethiopia, especially Central and Western Tigray, to the production of commercial gum-resins that are channeled into the international trade. It also assesses the existing research on the Land of Punt to contextualize the incense trade.

3. 1. Physical Geography

Tigray is in the Northern Ethiopian Highlands with altitudes that range from 500 to 3900 meters above sea level (Bhatta and Årethun 2013:4; Hadgu et al. 2013:89) and covers an area of 80,000 km² (Gebremedhin et al. 2000:22; Tesfaye et al. 2000:28). The topography is defined by uneven hills, plateau, and gorges (Abbate et al. 2015:35). The topography of the study area is characterized by a high elevation varying from 2460 to 1500 meters above sea level, consisting of dispersed hills crossed by small seasonal streams (Beyth 1972:19; Ferrari et al. 2015:148). There is a similarity to the landscape patterns of Central and Western Tigray. One exception to this pattern lies in the Shire area, where the elevation steadily decreases towards the Ethio–Sudanese border and it is cut by river valleys (Coltorti et al. 2007:288). Central Tigray has distinct ecosystems arising from past physical and climatic environments.

3. 1. 1. Climate

Tigray is part of the African dryland zone, characterised by erratic rainfall (Hagos et al. 2002:6). Variance in topography affects the region's climate and environment. Tigray can be divided into three climatic zones, following the Ethiopian classification of agro-climatic zones: cool highlands (*degua*) 2,300-3,000 m asl; temperate highlands (*hawsa degua*) 1500-2300 m asl; and hot lowlands (*qolla*) 500-1,500 m asl (Hagos et al. 2002:6; Gebru et al. 1994: iv; Wilson

1977:241). The annual temperature in the study area ranges from 18 and 40°C (Hagos et al. 2002:6-7). The rainfall distribution is periodic and controlled by the seasonal migration of the Inter-Tropical Convergence Zone (ITCZ) that crosses Ethiopia twice each year (Conway 2000:149). The season of the greatest rainfall is summer (*kiremt*), from June to September with a mean annual rainfall ranging from 500 to 900 mm (Nyssen et al. 2007:5). The southeastern part of the region has another season called spring (*belg*), with little rainfall during February and April. Generally, the highlands (*degua* and *hawsa degua*) climatic zones receive more rainfall than the lowland (*qolla*) arid areas (Hendrie 1999:33; Gebru et al.1994:8).

3. 1. 2. Drainage System

Northern highlands water flows in two directions: some rivers flow to the west and join the Blue Nile in the Sudan. The other perennial rivers flow into eastern Tigray or vanish in the Afar lowlands (Billi 2015:15; Tesfaye et al.2000:28). The Tekeze river that originates from neighbouring Amhara Regional State is the largest and longest river that flows through Tigray and feeds into the Atbara, which is one of the major tributaries of the Nile River (Hendrie 1999:33). The Mereb river flows from Eritrea to Sudan and delineates the border between Ethiopia and Eritrea (Billi et al. 2015:90).

3. 1. 3. Natural Vegetation

The northern highlands of Ethiopia are part of the African dryland vegetation (Hagos et al. 2002:6-7) that consists of *Acacia*, *Boswellia* and *Commiphora* tree species, which produce commercial oleo-gum-resins including gum arabic, frankincense, opopanax, and myrrh that are produced in different parts of Ethiopia (Abiyu et al. 2010:134). The genus *Boswellia* is abundant in northeast Africa and most of its species are indigenous to Eritrea, Ethiopia, Kenya, Sudan, and Somalia (Al-Harrasi et al. 2019a:2; Vollesen 1989:442). A total of 20 *Boswellia* species are

identified in the drylands of Africa, southern Arabia (Oman and Yemen), and India. Of these, six are found in Ethiopia where *Acacia-Commiphora* woodlands grow. These consist of *Boswellia microphylla*, *Boswellia neglecta*, *Boswellia ogadensis*, *Boswellia papyrifera*, *Boswellia pirottae*, and *Boswellia rivaie* (Vollesen 1989:442). With the exception of *Boswellia pirottae*, the five species yield commercial frankincense (Fitwi 2000:14; Lemenih 2011:14).

Boswellia papyrifera (Del.) Hochst belongs to the Burseraceae family that produce frankincense or gum olibanum (Abiyu et al. 2010:134) (Figure 4.1). The ideal environment for *Boswellia papyrifera* is steep stony slopes or sandy river valleys with shallow soils at elevations between 950 and 1800 meter above sea level (Fichtl and Admasu 1994; Vollesen 1989:443). *Boswellia papyrifera* (Del.) Hochst was the main source of frankincense for East Africa, just as the *Boswellia sacra* Flückiger was for Arabia during the Greco-Roman trade in the earlier first millennium CE (Tucker 1986:425-426). *Boswellia papyrifera* (Del.) Hochst is broadly distributed in northern, northwestern, and western parts of Ethiopia (Tadesse et al. 2004:288).

In Ethiopia, frankincense-producing woodlands account for about 2.9 million hectares and the trees are widely spread over eight regional states (Lemenih 2011:16). Tigray Regional State has an estimate of 940,000 hectares (Gebremedhin 1997), which is the largest concentration of *Boswellia papyrifera* (Del.) Hochst in the country (Deffar 1998; Fitwi 2000; Gebrehiwot 2003; Lemenih 2005; Tadesse et al. 2007), followed by the Amhara Regional State which has a total area of 680,000 hectares (Lemenih 2005:60). In Tigray, frankincense is known by two names: *meqer*³ and *walwa* (Bekele-Tesemma 2007:138; Moens et al. 2019:297). The species is

³ See Banti and Contini (1997:169-192) for the various names of frankincense and myrrh used by the Semitic and Cushitic speaking people of Ethiopia and the Horn.

concentrated in Central and Western Tigray along the Giba and Tekeze River valleys (Gebrehiwot et al. 2002:4; Moens et al. 2019:293).



Figure 3.1. Frankincense tree from northern Ethiopia

3. 2. Incense trade in the Horn of Africa and the Red Sea Region

There are many studies of the ancient trade routes for frankincense and myrrh that ran from the Red Sea region to Mesopotamia (e.g., Zarins 1997), Assyria, the Levant (e.g., Ben-

Yehoshua et al. 2012), the Mediterranean, Ancient Egypt, and southern Arabia (e.g., Ergin 2014; Groom 1981).

A major question about the incense trade in northeast Africa centers around the location of the land of Punt and its legendary production and/or trade in luxury goods, including incense. The incense trade in northeastern Africa is dated to the third millennium BCE in Egyptian texts that refer to the myrrh trade from the Land of Punt (also known as Pwanet) to Old Kingdom Egypt (Kitchen 1993: 604, 2004:25), where it was used in social and religious rites (McLaughlin 2010: 23; Singer 2007:4). The Egyptian term for the product they obtained from Punt is *antyw*. Creasman and Yamamoto (2019:350) argue that although scholars translate the term *antyw* to represent either myrrh, produced from *Commiphora* species (Manniche 1999:26), or frankincense, the product of the *Boswellia* species (Goyon 2003:55 cited in Creasman and Yamamoto 2019), it might have been used by the Egyptians to refer to various species of both genera. Incense was an important commodity in Ancient Egyptian trade and was essential in the process of embalming. Inscriptions in the tomb of New Kingdom Pharaoh Hatshepsut depict her major expedition to Punt and the acquisition of live incense plants that were brought back to Egypt, but transplantation was unsuccessful (Kalb 2009:32-33).

Much of the study of Punt focuses on the question of its location (Creasman 2014; Fattovich 1996; Phillips 1996). Two primary regions are proposed: northeastern Africa and southern Arabia. The attempt to delineate and locate the position of the Land of Punt began at the turn of the 19th century (Harvey 2003:84), and the question of Punt's location remains controversial, because the textual and pictographic evidence simply gives a general picture of a location to the south or east of Egypt (Harvey 2003:84-85; Meeks 2003:56-58; Phillips 1997:423). Heinrich Karl Brugsch (1857: 48–49) pioneered the investigation of Punt in the 1850s and proposed its

location in Arabia. His proposition is based on areas that grow aromatic plants, referencing the Egyptian classical period reliefs carved on funerary temples (Meeks 2003:53).

Kitchen (1993, 1999, 2004) determined Punt's location to be in the Sudanese and Eritrean lowlands along the Red Sea coast and points to the use of sea transportation by the Egyptians in their journey to the Puntites. Habtemichael (2019) suggests Adulis as Punt or part of Punt because of its significance as a trading port of aromatics and frankincense production in the area. Others locate Punt in western Ethiopia, northern Ethiopia (Herzog 1968 cited in Fattovich 1991:259), northeastern Ethiopia, particularly somewhere in eastern Tigray (Shinn and Ofcansky 2013:349), and Awssa (the present day Afar region of Ethiopia) (Kalb 2009:31,33). These last two areas are adjacent to the Red Sea coast. Kalb (2009:33) presents a different perspective by arguing that Punt itself was not a source of frankincense, myrrh, and other goods needed by the ancient Egyptians. The Puntites in Awssa might have played an intermediary role by organising the incense trade and other goods from Somalia and other hinterlands of Africa to the Land of Punt. His proposition takes into consideration the easy accessibility of Awssa by sea or by land and its position near myrrh terraces, a place depicted in the relief of the temple of Queen Hatshepsut). Kalb (2009:33) argues that

... it is apparent that the Puntites had little invested in this commodity [myrrh]; rather, acting as middlemen - [the Puntites]- obtained the plants from their source, which presumably they then offered the Egyptians at a seller's market price – a logical source of myrrh would be the terraces in the neighbouring Somali lands known since antiquity for its high-quality myrrh.

There is a second perspective linking Punt with Ophir⁴ which is related to the Afar area of northeastern Ethiopia. This area was very active in incense trading as early as the period of King Solomon (ca.973-930 BCE). Solomon's ships were said to have travelled to Ophir looking for gold, incense, and other precious minerals. Some historians indicate Ophir procured gold from the hinterlands of Ethiopia and incense from the littorals of the Horn of Africa to export to the Middle East (Franchetti 1930:226; Hable Sellassie 1972:39; R. Pankhurst 1997:16-17).

Shinn and Ofcansky (2013:349) provide no evidence for choosing eastern Tigray as the location for Punt. Fattovich (1991:259) cites Herzog's (1968) monograph of Punt's location in western and northern Ethiopia, but it seems that this hypothesis was rejected with the secession of Eritrea from Ethiopia in 1991. The area referred to as a possible location of Punt, part of northern Ethiopia, now falls within the territory of modern Eritrea. However, Kitchen (1993:604) mentions the territories of northern and northwestern Ethiopia as part of Punt.

The postulation of northern Somalia as the Land of Punt was one of the earliest theories until the publication of Herzog's monograph (Kitchen 2004:28). The evidence used to position Punt in Somalia stems from the contemporary production of quality frankincense and myrrh in the region (Kitchen 2004: 28; Hepper 1967:435-438, 1969:69-70; Sayed 2003:432). Sayed (2003:432) points out that the geographical description of the Land of Punt in Hatshepsut's mortuary temple, which suggests a hilly terrain near a coast that produces frankincense, and the frankincense trees mentioned in the classical sources of Strabo, Pliny, and the *Periplus of the Erythraean Sea*, refer to northeastern Somalia. Dixon (2004:33) comments about the need for

⁴ Ophir is identified with Arabia and India where similar nomenclature exists (Hable Sellassie 1972:39).

extending the location of Punt to include southern and western Arabia, hypothesizing an Egyptian expedition in search of aromatic plants and ebony trees. Kitchen (2004:28) is skeptical of considering Somalia and South Arabia as part of Punt. While most researchers agree on Punt as a source of incense, Balanda (2005) and Kalb (2009) argue that Punt was not the source of all goods exported to ancient Egypt. Some goods were brought from the hinterlands of Africa and the Puntites were the middle agents. However, both Balanda and Kalb seem unaware that the Afar ethnic group of the Afar region of Ethiopia on the eastern border of Tigray still grow myrrh and frankincense (see Fitwi 2000; Lemenih 2011).

Kitchen (1971) gives a detailed explanation of why the area around the Ethiopian-Eritrean-Sudanese border is the best candidate for the location of Punt based on anthropological and archaeological, plant and animal evidence. Depending solely on incense to identify the location of Punt was a problem for Kitchen because *Boswellia* and *Commiphora* trees were found on both sides of the Red Sea (Groom 1981:99). In Africa, *Boswellia papyrifera* is found in Cameroon, Chad, Eritrea, Ethiopia, Nigeria, Sudan, and Uganda, with high concentrations in Sudan and the Sahel transitional zone (Hepper 1969; Ogbazghi et al. 2006; Rijkers et al. 2006; Vollesen 1989; White 1983). Kitchen argues that further investigation of the origin of other plant species depicted in Hatshepsut's mortuary reliefs might be useful for identifying the location of Punt. One good example is the ebony tree, which is depicted in the relief in Hatshepsut's mausoleum. Ebony grows in East Africa in Eritrea, Ethiopia, Somalia, and Sudan (Kitchen 1971:187, 2004). The Greek authors Diodorus and Strabo point out that ebony grows in Ethiopia, and Herodotus infers that the ebony depicted at Hatshepsut's temple was brought from Ethiopia⁵ as a gift (Gale

⁵ In Greek, the word Ethiopia means 'people with burnt faces' and refers to all people with black skin and cannot be interpreted as the location of contemporary Ethiopia.

et al. 2000:338-339). Moreover, of the two ebony trees (*Dalbergia melanoxylon*) recovered from Egyptian excavation, one of them, *Pistacia*, is ascribed to Eritrea and Somalia (Mitchell 2005:78; Serpico and White 2000:884).

Most arguments over Punt's location are materially uncorroborated, except Kitchen's (2004:27-28) work that locates Punt in the Sudanese and Eritrean lowlands along the Red Sea coast based upon archaeological evidence of trade between the Eritrean-Sudanese lowlands and the Red Sea coastal regions of Egypt (see Bard and Fattovich 2015:10; Fattovich 1991:259-260, 2012b:2; Manzo 2012:76; Munro-Hay 1993:609), although data from Mersa Gawasis/Wadi Gawasi suggest the possibility of incorporating the coastal region of southern Yemen as part of Punt (Bard and Fattovich 2013; Fattovich 2012b).

There is no direct archaeological evidence that enables one to delimit the location of Punt. As Phillips (1997:423) has said: "The Land of Punt has not yet been located with certainty on any map and no archaeological remains have ever been identified, even tentatively, as Puntite". While there is a paucity of archaeological evidence to solve the problem of Punt's location, some studies indicate contact between ancient Egypt and the areas suggested as possible locations of Punt. For example, Arkell (1954) identified ceramics that have an affinity with those of Egypt's 18th dynasty that were recovered from the Agordat region of Eritrea. Similarly, Fattovich (1991) has uncovered artifacts from Mahal Teglinos of the Kassala/ Gash Delta region of Sudan that include potsherds, obsidian flakes, and donkey remains. Some of the artifacts have their origin in northern highland Ethiopia and Eritrea, Egypt, and Yemen. Analysis of the potsherds reveals the contact of Nubia with the Middle and New Kingdoms of Egypt and the northern Horn of Africa. The donkey remains are interpreted as evidence of a commercial relationship between the Gash Delta and the Red Sea region (Phillips 1997:439-440) because

donkeys are used primarily to carry goods. More information is needed to determine this region's relationship with Punt. Phillips (1997:439) also notes that future archaeological investigations may be unable to define Punt's precise location.

Archaeological investigation in Sudan and Egypt has provided valuable data of Egypt's trade with Punt with the discovery of the seafaring harbour Mersa Gawasis/Wadi Gawasis (also known as *Saww*). Archaeologists uncovered shrines and stelae with hieroglyphic texts that bear the name Bia Punt and the title of the sea administrator (Sayed 1977, 1978). More importantly, this investigation brought to light an inscription that describes an expedition made to Bia Punt, a separate region consisting of 3700 people under the leadership of Vizier Intefoqer during the reign of King Senusret I of the Middle Kingdom (Sayed 1977, 1978). Bia Punt and Punt were separate destinations located on the Red Sea to the south of 20° N latitude and were destinations for Egyptian seafaring expeditions; the Land of Punt refers to both locations (Fattovich 2018: 205-206).

Recent investigations at Mersa Gawasis/Wadi Gawasis yielded faunal and floral remains, ebony, ceramics, lithics, and obsidian of southern Red Sea origin, including epigraphic evidence of an Egyptian expedition to Punt and Bia Punt during the Middle Kingdom. Other findings include artifacts used in ship construction and operation (Bard and Fattovich 2010:1-10, Bard and Fattovich 2013:3-11; Fattovich 2012b:1-4; Ward and Zazzaro 2007:135-153). Carbon dating of charcoal samples from the site gives a range of dates ca. 2000-1600 BCE, that indicate that the site was in use during the Middle Kingdom. In addition to epigraphic evidence, three cedar wood samples dated to 2335–1745 BCE, 1520–1105 BCE, and 1315–976 BCE were recovered from the site. This may support the use of the site during Middle and New Kingdom times (Fattovich 2012b:5). The above period also spans the Second Intermediate, when the state of Kerma in

present-day northern Sudan was most powerful. The ceramics recovered from the site are of African and Arabian origin, including potsherds from the Ancient Ona culture of Eritrea (contemporaries of the Pre-Aksumites) and early Adulis, the Gash group from areas adjoining Eritrea and Sudan, Nubian potsherds from Sudan, and Malayba ceramics from Yemen. Other artifacts also were imported from both sides of the Red Sea, including ebony (*Diospyros* sp.) from northwestern Eritrea that was found at Mersa Gawasis (Fattovich 2012b:13). It is argued that “the discovery of four rod-like pieces of ebony... suggests that the wood was cut in this shape in Punt in order to be easily transported to Egypt” (Fattovich 2012b:13). Obsidian was imported from Adulis and from the interior of the Danakil lowlands of Eritrea, Ethiopia, and Yemen (Aston et al. 2000:46-47; Dumitru and Harrower 2019: 75-76; Fattovich 1991:257–272; Fattovich 2012b:13).

The discovery of Mersa Gawasis/Wadi Gawasis harbour itself and associated artifacts offers clues for the location of Punt (Bard and Fattovich 2013:7; Fattovich 2012b:13). Fattovich (2012b:13) claims that the location of Punt is either in Eritrea or Yemen. This differs from his previous hypothesis that placed Punt in eastern Sudan/northern Ethiopia (modern Eritrea) with its center between Gash and the Barka Valley and extending to Port Sudan in the north (Fattovich 1991:259). Based on epigraphic evidence, this recent study identifies two different destinations for Egyptian expeditions at the time of the 12th dynasty: Bia Punt and Punt. It is suggested that Bia Punt was in present-day northern Eritrea, considering the wide occurrence of ebony trees and gold mining fields in Eritrea and the discovery of Eritrean ceramics at Bia Punt. Bia Punt is usually referenced in the literature as ‘Mine of Punt’ (Kitchen 1993, 603; but see Balanda’s 2005:33-34 contention on the use of the term ‘Mine of Punt’). The location of Punt is placed on the coasts of southern Yemen based on the recovery of the Malayba ceramics of South Arabia at

Mersa Gawasis/Wadi Gawasi (Bard and Fattovich 2013:10; Fattovich 2012b:13). Recent studies suggest that the center of Punt seems to lie on the Red Sea coast regions of Eritrea and Yemen (Fattovich 2012b:13).

In addition to the archaeological artifacts recovered from the Kassala region of Eastern Sudan, other artifacts, including Egyptian alabastron, pottery, a seated figurine, and a royal emblem stick were found during the excavations of the Yeha region of northern Ethiopia (Phillips 1995:2-10, 1997:442-445). The alabastron is contemporary with the Ancient Egyptian 25th to 27th Dynasties (770-404 BCE), and carnelian amulets from the same period of the god Harpokrates were uncovered from the Aksumite site of Matara in modern Eritrea (Fattovich 1990:25; Phillips 1997:442-445).

Unfortunately, more attention has focused on the location of Punt than on the social, economic, and material production and consumption of incense. However, extensive information on incense trade routes is available. Much of the South Arabian kingdoms' wealth came from the lucrative trade in frankincense and myrrh that grows primarily in southern Arabia and the Horn of Africa (Ben-Yehoshua et al. 2012; Sedov 2007). Long-distance trade flourished in southern Arabia and trade routes connected the region with Egypt, Mesopotamia, Persia, Greece, and Rome (Ben-Yehoshua et al. 2012:1; Sedov 2007:90; Seland 2013:380-382). One important incense trade route emerged in Arabia during the early Iron Age (11th–late 10th century BCE) (Gilboa 2015:265-267). Prior to the incense trade, the same route was used to transport salt from mines located in the Arabian desert, first by donkey and later by camel caravans (Grant 2005:124). The Romans controlled the western Arabian incense trade after the conquest of Nabatea in 106 CE (Ben-Yehoshua et al. 2012:18; Bukharin 2009:64; Roll 2005:113). The Aksumite kingdom was the dominant African state in the southern Red Sea

trade. It was a major partner of Rome in the Indian Ocean trade (Hatke 2013:25) and participated in the inland caravan trade in northeast Africa and in the Red Sea maritime trade (Bukharin 2009:66). According to an Aksumite inscription, Aksumite King Gadūrat led a successful campaign to protect the incense trade routes and Roman merchants from the Kinaidokolpites and Arrabites of western Arabia in the 2nd century CE (Breton 2011:73; Bukharin 2009:66-67; Mekouria 1988:558; Wolde Aregay 1997:33, 37). Kobishanov (1981:392, 399) states that trading was a state enterprise for the Aksumite King Zoscales. Kobishanov (1981:392, 399) also notes that King Ezana of Aksum had punished the Afan tribe for disrupting the Aksumite caravan trade. After suppressing internal rebellions within the kingdom, Ezana focused on controlling the routes that linked Egypt and Syria with the Indian Ocean, South Arabia, and the hinterlands of northeast Africa.

The earliest archaeological evidence of incense in northeast Africa is dated to Old Kingdom Egypt (2650-2180 BCE) in the form of a spoon-shaped incense burner (Evershed et al. 1997: 667). In Tigray, the earliest archaeological evidence of incense use is manifested in eight first millennium BCE incense burners, some made of clay and others of limestone. These incense burners were found in elite ritual contexts in sites in central and eastern Tigray and in nearby Eritrea and are inscribed with Himyaritic (south Arabian) script (Anfray 2012:30; Dugast and Gajda 2012:11-14; Gajda and Gebre Selassie 2009:50; Gajda et al. 2009:34; Wolf and Nowotnick 2010:376) and disc-and-crescent symbols associated with Sabeian deities (Fattovich 1987:44; Fattovich and Bard 2001:11; D. Phillipson 2012:40; Seland 2014:640; Wolf and Nowotnick 2010:376). The evidence suggests an elite/religious use of incense in Pre-Aksumite times and demonstrates the possibility of finding incense residues and material culture associated with incense offerings in early sites. The association of incense burners with Hamyaritic script

and the disc-and-crescent image opens the question of whether incense use was introduced into the northern highlands by Sabbeans through trade. Another issue of concern is the problem of identifying the specific type of incense in use in the pre-Aksumite period.

3. 3. Historical Context of Frankincense

Frankincense was an early luxury product, initially restricted to use in rituals (Plate 2014:62). Burning frankincense was part of the religious rites of Sumerians, Babylonians, Assyrians, Greeks, Jews, Ancient Egyptians (and many other people) to fumigate areas and delight their gods (Plate 2014:65; Small 2017:219). Incense use was linked with wealth and power of Roman and Hellenic emperors in their divine role (Bowersock 1997:553-554). From the 2nd century BCE onward, the demand for frankincense increased sharply with Roman trade. The Romans burned large quantities of frankincense in their temples, funerary rites, and private houses (Singer 2007:7). However, Christianity caused a sharp decline in the incense trade. Early Christians associated incense burning with pagan worship and avoided its use (Budge 1928; Baeten et al. 2014:2; Bowersock 1997:555). Roman emperors requested Christians to burn incense for their gods and this act was used to expose their faith; Christians who refused to do so were tortured and killed (Budge 1928:38, 42; Plate 2014:72-73).

Nevertheless, in the early Aksumite period, the value of frankincense is demonstrated in the New Testament story of the birth of Jesus. One of the three kings offered frankincense as a gift to the infant Jesus, and Ethiopian legend claims that Aksum's King Bazen was the king that offered this gift (Munro-Hay 1991:17; Milkias 2011:181). According to the Ethiopian Orthodox Tewahedo Church, the wisemen arrived at Bethlehem two years after the birth of Jesus with their gifts of gold that symbolized his royalty, incense his divinity, and myrrh his suffering (Budge

1928: 242, 247; Thursday's Praise of Mary (Weddase Maryam) of Ethiopian Orthodox Tewahedo Church; and Small 2017:220).

From historic times to today, frankincense and myrrh are used in rites performed in the Ethiopian Orthodox Tewahedo Church during mass, marriage, and funeral services (Fritsch 2008:134; personal observation) using metal burners to dispel the devil and other evil spirits from the compound of the church and from patients. The use of incense for ritual purposes during the Pre-Aksumite period is evident in the recovery of incense burners that have inscriptions of gods worshipped prior to the Aksumite Emperor Ezana's conversion to Christianity ca. 350 CE (Hable Sellassie 1972:60-61; D. Phillipson 1998:114, 2012:38, 40).

The adoption of incense in Christendom commenced with Emperor Constantine's conversion to Christianity in the early 4th century CE (Kenna 2005:54; Plate 2014:74), and frankincense was used in the Eucharist and in Christian funerary rites (Tatomir 2008:174). Aksumite King Ezana converted to Christianity at about the same time, and incense consumption increased in Aksumite religious rituals with the establishment of monasteries and churches in different parts of the kingdom and with the populace's conversion after the 5th century CE (Fitwi and Lemeneh 2011:46).

Medieval Ethiopian kings used to grant *gults*⁶ to Aksum Cathedral on occasions of their coronation rituals at the church (R. Pankhurst 1982:75). This tradition of land grants to the church, and the attached peasant obligation to offer incense tributes to the church, began at least in the 9th century CE (R. Pankhurst 1982:75). A case in point is King Zar'a Yaekob's (r. 1434-

⁶ According to Tamrat (1972:100) *gult* is: "the right to collect monthly and /or annual tributes from peasants...by the church or individual who received a piece of land as a *gult* from the state. The tributes... collected were not necessarily produced on the *gult* land itself.

1468) renewal of the 9th century grant to the cathedral. He granted the territories of Na'der, Degne, Awle'o, and other unspecified areas around Aksum to supply incense. The king's land charter cited that the grant may expedite the cleansing of his sins and his inheritance of the kingdom of heaven (R. Pankhurst 1982:75). In connection with incense, R. Pankhurst (1967:42) describes the story of King Zar'a Yaekob, who invoked the death penalty on his wife Tseyon Mogesa for alleged conspiracy to crown their son Baede Maryam (r.1468-1478) as king, while the king was still active in power. On learning of this event, the grieved young Baeda Maryam offered frankincense to Meqdese Maryam church near Debre Birhan in Shewa where Tseyon Mogesa was buried. Zar'a Yaeqob was furious and demanded that his son answer the question of why he offered frankincense to the church. The king arrested his son and his escort, whereupon the clerics intervened and gave the boy church protection. Zar'a Yaeqob acceded and even declared Baede Maryam as his successor (R. Pankhurst 1967:42). In the mid-16th century, Alvarez observed that churches at Debarwa, the capital of the region to the north of Mereb river (present day Eritrea), received large amounts of incense as tributes and other necessities from the Bahre Negash, governor of the region (Alvarez 1881:119). Alvarez was part of the Portuguese Embassy to Ethiopia in the early 16th century and he brought gifts of seed-pearls and a cross of rubies to Queen Eleni and he gave incense, pepper, silk, and a bell to the monks of Debre Bizan Monastery (Beckingham and Huntingford 1961:63).

Alvarez (1881:62), testified that the prominent merchants at several markets in northern Ethiopia were priests, monks, and nuns, who were the main consumers of religious commodities including incense, candles, vestments, and umbrellas. Bruce (1790:343) also observed the use of incense and other valued commodities as mediums of exchange in the late 18th century. Bruce (1790:52) stated that residents at Massawa had a strong tradition of burning myrrh and incense in

their houses before they opened their doors in the morning, and the same people used incense and myrrh to fumigate their handkerchiefs at home and to cover their noses throughout the day to protect themselves from polluted air.

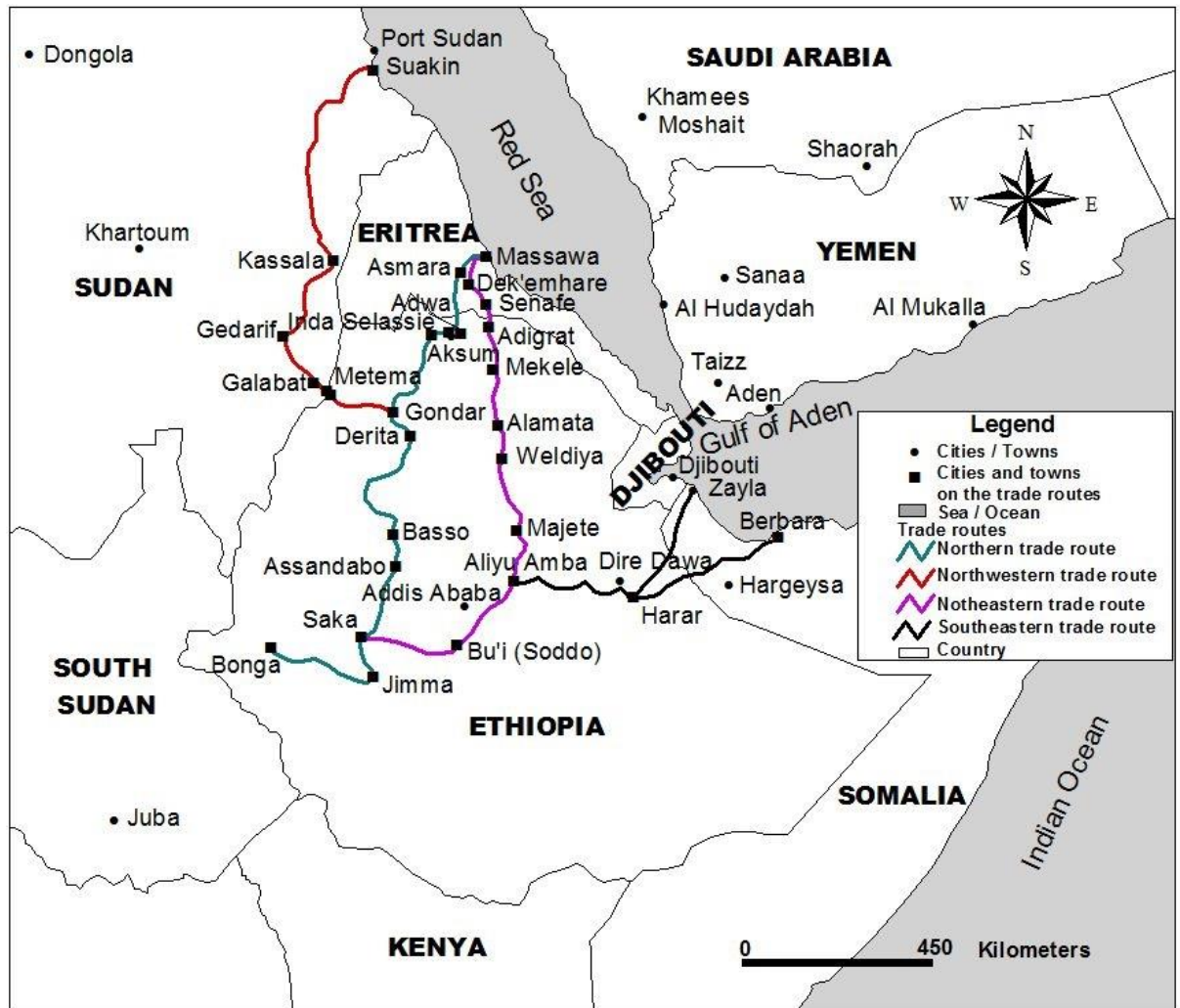
Charles Johnston's mid-19th century account of Shewa indicates Muslim merchant women were strongly visible in incense trading. Johnston (1844:238) observed that the Muslims of Shewa were extremely poor. Even then, it was these women who dominated the trading of such vital items as frankincense, myrrh, kohl (for eye makeup), and cotton clothes at Aliyu Amba market. It is possible that Muslim women's visibility in incense and other small-scale trade in Shewa's markets reflected their activities in Tigray's incense trade, considering the social, economic and cultural similarities between these two regions.

Ethiopian traditional healing rituals incorporate different types of incense burned in bowls made of clay. Some traditional healers employ incense either as a component of the healing process or to diagnose clients' ailments and to divine their future through incense smoke (Kassaye et al. 2006:129), a practice that likely comes from pre-Christian tradition. In contemporary Tigrayan rural and urban society, incense of aromatic wood and leaves is used in households daily during coffee rituals and chat chewing, and it is used to disinfect and to perfume (Gebremedhin 1997:9; Goettsch 1991:116). Almost every rural and urban household has a clay incense burner (see Lyons 2009:152). Incense is burned to cleanse the body after childbirth. Some incense, including myrrh, are burnt to treat people possessed by witchcraft, and prostitutes in Addis Ababa used to burn myrrh to attract visitors (Goettsch 1991:116). Unfortunately, non-elite consumption of incense and the varieties of incense involved in domestic trade are rarely, if ever, considered by archaeologists.

3. 4. A Survey of Major Historical Trade Routes and Trading

Sernicola and L. Phillipson (2011:195) identified ancient roads and exchange networks that linked Aksum to Qohayin and Debarwa across the Mereb River via Mai Gwodae and Mai Atela, both of which were stopping points for traders from Aksum to Asmara until recently. These latter routes are currently used by local peoples during market days. This route was part of the principal northern Ethiopian trade route from the Red Sea to Bonga (Kaffa) into the 20th century.

Historians (Abir 1968:45; Zewde 2002:21) identify the major 19th century caravan routes as the northern and the southeastern trade routes which terminated, respectively, at Massawa and Zeila and both had local branches that served as feeder routes to markets along the way (see Map 2.1). The northern trade route runs from Bonga (Kaffa) to Massawa and crosses major market towns including Jimma, Saka, Assandabo, Basso, Derita, Gondar, Adwa, and Asmara. The sites of Adwa, Aksum, and Shire Inda Selassie are crucial trading nodes along this trade route. R. Pankhurst (1964:69, 82), using trade records from the 19th and early 20th centuries, identifies import items traded along this route, including incense, sandalwood, kohl (for eye makeup), gun, black pepper, and various perfumes.



Map 3.1. Long distance trade routes of Ethiopia, 19th - 20th centuries

At the turn of the 19th century, the British envoy, Henry Salt (1814:424), observed Adwa as the prominent market along the eastern side of the Tekeze River. Local Muslim merchants were the principal middlemen between the Ethiopian hinterland and the Red Sea coastal regions (R. Pankhurst 1964; 1968). Trade was controlled by the state, where individual merchants acted as agents to conduct the trade on behalf of the emperors (Plowden 1868; Salt 1814).

Salt (1814:424-426) further reported that cloth was the chief product of Adwa, and bars of salt (amole) procured from the Danakil or the Afar lowlands were distributed through Adwa to the western hinterlands. Aksum also featured prominently in the production of parchment, iron,

and brass, while Shire supplied large quantities of ivory (Salt 1814:424-426). Muslim head merchants (*Naggadras*) monopolized the post of customs head in the string of markets along the northern trade route from the 16th to the mid-20th century (Plowden 1868:130).

Incense trading is deeply intertwined with the social history of Muslim merchants and trading culture in northern Ethiopia. Traditionally, Muslims were not entitled to own farmland, and trading became their predominant occupation followed by weaving, tailoring⁷ (R. Pankhurst 1961:284), and running tea rooms—all geared to supplying the basic items for the fledgling urban population. From the outset, Muslims prevailed in the trading occupation, both in the itinerant trade and stationed trade sectors within Ethiopia and the Horn of Africa (R. Pankhurst 1992:53). Among the traditional Muslim trading groups in Northern Ethiopia, including Amhara areas, the *Jabarti* (Ahmad 1989:444; R. Pankhurst 1992:53; Tamrat 1972:85-88; Trimmingham 1965:30) were the main trading actors for centuries past. Aksum's Muslims were largely part of this trading diaspora, who gradually stationed themselves in the city under the patronage of leading Christian chiefs and clerics (Gebrelibanos forthcoming: 35-40; R. Pankhurst 1961:285). Muslims remained either as trading agents of important and rich Ethiopian Christians or they provided their services for supplying basic items such as incense, clothes, mats, and carpets for the nearby churches. There were symbiotic relationships between Christian ruling elites and Muslim trading communities. Through time, Christian chiefs in Aksum allowed them to rent⁸ their houses to supply basic trade items on a regular basis (Kassa 2019:25).

⁷ The medieval mobile royal courts craftsmen include Muslim tailors, some of whom were converted to Christianity (R. Pankhurst 1992:63).

⁸ There are also studies that show Muslim merchants rented residential quarters owned by the church as noted at Darita of Bagemdir (Gondar) in Ethiopia (Ahmad 1989:449).

The northwesterly trade route to Sudan was a branch of the northern long distance trade route. The route split from Gondar destined to the historical port of Suakin and passing through three crucial markets: Metema, Galabat, and Gedarif. Ethiopian pilgrims used the northwesterly trade route to travel to the holy lands in Cairo and Jerusalem (Miyake and Oka 2012:28). Ethiopian pilgrims and Egyptian bishops (consecrated in Alexandria as heads of the Ethiopian Orthodox Tewahedo Church) are assumed to have imported ecclesiastical objects (Tamrat 1972) including frankincense and myrrh along this route. The imports included incense, sandalwood, and perfume (R. Pankhurst 1964:70).

The southeastern long-distance caravan trade route was the second major Ethiopian trade route that originated in Bonga and passed through Saka, Soddo, Aliyu Amba, and Harar where it split into two routes going to Zayla and Berbera along the Somaliland coast. Zayla is a famous trading outlet for commodities from southeastern Ethiopia from the 13th to the early 20th century when it was usurped by Djibouti. Interestingly, Zayla grew through imports of incense and myrrh, and exports of gold, slaves, and coffee (Miyake and Oka 2012:27). In fact, Ethiopia imported different items, including incense from the Dhofar region of south Arabia through the Somali port of Zayla circa the 16th century CE (R. Pankhurst 2004:22), and incense was transported by camel caravan to the Ethiopian Christian highlands (R. Pankhurst 1982:59). Muslim incense merchants of Harar frequented Zayla and Berbera where they procured large supplies of incense, myrrh, and gum to redistribute to merchants along the southeastern Ethiopian hinterland (R. Pankhurst 1964:48). This route was not only the main gate for Arabian goods but also for the advent and expansion of Islam that led to the establishment of such Muslim sultanates of Harar, Ifat, and Jimma Abba Jifar (Tamrat 1972:83).

The other alternate route took the north-easterly direction through Saka – Soddo – Aliyu Amba – Mekele – Dekemhare leading to Massawa. Among the crucial trading posts across these routes include Majetie (Shewa), Woldiya (Wollo), Maychew and Adigrat (Tigray), and Adi Keyih (Eritrea). Salt from the Danakil and incense were channelled through this route.

3. 5. Recent Trends on Incense Production and Collection in Ethiopia

There is no tangible evidence that frankincense and myrrh were produced for commercial purposes before the Italian Occupation period (1935-1941). What is known, is that in the 1940s, the Italians introduced formal production of frankincense on a commercial scale from Somalia to Eritrea (Fitwi 2000:14; Fitwi and Lemenih 2011:47; Global Business Network (GBN) 2020:6).

In Tigray, the contemporary collection of frankincense from the natural forests began in the Rama area, just north of Aksum in Central Tigray, in 1949. Since then, production of frankincense has expanded to other areas of Central Tigray (Adwa, Aksum, and Tembien) and Western Tigray (Shire) (Gebremedhin 1997:5). Incense was collected by individuals without a license until the establishment of Tigray Agricultural and Industrial Development Limited (TAIDL)⁹ in 1962 (Gebremedhin 1997:4), a private company established by Le’ul Ras Mengesha Seyoum, then Governor-General of Tigray (1966-1974). Fitwi and Lemenih (2011:47) contend that TAIDL was a share company owned by the Imperial government of Ethiopia and private investors. TAIDL carried out the production and processing of frankincense in Tigray until the overthrow of the Imperial regime in 1974. Throughout its existence, the company created job opportunities for low-income people in Tigray. It employed an average of 10,000

⁹ Wassie (2011:6) states that TAIDL commenced incense production in Tigray in 1948. Fitwi and Lemenih (2011:47) and Gebremedhin (1997) place the foundation of TAIDL in the 1960s.

men as collectors and another 5000 women as processors of incense (Seyoum 2018:180). Occasionally, however, there were concerns and perceptions that allude to the socio-economic vulnerability of incense processors. In relation to this, on the eve of the 1974 Ethiopian Revolution, a student street protest in Mekele, the capital of Tigray, aired the grievances of these workers, demanding higher pay and better living conditions.

The Derg government nationalized private enterprises and insurance companies in 1975 (Dinka 2016:43). This led to the nationalization of TAIDL (Seyoum 2018:180) and its incorporation under the National Gum Producing and Marketing Enterprise (NGPME) in 1976. In 1975, the Derg declared land and natural resources to be state property.¹⁰ The government also institutionalized the NGPME. The NGPME assumed the collection and trading of non-timber products including frankincense and other natural gums and resins at the national level (Tilahun et al. 2016:96). Besides running TAIDL, NGPME standardized the production and processing of incense for commercial purposes in Amhara, Benishangul-Gumuz, Oromia and other parts of Ethiopia. NGPME distributed tapping equipment brought from Sudan and Somalia to enhance quality production (Fitwi and Lemenih 2011:47-48; Wassie 2011:6). The state monopolized the extraction and marketing of frankincense until the change of government in 1991. Individual households were prohibited from owning *Boswellia* forestland and producing frankincense for sale. The households also did not benefit from seasonal employment or rent from marketing frankincense and other gum products (Tilahun et al. 2016:96). Even after the demise of the Derg, the NGPME continued its regular business of producing, processing, and trading natural gum (Fitwi and Lemenih 2011:47-48; Participant B7).

¹⁰ Unlike the Imperial period, where the ruling elite alone controlled the land and natural resources, the Derg redistributed the land to the tillers, and natural resources for communal use.

In 1991, the EPRDF deposed the Derg and reformed the administrative structure and economic policy of the new Federal Democratic Republic of Ethiopia. The country became a federal state organized into nine ethnic-based Regional States, one of which is the Tigray Regional State. The EPRDF declared a free market economic policy. The policy allows resident rural households to form producer cooperatives, and other investors to utilize the *Boswellia* forests (Tilahun et al. 2016:96). The economic policy also allows Regional States to administer natural resources found within their respective territories. As a result, many private companies, including those affiliated with regional ruling parties, entered the business of incense production and its commercial trade.

Cooperatives had a long uneasy history in Ethiopia particularly during the Derg era which led to their termination in 1991. The Derg period cooperatives were established to cease capitalist exploitation and deter capitalistic organizations from flourishing (Rahmato1990: 102). The EPRDF has led government reorganized cooperatives since 2002 to improve the living conditions of its members (Bernard et al. 2010 :17). Cooperatives are institutions that attempt to ensure local control of economic resources by distributing dividends equally among their members (Hopkins 1976:101). They are engaged in production and distribution of agricultural and forest products (Hamer 1981:114). Hopkins (1976:102) identified formal equality and structural/status inequality among cooperative members based on task differentiation by age, sex, education, family position, social rank, and involvement in parties or bureaucracies in other organizations. Cooperatives can be controlled by bureaucratic elites through monitoring the cooperative's operational information. Nash and Hopkins (1976:7) illustrates that there is high probability of politicization of centrally sponsored cooperatives. As Vincent (1976:82) has demonstrated cooperatives tend to underpin the local political and economic power structure. As

discussed in Chapter 6, the incense processing companies have ties to the region's ruling party, implying that participation in cooperatives and incense processing necessitates political allegiance. In addition, tappers must be licenced by completing annual frankincense training, implying the regional state's desire to control the frankincense resource.

At the time of field research, more than 30 companies were involved in incense collection, processing, and trading in various regional states, thereby reducing the contribution of NGPME to less than half of the total incense export from Ethiopia (Fitwi and Lemenih 2011:48; Lemenih 2005:55; Kassa et al. 2011; Wassie 2011:6). Being a federal government company, NGPME still remains one of the major companies producing, processing, and trading incense. It has opened branches in various regional states, including Tigray (Fitwi and Lemenih 2011:48).

Some studies indicate that there were 89 firms licensed by the Tigray Bureau of Agriculture and Natural Resources to produce and trade frankincense (Tilahun et al. 2016:96). Of these, 25 are rural cooperatives which tap incense in concession areas and sell the product to government and private companies (Tilahun et al. 2016:96; Participant B1). Frankincense producing companies can be classified into four categories based on their affiliation:

- 1) the NGPME,
- 2) Guna Trading House Private Limited Share Company (a parastatal company affiliated with the Tigray Regional Government),
- 3) private companies including Sehul, Selam, Mekhete, Martha, Wer'i, and Alula. The latter two were owned by a group of TPLF military veterans but are now defunct,
- 4) Other private companies owned by individual investors.

All of these companies have their own cleaning and sorting facilities. The NGPME uses two methods of collecting frankincense in Western Tigray (see map 4.1 for production districts). First, it collects frankincense from the forests of Asgeda Tsimbla and Tselemti districts by hiring its own tappers. Second, it purchases frankincense from cooperatives operating in Western and Central Tigray. NGPME has a total of 400 employees, half of whom are women tasked in processing frankincense (participant B7). Guna Trading Houses P.L.C. is part of the Endowment Fund for the Rehabilitation of Tigray (EFFORT), a private company administered by Tigray Regional State. In the period 1994 to 2012, Guna Trading House collected frankincense by hiring its own tappers in Western Tigray. Guna Trading had established the Shire Inda Selassie incense warehouse in 1997 and was producing frankincense on 30,000 hectares at Kafta Humera and Addi Remets districts in Western Tigray (Participants B1, B2). However, in 2012, it ceased its production activities because the regional government decided to transfer the frankincense forestlands to youths located in these areas (participants B1 and B2). One man in his 50s (B1) from Aksum stated that the government's decision failed to materialize. This was due to private investors taking the land through a clandestine network of local bureaucrats. He further explained that Guna continues to purchase raw frankincense resins from producer cooperatives that pay royalties to the government. It is a leading company in exporting frankincense from Tigray.

Research on the incense trade in northern Ethiopia is relatively rare, even though the use of incense for social and economic purposes in this region is ancient. The research that exists indicates that incense has been used in elite ritual contexts in northern highland Ethiopia since the first millennium BCE (Butzer 1981:472; Fitwi and Lemenih 2011:47; Goettsch 1991:115; Woldeamanuel 2012:52). DiBlasi (2005: xiii), Gebremedhin (1997:4), and Taib (1982:2) noted

that frankincense was one of the items exchanged internationally in Aksumite times in the first millennium CE (see below), although Fattovich (2019:254) suggests without evidence that its exploitation at that time is unlikely. Incense use is known in Tigray from Pre-Aksumite times, as attested by incense burners with Sabeian (south Arabian) inscriptions dated to the 8th to the 6th centuries BCE (Wolf and Nowotnick 2010:368). Although researchers (Gebrehiwot et al. 2002; Munro-Hay 1982, 1991) claim that the region has produced incense for international trade for the past 2000 years, there is no solid archaeological evidence to substantiate or dispute this claim. Furthermore, incense production, consumption, distribution, and its role in the region's household economies in the past and the present is unknown.

Although frankincense may have been produced in Ethiopia, the main securely known source of frankincense was southern Arabia at the time of Aksum. Today, Ethiopia is a major producer and exporter of frankincense and myrrh in domestic and international markets (Eshete et al. 2005:56). The Boswellian Project, run by the French-based company under the same name, sells incense produced in Tigray to Europe. On its website, www.naturalincense.org, the company has information, including a film, on incense production in Tigray and the Afar (northeastern Ethiopia) regions that indicates incense is an ongoing and sustainable resource that remains important in contemporary society and local economies. Lemenih (2011:26) estimated the annual domestic consumption of frankincense in 2011 as 9,525,440 kg, and the Ethiopian Church¹¹ consumes more than 2 million kg of incense per year (Gebrehiwot et al. 2003:350).

3. 6. Summary

Tigray Regional State has the largest concentration of *Boswellia papyrifera* (Del.) Hochst in the country. A major question of the incense trade in northeast Africa centers around the

¹¹ It is estimated that one large church could consume 150 kilogram of frankincense per year (Fritsch 2008:134)

location of the land of Punt and its legendary production and/or trade in luxury goods including incense. Unfortunately, more attention has focused on the location of Punt than on the social, economic, and material production and consumption of incense. However, extensive information on incense trade routes is still available. There is no direct archaeological evidence that enables one to delimit the location of Punt.

The Aksumite kingdom participated in the inland caravan trade in northeast Africa and in the Red Sea maritime trade. Aksumite kings protected the incense trade routes and long-distance caravan merchants, which denotes the significance of the incense trade. Ethiopian kings used to grant lands to prominent churches and monasteries in Central Tigray to expedite the cleansing of their sins and their inheritance of the kingdom of heaven. They also instructed local peasants to offer incense tributes to the church. The Ethiopian state became increasingly hierarchical in structure, and the congregation/ laity were required to provide incense to the church. This indicates incense was implicated in the political economy of the Abyssinian state/Ethiopian Empire for the past 700 years. Priests, monks, and nuns were among the prominent merchants at several markets in northern Ethiopia. They were also the main consumers of religious commodities such as incense. Meanwhile, in Shewa (central Ethiopia) Muslim merchant women were strongly visible in incense trading.

Little research exists on the incense trade in northern Ethiopia that allude to incense's long use in elite ritual contexts in northern highland Ethiopia. This is notwithstanding the fact that the region produced incense for international trade for centuries. Besides, incense production, consumption, distribution, and its role in the region's household economies in the past and the present is unknown. Recording practices related to incense provides knowledge of contemporary trade and its materiality that can be compared with future archaeological evidence.

This dissertation fills the gap in archaeological/historical knowledge related to incense production and trade in this region. It also elucidates the role of incense production and consumption in the contemporary political economy. In the next chapter, the theoretical framework of the dissertation is established.

CHAPTER FOUR: THEORY

This study explores the political economy of the incense trade using the domestic mode of production and feminist political economy. Political economy addresses relations of power and economic processes in societies (Wolf 1982: xviii). However, political economy has been criticized by feminist researchers for not exploring women's domestic or care labor adequately (Wilk and Ciggett 2007:17-18) while emphasizing economic structures such as mode of production models. Feminist perspectives examine how intersectional subjectivities of class, ethnicity, age, religion, and gender constitute different experiences and inequities in people's access to economic resources and power (Nightingale 2011; Sundberg 2017). This study focuses on the intersectional subjectivities of gender, class, education, religion, and age in sectors of incense production, processing, distribution, and consumption.

The way people perceive gender needs to be understood independent of biological sex. Other theorists (Butler 1993; Voss 2008) argue that gender and sex are both reproduced and embodied through performance of culturally 'normative' activities in ongoing social interactions (Moen 2019). Sex and gender are two different terms with different meanings but sometimes people use them interchangeably without due care as if gender and sex are the same (Pryzgodna and Chrisler 2000:554). Sex represents the biological aspect of being male and female while gender refers to culturally constructed perceptions of what it is to be masculine and feminine in a society (Archer and Llyod 2002:17). Gender is determined by behavioral, social, and psychological traits of men and women (Pryzgodna and Chrisler 2000:554). Gender roles and responsibilities ascribed to individuals or groups is mediated by socio-political institutions including religion, media, and education (Johnson and Repta 2012:21). Despite the belief that

sex as biological and gender as social, both perceptions are socially constructed and subject to change. The perception of sex varies from culture to culture (Johnson and Repta 2012:20).

Gender theorists criticize assumptions that gender is binary and maps onto normative biological categories of male and female. This dismisses the experiences of people whose gender does not conform to these two categories (see DuBois and Shattuck-Heidorn 2021; Moen 2019). However, societal perceptions of binary gender also exist in non-western societies including Tigray. In Tigray, Smiths and potters, who transgress normative gendered technologies and spaces, are perceived as different categories or types of men and women (Lyons 2014). Gender is used in this dissertation to refer to Tigrayan perceptions of the social norms and behaviors of men and women (see also Johnson et al. 2009). This enables me to analyze gendered activities of men and women in the incense processing and trade. In Tigrayan society, and within the Ethiopian Orthodox Tewahedo Church, gender is strongly perceived as binary, a perception that is further enforced by law. This does not mean that there are no nonbinary individuals as indicated in Donham's (1999) study in Maale of southwestern Ethiopia and possibly in other parts of Ethiopia including Tigray (<http://www.afrol.com/articles/38446> accessed on November 13, 2021). For instance, Lyons (2009, 2014) argues that in rural contexts in Tigray, binary perceptions of gender are both constituted and performed through gendered technologies, spaces and activities that create complementary but unequal roles and relationships for men and women within agrarian households and society at large.

Furthermore, Lyons (2009, 2014) suggests that certain activities, technologies, and spaces used and shaped by men and women in daily practice, are also perceived gendered. For instance, baking and cooking in rural households is a feminine and feminizing activity such that men are perceived to be emasculated by just sitting inside a woman's kitchen. Artisans who transgress

gendered technologies and spaces, are perceived to be different types of males and females (Lyons 2014), but not as other genders within society. Nevertheless, this study recognizes that Tigrayan men and women have highly variable gender experiences depending on subjectivities of age, class, religion, and education, and these subjectivities would likely shift over time. Notably, and unlike many regions of Africa, Ethiopia was not colonized, and contemporary societal structures and identities are situated in its long feudal history.

Since this study is an ethnoarchaeological project on incense trade, ethnoarchaeology's theoretical orientation and the debates around it are presented below, followed by a detailed discussion of feminist political economy.

4. 1. Ethnoarchaeology

Lyons and David (2019) define ethnoarchaeology as a form of ethnography conducted by archaeologists to investigate the relationship between contemporary people and their material, intangible, and invisible worlds. Ethnoarchaeology is not restricted by any specific theory or method, and recent overviews outline the development and changing focus of the subdiscipline (David and Kramer 2001; Lane 2015; Lyons and Casey 2016; Lyons and David 2019; Politis 2015).

Initially, ethnoarchaeology was used to identify material correlates relevant to archaeological interpretations of past human activities (see Cunningham 2003; David and Kramer 2001; Lane 2005, 2015). In the early and mid-20th century, analogies were used to interpret historically related cultures, referred to as the Direct Historic Approach, and 'general analogies' were used to interpret unrelated cultures that shared similar environments and subsistence practices (see David and Kramer 2001; Lane 2005; Stahl 1993). Some earlier ethnoarchaeological approaches were criticized for imposing the present onto the past and

unethically representing contemporary people as ‘perpetually traditional’ or as ‘living fossils’ (Cunningham 2003, 2009; Gosden 1999; Gosselain 2016; Lane 2005). While these criticisms were justifiable for some studies, researchers also recognized that without ethnographic analogy, archaeologists could say very little about the past beyond its description (Lane 2005; Stahl 1993). Following much debate and discussion (e.g., Cunningham 2003, 2009; Fewster 2006; Gould and Watson 1982; Kelley and Hanen 1990; Stahl 1993; Watson 1980; Wylie 1982, 1985, 1988), researchers determined better practices for using ethnographic analogy and how to develop stronger analogies. In contemporary practice, ethnoarchaeological studies are historically, ecologically, and socially situated to the greatest extent possible (Lane 2005), and only then are contemporary contexts compared to archaeological contexts to determine how they are similar and different in relevant ways (see Stahl 2001). Historically situated studies can determine changes and continuities in material practices over time and avoid representing people as ‘perpetually traditional’ (Lane 2005).

Although ethnographic analogy is one contribution of ethnoarchaeology to archaeology, many ethnoarchaeologists currently view their research as much more than analogy-making (Cunningham 2009; Lyons and Casey 2016; Lyons and David 2019; Politis 2015; Skibo 2009). For instance, ethnoarchaeology has an important role to play in addressing the material and ontological context of subaltern and marginalized people, whose subjectivities are rarely addressed in archaeological research (J. Arthur 2013; K. Arthur 2007, 2013, 2018; Fewster 2013; Kohtamaki 2010; Lyons 2014, 2021; Lyons and Freeman 2009; Kearney 2010; McNiven 2016). Ethnoarchaeology can investigate how social identities are created by studying how social perceptions of people’s technological knowledge and their participation in material production, distribution, and consumption are understood and valued in different societal contexts (e.g.,

David and Sterner 2012; Gosselain 2000; Lyons 2009, 2014; Lyons and Freeman 2009; Schmidt 1997; Sterner and David 1991). In doing so, ethnoarchaeology contributes to material cultures studies. In fact, Skibo (2009) suggests that ethnoarchaeology's most significant contribution is developing the understanding of the relationship between people and material culture in contemporary and past contexts.

Other researchers view ethnoarchaeology's ability to test archaeological inference in real cultural contexts as its primary contribution (Cunningham and MacEachern 2016; Friesem 2018; Skibo 2009; Livingstone Smith 2000; Lyons and Casey 2016; Lyons and David 2019). This includes the inclusion of diverse societal experiences and ontologies that challenge Western archaeological inference and make archaeology more relevant and inclusive to African and other non-western people (K. Arthur 2018; Pikirayi 2015). In this way, ethnoarchaeology can contribute to the decolonization of archaeology, including in Africa, by studying how non-western societies perceive relationships with materials, technological practices, spirits, deities, and other forces in their environment in diverse ways (Apoth and Gavua 2010; K. Arthur 2018; Brady and Kearney 2016; Cunningham and MacEachern 2016; Lyons 2014; Lyons and Freeman 2009; Mire 2015; Wayessa 2015, 2018). Importantly, ethnoarchaeology allows researchers to study intangible practices that are unavailable to archaeologists (Biagetti and Lugli 2016), and in doing so their studies contribute to the documentation of intangible cultural heritage.

The ethnoarchaeological study of incense presented in this dissertation, contributes a rare example of how the incense trade is integrated into the political economy of contemporary Tigray, how aspects of this trade are experienced by contemporary people with different social subjectivities, and how these practices are situated in Tigray's social, spiritual, and economic history. There is almost no archaeological record to compare with Tigray's contemporary

incense trade, as incense production, consumption, and distribution are largely invisible in the archaeological record. Ethnoarchaeology provides an important opportunity to study a non-mechanized incense production process, to ask participants in this trade about the impact of the trade on their lives, and how different types of incense are consumed in households and in the church. As a result, this study demonstrates the complexity of producing, processing, distributing, and consuming incense in contemporary Tigray, how incense is deeply integrated into the ritual and economic life of Tigrayan people, and how the incense trade is part of Tigray's, and Ethiopia's, contemporary political economy that further reproduces historically rooted and newly emerging social inequities and different subjectivities for women and men at all social levels. While this study does not delve deeply into Tigrayan ontology, it does address how Tigrayan society perceives an association between women and incense, and how huge quantities of incense are consumed as fundamental actants in daily and routine ritual practices of the church and its congregants, and in social, ritual, and medicinal practices in domestic contexts.

4. 2. Theoretical Perspectives: Political Economy and Feminist Political Economy

4. 2. 1. Political Economy

Bronislaw Malinowski's (1922) ethnographic study of the Trobriand Islands revealed a significant gap between the Western economic model and that of non-industrial societies. Malinowski observed that the Islanders spent more time and energy collecting items (armshells and necklaces) that many observers consider as of no economic value. The Western economic concept, which assumes individuals are motivated by the desire to maximise profits, does not correspond with non-industrial societies' economic perceptions. Non-industrial societies define economy through cultural values rather than market profit maximisation. This implies that economic needs must be considered in the context of their sociocultural context (Grinker et al.

2010:112-114). Reality demonstrates that all societies do not operate rationally to maximize their economic benefits.

Gift-giving is one economic practise that defies Western models of economic rationality. Mauss (1954:46) argues that market exchanges emerged from gift exchanges. According to Mauss (1954), three elements are involved in Kula gift exchange: giving, receiving, and reciprocating a gift. The exchange of goods between groups creates social solidarity. A gift that does nothing to enhance solidarity is meaningless. When humans receive a gift, they feel obligated to reciprocate which indicates that the gift is not free. It coerces the person to give something in return (Wilk and Cigget 2007:158).

The obligation to reciprocate a gift after an individual has received one is crucial in the exchange system. According to Mauss, the obligation to reciprocate is attached with the concept of *hau*, a Maori term for spirit. It is argued that when someone gives a gift, the spirit or identity of the person goes with the object. Thus, receiving the gift always carries an obligation to reciprocate, because the spirit of the object wants to return to its original owner. Unlike the commodities sold in the capitalist world, which is discussed below, the object is inseparable from its owner and carries the identity of the giver (Wilk and Cigget 2007:159). The receiver is socially and morally obliged to reciprocate. Mauss' study of the gift is a turning point that shifted the focus of cultural economics from profit maximization toward the study of social, and collective values; and he showed that people and symbols can be part of exchange systems in some societies (Grinker et al. 2010:114).

Marshal Sahlins (1972) argues that gifts communicate a message. The objects are active in a sense that they give us clues about the giver and the perception of the person who receives the gift. Dolfsma (2001:398) describes that women in all societies are the major providers and

receivers of a gift. Mauss (1954) argues that, unlike capitalist commodity exchange system, objects and their exchange are socially embedded, a perspective developed by Karl Polanyi in his substantivist analysis of the economy (Wilk and Cigget 2007:161).

Polanyi (1944) argues the term 'economy' has dual meanings. Formal refers to rational decisions that a society makes to maximize its resources through market exchange. Substantive indicates that the allocation of goods and services through reciprocal exchange and redistribution is culturally embedded. Anthropologists who used the formal approach to describe and analyze economic activities were called formalists, while those who are aligned to the substantive approach were known as substantivists. This dichotomy is now nonexistent at least in the sense that they are no longer thought of as polar opposites, and both approaches are used in combination by accepting the cultural embeddedness of economy and realising individual choice (Grinker et al. 2010:116).

Marxism has been deployed to analyze the unequal distribution of power and wealth in society. The mode of production defines the nature of social, political, and spiritual dimensions of life (Marx quoted in Grinker et al. 2010:117). Wolf (1982:76) recognizes three modes of production: capitalist, tributary, and kin-ordered to understand production relations and mobilization of social labor during the colonial era. Three interlinked attributes characterized capitalist mode of production: control of means of production, commoditization of labor power, and maximization of surplus production (Wolf 1982:78). In the tributary mode of production, rulers accumulate wealth in the form of tribute. The rulers alienate local lords from access to local tribute and extract surplus from primary producers. Local authorities are reduced to mere dependents of these overlords who amassed both tribute and surplus. Kin- based mode of production refers to the mobilization of social labor firmly attached to particular relations

between people. This labor can be defined and accessed through extensive social attachment including filiation/marriage, and consanguinity/affinity (Wolf 1982:91). The idea of social labor helps to grasp how human beings structure production differently in the three modes of production (Wolf 1982:76).

Similarly, Claude Meillassoux (1981:34) has applied the kin based/ domestic mode of production in precolonial African societies. For Meillassoux the domestic mode of production attains its final shape with cereal agriculture manifested in the acquisition and utilization of land, labor, and means of production. Elder community leaders control their respective group's reproduction by controlling the means of reproduction (access of young men to marriage partners) through bride wealth payments that leads to inequalities. In this case, elders compel young men to work for them (Grinker et al. 2010:117). Prior to Meillassoux, Sahlins (1972:78-79) developed the concept of the domestic mode of production, which is characterised by the sexual division of labor and limited livelihood production. Sahlins is criticized for not specifying the historical period for the application of this mode of production (see Meillassoux 1981:7).

Marx and Engels introduced the Asiatic mode of production that presupposed villages based on collective production and bound to a “higher unity” in the form of a state capable of compelling people to work (Coquery-Vidrovitch 2010:139). Godelier (1963) prescribed the Asiatic mode of production to Africa. However, Godelier recognized two forms of the Asiatic mode of production: one, with public works and the second, without public works. He identified the one without public works being applicable to precolonial African realities.

Jean Suret-Canale (1964) is another scholar who adapted the Asiatic mode of production to precolonial Africa suggesting that Asiatic and African societies lacked purely feudal or slave owning societies. Suret-Canale justified his position in terms of the evolution of African societies

along three stages: primitive community, tribal patriarchal societal structure (stateless), and class based societies (state). This unsettled debate led to the proposal of yet another model—the African mode of production of Coquery-Vidrovitch (2010).

Coquery-Vidrovitch (2010:145-147) criticizes Africanist scholars for two important limitations. First, their tendency to overemphasise kinship/political organization while reducing the roles of economic inequalities or class relations. Second, their erroneous application of the Asiatic Mode of Production to African realities. She challenged Africanists who saw the state as an entrepreneur capable of imposing massive tasks on the population with limited technology in the same way as states in the Middle East and China had done. Coquery-Vidrovitch (2010:140-147) introduced the African mode of production based on mix of patriarchal-communal economy and ascendancy of chiefs controlling market and long distance trade. She further insisted that the African mode of production is different from both the capitalist and Asiatic modes of production due to the lack of true despotism in Africa that exploited a peasant class. However, this cannot be applied to Ethiopia, which had a feudal authority and a peasant class.

I adopt Donald Donham's (1999) approach that shows the dynamic interactions among productive powers, productive inequalities, and reproductive schemata to explain the political economy of the incense trade. This will be complimented by the feminist political economy that dwells upon three vital variables: gender, access to resources, and patriarchy.

Donham revised concepts related to domestic mode of production to explore how social labor was utilized in the context of the Malee Kingdom of southwestern Ethiopia. He replaced the term 'forces of production' with 'productive powers'. Accordingly, productive powers consist of resources of production and tools including human skills, knowledge, and social organization. Production inequalities replaced the concept of relations of production denoting “

relations within which . . . [people] regulate their mutual access to the productive forces and, *as a consequence*, to the products of production” (Marx quoted in Donham 1999:64). Superstructure turns into reproductive schemata to illuminate productive inequalities, resolving social conflicts, and mobilizing coercive forces (Donham 1999:68).

In Donham’s (1999: 91) study reproductive schemata analysis explains the structure of exploitation that fetishize fertility. Fertility operates hierarchically in a descending order from kings, regional chiefs, and lineage heads down to men in households. It also translates into the flow of products to the king who extracts surplus labor or tribute from the community. The exploitation of labor and surplus product establishes stability and sustains privilege and power structures. This is linked to Marx’s concept of commodity fetishism within a capitalist mode of production, in which the value of products of labor explains the relationships between people and commodities. For Marx, commodity fetishism hides the exploitative social and economic transactions between laborers and capitalists who owns the means of production. This pattern of relationship tends to be so deceptive for the workers who hardly notice that commodity fetishism stands out as an instrument of oppression (Grinker et al. 2010:117-118). It can be argued that reappraising the extra hours that people work indicates their exploitation beyond what is needed for their survival and reproduction. Cunningham (2017:14) citing Kolakowski argues that “exploitation is measured by assessing the amount that people work beyond what is necessary in a given social context for their maintenance and reproduction.” An extension in working hours indicates unremunerated labor exploitation as manifested in my study of women incense processors working for different companies. Donham (1999:62) emphasized the institutionalization of inequalities as reflected in the control of labor. This manifests productive inequalities or the differential power relationships over the production of society's total output.

Donham (1999:64) shows that productive inequalities assume a central place in Marx's political economy analysis because they indicate the basic divisions and contradictions within society.

Productive inequalities present social impediments to an exercise of human freedom by alienating groups from the social product necessary for human self-fulfillment. Diverse arrangement of productive inequalities projected diverse degrees of alienation which reproduces different degrees of inequality (Donham 1999:64-65). Donham articulated Marx's analysis of capitalist society to explain alienation within the context production process. He reflected productive inequalities by classifying into two contradictory forces: capitalists and workers. Capitalists controlled productive powers while workers alienated from productive powers except that of their labor. Capitalists own production enterprise, machineries, and capital to hire workers. Workers, in contrast, will be coerced to sell their labor power to capitalists (Donham 1999:66).

Alienation is a theoretical concept in political economy focused on production and fetishization developed by Marx for capitalist society. Marx (1988) defines alienation as the separation of work or labor from the worker, or the separation of labor products from the worker. Marx distinguishes four types of labor alienation. First, alienation from the labor product. The capitalist owns and sells the product after the worker has created it. The worker is dissociated from the product. Second, alienation from labor activity. For the duration of the workday, the worker sells his or her labor power to the capitalist in the form of wage labor. Third, alienation from one's own unique humanity. Workers have become estranged from both themselves and the material world. Fourth, alienation from the society. Workers are estranged from one another (Marx 1988:72-74). Tsing (2015:122,301) argues that through alienation from material products (matsutake in this case) that are sold without reference to the producers, the products become a

stand-alone that is estranged from people involved in various stages of production. The objects have been stripped of the histories and obligations that went into their creation. In other words, the product is alienated from its social context of production, which is commodity fetishism.

Marx and Engels have been criticized for assuming that alienation only occurs in capitalist societies, despite the fact that “Women's propertylessness in their bodies and the labour of their bodies predates capitalism” (Dickenson 2001:208). For instance, Marx has been criticized for ignoring the alienation of women's labor power. He underestimates reproduction labor because it is not part of the production process. Reproduction is thought to have no use or value (Dickenson 2001:208). Delphy (1984:60) challenges this notion of alienation by replacing reproduction with a domestic mode of production to explain the market value of housework. She claims that alienation, defined as a lack of power and control, can be applied to women's poverty. In short, Delphy depicts women's domestic labor as alienated, and the home can be perceived as a site of production and reproduction.

The informal economy is known by various names, including underground, unrecorded, or hidden labor (Snyder 2005:3, 20; Weidhaas 2017:3). In a gender-segregated workplace, women are engaged in hidden forms of production (Snyder 2005:18). Child labor is another form of hidden labor where children participate in housework (including shopping, collecting firewood, cleaning, fetching water, or caring for children) and family business work (including working in farm activities, family-owned shops or workplace, and selling goods from the family's farm or business in the street and at the market) (Webbink et al.2012: 631). However, the International Labor Organization (ILO) sanctifies unpaid child labor performed in a domestic context if supervised by parents (Nieuwenhuys 1996:239). Poster et al. (2016:4) state that the concept of hidden labor needs to be expanded to include women's work performed inside the

home under a piece-rate system. Martin (2014:18) argues that hidden labor, which constitutes a significant portion of mundane work in migrant-serving organizations, is underestimated because women's work in the home and in the voluntary sector is not considered as part of the economy.

Donham's analysis of social labor, Marx's alienation theory, and hidden labor have resonance to the patterns of relationship observed in incense processing companies and the overwhelming number of women incense processors who have nothing but their labor to sell to big trading companies. As discussed in chapter 7, women who work extra hours in incense processing are exploited without proportionate remuneration for their labor.

4. 2. 2. Feminist Political Economy

Feminist political economy is a concept that developed during the rise of the second wave of feminism (Becchio 2020:9). It seeks to understand how gender has been culturally constructed and entangled with processes of class formation, race, and other aspects of social identity to sustain women's marginalised social position (Olson 2001:327). Feminist political economy arose from the shortcomings of other political economy approaches, which failed to address the gender bias of neoclassical economics. In its analysis, Marxist political economy also fails to adequately explain gender differences within classes. It is castigated for prioritizing production over reproduction which is the materialist basis of social relations of reproduction (Hopkins 2001:331).

Feminist theory has contributed to the development of three major analytical tools in feminist political economy: social reproduction, patriarchy, and gender (Figart and Mutari 2001:337). Social reproduction is a term developed from Marxist discourse that refers to the production of life while production designates production for the market. Production/labor is associated with the male sphere of activity and reproduction within the realm of the female

sphere. Luxton (2006:26) points out that that feminists like Engels, equate production, labor and men with the economy, and women with reproduction and the family, even though they recognize that women participate in paid labour, essentially presenting men as the bread winners, and women as full-time homemakers (Mutari 2000:30). It also presupposes that housekeeping and family responsibility are tasks of women.

The division of production and reproduction in different contexts took place with the emergence of capitalism. Production occurs outside the home, involves the creation of commodities for exchange. Reproduction is usually performed by women, children, and the elderly either unpaid, if performed by family members, or paid, if done by domestic workers. However, one contribution of feminist economy is the recognition of reproduction /domestic labor to the economy and the value of unpaid household labor to national income as an economic realm (Mutari 2000:30). Classification of reproduction as women's sphere not merely disregards women's role in the economy but also neglects the interaction between household and the marketplace (Hopkins 2001:332).

Another major source of concern for feminist political economists is patriarchy. Patriarchy refers to men's control over women's labor power. Patriarchal systems reinforce gender inequality across the economy, society and in politics (Makama 2013; Nadasen 2012). It was used to explain power dynamics between men and women in every social institution (Gardiner 2001:284). Women are denied access to critical productive resources in all modes of production. They are excluded from higher-paying jobs under capitalism (Mutari 2000:31). Gender segregation in the workplace became a key mechanism for reinforcing women's economic dependence. Labor market exhibits gender-based occupational segregation along horizontal and vertical axes. The horizontal axis refers to the way in which men and women

cluster in different occupations and industries. The vertical axis indicates men's prevalence in highly paid jobs within an industry/occupation. Women are victims of both vertical and horizontal segregation (Sarma 2009:84-85). In North America women continue to spend more time on household tasks despite men's' increased commitment to do housework. This impedes women's active participation in paid labor (Lachance-Grzela and Bouchard 2010:772). This can be contextualized within the patriarchal system in Tigray that relegates women to the home in rural contexts. Tigrayan gender stereotypes perceive certain work in the home as feminizing and emasculating, including food processing (Lyons 2014). Lyons (2009, 2014) and Cascadden et al. (2020) stress that women's pottery production is perceived as feminine and feminizing, including the widely held Tigrayan belief that working with clay makes men sterile. Even the act of a man sitting in women's kitchens or staying inside houses during the workday are considered feminizing (Lyons 2009).

From a feminist political economy perspective, women's active participation in the labor market is acknowledged as constrained by the competing demands of work in the home and is limited by cultural and historical perceptions of what is appropriate work, and work environments for men and women (Ahlborg and Nightingale 2018; Allen 2008). Feminist political economists observe inherent social inequality and power relations in the private and public spheres (Syed 2021).

Another concern of feminists is theorizing the ownership or access to land of women and other marginalized groups. Women are excluded from ownership of land or have limited access to land in many developing countries due to prioritization of land allocations to development projects (Nightingale 2006:168-169) but this varies from country to country. However, women's exclusion from land is deeper than the capitalist economy and development projects. In Tigray, a

long history of societal patriarchy favours men as land holders. These patriarchal structures are easily transferred to the exploitation of women in the labour force in urban settings.

Keith Hart (2006:25-26) coined the term “informal sector” in the early 1970s to describe the economic activities of rural migrants in Accra, which is characterised by the absence of bureaucratic sophistication. The informal sector encompasses diverse economic activities, where some are paid and some are not. The informal sector, among others, includes gardening and brewing, any kind of trade, gambling, theft, and political corruption. Hart observed that people in Accra sometimes combine both formal and informal sources of income to maintain their livelihood. The informal sector runs a risk of disappearing when the bureaucracy engaged in providing credit to the sector then demands that participants pay tax.

Guha-Khasnobis et al. (2006:3) argue that the informal economy is not governed by the rules of market economy. It operates within the family mode of production and operates in violation of formal state rules characterised by unregistered business that does not pay taxes. Formal economy is regulated and protected by the state and is governed by modern capitalist firms with their objective of profit maximization

Lipton (1984:196) identifies three shortcomings of the concept of informality. First, informality is characterized by a continuum practice and lacks a clear-cut separation between the formal and the informal. Second, the relationships between the informal sector and the rest of the economy are not well investigated. Third, the characteristics of the two sectors are not well identified. It is unclear which economic activity falls either in the informal or formal sector. Economic activities in the informal sector itself can vary greatly.

Moreover, Tuominen (1994:238) explains that, while the concept of informality was intended to analyze work done outside the formal economic sector, it fails to recognize women's

domestic labor. One such example cited by Tuominen (1994) is the definition of informal economy provided by Castells and Portes (1989:12) which is “a process... characterized by one central feature: it is unregulated by the institutions of society in a legal and social environment in which similar activities are regulated”. Tuominen (1994:239) further criticized classical and Marxist economists for their emphasis on production of commodities and neglecting women’s domestic labor in their analysis of economic structures and production.

Livelihood is a means of making a living which consist of resources that sustain basic human needs, cultural values, and social relationships (Zakour and Swager 2018:49). Women from urban and rural areas become involved in informal economic sectors such as trading activities to support their families when primary sources of household economies fail (Clark 2001:114; Seligmann 2001:3; Werner 2003:121), including when women become household heads following divorce or becoming widowed (Lyons 2014; Seligmann 2001). Women also trade or do craftwork to support their families when they cannot produce enough food from their farms (Hirth 2009:15; Lyons 2014), or as a strategy to maintain their economic power and keep their marital status (Sikkink 2001:213). The same strategy helps to establish a social network (Werner 2003:122-124) that gives them access to the male dominated public sphere (Seligmann 2001:10).

However, social perceptions of women's participation in trade are not always positive. For example, Berhane-Selassie’s study (1991) found negative societal perceptions women face as traders within the context of marketplaces in southern Ethiopia. Women's trading is a less respected activity for the family and community (Lessinger 2001:78) and women’s trading is perceived as abandoning their household tasks (Huseby-Darvas 2001:202), even though women's trade is widespread and essential. As Weismantel (2005:120-124) notes in South America, the

market not only provides income for the family's well-being, but it is a place where women share and discuss their domestic and economic problems and find solidarity. This observation also applies to women's trade in Tigray (see Lyons 2014).

The informal economy is relevant to my study because both women and men engage in incense production, processing, and trading, and earn their livelihood from the informal sector. As Hart's study indicates, urban migrants entered this sector to sustain their livelihood. Similarly, this study shows that many women incense producers and processors, migrated from the nearby rural areas to work in informal jobs.

Feminist political economy is applied as the theoretical framework to investigate the complexities of local and historically situated economies in terms of the labor force and people's access to economic resources, including social and political resources, problems relevant to the different sectors of Tigray's incense trade. The three major analytical tools in feminist political economy, that is social reproduction, patriarchy, and gender, are used to contextualize the incense trade in Tigray. These tools are used to analyze labor in incense processing and measure the inequality and alienation rooted in the patriarchal system that enforced gender inequality across the economy and society.

CHAPTER 5: METHODS

This chapter discusses research methods used in data collection and analysis in this dissertation. It addresses selection of research sites, research design, and techniques of data collection as well as human research/ ethics protocols. The methods for the phytolith, starch, and charcoal analysis are provided in Chapter 10.

5. 1. Research Location

Place has a crucial role in the development of ethnographic research (Wolcott 1999:24). Gupta and Ferguson (1997:13) show that certain places have greater anthropological significance than others. Ethnography places a special emphasis on the selection of a study site, regardless of the specific themes of a study (Wolcott 1999:24-25). Sites are selected based on rigorous thought, criteria, feasibilities, and relevance to the goal of the study (Harrison 2018:52). These considerations include personal connections and conveniences.

I selected this topic for my dissertation because of my familiarity with and interest in the use of incense in Tigray. This interest was developed through long experiences and contacts with archaeologists working in Tigray. My interest in ethnoarchaeology was developed partly through contact with my current supervisor, Dr. Diane Lyons, in 2006 when I was doing my MA on rock art in eastern Tigray. At that time, I met Dr. Lyons on her field trip to the study area. When I gave her my MA proposal for her input and feedback, she brought to my attention the inclusion of ethnoarchaeological questions that triggered a further ambitious project on ethnoarchaeology. After about 6 years, I met Dr. Lyons again in Addis Ababa during one of her field seasons and expressed my interest in pursuing a PhD study on ethnoarchaeology under her supervision. It was partly because of our discussion that I switched my interest from Eastern Tigray into Central and Western Tigray. Aksum, a town in Central Tigray, is the most studied archaeological

location in Tigray Regional State. Aksum was also selected as an ideal place to conduct ethnoarchaeological research of Tigrayan material practices that potentially could inform archaeological inference in the region. I decided to work on the incense trade because there are archaeological incense burners recovered from Aksum and its environs. Since frankincense today is produced in Central and Western Tigray, it stimulated my interest to expand the horizons of the study from Aksum to the next major cities of Adwa and Shire Inda Selassie, situated to the east and west of Aksum, respectively. Both sites share archaeological and historical development in common with that of Aksum. After I joined the graduate program in Archaeology at the University of Calgary, I accompanied my supervisor to Aksum in 2015 to acquire ethnoarchaeological fieldwork experience. This trip further enabled me to see the greater perspectives of undertaking ethnoarchaeological study on the incense trade. Dr. Joanna Casey was part of the team to Aksum, and discussions with Dr. Casey enriched my interest in the ethnoarchaeology of trade. During the fieldwork, I came across old acquaintances and made new personal connections with those who resided in Aksum. I was assured that if I conducted my fieldwork there, they could offer help in connecting me with research participants. This narrative shows that the field site selection was not random but purposive, as Harrison (2018) and Wolcott (1999) have indicated.

5. 2. Data Collection Strategies

The earliest notion of ethnography was to describe “accounts of non-literate peoples” to document fast-disappearing cultures (Wolcott 1999:41). This implies that the focus of ethnography was on study of other cultures. However, Harrison (2018:6) noted that ethnography has lost its original emphasis on the study of others through time. The current preoccupation of ethnographic research is on the description of ordinary people’s cultural life, activities, and

status, and their own perceptions in specific places and times (Wolcott 1999:68). Geertz (1973:19) defined this idea of ethnography as an inscription practice. Ethnography can be conducted by a participant observer who could be either a cultural insider or outsider (Brayboy and Deyhle 2000:163). Pike (1967) described participant observation along binary notions of emics and etics, referring to an insider and an outsider perspective respectively. Emics refer to grasping cultural rules and categories as a native researcher, whereas etics implies grasping the rules and categories of a certain culture as an outside researcher (Margolis 2013). Participant observation is applied in rigorous research, and it requires staying a couple months in the field (David and Kramer 2001:66). There are pros and cons when a researcher has positioned himself / herself as cultural insider or outsider (Harrison 2018:66-67).

Cultural insiders have the advantage of easier access to research participants, which can be manifested during the process of recruiting and interviewing. They easily secure trust and cooperation from the community. Cultural insiders are more familiar with the local people and have a better grasp of the social and cultural attributes of the community under study (Suwankhong and Liamputtong 2015:2; Wolcott 1999:37). This helps the researchers to garner reliable data from the participants (Saidin and Yaacob 2016:850). They are considered members of the community, not outsiders (Bonner and Tolhurst 2015 :16). Cultural insiders can access the local economic and ritual life that the host community do not want to disclose to outsiders (David and Kramer 2001:66). They know how to approach local people with diverse genders, age, and social status. They can also engage in the community's daily activities immediately, without permits from local people (Suwankhong and Liamputtong 2015:2). Cultural insiders can be more economical than the outsiders due to the insider's prior knowledge of the culture and language, and acquaintance with local conditions (Bonner and Tolhurst 2015:17). Sharing a

language facilitates information exchange with research participants and the misinterpretation of cultural data (Ginkel 1998:255).

However, there are certain disadvantages to being a cultural insider. First, although cultural insiders normally show acceptable behaviors, if they break the cultural rules of their own community, they can be deemed as outsiders (Suwankhong and Liamputtong 2015:2). Thus, they would be exposed to estrangement (Brayboy and Deyhle 2000:165). Second, the researchers can experience role conflicts. They can be considered as the advocate of the community rather than an objective researcher (Bonner and Tolhurst 2015:17). Third, there is the possibility of distortion in interpretation and analysis of data owing to a lack of social distance from the accounts of the informants (Brayboy and Deyhle 2000:165). To perform a proper analysis, cultural insiders should expose themselves to cross-cultural research before launching research in their own respective community, to distance themselves from their own culture (Nakane 1982:58).

Cultural outsiders have the advantage of being seen as more objective observers than the cultural insiders (Saidin and Yaacob 2016:850). The researchers are free from commitment to the community they are investigating (Bonner and Tolhurst 2015:17). Outsiders have also the advantage of getting a more detailed explanation about the culture of the community than would have been given to insiders, who are assumed to have a prior knowledge of their culture. Insiders may be rebuked if they raise similar questions in the presence of a cultural outsider. This emanates from the assumption that insiders are expected to know the answer, like the research participants do (Merriam et al. 2001:410).

However, a cultural outsider has the disadvantage of being a stranger attempting to penetrate the sub-culture of the research community (Ginkel 1998:255). Another disadvantage is that it

takes the outsider a longer time to build trust, recruit informants, and conduct research within a community. This puts the researcher at the further disadvantage of a less economical and more time-consuming venture to grasp the cultural settings, language, and interpretations of the collected data (Bonner and Tolhurst 2015:17).

Despite these advantages and disadvantages discussed above, one should not overstate the differences between cultural insider and outsider (Ginkel 1998:255). As Hammersley and Atkinson (1996:112) argued, both the insider and outsider researcher should assume an intellectually neutral position.

I was occupying both an insider and outsider position when I conducted my fieldwork in Central and Western Tigray. I am a cultural insider because I am a member of the Ethiopian Orthodox Tewahedo Church, fluent in written and spoken Ge'ez (the liturgical language of the church), Tigrigna, and Amharic. I have read many Ge'ez manuscripts and I have noted the importance of frankincense and myrrh in church rituals. I have observed the significance of the incense trade in the lives of Tigrayan women during my discussions with my supervisor, Dr. Lyons, when conducting ethnoarchaeological fieldwork in northern Tigray in 2015. Mastery of Ge'ez enables me to directly access information from church records on incense consumption over time.

In Aksum, I was able to utilize two individuals that I have known for 30 years who live outside the study area from our shared connections with the Church and its agencies. One of these contacts was my former schoolmate, and the other was a distinguished church scholar and the former director of the boarding school where I attended my elementary and high school. These two contacts were instrumental in facilitating my recruitment of research participants. They informed the research participants about my strong bonds with the Church, and that I was

one of the students raised by the church's boarding school. The assistance of these two individuals and the letter from the Church headquarters were instrumental in building trust between church participants and me. This allowed me to explore the Church's access to high quality frankincense and myrrh, and the religious use of these incense types. My former schoolmate connected me with incense company managers, wholesale, and retail traders. The company managers had to be convinced first to provide access to their compounds and also to permit a stranger to speak to their employees.

Being a cultural insider or outsider does not mean that I share the incense processors' subjectivity or that I know every activity going on in the incense processing and trading setting. As a male, middle class, church- educated, urban-dwelling, university researcher, I have inherent biases. Research participants could suspect that I gain great financial benefits from the research. They might suspect me of extracting personal information to spy on them about their political position. They might also be hesitant to provide accurate personal financial data, in order not to be excluded from aid and exposed to additional tax payments. Since I am from the Raya area and not Central or Western Tigray, I was not as fully acceptable to people as the people who reside in the study area. I think that had it not been for my personal contacts, research participants might have been reluctant to participate in the research and might have been reluctant to give detailed data. I did not interact informally with non-Christian and female participants as I did with Christian male participants because this would have been uncomfortable and socially inappropriate. A marginalized woman or man in Tigrayan society is comfortable to narrate their economic circumstances with insider-outsider researchers once they have built trust and have clearly understood the objective of the project.

5. 3. Participant Observation

Participant observation is one component of fieldwork methods and refers to every activity of an ethnographer in his/ her research site (Wolcott 1999:44). For Harrison (2018:12), it refers to the participation of an ethnographer in social activities during his/ her stay in the study site. Personal observation allows the researcher to have his/her own a field site and collect his or her own data rather than depending on other data (Wolcott 1999:43, 45).

Since ethnography is carried out for an extended time, a researcher will gain a complete picture of the culture under study (Wolcott 1999:49). This gives an additional advantage to fully understand the detailed behavior of research participants who otherwise might conceal their true behavior for a short period (Harrison 2018:18). Participant observation is a good venue to acquire reliable data, and the researcher can play both active and passive roles simultaneously (Wolcott 1999:49), which places the researcher “somewhere between full participation, just like (or as) a member of a community, and strictly observing” (Harrison 2018:16). The disadvantage is that the intimacy created with research participants might entail observer bias that compromises objectivity (Wolcott 1999:50). Participant observation is done as either a cultural insider or outsider, as stated earlier.

As a participant observer, I attended various church services to update myself with services that use incense, to observe who offers frankincense and myrrh to the church (men/women), and to understand the value of incense to the laity in general. I was able to observe incense rituals performed almost every Sunday mass, 5 baptism rituals, 3 matrimony services, and 3 funeral services during the field season. It is mandatory for an Ethiopian Orthodox Christian to attend the Sunday Mass unless he/ she is seriously ill. I also observed

incense rituals in households in Aksum, Adwa, and Shire Inda Selassie. In addition, I observed coffee ceremonies at hotels and on the streets of Aksum, Adwa, and Shire Inda Selassie.

Incense processing and grading methods were observed during the interviews at incense warehouses in Shire Inda Selassie. I also made personal observations in various marketplaces to assess the demand for the products and to determine the gender and age patterns of the customers. In the course I learnt that in all weekly and daily markets, women predominate in selling and buying incense and other aromatic plants. Furthermore, I was able to observe the traders in the market, on market days, and shops in the study sites. This practice allowed me to determine the main actors in purchasing and selling incense and aromatic woods/plants.

5. 4. Interviews

Social science research data can be classified into individual and cultural attributes. Different approaches are employed for the purposes of sampling. Individual data refers to demographic and economic data that can be processed through probability sampling. Cultural data includes diverse customs, norms, and practices which could be acquired through nonprobability sampling (Bernard 2011:113). There are two data sampling techniques: probability and non- probability. Probability sampling suggests that every participant in the sample population has an equal chance of being selected for the study. This category consists of simple random, stratified random, cluster sampling, and systematic sampling (Taherdoost 2016:20). In contrast, non-probability sampling is applied in qualitative research and case studies. It is used to investigate real life stories and does not need to be representative. It requires a clear rationale for the inclusion of research participants in the study (Bernard 2011:143). This sampling technique includes quota, snowball, judgment, and convenience. I have used the convenience and purposive /judgmental samplings for my project. The convenience sampling was selected

because research participants from different sectors of the incense trade who were willing to be interviewed and easily available, which saved time and research costs (Taherdoost 2016:22). Purposive sampling was used to gather data based on their age, sector of incense trade, income, and management of household economy, and to identify cultural phenomena (Bernard 2011:143).

Interviews are classified into structured, semi- structured, and unstructured types of interviews. In structured interviews, each participant is asked similar questions with the objective of reaching comparative uniformity. This is convenient for quantitative research, which uses high statistical tools (Wolcott 1999:53). Semi structured interviews are an open-ended data gathering techniques based on predesigned research questions and can be conducted anywhere.

Unstructured interviews are conducted with a defined plan that the researcher follows. It gives freedom to research participants' responses to express themselves in their own ways and time (Bernard 2011:156-157). I have employed semi structured and unstructured interview techniques in my research interactions with women incense processors, company managers, wholesale and retail traders, and church leaders. This approach helped to identify other potential participants with good knowledge on the use of incense and history of incense use in the church. These techniques are used because they are convenient for conducting research at any venue and occasion. Both semi- structured and unstructured interviews follow a general framework and interview guidelines. A semi structured interview offers the opportunity to build preliminary rapport with participants and narrate individual journeys in life. However, a particular disadvantage with an unstructured interview is that it might not be convenient for busy research participants (Bernard 2011:158).

I have found both structured and unstructured interviews very helpful, not only to gather data but also to establish facts, patterns, and themes of the study. Guest et al. (2006:60) noted saturation as a defining character of qualitative work. The theory of saturation determines whether adequate sample sizes are collected in purposive sampling. Morse (1995:147) observed that while saturation is a defining feature in qualitative research, there are no published guidelines to determine how many sample sizes are enough to reach saturation. For Bernard (2000:178), most ethnographic research reached saturation point at 30-60 interviews, while Bertaux (1981) assumed 15 interviews to be the least acceptable research sample size. Morse (1994:225) recommended at least 30-50 participants. In the case of my study, I have interviewed a total of 138 research participants belonging to five categories, considerably above the conservative estimates suggested to meet saturation. I realized that my data had reached saturation when themes and codes began to repeat. As Morse (1995:147) suggested, there is no consensus for the exact sample size for saturation point.

5. 5. Data Analysis

Thematic analysis is a form of research analysis that focuses on identifying themes/ patterns of meaning in qualitative data (Clarke and Braun 2017:297). It is a way of restructuring data different from the chronological arrangement of field experiences as depicted in field notebooks and interview transcripts. The data for this study were collected through interviews, observation, literature, and ancient scripts. The interviews were recorded using fieldnotes. Some themes and codes developed in this dissertation were identified during field work when I made daily interview summaries and reflections on what I observed. Detailed thematic analysis was done using Guest et al. (2012) and the six phases of thematic analysis described by Braun and Clarke (2006:87), which include data familiarization, generating initial code, searching for themes,

reviewing themes, defining and naming themes, and producing the report. The major themes that evolved from field data are frankincense production and labor organization, grading and transportation, household economy and gender relations, incense consumption, incense trade, frankincense and church rites. These themes are developed in the ensuing chapters.

5. 6. Research Sample

Incense is used by elites and non-elites in the study area. Elites are the Ethiopian Orthodox Tewahedo Church, which uses the highest quality frankincense, and the state, which owns the major companies controls the distribution of high quality frankincense internationally, not unlike earlier polities. The non-elites are ordinary people who consume inferior incense in terms of its quality and price, at the household level. Elites and non-elites were interviewed to obtain a broad understanding of incense. A total of 138 people were interviewed during the summer of 2018 (July-September) in Aksum, Adwa (including Yeha), and Shire Inda Selassie. The interviews in Aksum and Adwa took place from July 28 to August 24, 2018, and in Shire Inda Selassie from August 25 to September 18, 2018, depending on participants' availability. As discussed in Chapter 7, incense processing and trading are feminine activities. There is an imbalance in the gender ratio within interview samples, but efforts were made to represent both genders when possible.

Interviews were conducted in Tigrinya and Amharic. I used Ge'ez when participants referred to Ge'ez texts during the interview, particularly in discussions related to incense rites in the church. The research samples presented below are among the major actors in the incense trade in Central and Western Tigray. In this dissertation, all data are anonymized. Women who do the incense processing in warehouses are coded from A1 to A85. Managers and department heads of

incense producing, processing, and trading companies are coded from B1 to B8. Wholesale traders involved in the sales of incense and spices of various kinds are coded from C1 to C7. Small scale incense and aromatic woods/leaves are coded from D1 to D18, and religious leaders and their laities are coded from E1 to E20.

5. 6. 1. Incense Processors

Frankincense processing is a source of income for poor women and children in Shire Inda Selassie. There were 700 women and girls employed in the four companies investigated, including 85 women who were interviewed. Women constitute most of the labor in the incense processing business, with a few men involved in loading and unloading the raw resin and loading processed and graded incense.

I interviewed a total of 85 women who do frankincense processing in warehouses at Shire Inda Selassie. These participants generally represent women incense processors at different companies. The study identified a smaller subset of participants who provided additional information on the details of the tasks performed in incense processing. The participants included three warehouse supervisors, seven veteran workers, and 18 young adults who had recently completed their high school education. A4, a warehouse supervisor with over 10 years of experience, started her job as the housekeeper at Shire Inda Selassie, A13 and A53 each have over 20 years of work experience and began their job as day laborers—the former as an incense processor in Nazareth/Adama (near Addis Ababa) and the latter as housekeeper in Mekele—and both were transferred to Shire Inda Selassie as warehouse supervisors. These three supervisors at an incense producing warehouse in Shire were interviewed because they oversee training of new employees, distributing and managing the overall activities of incense processing and grading.

Interviewing three supervisors was deemed sufficient because they gave consent to participate in the research. Besides, these were the only women who were working as warehouse supervisors when I conducted the research. Availability and consent were the major recruitment criteria for all female incense processors. They were interviewed to illuminate incense processing and trading and its contribution to their respective household economy.

The incense processors interviewed were not a homogeneous entity, but instead represented the diversity that one would expect in any community. The experienced workers constituted an important subset of incense processing women. They have a more extensive knowledge of the origin and development of incense processing companies (from government to parastatal and private companies), they have worked at different companies in their longer careers and were able to describe the qualitative changes in payment rates, employee composition, incense grading criteria, and tasks over time. A12, one of the workers who is illiterate, has worked in the business for more than 30 years. She recalls only one government company, the NGPME was engaged in incense processing in Western Tigray before 1991. She joined the company before she was 16 years old to help her mother in incense processing—a trend evident from my interviews with the contemporary incense processors.

Another subset of incense processors is composed of 18 younger adult women between the age of 18 and 21 years old. They have completed their high school education (Grade 10), but never qualified to join colleges or universities to navigate professional jobs. Except for two participants (A11 and A58), these women began working in the incense processing companies together with their families and have acquired moderate job experience ranging from 3 to 7 years of employment. One of these workers (A11) is a 19-year-old woman who came to Shire Inda

Selassie from a rural area in Shire to pursue her education on a part time basis while working in the company to support herself.

5. 6. 2. The Incense Producing and Trading Companies

I interviewed a total of 8 managers and department heads of incense producing, processing, and trading companies at Shire Inda Selassie. One is female¹² and the remaining seven are males. The companies included in this study are the NGPME, Guna Trading Houses, and three other private companies. The company managers and employees come from different backgrounds and have acquired a good knowledge of incense production and trading with long experience in the business. It was stated that the TPLF was involved in the incense trade in Tigray right from its days of insurgency (1974-1991) via Sudan. Five participants were former TPLF combatants (one of them is currently a General Manager of the company), of which two were assigned to manage incense and other cash crops (e.g., sesame) produced in Tigray during the armed struggle against the *Derg* regime (1974-1991). From these five participants, three male participants were involved in incense production/tapping for many years before they assumed their current positions in the company. The remaining three participants are managers of incense processing and trading companies: one governmental, and three private companies. One of the private company managers began his career as an incense tapper before he was promoted to squadra leader. He succeeded eventually in establishing his own incense processing and trading company.

Company managers and workers were interviewed to understand incense production and exchange processes in the region and the country in general. My interaction with different

¹² This individual was a TPLF combatant, who is now head of one company's finance division.

company managers was essential in learning the history and daily activities of these companies and how the incense trade operated both within the domestic and international trading system. They also helped me understand the entire system of incense trading, including the production, processing, and marketing phases, including how the companies' recruited laborers, how payment is determined, and issues of income diversification within the study area. In sum, it was possible to understand the details of export processes and returns from incense trading companies.

5. 6. 3. Wholesale Traders

Interviews with seven wholesale traders were conducted in Aksum and Wukro Maray, a small town located 18 kilometers northwest of Aksum. Men exclusively dominated this occupation, while their wives occasionally appeared in the stores as stand-ins when their husbands were occupied in other commitments. The wholesale traders are involved in the sale of incense and spices of various kinds in addition to other items from their respective shops. Similar types of questions were asked of small-scale and wholesale traders, although some questions were tailored for variations in these two groups' trade. I contacted each participant in their respective shops and explained the purpose of the project. I interviewed wholesale traders to understand the dynamics of wholesale trade transaction and transportation methods and to establish incense consumption patterns at church and household levels.

5. 6. 4. Small-scale incense Traders (Retailers)

The small-scale incense traders who sell different types of incense and other aromatic plants in the marketplaces of Adwa, Aksum, and Shire Inda Selassie were recruited at marketplaces, but interviews were conducted at their homes by prior arrangement. Saturday is the major market

day for the three cities. Eight retailers were from Aksum, seven from Shire Inda Selassie, and three from Adwa markets. The five male participants from Shire Inda Selassie who received traditional church education are regarded as *debtera*,¹³ who are often traditional doctors, and are exclusively engaged in selling aromatic and medicinal plants. The interview questions were useful to trace production areas of aromatic plants, the means of transportation, and its contribution to women's household economies.

I conducted informal discussions with the traders and their clients on the types of products they purchase, their use, and the origin of the products. Photographs were taken that show market scenes and the products displayed on market days.

5. 6. 5. Religious Leaders and their Laity

Interviews with religious leaders and their laity were conducted at Aksum and Yeha to determine rites performed in the Ethiopian Orthodox Tewahedo Church using frankincense and myrrh. They were also asked if they remembered any specific manuscript or book that discusses the use of incense in the church, and if they recalled any changes in the tradition, uses or trade of types of incense in their lifetime, and the reasons for these changes. All participants cited various texts from the Bible to justify the sacredness of incense and how it was adopted into the church's rites. These identified church manuscripts written in ancient Ge'ez which I was then able to

¹³ *Debteras* are always male. There are two types of *debtera*. The first one is the highest scholar and teacher of the church "characterized by his extensive knowledge of the traditional patristic and biblical scriptures, church music, religious poetry, and canon law" (Dagne 1970 :90). In addition, this kind of *debtera* might have medicinal and herbal skills for curing and/or for magical practices. The other *debtera* is a person who is mediocre in church education but more inclined to occult and supernatural practice. The latter uses his occult skills for a living and /or for social power.

explore to synthesize the importance of incense in the church rites and procedures, and the purposes of frankincense offerings in the church.

I consulted church manuscripts at St Mary Church in Aksum, particularly *Metshafe Kidase* (the Ethiopic Liturgy), *Kebre Negest*¹⁴ (Glory of Kings), *Metshafe Didsqelya* (the Ethiopic Didascalia), *Fetha Negest* (The Law of the Kings), *Tselote Itan* (The Prayer Book of the Incense), *Metshafe Ginzet* (the Book of Absolution), readings from the four Gospels on the birth of Jesus Christ, and *Weddase Maryam* (Thursday’s strophe 3 of Praise of Mary). The first four manuscripts are available in print form, and they also are translated into English, published, and disseminated in digital form. I have cross checked between the original master manuscripts and the published forms. The church manuscripts helped me to comprehend the use and history of incense from the perspective of the Ethiopian Orthodox Tewahedo Church.

Table 5.1. Gender and age range of participants.

Gender	Age Range							N= 138
	18-28	29-38	39-48	49-58	59-68	69-78	79-88	
Female	27	33	19	15	4	1	1	100
Male	4	7	12	7	3	3	2	38

¹⁴ The *Kebre Negest* is believed to have existed in written form or oral tradition by the 6th CE, although the current version is dated to the early 14th century (Phillipson 2012: 66-68).

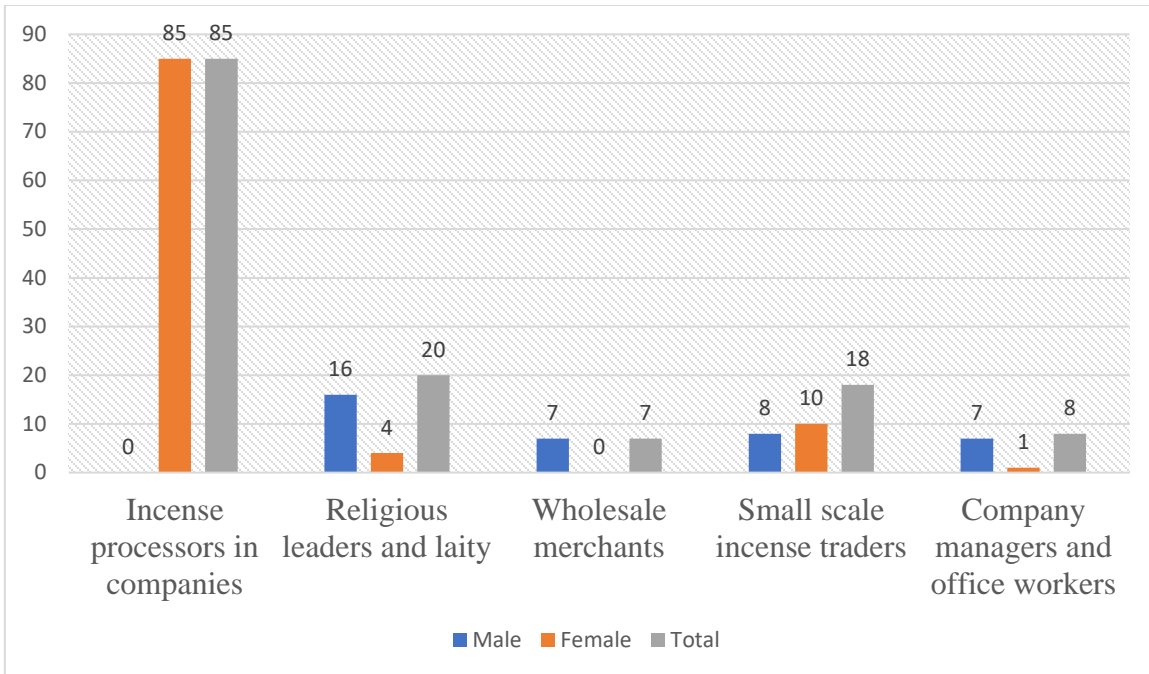


Figure 5.1. Participants based on their occupation and gender.

5. 7. Human Research /Ethics

Research presented in this dissertation was conducted under the certificate for ethical research (REB17-1808) issued by the Conjoint Faculties Research Ethics Board (CFREB) at the University of Calgary. Permission to conduct field research in Ethiopia was obtained from the Federal Government Authority for Research and Conservation of Cultural Heritage (ARCCH) in Addis Ababa, and for research in Tigray from the Tigray Culture and Tourism Bureau in Mekele. The headquarters of the Ethiopian Orthodox Tewahedo Church provided me with a permit letter to access church manuscripts and to receive assistance from church authorities in the study area. Research was funded by the University of Calgary Faculty of Graduate Studies (International Research Excellence Award), Office of the Vice-President (Research) (Dissertation /Dissertation Research Grants), and the Graduate Program of the Department of Anthropology and Archaeology.

Upon arrival in Tigray, I contacted company managers in Shire Inda Selassie for permission to conduct research within their companies. Company managers and warehouse supervisors gave me access to the warehouse compounds to request the workers willingness to join my research project. Following this, participants were chosen randomly. I obtained informed consent from all female participants (all over the age of 18) who were engaged in processing and grading incense. The participants preferred to be interviewed at the warehouses due to time constraints and their requests were met. I spent an average of an hour with each woman. Each woman was interviewed individually to maintain confidentiality. Five women refused to participate, and I respected their right to do so. Two of these women declined to participate in the study without giving any specific reason, and the remaining three refused to participate in the research on the grounds that their participation would not bring them any benefit to improve their livelihood. These women recalled that similar researchers consulted them earlier, and they resented the fact that this did not result in the government improving their working conditions and/or enhancing their livelihoods. The other female participants (N=85) felt comfortable volunteering for the interviews. I read the Tigrigna version of the statement of informed consent to women who were illiterate, before interviews commenced.

Incense processing company managers and department heads were requested to read the translated Tigrigna version of the statement of consent, and if willing, to provide verbal consent to be interviewed. Interview with incense producing and trading companies was held in Shire Inda Selassie where the companies are located. The interview took an average of 90 minutes with each participant.

The wholesale participants read the consent statement before they provided verbal consent. I fixed an appointment with each participant. Detailed interviews were held in the shops of each participant and each interview took an average of 75 minutes.

All interviews with small-scale incense traders were made at the participants' residences. Conducting interviews inside marketplaces was avoided for two reasons. First, I did not want to interfere with their regular business in the market venue when they were earning income. Second, participants' homes ensured their privacy and confidentiality. Consent of both participants and their customers was obtained for photographs taken in the marketplace. These images were deemed important to demonstrate the overall process of incense and aromatic plant material marketing in the study area. One Muslim woman did not want to be interviewed because she did not feel her story was worth narrating. Informed consent was obtained from each of the women interviewed. I read the consent form to each participant because some of them could not read and received their verbal consent. The interviews were held in the respective homes of each participant. While conducting the interview, other family members were present in the compound but could not hear our detailed conversation as houses are compartmentalized. In Tigrayan culture, it would be uncomfortable for women to be interviewed alone in their homes by strangers, especially people of the opposite sex, without other household members present. This is the norm: private conversations are respected and the participants in private conversations lower their voices. An average of an hour was spent with each trader.

I obtained informed consent from the clerics and the laity (N=20). Since all participants are literate, they read the translated Tigrigna version of the statement of consent, and then agreed to be interviewed. The interviews allowed greater opportunities for discussion and helped to identify other potential participants assumed to have good knowledge of incense use and its

history in the church. Dates and places of interviews were scheduled at the participant's convenience once verbal consent was obtained and documented. The interviews in Aksum were conducted at three different locations (respondents' houses, church compounds, and hotel premises). Eleven interviews were conducted within the houses of the religious leaders and laity, including one male and one female church leader living within the compound of Aksum St. Mary Cathedral. The interviews with the latter were conducted separately in their respective houses where they teach students. Three interviews took place at various hotels located in Aksum (Yared Zema Hotel, Sabean Hotel, and Africa Hotel) at the participants' requests that I arrange a place of interview; one interview was held in an office in the Central Tigray Zone Diocese of the Ethiopian Orthodox Church. The five interviews in Yeha were conducted at the compound of Yeha Aba Aftse Church.

The time spent with individual participants varied according to their ability to explain rites using incense, and the specialization in their church education. Preachers and commentary specialists spent an average of one hour and 30 minutes per interview, while the remaining participants spent an average of one hour. During interviews, all participants justified the utilization of frankincense and myrrh in church rituals. The information letter provided to participants before obtaining informed consent is attached in Appendix D and F, and interview questions asked to meet project objectives are Appendices A–C.

5. 8. Ethnographic Materials

Incense burners, frankincense and other aromatic samples were collected for analysis during fieldwork. The sample collections were exported to Canada under Canada Food Inspection Agency Import Permit No. P-2018-02670 and the ARCCH. The samples were analyzed in Dr. Brian Kooyman's paleoethnobotany laboratory in the Department of Anthropology and

Archaeology at the University of Calgary (details of laboratory methods are elaborated in Chapter 10).

Production locations of frankincense, myrrh and other local aromatic wood/leaves, and the distribution points of incense from markets to customers were identified through interviews to provide a broader understanding of contemporary trade routes for different types of incense (see Map 7.2). Connections among these locations with other locales in northeastern Africa were plotted using Geographical Information System (GIS) maps (see Map 3.1. and Map 7.1). Information from interviews and published archaeological and historical surveys of ancient trade routes were used as a starting point to evaluate the relationships and changes in trade routes over time. Further historical context of incense use was obtained from historical texts written in ancient Ge'ez. Archival research on the incense trade was conducted in the archives of the Institute of Ethiopian Studies (Addis Ababa University), which holds the world's largest collection on issues related to Ethiopian studies; and church archives in Aksum at St. Mary Church and the Headquarters of the Ethiopian Orthodox Tewahedo Church Library and Museum.

5. 9. Synthesis of Methods

Research location plays a crucial role for the development of ethnographic research. Ethnographic research focuses on description of people's cultural life in a specific place and time. Ethnography can be conducted by a participant observer. The observer could be positioned as cultural insider or outsider. Cultural insiders are more familiar with the local people and have the advantage of easier access to research participants and easily build trust and cooperation from the community. Cultural outsiders are objective observers and are free from commitment to the host community. Cultural insiders may have problems of objectivity because of their immersion

in the culture in ways that distort their interpretation and data analysis. Outsiders also may encounter problems of language barriers and dependence on translators. Both insider and outsider researchers should assume an intellectually neutral position in their research endeavour.

I was occupying both an insider and outsider position when I conducted my fieldwork. I have used the convenience and purposive /judgmental samplings for my project. The convenience sampling was selected for its convenience to save time and research costs. Both semi-structured and unstructured interview techniques were used to collect data in the field. The data used in this study were acquired through interviews, observation, literature, and ancient scripts.

In the next chapters, the ethnoarchaeological and ethnographic data collected from Aksum, Adwa, and Shire Inda Selassie using the methods discussed in this chapter are presented.

CHAPTER 6: INCENSE PRODUCTION I: COLLECTION, GRADING AND TRANSPORTATION

Introduction

This chapter seeks to answer the question of how the incense trade integrates ordinary people into the social hierarchies and larger scale economies of the study area. It emphasizes the demographic and socioeconomic situation of incense producers. It also analyses systems of frankincense grading and transportation of frankincense to international markets. The chapter reveals gendered divisions of labor in the frankincense trading system. The sources of data employed for synthesising this chapter are a combination of literature review and research participants' interviews.

6. 1. Incense Tapping, Collection, and Grading Procedures

6. 1. 1. An Overview of Incense Production

The aromatic resins (myrrh and frankincense) are produced in remote rural highlands and exchanged at urban centers and exported outside the country. Myrrh (*Commiphora-myrrha*) is produced from small shrubs of *Commiphora* species endemic to Ethiopia (Lemenih 2005:55). It grows in southern and southeastern Ethiopia, mainly in Bale, Ogaden, and Sidamo (Deffar 1998; Fitwi 2000). Myrrh is ranked third (6%) in terms of production volume in the country, behind *Boswellia papyrifera* (80%), and gum arabic (produced from *A. senegal*) (14%) (Defar 1998). In Western Tigray, an area of 500,000 hectares is estimated to have a stand of 30, 000,000 trees. It is estimated that about 50,000 quintals of gum olibanum per year can be tapped from the trees. However, the amount of gum olibanum tapped annually in the region is not more than 25,000 quintals (Hagos et al. 2002:7).

Gums can be classified into aromatic and non-aromatic resins. Aromatic gums are substances with volatile oil which produce odour (Lemenih 2011: 15-16). Africa is the world's leading producer of frankincense, followed by India (Al-Harrasi et al. 2019b:45), and within Africa, Ethiopia is the second leading producer and exporter of frankincense after Somalia (Coppen 2005:18; Ehsete et al. 2005:56; Moens et al. 2019:299; Tilahun et al. 2007:997).

Three types of frankincense have been identified in Ethiopia: Tigray, Ogaden, and Borana (Fitwi 2000:14-15). They are named respectively after areas in Ethiopia's northern highlands, eastern and southeastern lowlands that produce frankincense (Tadesse et al. 2004:288). The Tigray type (white) frankincense differs from the other two in its high production volume, making it the main commercial species traded broadly in both domestic and international markets today. The Tigray type is harvested from *Boswellia papyrifera* (Del.) Hochst, and the Ogaden and Borana types are produced from varieties of *Boswellia* species including *Boswellia rivae*, *Boswellia ogadensis*, *Boswellia neglecta* and *Boswellia microphylla* (Deffar 1998; Lemenih 2005). Another variety of frankincense produced from *Boswellia serrata* Roxb in India is traded as Indian olibanum or Indian frankincense in the international market (Murthy and Shiva 1977). Gum arabic, a non-aromatic gum and resin, is widely collected from all parts of Ethiopia except northern Ethiopia (Lemenih 2011:19).

Frankincense has featured in the development of Ethiopian investment and trade. In this regard, recent studies in various parts of Ethiopia indicate eviction of poor peasants and urban dwellers from their lands and natural resources and these lands are then transferred by the Federal Government to private and international investors (Bekele and Kjosavik 2016; Feyissa 2011; Lavers 2012; Lie and Mesfin 2018). In Tigray, frankincense-producing cooperatives, government, and private companies carry out incense production, processing, and exchange.

Ethiopia's federal and regional governments also have their own companies that are involved in harvesting and trading incense. Some private companies, including Guna (which is owned by the TPLF), Sihul, Alula, and Mekhete project companies (Deffar1998) have affiliations with the region's ruling party because the owners are veterans of the TPLF. The government control of the industry has raised the question of the extent that incense production and trade benefits local communities (Tilahun et al.2016:96).

6. 1. 2. Labor Organization

There is a considerable difference in the organization of production of frankincense and other gum resins in northern and southern Ethiopia due to the product type and their location (Fitwi 2000:18; Fitwi and Lemenih 2011:63-64; Tadesse et al. 2004:288; Mekonnen et al. 2013:279). In northern Ethiopia, frankincense and other gums are obtained through tapping stems and branches of the frankincense tree. It is carried out systematically by private companies and cooperatives, who hire men to work for a couple of months during the dry season from October to June. The task consists of wounding, collecting, and refreshing the resins. In contrast, in southern Ethiopia tapping is not applied to produce incense resins. It is collected by herders, women, and children on a part-time basis from naturally produced seepage of the trees. However, production methods in southern Ethiopia are changing with recent introductions of commercial incense production cooperatives in the region. The quality of the frankincense in the south is low because the resins are mixed with soil or sand, with poor handling and collecting methods (Fitwi and Lemenih 2011:64).

Frankincense trees are tapped during the dry season when they shed their leaves (Abiyu et al. 2010:135) and tapping should be stopped before the trees begin the leaf regeneration that stimulates photosynthesis (Fitwi 2000:20). Tapping is an itinerant occupation that is seasonal,

and the tappers move to the production sites for work. Tapping is exclusively done by men in north and northwestern Ethiopia (Mekonnen et al. 2013:279; Moens et al. 2019:295). The collection of incense is an entirely male labor force. Male frankincense producers are alienated from the incense they produced. Tsing's (2015:122) comparison of matsutake alienation described in Chapter 4 on page 63 resonates with the frankincense alienation in Tigray. Similarly, tappers are alienated from the frankincense they produced by selling their labour and relinquishing the product of their labour to incense companies. In Tigray and other parts of Ethiopia, tapping of frankincense is used as a critical source of income by poor families to meet their basic needs (Tilahun et al. 2016). That is why, tappers in the Tembien area of Central Tigray are young and on average 21 years of age (Moens et al. 2019:295) and landless farmers who learnt tapping skills from their family members or neighbors. They access income streams independent from their family networks. There are local rules and regulations to participate in tapping. Tappers are required to be members of cooperatives and they are required to be licensed by completing annual training on frankincense production at the cost of about 180 USD (Moens et al. 2019:297). Many landless farmers cannot afford this cost, and it is estimated that about 40% of this social group are excluded from licensing and trading of frankincense (Moens et al. 2019:295-296). The tappers from Central Tigray are experts in tapping frankincense trees because of the longer history of frankincense tapping in this area (Woldeamanuel 2012:54).

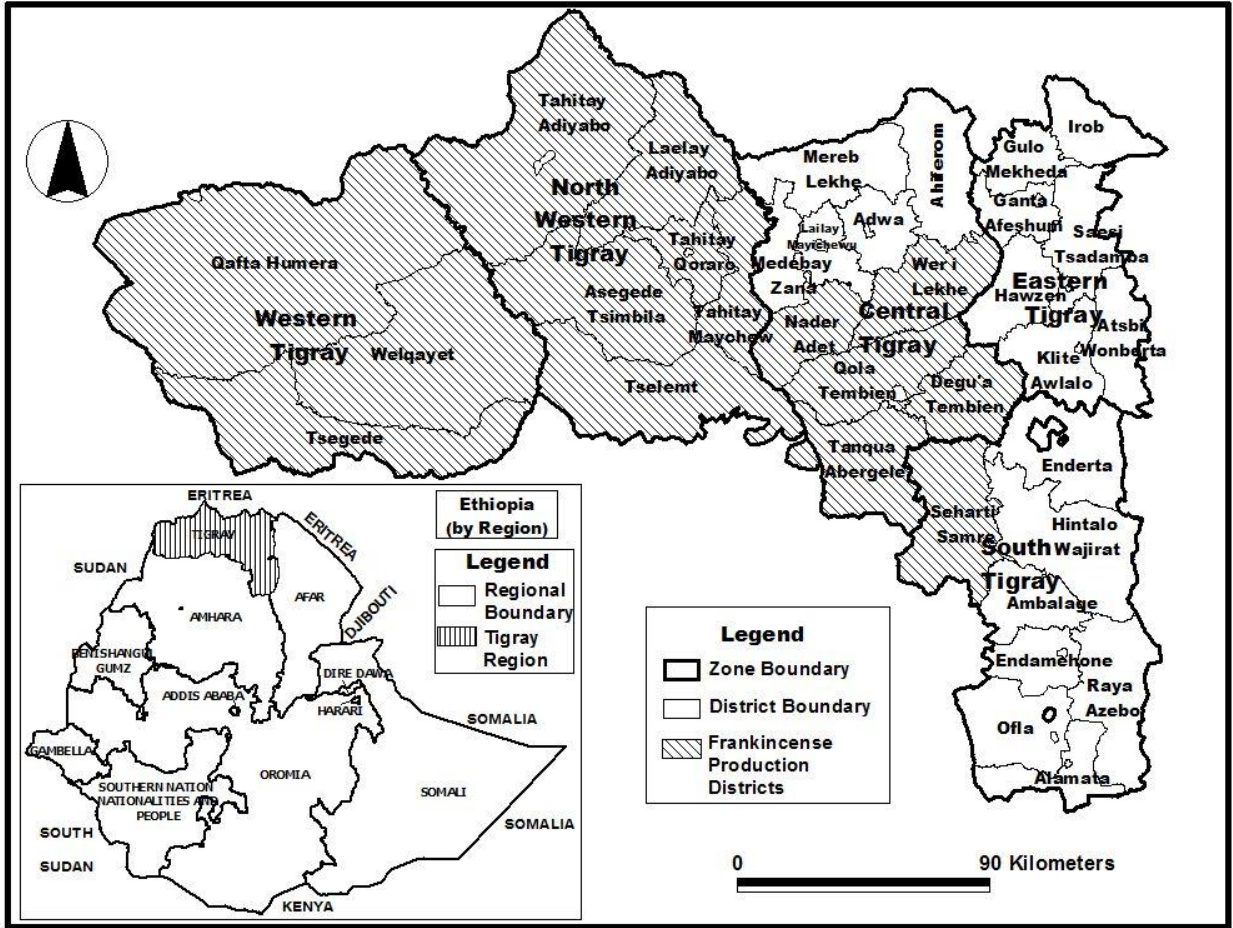
Firms engaged in frankincense production in the Metema *Woreda* of Amhara Regional State preferred to hire tappers from Adwa and Aksum (Eshete et al. 2005:64). On average, 1,400 individuals are employed as tappers each year in Metema area (Eshete 2002). The local people in Metema area do not participate in incense production for the following three reasons. First, they do not possess the skills. Second, resin collection is perceived to be a shameful activity (Eshete

et al. 2005:64; Lemenih et al. 2007:399; Woldeamnuel 2012:54) in which *chewas*¹⁵ (gentlemen) do not dare to be involved; tapping and resin collection are occupations that established farmers would never undertake, and the *chewa* leave this job to poor landless youths. In Tembien, tappers constitute a distinct occupational identity known as *meqeray*¹⁶ (Smidt 2019:71). Third, the local community are not interested in frankincense production partly because of delays in payments and low remuneration (Eshete et al. 2005:.68). However, local people in Metema are tied to the system economically because they own incense trees and to hire tappers (Eshete et al. 2005:69).

The remaining part of the discussion of this chapter is based on data derived from interviews with four participants who were once tappers and now work as company managers and team leaders. I did not directly interview male frankincense collectors because my field work was at the end of the production season in 2018. Frankincense produced in Tigray is mainly tapped from six *woredas* (districts) of Western Tigray: Asegede Tsimbila, Kafta Humera, Tahtay Adiabo, Tselemt, Tsegede, and Welkayt. Frankincense is harvested at Tanqua Abergelle and Dogu'a Tembien districts of Central Tigray as well.

¹⁵ The term *chewa* has two meanings. First, it is used to denote rural gentlemen who are respectable farmers. Second, historically *chewa* refers to peasant warriors of Ethiopian emperors during the medieval period (CE 1270-1855). The emperors could mobilize them in times of warfare. They were given *rist* lands in lieu of salary (Berhane-Selassie 2018). In this context, *chewa* refers to the first definition.

¹⁶ Named after local frankincense's nomenclature in '*meqer*', a Tigrigna word for frankincense.



Map 6.1. Frankincense production districts in Central and Western Tigray

Some tappers work as day laborers in the construction sector or any job available in the towns during the off-season. Companies appoint experienced coordinators to manage the tapping procedures. The coordinators hire tappers and organize them into what is locally known as *squadra*. The latter refers to a working team that consists of four to six individuals, or 10 to 14 individuals if the size of the frankincense forest to be tapped is large.

Temporary warehouses are constructed at the production site to dry and store frankincense for the entire season, and temporary camps are built for the workers who live on site during the tapping season from mid-October to the first week of June. Payment negotiations are made between the *squadra* leader and the tappers. Food items are provided to the tappers by

the coordinators, but the cost for food items comes out of the tappers' pay. Medical costs are provided free by the hiring firm). It is estimated that there were between 20,000-23,000 tappers in Western Tigray in the dry season. A single tapper in Western Tigray collects up to 1,500 kgs of frankincense in one season.

Payment to the tappers is made via the coordinators when *squadras* submit the collected product to the contracting organization. A *squadra* is paid 54 USD (1500 Ethiopian ETB) per quintal¹⁷, and tappers receive their shares as per agreement made with the *squadra*. The coordinator receives 16% of the payments per quintal and 84% of the amount will be dispensed among the *squadra* members after accounting for food costs during the tapping season.

Women are unable to participate in tapping incense resin in woodlands because of economic and societal barriers that prohibit women going alone to these distant rural locations for fear of gender-based violence. In tapping, men also use masculine agricultural tools such as axes and knives. Thus, there is a gendered spatial and technological division of labor that puts women in urban areas to process frankincense inside their homes or inside factory warehouses, which is discussed in Chapters 7 and 8, and men's tapping activities outside the house in the male realm where they extract gums and resins analogous to the structure of agrarian divisions of labor, where men produce crops and women process them.

6. 1. 3. Tapping Process

There are ten steps in frankincense production, but this varies from site to site. The first tapping season is October to mid-November. Trees are tapped 50 centimeters from the base of the stem. The first stage of tapping is to wound or shave a small portion of the stem or branch of

¹⁷ 1 quintal =100 kilograms.

the frankincense tree epidermis with a spherical-shaped cut made with a sharp axe (2mm deep and 4 to 8mm wide), locally known as *Mingaf*¹⁸. The first tapping stage is locally known as *te'alim*, meaning training, or initiating the tree for production.¹⁹ Tapping of a single tree may involve six to eight wounds and in some cases up to 12 if the tree is large enough. A single tree can be tapped up to 8 times per annum. To heal the wounds, the tree is not tapped for one year every two to three years.

Frankincense resin is formed when a white milky resin oozes from the incision or from scraping of the epidermis. The resin solidifies in spherical lumps as it hardens with exposure to air. It takes three weeks for the resin to dry and be ready for collection.

Qinifirit, the second stage of tapping, commences 45 days after the first tapping and runs roughly from mid-November to early December. This activity marks the opening of the epidermis cover of previously tapped frankincense trees. The epidermis is opened and cleaned for four months until the incision has reached 4 cm in width, at which time the tree begins to yield white and black coloured frankincense. The harvests are placed in separate sacks based on their color.

The third stage begins 30 days after the second tapping stage from mid-December to early January. The quantity of frankincense collected during this stage is very small and is white in color. The fourth stage of tapping takes place from mid-January to February and 25 days after

¹⁸ The tool's name likely originated in an East African country. It is spelled *mingaf* in Eritrea, Ethiopia, and Kenya, *mingaaf* in Somalia, and *mengaf* in Sudan (Farah 1988:237; Fitwi 2000:20; Mahmoud 2005:87; Muga et al. 2010:9; Ogbazghi 2005:43).

¹⁹ One of the tappers is currently running his own frankincense facility at Shire Indaselassie while the other is a team leader at Guna Trading House.

the previous round. Again, the quantity of frankincense collected during this stage is very small and is white in color. Export standard frankincense collection begins at this stage.

In the fifth stage (mid-February to March) tappers, carrying baskets, harvest the frankincense in volumes of up to 15 kg per person.

In the sixth stage between March and April, the main tasks are harvesting and cleaning. During this period, the number of workers is increased for 16 days in which higher volumes of frankincense are collected (up to 20kg of frankincense per person per day).

The seventh stage is undertaken between April to May, and workers return to each tree that they tap every third day and they collect 20-40 kg of incense per day. At this stage special grade frankincense and black frankincense is harvested.

Although the volume of frankincense is very small in the first five stages, it is of the best quality. After the seventh stage, and before the rainy season begins, the product is transported to permanent warehouses.

The eighth and ninth stages constitute the peak harvest season, which is undertaken in May 12 days after the previous round of tapping, and continues to June 10. This is the time when large volumes of incense are collected, and a tapper can collect up to 20 kgs per day. The frankincense collected at this stage exceeds the total volume of frankincense collected from the second to the sixth stage. Regardless of the stages, the resins collected during the dry season are of the best quality.

The last round is locally called *jaleb*, a final procedure performed to heal the wounds/incisions by closing the tapping process. It occurs after June 10 or in the early second week of June. The frankincense harvested at this time is of poor quality and black in color.

6. 2. Sorting, Cleaning and Grading

Processing of raw resins after tapping includes sorting, cleaning, and grading of the frankincense. The newly unprocessed harvest is locally known as *gurezo*. The sorting process involves removing impurities and separating the lumps of resin based on their size and color (Lemenih 2005:62). Women do this task either within warehouses (Fitwi 2000:20) or sometimes inside rural homes located around the frankincense production area (Moens et al. 2019:298). It involves a rigorous process of sorting the resins by hand.

Different sizes of sieves or winnowing trays are used to separate the *gurezo* into seven grades according to purity, color, and lump size (participants B1 and B7). However, most development researchers recognize only five grades of frankincense, or *gum olibanum*, by merging Grade 1A and 1B, and referring it as Grade 1, and Grades 4 special and 4 normal, referring it as Grade 4 (e.g., see Fitwi 2000; Gebrehiwot et al. 2003).

Table 6.1. Frankincense grading methods

Grade	Screen size/ diameter	Characteristics	% Frankincense extracted per 100 kg of raw material
1A	6-8mm	White, large lumps	10
1B	4-6mm	Dark red/ cloudy	0.3
2	4mm	White	1.2
3	2-4mm	White	1.2

4 (Special)	2-4mm	White and red, lumps attached with bark	21.3
4 (Regular)	2-4mm	Black/dark, bark attached with lumps	18
5	2mm	Bark and powder	48

While Grades 1 to 3 are exported, the remaining two are sold in the domestic market (Lemenih 2005:62; Moens et al. 2019:297). Some companies exported Grade 4 to China until 2018, but it is now being sold domestically and mainly in Amhara Regional State in Dessie, and in Addis Ababa. Grades 1 to 3 are exported to Europe, North America, North Africa, and Asia (participant B1). It is estimated that 4000 to 5000 tonnes of frankincense are produced in Tigray per annum (Participant B1). NGPME alone exports around 1,000-1,500 tonnes per year and constitutes 40% of Ethiopia's total exports of frankincense (CBI 2016:8).

Certain standards are required to export frankincense such as packing in bags with tags as per the buyer's request. Once the required export documentation is secured, the product is shipped to Djibouti under the supervision of the customs office in Mekele or Humera (participant B1).

Frankincense processing will be covered in the next chapter.

6. 3. Transportation

All harvested resins are first gathered into a temporary warehouse at the production site using pack animals (camels and donkeys) or humans. Then the resin is spread over clean plastic mats/coated canvas fabric to refresh and dry the harvest. The quality of incense is determined by the way it is handled, including tapping and collecting methods, and dried. The gathering of

resins in temporary warehouses continues until April or sometimes May if there is enough storage space. In April, after drying, trucks begin to transport resins to the main warehouses located at Inda Selassie before the onset of the rainy season. Drying and refreshing may resume at the main warehouses for about two months before sorting, cleaning, and grading begins.

6. 4. Summary

Most of the Ethiopian frankincense for international export comes from Central and Western Tigray. Production of frankincense in the frankincense forests involves poor, often landless, men who are itinerant laborers. The known history of frankincense production in Tigray has resulted in Tigrayans acquiring the skills needed in efficient resin tapping, and incense production has contributed greatly to the national economy through export trade. The frankincense production and processing have a strong gendered division of labor. Men dominate in the incense production sector. Rural communities resent that they were evicted from their farmlands and frankincense forests for investment. Nevertheless, they feel that they have not proportionally benefited from this investment opportunity. The next two chapters highlight issues of the incense processing, trading and its implication for household economy and gender relations in Central and Western Tigray. They also examine the social and economic conditions of women incense processors, and traders engaged in the incense trade.

CHAPTER 7: INCENSE PRODUCTION II: PROCESSING AND TRADING

Introduction

This chapter tries to answer the question of how the incense trade integrates ordinary people into social hierarchies and larger scale economies in the history of the study area. It also addresses the lived experience of the women engaged in processing and trading of incense and aromatics. It examines trading, profit margins, incense processing methods, and income determination.

7. 1. Socio-Economic Context of Actors in the Incense Trading System

The data presented in this section are derived from four categories of research participants: incense processors, company managers and supervisors, wholesale traders, and retailers. Incense processors range in age from 18 to 65 years old, with an average age of 34.8 years (Table 7.1). Younger workers in the age range from 18 to 34 years make up 40% of research participants.

Incense processors are of diverse marital status. As indicated in Table 7.1., 69% of the female incense processors interviewed are the heads of their households. These women became household heads through divorce or widowhood, or they were unmarried young adults. Women incense processors and retailers are mainly single mothers and the main bread winners for their respective households, with little or no support from partners, relatives, or any other employment. Eight of the incense processors (A2, A3, A7, A8, A15, A63, A69, and A82) reported that they had disabled or unemployed partners or family members who could not contribute to the household economy. Although sons assist their mothers until puberty, they eventually exit from the sector to find other opportunities within the informal sector selling toothpicks, lottery tickets, retailing factory products, and construction work. Because boys need

to organize their own lives and form their own nuclear families, they cannot support their mother's household once they leave.

Thirty-three of the women (39% of participants) were divorced and received no support from ex-spouses, 14 (16% of participants) were single, and 12 (14% of participants) were widowed. Interviews with 40 mothers (47% of participants) revealed that their high-school-aged daughters work part time sorting incense to increase their mothers' income. This practice was recognized by the supervisors who distributed incense to women working in the warehouse.

All women interviewed are Orthodox Christians. Twenty-seven percent of the incense processors have basic educational training from Grades 7 to 12. Seventy-three percent of the participants do not have formal education. Thirteen women (50 years of age and older)²⁰, who were school age in the 1970s and 1980s, were deprived of formal education. Only two incense processors had completed grade 12. One of these women has assumed a better position working as a warehouse supervisor, and the other remains an incense processor. The supervisor completed secondary education during the *Derg* period. She joined NGPME initially as a factory cleaner at Adama (near Addis Ababa) in Oromiya Regional State and was later promoted to her current position. Supervisors are the ones with better academic backgrounds (i.e., they have completed Grade 8 and above). Twenty participants (18-34 age group) had completed Grade 10 and are currently working as incense processors for different companies. The only exception is A47, who completed Grade 12, and is a widow who joined the sector because of economic distress after the demise of her spouse. She turned to incense processing to support her 5-year-

²⁰ These are research participants coded as follows: A2, A5, A7, A12, A14, A18, A23, A29, A42, A49, A69, A72, and A79.

old child and mother. Sixty-two of incense processing women (74% of participants) have no formal education (see Table 7.1).

The next socio-demographic data presented here was collected from managers and department heads of incense processing companies. The participants age ranges are from 31 to 60 with an average age of approximately 46 years (Table 7.1). All were married. Two of the men are Muslim and the other six are Christians. Men hold seven of the eight managerial positions and have extensive work experience, with a thorough understanding of the production, processing, and trading system. Two participants are college graduates and assumed managerial positions in the government and parastatal owned companies, while department heads have either completed Grade 12 or have a college diploma. All senior management (managers and department heads) from Guna Trading House Plc. were initially combatants. They initially worked in the incense production, processing, and trading as members of the TPLF during the civil war. After the end of the civil war (1974-1991), they were recruited by the Tigray Regional Government to become formal members of management in the newly formed parastatal trading house by virtue of their previous experiences. They acquired basic education, which helped them to combine theory and practice for the modern company set-up. Another company manager, who initially started his career as an incense tapper, had moved into *squadra* leader and eventually managed to set up his own company. He has achieved significant upward social mobility in his status and can be regarded as a good role model in setting up and running an incense production, processing, and trading company. Another two company managers, one governmental and another private, have joined the company as professional managers. Many department heads and supervisors in the various companies have also accumulated rich experiences in different aspects

of incense production, processing, and trading. They essentially bridge the top management and operational aspects of the business.

The next set of data comes from wholesale traders in Aksum and Wukro Maray towns. A total of seven male wholesalers were interviewed and five of these men were married. As presented in Table 7.1, educationally, all participants have completed secondary school and two are college graduates in nursing and accounting professions. All the wholesalers interviewed were Muslim except two Christians who fall into the youngest age range. From the two graduates, one is Christian, and the other is Muslim. The college graduates opted to become incense traders partly because of the poor job opportunities available for growing numbers of university graduates and professionals over the past 20 years. All the incense wholesalers from Aksum transitioned from the occupation of tailoring (began as apprentices in general trade with their parents and siblings) as the incense trade afforded a higher income on average of approximately 2000 Ethiopian ETB (72 USD) per month, while in tailoring they averaged approximately 1300 Ethiopian ETB (40 USD) per month.

Another sector of the incense trading system are small-scale traders. Most of the group fall within the age range of 20 to 80 years with an average age of 47. As Table 7.1. shows all eight male incense retailers are Christians and five of them have church education. Table 7.1. indicates three of ten female incense processors are Muslim, and only two out of ten women have received secular education.

Table 7.1. Socio-demographic data of research participants

Research Participants	Age Ranges	Range of birth years	Marital status				Education					Religion		Sex	
			S	D	W	M	Illiterate	Church	Grade 1-6	Grade 7-12	College	Christian	Muslim	M	F
Incense Processors	18-24	1994-2000	13	1	0	2	3	0	0	14	0	16	0	0	16
	25-34	1984-1993	1	9	5	12	19	0	0	7	0	27	0	0	27
	35-44	1974-1983	0	14	1	7	21	0	0	1	0	22	0	0	22
	45-54	1964-1973	0	8	4	4	15	0	0	1	0	16	0	0	16
	55-64	1954-1963	0	0	1	1	1	0	0	0	0	2	0	0	2
	65-74	1944-1953	0	1	1	0	3	0	0	0	0	2	0	0	2
Total participants		85	14	33	12	26	62	0	0	23	0	85	0	0	85
% of participants		100	16	39	14	31	73	0	0	27	0	100	0	0	100
Female Heads of Households			X	X	X										
Male Heads of households						X									
Company managers and supervisors	31-40		0	0	0	2	0	0	0	1	0	1	1	1	1
	41-50		0	0	0	3	0	0	0	2	2	3	0	3	0
	51-60		0	0	0	3	0	0	0	3	0	2	1	3	0
Total participants			0	0	0	8	0	0	0	6	2	6	2	7	1
% of participants			0	0	0	100	0	0	0	75	25	75	25	88	12
Wholesale traders	20-30		2	0	0	1	0	0	0	1	2	2	1	3	0
	31-40		0	0	0	1	0	0	0	1	0	0	1	1	0
	41-50		0	0	0	2	0	0	0	2	0	0	2	2	0
	51-60		0	0	0	1	0	0	0	1	0	0	1	1	0
Total participants			2	0	0	5	0	0	5	2	2	5	7	0	
% of participants			29	0	0	71	0	0	71	29	29	71	100	0	
Retail traders*	20-40		1	0	0	8	2	2	1	4	0	8	1	5	4
	41-60		0	0	3	3	4	2	0	0	0	4	2	2	4
	61-80		0	0	2	1	2	1	0	0	0	3	0	1	2
Total participant			1	0	5	12	8	5	1	4	0	15	3	8	10
% of participants			5	0	28	67	44	28	6	22	0	83	17	44	56

Only three of the small-scale incense traders involved in this study have agricultural land (D14, D15 and D17). Fifteen participants missed the last government land redistribution in 1991 for different reasons. Four participants were not residing in Central Tigray when land was reallocated, six-lived in towns and were ineligible to acquire farmland, and five were underage when farmland was redistributed. Most participants, especially young adults, entered retail in an established family business.

Table 7. 2. Number of years in incense retailing

Number of years in retailing	Age ranges (Men)				Number of years in retailing	Age ranges (Men)			
	20-40	41-60	61-80	Total		20-40	41-60	61-80	Total
0-5 years	3	0	0	3	0-5 years	3	0	0	3
6-10 years	0	0	0	0	6-10 years	0	0	0	0
11-15 years	2	1	0	3	11-15 years	1	0	1	2
16-20 years	0	1	0	1	16-20 years	0	4	0	4
>20 years	0	0	1	1	>20 years	0	0	1	1

Table 7.2. shows that nine of 18 incense retailers are in the younger age range, whereas three retailers are in the older age category.

Two female participants (D10 and D11) from Adwa stated that they do not receive additional income from their spouses because one of them is disabled, while the other is an elderly person. One other participant (D7) is a widow who entered the business after the loss of her husband. The remaining five participants are *debteras* who live both by selling aromatic woods and by working as traditional healers. Female diviners also use incense for divination (D13), although culturally they are not considered ‘like’ male *debteras* (D16) for the simple reason that their wisdom is not derived from exposure to church education. However, female diviners are feared and revered as powerful. Incense retailers claim that this sector was dominated by women until the past decade (2008–2018). These young males are high school graduates with no access to land or other employment and are encroaching on this female occupation.

7. 2. Incense Processing

7. 2. 1. Incense Processing Methods

Processing of frankincense resins is conducted in the company warehouses in the period from September to June. Each incense processor is working from Monday to Saturday, 8 am to 6 pm. In exceptional cases, however, companies may supply incense to processors during the summer if they get more resin from production sites. Based on field observation and data collected from participants, incense processors have two hours of break time each day for lunch and coffee. However, most of the women work through their breaks to complete the work on time and get another round of frankincense resin for processing. Three of the women interviewed are new employees, but 82 of the women have long work experience, ranging from two to 30 years. The more experienced women are found within various companies located in Shire Inda Selassie. For novice employees, on-the-job training is provided either by the warehouse

supervisor or by an experienced co-worker. One participant (A12), who stayed in the business for more than 30 years, said that she learned the skill while assisting her mother when she was working for the NGPME during the *Derg* period.



Figure 7.1. Processed frankincense in burlap bags and arranged by grades.

Incense warehouses are used for storage and primary value addition —cleaning, sorting, and grading that dictates quality and price. The incense resins stored within the warehouses are often labelled by grade quality. Guna Trading Company has two large warehouses with 900 m² workspace and each can accommodate up to 150 workers. The other three companies also have their own warehouses although one of them has a smaller warehouse that creates greater congestion and has poor ventilation for workers, which makes the processing uncomfortable. One of the two government run company warehouses is made of iron sheet walls, which emit intense heat and cold depending on the local weather and season. The local average monthly temperature is over 30° C in Shire Inda Selassie.



Figure 7.2. Private incense warehouse at Shire Inda Selassie (left) and government owned warehouse (image on right) are congested working spaces.



Figure 7.3. Guna Trading House incense processing warehouse (left) and a private company warehouse (right).

Quality assurance and standardization is another crucial concern in marketing and exporting. Frankincense resins are graded and allocated based on the employee's experience and ability to process 10 to 30 quintals quarterly, depending upon the availability of household family labor. Participants stated that processing includes manual cleaning of impurities, sorting out the resins, and grading them based on their particle size and colour. A knife, winnowing basket, and sieves of different mesh sizes (6, 4 and 2 mm) are used to separate the bark from the resin, and granules are detached by crushing the granules using knives (B1, B5, A13, and A52).

The tools employed in processing frankincense (see Table 7.4) are purchased from the market by the company. Some of the tools employed in processing frankincense are presented from A-I below. These are screening trays (A, B and C), sieves of different mesh sizes (D and E), winnowing implement made from bottle jugs, brooms (F and G), and pallets (H and I).



A. Tray



B. Sorting incense using tray



C. Sorting and sieving



D. Sieving tool



E. Various size sieving tools used in grading



F. Winnowing implement made from bottle jugs.

G. Broom



H. Pallets with different types of incense grades I. Empty pallets

Figure 7.4. Tools employed in processing frankincense

Some tools are used in agricultural and household work: winnowing trays, knives, and brooms. Some families state that their children are instrumental in sorting tiny resins that will be classified into Grades 2 and 3, which are harder for adults to view and to sort. The quality of the frankincense is negatively affected if it is exposed to rain, heat, and improper tapping methods, including samples with more bark than granules of resin. Since the tappers' payments are determined by the collected weight of frankincense in kilograms, quality is sometimes compromised, as tappers tend to focus more on the quantity than on the quality of the product.





Figure 7.5. Women-processing frankincense in various companies, Shire Inda Selassie.

Payment is based on weight of incense in kilograms and the grades of frankincense processed (Table 7.3) but the women are not paid until they complete the processing and submit the product to company warehouse supervisors after every quarter. The supervisors inspect the processed frankincense resin for quality control; they record the grades and weight in kg that each woman sorted and graded. The payment for Grade 1A and Grade 3 is similar because the task for Grade 3 requires more time and patience.

The task of frankincense processing demands dexterity, and it is dusty. Female incense processors state that men are not interested in this sector because they view this work as menial and dirty, partly because resins stick to the processor's body. The majority (75%) of women interviewed in this study also complained of resin sticking to their bodies, and the companies provide two bars of soap per month per person and a uniform per annum (participants B1-manager and A53-supervisor). However, I did not observe any women wearing uniforms; they were wearing their own worn-out clothes and hair scarves.

Table 7.3. Payment set by different companies for incense processing for export frankincense.

Incense Grade	Payment/quintal of incense women receive in ETB and USD in the four Trading Companies Investigated								Average Payment	
	NGPME		Guna		Hagos		Mohamed		ETB	USD
	ETB	USD	ETB	USD	ETB	USD	ETB	USD	ETB	USD
Grade 1A	300	10.80	285	10.30	300	10.80	300	10.80	296	11
Grade 1B	190	6.10	175	6.30	190	6.10	195	7.00	188	6
Grade 2	180	6.50	175	6.30	180	6.50	185	6.70	180	7
Grade 3	300	10.80	285	10.30	300	10.80	300	10.80	296	11
Grade 4	140	5.20	150	5.40	145	5.25	155	4.30	148	5
Special										
Grade 4 Regular	135	4.90	130	4.70	140	5.00	130	4.70	134	5
Grade 5	100	3.60	100	3.60	130	4.70	120	4.35	113	4

Details on specific characteristics of the various grades of incense were already discussed in Chapter 6. Here are described the different grades and corresponding payment allocated for processing each incense grade. Accordingly, Grades 1A and 1B are higher grades that are assigned an average processing price of 11 USD (296 ETB) and 6 USD (188 ETB) per 100 kg of incense. Grade 2 is processed with an average payment of 7 USD (180 ETB) per 100 kg. Grade 3 is essentially the same as Grade 1 in terms of the intensity of processing and it has the same payment compensation. Grade 4 special and regular are processed at an average payment of 5

USD (148 ETB /100 kg), and 5 USD (134 ETB) per 100 kg, respectively. Finally, Grade 5 is processed at an average payment of 4 USD (113 ETB) per 100 kg.

Experience matters in incense processing. The less experienced incense processors who had worked for 1–4 years (27 women), and those with middle level experience of 5–10 years (29 women), are almost equal in number. This indicates the sector is steadily attracting new entrants every year. The highly experienced older women are fewer in number (8% of participants). These older women have more years of experience, but they are also susceptible to various diseases, including eye cataracts, and the average life expectancy for women in Ethiopia is 68 years (<https://data.worldbank.org/indicator/SP.DYN.LE00.FE.IN?locations=ET>). In Tigray, the average mortality rates are higher amongst divorced, widowed, and rural people (Weldearegawi et al.2014:4). This explains the lower number of incense processors in this sector as the group gets closer to the 65-year age group. Given the scarcity of jobs, incense processing provides a safety net for those women who are willing to work and meet their household needs. Interviewed women express their intent to leave as soon as they find other better paying and stable jobs.

Table 7.4. Years in incense processing

Years in incense processing	Age Ranges							
	18-24	25-34	35-44	45-54	55-64	65-74	Total	%
1-4	12	11	4	0	0	0	27	32
5-10	3	13	9	4	0	0	29	34
11-15	0	3	3	2	0	1	9	11
16-20	0	1	4	5	2	1	13	15
>20	0	0	3	4	0	0	7	8

Based on information obtained from participants, both female and male children are used to helping their parents. However, as they get older, they tend to find other opportunities and exit the sector, often leaving their mothers behind and without assistance in the workplace. I also observed that while young boys help their mothers in incense processing, they tend to leave the sector at puberty, when they perceive the work as a feminine job, while girls continue supporting their mothers in processing incense longer. Women incense processors have one relative advantage in working at the warehouses in that they can do childcare at work while at the same time performing incense sorting. Children who are seven and older are enlisted to help their mothers with the work. The piece-rate system enables mothers to earn more income because they process more by using their children's labor.

Companies can terminate work contracts at any time due to shortage of frankincense production, resin-drying time, and annual auditing. The frankincense trees rest for tapping once every three years, during which time the workers are laid off until the resumption of the next production season. The resins are collected from the field and contain moisture, requiring an average of one and a half months to be fully dried and prepared for distribution to processors. Only a few women are needed for drying. Companies can be temporarily closed for two months for inventory and auditing purposes. Women processors are typically laid off for about a quarter of the year. Four participants (A7, A17, A28, and A39) indicated that when incense processing work is not available or delayed, they resort to domestic work: cooking, laundry work, work as nannies, or selling *sewa* (local beer). Very few women resort to running roadside coffee houses or other small scale trading ventures if they accumulate initial capital. Eleven women (A36, A38, A45, A46, A68, A71, A74, A80, A82, A83, and A84) stated that female incense processors are

tied to this work because they are vulnerable to unemployment, and there is no alternative income-generating activity in the area for them.

7. 2. 2. Payment Determination Patterns

Family participation in incense processing and the corresponding average annual income, depends on labor intensity and family productivity, regular or intermittent work, the amount of incense received/processed, and the quality of the raw material distributed to respective families. Family participation involves the mobilization of dependent children's labor. In this case, a household could have either two adult incense processors (i.e., two sisters), or women and children who operate on a piece-rate system. This price determination method of the companies fits in well with Karl Marx's piece-rate system (Marx 1976).

Piece-rate is determined by the value or price of labor–power spent to process a product, while time payment rate is determined by the duration of labor invested to produce an item or the service rendered (Marx 1976:692-694). In time-wage, a similar fee is allocated for similar function. In other words, wage is a payment for an hour of labour regardless of its productive outcomes. In piece- rate, however, the payment for labor–time is calculated by the quantity of the product (Paarsch and Shearer 2000:60). This indicates that payments vary based on individual differences in skill, strength, energy, and staying power at work. Piece-rate offers a sense of individuality, liberty, independence, and self-control. It also enhances competition among workers (Marx 1976:697). In piece-rate, labor controls the unit of work done in companies/ industries. Since piece-rate workers are their own managers, they are mainly concerned with their productivity, which in turn enhances wage payment reductions for industries. A piece-rate system ensures companies' potential for cost effectiveness and profit making (Lazear 2018:199-200) at the expense of a low wage rate. Companies reserve the right to fire an inefficient piece-

rate worker if he/she never meets the expected labor output to deliver a product. It appears piece-rate workers are exploited by companies, working long hours by transgression of the legal limits of work (Marx 1976:694). This is also applicable to the women employed as incense processors in the study area. The two major forms of payments (namely piece-rate and wage rate) that Marx identified are well observed in incense processing. This kind of arrangement was made with the intent of enhancing productivity, efficiency, and quality. Piece-rate (a payment by product weight on a quarterly system) mainly applies to women incense processors and tappers, whereas wage rate applies to company managers. In rare cases, both forms of payments are combined in settling the payments for a certain category of workers, such women warehouse supervisors. As supervisors, they earn a monthly wage, while as incense processors (on a part-time basis), their payment is determined through a piece-rate system, as for other women incense processors.

As shown in Table 7.5. some families with 2-3 participants make 4000-6000 ETB per year, while others of similar family size earn 6001-9000 ETB. While equal family labor size was mobilized in both cases, the difference in income results from the latter group's better productivity and efficiency because of their experience, age, and the gender of their household assistants, as well as the quality of incense received to process which is entirely randomly distributed. However, the income of 6 individuals who each had 2 household assistants was 2000-4000 ETB per year because of their relative inefficiency, lower productivity, irregular work attendance, and probably due to the lower grade of incense they received for processing.

The total participants in Table 7.5. below should be (N=85) but in the Table N=77. This happened because 3 individuals had no access to household labor and their income category was expected to be in the 72–144 USD (2000-4000 ETB) category, but their income was moved to 144-217 USD (4001-6000 ETB) category due to better efficiency and productivity. However, 5

individuals with 2 households each who ought to be in the income category 144–217 USD (4001-6000 ETB) falls into the income range 72–144 USD (2000-4000 ETB) possibly due the poor quality of the burlap bag of frankincense allocated to them or inefficiency.

Table 7.5. Female incense processors’ responses to questions of income sources.

Full Questions are found in Appendix No. 1. Question summary	Answer	Number of women (N=77)	Approximate Annual average income in ETB	Approximate annual average income in USD
Do you hold farmland?	Yes	5	5000-6000 from crop sales	
	No	80		
Number of additional family labor in incense processing?	0	24	2000-4000	72-144
	1-4	26	4001-6000	144-217
	2-4	22	6001-9000	217-325
	2-3	5	9001-12000	325-433
Financial support from spouse or family member?	Yes	18		
	No	67		

The women could not be precise in answering the question of their monthly income because salaries are paid quarterly, and individual income varies based on the type of incense graded. Incense is sorted into three grades based on its quality. The frankincense comes in burlap bags, and these are randomly distributed to the processors in the warehouse²¹. The degree of higher quality versus lower quality of incense supplied to processors within the same quintal is randomly distributed; this in turn translates into higher or lower income after processing, respectively. Women who receive higher quality incense to sort could be eligible to earn a higher fee than those who receive lower quality incense. Eighty participants disclosed a rough estimate of their quarterly salaries. Two women were not comfortable in doing so, partly because they are not satisfied with their total income. Three women were not able to estimate their income as they were newer employees.

Data obtained from participants showed that participants receive a net income that ranges from 120–280 USD, depending on the number of burlap bags processed and family size involved in the task. The income is larger for those households who have more hands involved in incense processing. Each quintal of incense is sorted into various grades during processing.

Supervisors earn a fixed monthly income of 54–72 USD (1500–2000 ETB). This group of workers also can receive annual salary increments, and they have the option to earn additional income by processing incense as well. About 6% of these individuals are excluded from this analysis because they were either not sure or not willing to disclose their annual income.

Overall, the income obtained from incense processing is inadequate to sustain family livelihoods. The average family monthly consumption expense ranges between 1200 to 1500

²¹ Moens et al. (2019:298)'s study in the Tembien rural area, women processed frankincense in their compounds and used *mihe* (coarse grade winnowing trays) for processing.

ETB for three family members. The Table also reveals 21% of the families tend to consolidate their income by soliciting additional income either from their spouses or receiving support from relatives.

7. 2. 3. Why do these research subjects work in incense processing?

Research participants were asked for their motives for working in incense processing. Nineteen percent of the participants stated that women are mainly engaged in incense processing because it does not require any educational qualification. It is an easily accessible job in Northwestern Tigray where frankincense is produced in large volume. A47 pointed out that the sector helps women and stated that with this income they “did not have to wait for their husbands’ hand-outs”; that is, they can access a cash economy independent from their husbands. Both single and married women use the income derived from incense processing to purchase basic household needs and monthly rent (details in Chapter 8).

Under exceptional circumstances, rural women are engaged in off-farm incense processing cooperatives that allow them to sort frankincense in their homes, as is the case in the district of Tembien (Central Tigray) (Moens et al. 2019:298). Nevertheless, as discovered through the interviews, landless women migrate to urban areas in search of work in incense processing, and landless men from urban areas are seasonally employed to tap frankincense in the rural *woredas* of western Tigray. Large scale incense processing in Tigray is feminine. Women in urban areas and rural areas tend to be confined by culturally proscribed jobs that can be done within the domestic workspace. Women monopolize incense processing at company warehouses.

Women incense processors are excluded not only from farmland but also from access to urban properties, small scale trading ventures, and microfinance credit. Only 10 out of 85

incense processors have their own houses²². Women incense processors spend most of their time in the incense processing sector, and resort to other jobs (e.g., maids) when they are laid off from incense processing seasonally. Four workers take these jobs as part time activities all year round (A20, A39, A46 and A49). Most incense processors could not initiate small scale trading activities for lack of initial capital. Four of the research participants had ventured into small scale trade but abandoned it due to bankruptcy (A15, A47, A51 and A75). Many other research participants are reluctant to take credits from government microfinance institutes (such as Dedebit Credit and Saving Institution) because they fear insecurity if they cannot meet payment schedules. Also, they are not sure if they would succeed in earning profits from a new trading venture. Access to microfinance credit criteria is also dependent on availability of collateral and /or joint group guarantees, where each member will assume equal responsibility for repaying the credit of each group member. Hence, incense processors are apprehensive in soliciting credits from microfinance institutes. Incense processors accept their current livelihood activities despite its disadvantages: lower income and poor job security.

7. 3. Incense Trading and Profit Margins

Aromatic resins are traded domestically and internationally and are important sources of income for local communities and the country (Fattovich 2019:254; Lemenih et al. 2012:104; Manzo 1999: 6-9). Frankincense (*Gum olibanum*) is one of the most commercially important aromatic resins in the drylands of eastern Africa (Tadesse et al. 2020:32-33). Ninety percent of

²² Access to urban land is extremely difficult because of shortages of land in the municipalities, and affordability.

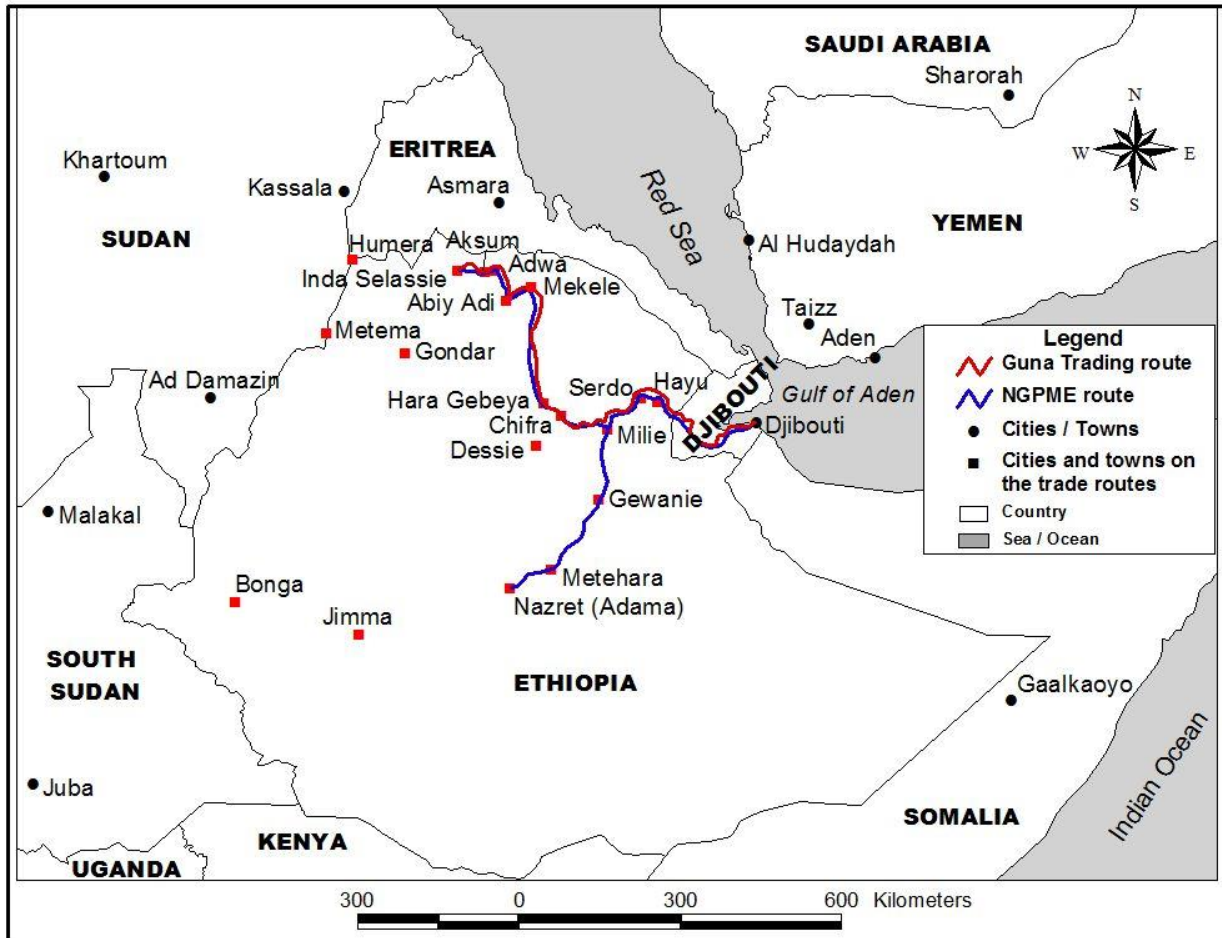
Ethiopia's frankincense export comes from *B. papyrifera* of northern and northwestern Ethiopia (Tadesse et al. 2007:215).

The links of incense trading processors with big companies is largely mediated by the companies' managers, department heads, and supervisors. There is no specific data that indicate how big the incense trade is or what the annual value of incense is for Tigray. However, Tadesse et al. (2020:35), presented export data from 2007 to 2014 for the Tigray type²³. For example, the lowest amount of export was 7000 tonnes in 2012/13 and the highest export was 9,200 tonnes in 2007/08. However, archival reports acquired from Guna (parastatal company of the Tigray region) show the annual transaction (import and domestic) of incense trading (Table 7.6. and 7.7). This indicates that incense processing contributes significantly to domestic and international trade. It should be considered that the companies make very large profits in part through very poor compensation that they provide to these women. The trend also shows incense processing is a highly feminized sector. According to B1, over 300 female incense processors are employed by Guna, and they help Guna thrive in their business and profits. However, there is no adequate data to estimate the rate of profit through appraisal of company profits versus labor returns to processors. At the national level, Derero et al. (2018:229) demonstrated that poor people produce and process frankincense and myrrh for meager financial returns while companies reap high profits.

There is no adequate data on the pattern and extent of frankincense export from the incense trading companies under study (see Map 7.1 for export routes). The only exception to

²³ Frankincense produced in various parts of Ethiopia, including Tigray, is known as Tigray type *olibanum*.

this is that of Guna Trading Company, which provides data of 3 years export and domestic trading. Hence the analysis focuses on the Guna report as an example.



Map 7.1. Frankincense export route for Guna Trading House and NGPME

The data from Guna show frankincense export patterns from fiscal year 2014/15 for Grade 1st A (amounting to a total of 182 metric tonnes) that was sold for 928,054 USD and grew to 215 metric tonnes in 2016/17 that sold for 1,182,295 USD. This declined sharply in the next fiscal year 2017/18 with a total export of 69.6 tonnes sold at 429,760 USD. There are data gaps for Grades 1st B, 2nd, and 3rd normal and 3rd B special during the fiscal year 2014/15. The company did not export 1st B and 3rd B special grades of incense in 2017/18. A possible reason for these gaps could be a lack of raw supplies that may be attributed to the healing cycle or rest period for

the frankincense trees at an interval of every 2–3 years. It is very difficult to estimate Guna’s profit compared to the expected labor costs for two reasons. First, there is no archival record of labor costs for the above 3 years. Second, Guna was unable to buy unprocessed frankincense from cooperatives in 2018 due to a shortage of unprocessed frankincense. Indeed, when I went to conduct field work in 2018, Guna had laid off its workers and hence suspended incense processing for that year. Therefore, the data analysed above is insufficient to show patterns of labor costs and company profits.

Table 7.6. Three years of frankincense export by Guna Trading House Plc.

No	Grade	2014/15 (2008 E.C.*)		2016/17 (2009 E.C.*)		2017/18 (2010 E.C.*)	
		Total in metric tonnes	Price in USD	Total in metric tonnes	Price in USD	Total in metric tonnes	Price in USD
1	1 st A	182	928,054	215.5	1,182,295	69.6	429,760
2	1 st B	-	-	16.0	72,800	-	-
3	2 nd	-	-	33.0	129,059	11.7	60,746
4	3 rd	-	-	30.5	97,124	12.7	60,062
5	4 th special	112	290,350	364.9	892,610	205.0	612,070
6	4 th Normal	28	53,200	28	58,800	-	-

7	3rd B ²⁴special	-	-	16	31,452	-	-
		322	1,271,604 (27,339,486 <i>ETB</i>)	703.875	2,464,140 (56,675, <i>220 ETB</i>)	299	1,162,638 (31,972,545 <i>ETB</i>)

Source: Archival Report of Guna Trading House PLC.

The Table shows frankincense export patterns from fiscal years 2014/15 for Grade 4th special (amounting to a total of 112 metric tonnes) sold for 290,350 USD and grew to 364.9 metric tonnes in 2016/17 that sold for 892,610 USD. This was followed by a drastic decline to 205 metric tonnes in 2017/18 that sold for 612,070 USD during the next fiscal year 2017/18. The export patterns of 4th Normal frankincense remained relatively constant in terms of metric tonnes (28 tonnes) which was sold for 53,200 USD in the fiscal year 2014/15, and 58,800 USD in 2016/17. The price variance is explained by foreign currency devaluation of the ETB (<https://www.poundsterlinglive.com/best-exchange-rates/us-dollar-to-ethiopian-birr-exchange-rate-on-2018-09-18>; <https://www.africanews.com/2017/10/10/ethiopia-central-bank-announces-15-percent-devaluation-of-birr/>). Then, in 2017/18, the export of this product ceased due to shortage of frankincense production probably attributed to the periodic tapping break. This indicates that if quality and standard supplies are maintained, there is an increasingly favorable export market trend for frankincense production over the 3-year period.

²⁴In the Table, Guna Trading Company uses a different frankincense grading system for Grade 3 than the standard grading system used by other companies (see Table 6.1).

Table 7.7. Three years domestic transaction of frankincense for Guna Trading House PLC.

Grade	2014/15 (2008 EC)			2016/17 (2009 EC.)			2017/18 (2010 E.C.)		
	Total quintals	Total		Total quintals	Total		Total quintals	Total	
		ETB	USD		ETB	USD		ETB	USD
Grade 3 B special and Grade 4 Normal	-	-		-	-		2,566.22	11,974,111	435,422
Grade 4 Normal	3,100	8,895,652	323,478	-	-		-	-	
Grade 5	4,790	6,344,869	230,723	10,060	13,813,928	502,325	1,000	3,539,130	128,696
Total	7,890	15,240,521	554,201	10,060	13,813,928	502325	3,566	15,513,241	448,291

Source: Archival Report of Guna Trading House

As can be observed from Tables 7.6. and 7.7., the 4th normal frankincense, which is used as the standard export to China, nicknamed “ቶሪና ብጽር” - *China bitsir*”- “screened for China market”, was diverted to the domestic market after the Chinese set new standards, which eliminated this grade of incense from the Chinese market. The effect was large volumes of 3rd B Special, and 4th Normal grades of incense saw increased use in the domestic market where 2,566.22 tonnes were sold at ETB 11,974,111 in 2017/18. It is difficult to compare the domestic prices of both 4th Normal and 3rd B special grades because these two grades were exported to China prior to 2016. Afterwards, these two grades of frankincense became items in the domestic

market. The incense producing and exporting companies have made considerable adjustments to the 4th grade normal. Measures were taken to change the 4th grade brand of the traditional grading system either by upgrading it into a higher level (Grade 3) or dropping it to Grade 5.

Grade 5 frankincense is often produced for the domestic market and often commands a much lower price. The data reveal that Grade 5 frankincense supplies and sales from fiscal year 2014/15 amounted to 4,790 quintals that sold for 6,344,869 ETB and the total amount increased by 10,060 quintals that sold for 13,813,928 ETB in the fiscal year 2016/17. The domestic supply of Grade 5 incense declined sharply to 1000 quintals sold for 3,539,130 ETB in fiscal year 2017/18. One crucial observation is that frankincense Grades 3 and 4, which used to attract large foreign currency from export trade and that are now diverted to the domestic market, have attracted huge local sales and profits. This implies that there is a strong domestic demand for frankincense. However, Grade 3 frankincense stands a greater chance of returning to the export market standards by making some modest adjustments. So far, I have attempted to illustrate how bigger trading companies operate in terms of the incense trading system. I now provide an overview of how the wholesale incense trading system operates.

Table 7.8. Key research questions for wholesale distributors (N=7)

Question		Response	N=7 participants	%
1. What is the volume of monthly incense transactions?	White frankincense	61-100 kg	5	71
	<i>tseada itan</i>	20-60 kg	0	
	Normal frankincense	60-100 kg	5	71
		20-60 kg	1	14

	<i>Meker</i>			
	<i>Aden kirfit</i>	61-100kg	5	71
		20-60 kg	2	29
	<i>Mitin</i>	61-100 kg	5	71
		20-60 kg	2	29
	<i>Jawi/Lubanja</i>	31-50 kg	5	71
		10-30kg	2	29
	<i>Kerbie/myrrh</i>	10-30 kg	4	51
2. Is incense trading a family business?	Yes		7	100
	No		0	-
3. How long have you traded incense?	1-10 years		3	43
	11-20 years		1	14
	21-30 years		2	29
	31-40 years		1	14
4. Your average annual income from incense trading	5000-10000		2	29
	ETB			
	10000-30000		5	71
	ETB			

White frankincense requires more capital to handle in the realms of wholesale transactions because the price is higher than other types of incense, and because it is expensive it will take more time to sell. Table 7.8 shows that only 5 wholesale traders interviewed conduct a monthly transaction of white frankincense that ranges between 61-100 kg each. Likewise, the rest of the incense varieties (including *Aden kirfit*, *Jawi /Lubanja*, *normal frankincense (meker)*, and *Mitin*) tend to hold the same monthly transaction patterns falling between 60-100 kg per trader, except those 2 wholesalers transact at lower volumes (20-60 kg). *Kerbie*/myrrh is often supplied and transacted at a very small scale in Tigray. In this case, wholesalers at Aksum and Wukro Maray often sell it in much smaller volumes, between 10-30 kg. three of the seven wholesalers interviewed, trade in myrrh, partly because it has little demand and it is seasonal in terms of use. It is also used to fumigate the corpse in funerary rites and occasionally it is used to soothe epilepsy and chase away evil eye spirits (C3, D12, and E5).

Five of the wholesale traders estimated annual profit margins from incense trading to be 10,000-30,000 ETB per year (361-1084 USD). The remaining two claimed a profit margin of 5000 -10000 ETB per annum (180-361 USD). Most research participants claim that profits derived from incense sales cover between 20% - 30% of their annual household expenses. This suggests that the incense trade remains a lucrative venture for wholesale traders who tend to monopolize this local business. A crucial strategy for wholesalers is diversifying products rather than reliance on incense alone for household income. This strategy offers the means to cover the remaining 70-80% of household annual expenses.

The wholesale incense trade is a family business inherited across generations. The two wholesale traders interviewed in Wukro Maray are siblings working together within the same shop. These Christian incense wholesale traders were particularly attracted to the business by

virtue of their own trading strategies. They found the profit from incense trading quite attractive and appeared to have their own niche clients, who are often Christians. Their central location within the market site and their supplementary merchandise coupled with the incense trade also gave them added value so that they were able to run their business more efficiently and with little risk.

Price and profit margins demonstrate that the incense trade contributes to local household economies in this sector, especially the economies of incense traders. The price of incense in the study area increases continuously over time. Participants believe that their profit is less derived from price increases than from high volume sales during Muslim and Christian holidays. The seven wholesale distributors interviewed indicated that the profit obtained from incense covers half of their monthly household expenses. From the data presented below (Table 7.9), the return obtained from 1 kilogram of each incense type can be considered as profitable. However, costs such as harvesting costs, transports costs, and processing costs are not included when such profits are calculated. This is because the wholesale distributors did not keep systematic ledgers. But some participants (C2 and C4) were reluctant to disclose the volume of incense that they sold per month and the actual income they received from the trade for fear that the municipal officers might access the information and charge them higher annual tax rates than what they are paying currently. For this reason, the profits reported should be considered approximate.

Table 7.9. Product and price-profit margin for wholesale traders

Incense type	Purchasing price per kg in ETB				Selling price per kg in ETB				Profit margin in ETB			
	C1	C3	C5	C7	C1	C3	C5	C7	C1	C3	C5	C7
	Research participants											
	C1	C3	C5	C7	C1	C3	C5	C7	C1	C3	C5	C7

Mitin Itan	140	140	140	140	160-180	150-170	160-180	160-180	20-40	10-30	20-40	20-40
Aden kirfit	130	130	135	130	160	150	160	150-160	20	20	25	30
Lubanja Jawi	80	85	80	80	110	120	100	100	30	30	20	20
Tsaeda Itan	200	200		200	230-250	210-230		230-240	20-25	20-30		20-30
Meker	70	70	70	70-80	80-100	80-100	85-100	80-100	20-30	20-30	20-25	20-30
	-	-	-									
	80	80	80									
Greek Itan	220		220	220	240		240	240	20		20	20
Kerbie		160	160	160		200	200	190-200		30	30	20-30
		-	-	-								
		170	170	170								

As can be deduced from Table 7.9, the average profit margin for the sales of most incense varieties varies depending on the purchasing price. Only three wholesalers from Aksum and Wukro Maray supply *kerbie* (myrrh), *Tseada itan* (white frankincense), and Greek *Itan* for church services.

Based on data from interview, family retail is a component of small-scale incense trading. For example, D5 and D9 are typical cases of families running retail businesses in Aksum and Adwa, respectively. D5 entered the business after he was mentored by his elder brother (D9). During fieldwork, I observed that these men's father and a sister, who was a high school student, are also involved in the business. Their father sells incense and other items to nearby Aksum St. Mary Cathedral, substituting for his son (D5) on occasion. Many people used to trade items

around parish churches during monthly and annual festivals and weekends. These items may not necessarily be religious items, but the location tends to be ideal for people to shop on their way to church. D5's sister sells her own trading items including incense, pendant crosses, and dates in her spare time, and she too contributes to the household economy. D9 initially acquired skills in the incense trade at Aksum and later moved to Adwa where he continues retailing incense and aromatic plants/woods together with his wife. The non-elite trade materials are generally collected, processed, marketed, and consumed by women, but now men are becoming involved in this activity.

7. 3. 1. Types, Uses and Functions of Various Incense and Aromatic Plants

The subsequent discussion is based on data derived from interview. Different types of incense and minerals are used in Tigray. Frankincense (*meker*) is widely traded in the shops and markets of Aksum, Adwa, and Shire Inda Selassie. Only Grades 4 and 5 frankincense are available within the domestic market. It is used by wholesale traders as an ingredient in the making of *mitin* incense. Based on the information from wholesale merchants and personal observation, there is a great demand for *meker* in Central and Northwestern Tigray, where it is used in large quantities in local churches. White frankincense (*tseada meker*) is categorized as a luxury product in Aksum because it is only consumed by the church.



Figure 7.6. Grade 5 frankincense displayed in one of the wholesale shops in Aksum.

Another incense type is myrrh (*kerbie*). Priests and women purchase it for church ceremonies, particularly for Good Friday and the Passion Week services. Individuals also purchase myrrh to use it as traditional medicine for healing people possessed with evil spirits. However, the market demand for myrrh is rather seasonal and limited, with three participants (C3, C6, and D5) stating that it takes two to three months to sell 50 kg.

The third type of incense is *mitin itan* which is the most popular incense in the study area. Christians consume *mitin itan* during the coffee ceremony, while Muslims use it (including *Jawi/Lubanja* and *Aden Adrus*) both during coffee and khat (a mild stimulant) chewing ceremonies. Muslims used incense as a companion to khat and coffee drinking ceremonies at home. Brinkerhoff (2011:102) stressed that a coffee ceremony without incense smoking is incomplete.



Figure 7.7. Ingredients used to make mitin: A. Miski B. Aromatic oil C. Sandalwood.

The recent expansion of coffee houses on the streets of Aksum, Adwa, and Shire Inda Selassie has augmented the demand for *mitin* incense.

The fourth type of incense is *Aden kirfit*. It is a frankincense mixed with its bark and is burned during coffee ceremony. It is imported from Somalia or Yemen, hence locally known as

Aden adrus, after a city in Yemen. Yemen is both an incense center and a market hub (Shackley 2007:187), and it has a wide market throughout much of Ethiopia.



Figure 7.8. Aden adrus displayed in a wholesale shop, Aksum.

The fifth type of incense is *Jawi* (Tigrigna)/ *Lubanja* (Amharic). According to Goettsch (1991:117), *Jawi /Lubanja* is imported to Ethiopia from Saudi Arabia, Djibouti, Somalia and possibly from Kenya. From the interview, it is revealed that wholesale distributors purchase *Jawi /Lubanja* in a bar form. One bar of *Jawi /Lubanja* weighs 25 kg and is crushed into pieces by the merchants in their respective shops. The mixture of *Jawi /Lubanja* and *Aden itan* creates a sweet scent and is often used for the coffee ceremony.

Finally, *Shebi* and *Dign* (sulfur) are forms of incense sold by wholesale distributors. They are important as traditional medicines for *buda* (evil eye). Various Ethiopian highlander communities perceive *buda* as associated with people who possess the spirits of an evil eye. The *buda* are a caste group who people fear and who they perceive to have occult capacities that harm other people (Baynes-Rock 2015:267; Lyons and Freeman 2009; Lyons 2014). In Tigray and Amhara, these are usually occupational groups who specialize in making specific types of crafts historically because they are landless (Finneran 2003: 428; Lyons 2014:179). Boylston

(2017:387-386) found that traders as landless people are now perceived as a new group of *buda*, who outcompete their competitors and make money that does not come from farming.



Figure 7.9. Sulfur displayed at wholesale shop in Aksum.

Shebi looks like salt and comes from Sudan and the Ethiopian lowland Afar salt mines (Gebrelibanos 2012:135).



Figure 7.10. Shebi displayed at a wholesale shop in Aksum.

7. 3. 2. Aromatic Plants and Woods

Some 20 incense and aromatic plant species were identified in the markets of Shire Inda Selassie, Aksum and Adwa. In the context of incense trading, small scale traders (particularly young adults) differ from wholesale distributors by selling aromatic and medicinal plants in addition to various incense sold by wholesale distributors. Women who were in the retail

business for many years only sold aromatic and medicinal plants. The most common aromatic and medicinal plants sold in the study area are presented in Table 7.10.

Table 7.10. Common aromatic plants sold in the study sites and their uses

No.	Latin name	Tigrigna	Sources	Uses
1	<i>Cordia africana</i> <i>Lam.</i>	<i>Aw'hi</i>	Western Tigray/Shire	burns from fire, abdominal pain, diarrhea, snake bite, pneumonia
2	<i>Olea europaea</i> L.	<i>Awl'i</i>	Aksum, Adwa, Shire	toothache, abdominal pain, malaria, asthma
3	<i>Klinia odora</i> <i>Forssk.</i>	<i>B'erir</i>	Adigrat, Aksum and its hinterland, and (Mai Tsebri/Shire)	snake bite, evil eye, evil spirit
4	black frankincense?	<i>Itan emni</i>	Western Tigray/ Shire	Headache
5	<i>Cyperus</i> (<i>bulbosus?</i>)	<i>Kunamini</i>	Raya and Shire	Beauty
6	<i>Securidaca</i> <i>longipedunculata</i> <i>Fresen.</i>	<i>Shutara</i>	Aksum and Shire	fumigate corpse
7	<i>Silene</i> <i>macrosolen</i>	<i>Saeri</i> <i>Saero</i>	Aksum and Shire	ward off snakes and spiders, malaria, fumigate corpse

8	mixture of <i>Ades</i> (<i>Myrtus</i> <i>communis</i> L.), <i>Tsihidi</i> (<i>Juniperus</i> <i>procera</i>)	<i>Tishatish</i>	Raya and Mekele rural area	beauty, like sauna
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People from villages located outside the major cities in the study areas supply the aromatic plants and woods. However, most aromatic plants come from Northwestern Tigray and a few plants/woods came from Mekele and the Raya areas, locally called *Raya chis*, literally Raya smokes. *Aftuh*, *B'erir* and *Saeri Saero* are brought to the market by female traders during market days, but their quantity is usually small (D4, D5, D7 and D12). There are two types of traders in the aromatic woods/ plants. One group are the *debteras* who sell both aromatic and medicinal plants and make prescriptions for how to use these plants. The other group of traders are women and recent high school graduates who sell aromatic plants. Five participants stated that they collect their own aromatic or medicinal plants because they can be sure of the identities of the species and of their sources. The aromatic and medicinal plants are always sold in the market by measuring the pieces more informally by the joints of fingers or by a handful. Two participants state that the incense traders' spatial location in the market is critical to their sales. The ideal location is on the outskirts of the market where the smell (or fragrance) of the product will attract clients. The incense traders are well situated within the heart of the market quarters, which signifies the long tradition and the significance of the incense trade to the community. However, since marketing space is so scarce, many of the younger traders do not have their own stalls. Thus, the younger traders have devised strategies of increasing their visibility through

aggressive networking and by situating themselves at the entrance and exit of the market during specific days of the week.



Figure 7.11. Aromatic woods and incense displayed at Adwa (left), and Aksum (right) markets.

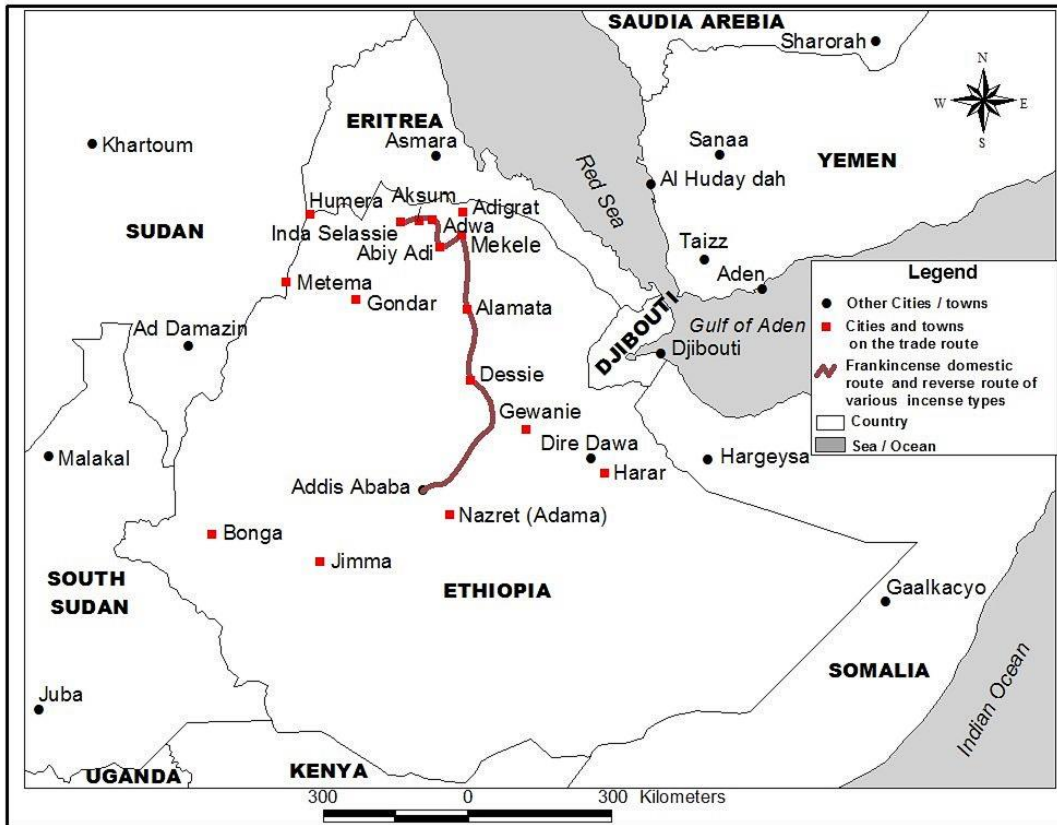


Figure 7.12. Aromatic woods and other beauty items displayed at Adwa (left and center) and Aksum (right) markets

7. 4. Incense Supplies, Trade Networking, and Transportation Mechanisms

All wholesale traders stated that the cities of Addis Ababa and Mekele are the main hubs of trade for frankincense distributed in Northwestern and Central Tigray. Incense geared to the domestic market is often sold at auction and most clients who buy incense wholesale are found in Addis Ababa and Dessie (see map 7.2). Thus, incense is directly shipped to wholesale merchants who have won the auction, and they redistribute the incense to different parts of Ethiopia based on their market networks and trading strategies. Wholesalers tend to dictate prices and terms of trade. Indeed, wholesale traders are usually the ones who sell incense consignments to Mekele,

the capital of Tigray. Some items are directly despatched to Addis Ababa and then redistributed back to Mekele, Aksum, Adwa, and Shire Inda Selassie (C1, C3 and C5).



Map 7.2. Frankincense domestic route from Shire Inda Selassie to Addis Ababa and the reverse route for various incense types (frankincense, myrrh, Lubanja, mitin, and others) sold in Tigray.

In relation to this, a wholesale distributor from Aksum stated that the supply chain for *mitin*, which is prepared by mixing a variety of aromatic plants or minerals such as sandalwood, *Miski* and *seyfel* from India, perfume, and *meaza* incense manufactured in Addis Ababa. *Mitin*'s production first began in Mekele in the late 1990s, and then was introduced to Addis Ababa, which eventually became the main venue for its production and distribution. Later, *mitin* started to be processed in Aksum in 2014, and was no longer ordered from Mekele or Addis Ababa

(C5)²⁵. Thus, *mitin* became available in Aksum and other Tigrayan cities. This broke the traditional trading chain with Addis Ababa, although some ingredients are still imported from abroad via Addis Ababa. These networks are also based in part on truck traffic and planes. Previously, incense would also be brought by the boat trade to Massawa and up to the plateau (by camel or donkey) in the first half of the 20th century (R. Pankhurst 1968:381,390).

Boswellia papyrifera (Del.) Hochst (Meker) that is produced in Central and Northwestern Tigray is still distributed from Addis Ababa and Mekele, and the wholesale traders redistribute it for local consumption. All wholesaler participants state that although Mekele is located at a short distance from the study area, they prefer to bring all incense items including *Boswellia papyrifera* (Del.) Hochst (Meker) from Addis Ababa for different reasons. Merchants argue that when they buy merchandise from Mekele, the truck drivers are not likely to transport the product since it does not benefit them unless the merchandise fills the truck load. However, in purchasing *mitin* and other incense types from Addis Ababa, simpler and faster transaction systems have developed over time. Merchants have the option to order *mitin*, frankincense, and other incense varieties by phone from the wholesale merchant in Addis Ababa. They can purchase any quantity of their choice without obligation to find other merchants to fill up the truck load, which eases transport cost. The trading items will be sent in one truck together with other merchandise of fellow local merchants within two or three days of ordering. The expenses of purchasing and transporting the product are often paid to the wholesale merchant in Addis Ababa through online banking.

²⁵ This participant is 41 years old, started work in 1991 while he was a young boy in his family's shop, and began running his own shop with his wife after 2011.

Participants identified three incense trade routes that were frequented before the outbreak of the Ethiopian-Eritrean War (1998–2000) in the Horn of Africa. Eritrea was the chief supplier of incense to northern Ethiopia, and it was an outlet for frankincense produced in Tigray for the Western world.²⁶ Sudan was the second trade route from which a variety of incense was supplied to northern and northwestern Ethiopia. It was also another major outlet for Ethiopian frankincense export to the outside world. The Dessie-Millie-Assab was an important route from Yemen and Saudi Arabia used by the Tigrayan merchants to acquire incense and spices for Tigray.

After the Ethiopian-Eritrean War, however, the direction of incense trade shifted towards the south and southeast, especially Addis Ababa. The private companies in Tigray and their headquarters in Addis Ababa export all the standard frankincense produced from Tigray via Djibouti. Wholesale distributors located at Dessie and Addis Ababa purchase Grades 4 and 5 frankincense resins, the domestic lower quality forms of incense. The wholesale distributors from Addis Ababa purchase Grade 4 and 5 frankincense resins and sell them without any value addition back to the markets and retail shops in Tigray. The merchants from Tigray give their order of incense and other goods to wholesale distributors in Addis Ababa. The wholesale distributors in Addis Ababa then prepare the incense merchandise for their clients in Tigray using brokers who will facilitate transport arrangements. The merchandise is then shipped to various cities in Tigray at a cost of not more than 30-40 ETB per kg order, which is surprisingly not much more expensive than the cost for the whole truck load shared among several merchants

²⁶ During the Imperial and Derg period, frankincense from Tigray and other areas was exported via Assab and Massawa. Also, TPLF used to export frankincense (via Sudan) from western Tigray, which was under its control during its insurgency.

ordering similar or different consignments. To sum up, Addis Ababa²⁷ and Dessie have become the redistribution centers of incense partly because much of the international and domestic trade is organized along this route and is then redistributed throughout the country. In the case of Addis Ababa, this is since its establishment as a capital in the 19th century and in the case of Dessie perhaps after the 1998 Ethio-Eritrean conflict or possibly earlier because it is linked by road to the Assab port.

7. 5. Clients and Contexts of Incense Use

Based on my observation, wholesale traders store all incense products within their shops. They often supply the incense to the weekly open market in Wukro Maray or to shops in the city center of Aksum. All incense is displayed in 100 kg burlap bags. The sample items are put in small plastic containers on the balcony that separates the client and the merchant. A weighing scale is used to determine the amount and price of the item to be sold. The product is then wrapped in newspaper or put in a plastic bag for the client. In addition to incense, wholesalers distribute various spices and goods in their shop, including coffee and other items that align with the coffee ceremony.



Figure 7.13. Incense displayed at wholesale shops, Aksum.

²⁷Addis Ababa was the distribution center in Ethiopia throughout the 20th century as well.

Based on data collected from participants, clients buying incense are categorised into two major groups. The first category includes clients who purchase frankincense for church ceremonies. These clients are mostly women. Two religious scholars interviewed (E2 and E4) claim women give incense to the church because of their exemplary devotion to God. They stress not to forget that “women are daughters of Mary Magdalene” who poured perfume on Jesus’ head and feet and who never departed from the tomb of Jesus until His resurrection. E2 stated that women are the ones who take care of household activities, and this experience allows them to know what is needed for the church services. Priests and nuns buy incense for the church, especially those who come from rural areas. However, some men also buy frankincense for the church services.

The second major category of clients are people who buy incense for household uses. The type of incense consumed at the household level includes all incense items described in section 7.3. except frankincense and myrrh. These last two incense types are often reserved exclusively for church services. There are specific holidays, such as the Ethiopian New Year (September 11), annual feasts of Aksum St. Mary Cathedral (November 29), Christmas, and Easter where incense consumption increases in comparison to the rest of the year. Muslims consume more incense (*Jawi*, *Aden adrus* and *Mitin*) on Thursday evenings which is a holiday and on Sunday which is their weekend, while Christians do the same rituals on Saturdays and Sundays. Visitors also frequent Muslim households at the same time. These are times of the week when more social gatherings and activities, including the coffee ceremony or khat chewing take place within Muslim households (C1, C2, C3, C4, and C6). Christian households also have coffee ceremonies accompanied by incense burning rituals to entertain their guests and extended families during weekends (E2, E4, E7 and E9).

This chapter has focused on incense processors, traders, and trade networks. A partial extension of these groups could be manifested through end users/ consumers who were closely networked with women incense processors, wholesale, and retail traders as clients. Narratives about the consumers' perspectives will be fully discussed in the next chapter.

7. 6. Summary

One of the main takeaways of this chapter is the socio- economic nexus between diverse social actors, including women incense processors, wholesalers, and small-scale-traders within the incense trade. Women are economically marginalized through lack of formal education and access to rural resources, that is not alleviated by their work in incense processing where they are exploited. These women are pillars of the trading system, albeit their subaltern position as poor women pushed them to the edges of the less rewarding incense processing sector. Similarly, women retailers act as the bridge between incense consumers and wholesalers and yet receive minimal profits.

The gendered division of labor and associated payment scale is structured by historical and patriarchal perceptions of what is appropriate work, workplaces, and technologies available to men and women and the value of gender-based work. Incense processing is largely a feminine task that women protect, and they actively discourage men from participating in incense processing as an activity perceived to emasculate. Women rely on their children, particularly their daughters, for long-term labor, and women support their daughters' education through this work. Working in incense processing does not require any educational qualification and is an easily accessible job in the study area where frankincense is produced in large volume. Payment is made on a quarterly basis. Both piece-rate and wage rate are used to calculate payments.

There is an established trend of partnership between Christian political elites and Muslim trading families in Tigray as manifested in the incense trade. Incense wholesale trading is largely dominated by the Muslims who reap the next most lucrative dividends from the frankincense trading system. The Christian elite have continuously assumed the lion's share of income derived from the incense trading system from the Imperial days up to the present. Aromatic plants also are important within the Tigrayan incense trading system due to their value as components of traditional healing, household cleansing, and family rituals. The wholesale incense and retail trade are family businesses inherited across generations.

This chapter has tried to show the impact of incense processing on generating family income. The next chapter will elaborate on contribution of incense processing and trading for household economy. It will also explore how incense processing and trading activities shape gender relations.

CHAPTER 8: INCENSE PRODUCTION III: IMPLICATIONS FOR HOUSEHOLD ECONOMY AND GENDER RELATIONS

Introduction

This chapter addresses how incense trade integrates ordinary people into social hierarchies and larger scale economies in the history of the study area and explores the lived experience of the women engaged in the processing and trading of incense and aromatics. It highlights the impact of incense processing and trading on household economy and gender relations. The study reveals how frankincense processing is the primary source of household income that meets subsistence and daily needs of incense processors in Central and Northwestern Tigray.

8. 1. Impacts of Incense Trading System to Household Economy

Agriculture constitutes the dominant household economy in Tigray, employing about 83% of the population (Teka and Lee 2020:4), while the service, manufacturing, and small-scale enterprises and occupations constitute the rest of available employment. Incense processing and trading companies are an integral part of manufacturing and trading firms that are owned by the Endowment Fund for the Rehabilitation of Tigray (EFFORT) (Young 1997). All these sectors employ women predominantly in the lowest paying positions based on informal discussion with research participants at Aksum and Shire Inda Selassie.

A five-year data review (2009–2013) from the Ethiopian Revenues and Customs Authority reveals that the annual foreign exchange revenues from frankincense export accounts for 11.82 million USD (Derero et al. 2018:516). Tadesse et al. (2020:34) also reported that the total Tigray type *olibanum* (frankincense) for the period 2007 to 2014 is 56,200 tonnes. The Tigray type *olibanum* is a generic term given to *Boswellia papyrifera* produced in different parts

of Ethiopia, but most of this incense type used in national export is produced in Tigray (Lemenih 2011:27). Lemenih et al. (2003) and Worku (2006) indicate that the frankincense production and processing contribution to household economy is growing steadily.

Data collected from fieldwork reveals that women are one of the principal actors in the frankincense production chain through their involvement in the processing and retailing of frankincense gums and resins. The processing sector alone provides an employment opportunity for 700 women in Shire Inda Selassie. It is a source of income diversification to the local community. There is no reliable nation-based data on the contribution of frankincense processing to women's household economies. However, the data gathered in this study shows that frankincense processing is the primary source of household income that meets the subsistence and daily needs of more than 95% of the participants (female-headed households in this study) in Northwestern Tigray. It also provides an economic option for married women and young unmarried women over the age of 18 in the study area.

The female incense processors interviewed stated that they use their income to pay for food, house rent and clothing as well as educating their children. After household costs, the women claimed that they are left with little if any savings and many run out of money every month. They take credits from the companies that employ them, a factor that keeps women attached to the company for a long time. Some women also reported taking credit from individual shops to buy their monthly groceries and other basic needs from the shop owners, who know that these women get their salaries on a quarterly basis. The incense processors have created their own social alliances and developed trust with shop owners as they pay debts as soon as they get their quarterly salaries. The money they acquire at a quarterly payment is immediately spent on debt repayment to shop owners, companies, and friends/relatives.

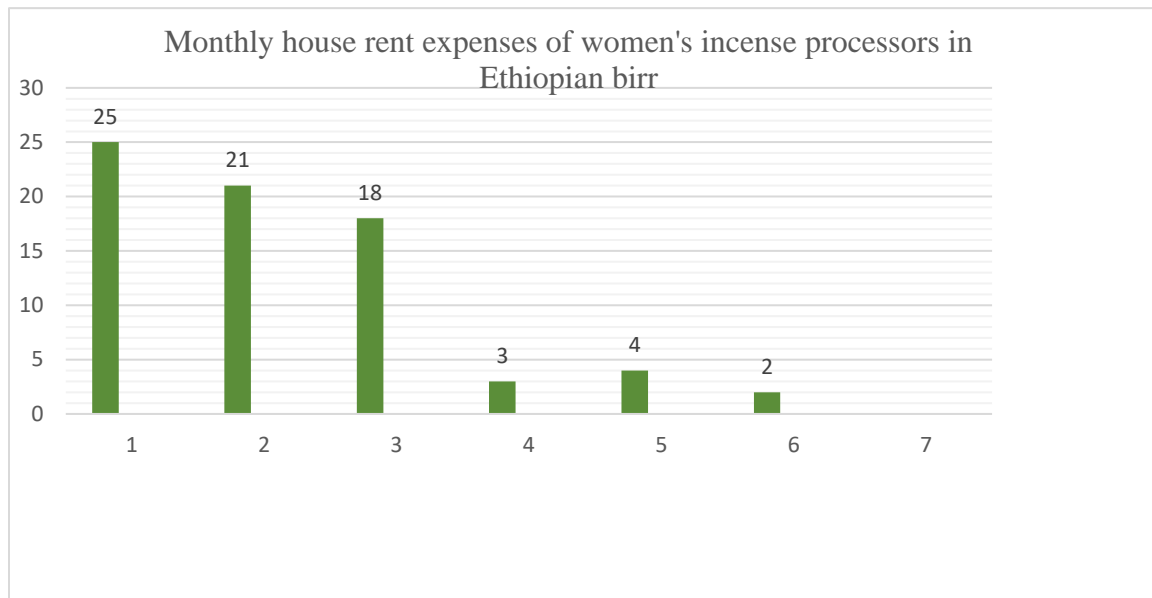


Figure 8.1. House rent expenses of women incense processors.

All incense processors are urban dwellers, but most of them do not own houses. They rent houses from individual owners. Over half of their annual income goes to house rents and the remaining covers the cost of basic needs. The least amount is spent on supporting the elderly and younger dependents within their extended families. Some incense processors, however, compromised the quality of their livelihood standards by renting small size houses with inadequate spaces. A small number of individuals whose spouses are salaried civil servants, or earn payments from other sectors, rent more spacious and standard houses. These better-off couples have larger households, and they may also use about 70% of their income in rent.

These women have modest savings, which they invest in their children's college fees and to support their children and siblings. For example, a 25-year-old participant (A48), who works in the company with her mother, states that the income they receive is used not only to cover their monthly living expenses (food and shelter) but also to cover tuition fees and rent for her sister, who studies nursing in a private college in Aksum. The nursing student was previously

working with her family as an incense processor. This is a clear case where women eke out a living with scarce resources to invest in their daughters' education and those of other female siblings. A4, A13 and A83 confirmed that there were many female students who were working in the company that succeeded in attending their studies at universities. Some return to the company during summer breaks to raise income to cover their tuition and some of their living costs for the fall semester.

Although incense processing has become a source of economic livelihood for a considerable number of households (A4, A7, A10, A12, A13, A42, B1, B6, B7 and B8), the income is inadequate to sustain food security for these households. Women incense processors are mainly from poor families, earning less than \$1.90 USD per day, which is less than the value calculated by the global poverty index (UNDP 2020:365). Only five widowed or divorced women derived additional income from agricultural activities through share cropping. Married women live in households where their spouses contribute to the household economy. However, the overwhelming majority of female-headed households have little or no additional sources of income. Incense processing is partly dependent on patterns of household labor mobilization and dependency. In this case, data obtained from field interviews established that there are two categories of school children working on a part-time basis. The first category involves children who pursue their education by working part-time independently. The students interviewed were only those who were 18 years of age and over, in accordance with my ethics certificate. However, incense processing is supplemented by child labor, which affects the children's education.

The other category includes children who work with their mothers processing and grading incense by adjusting their school hours. The percentage of incense processed by these children depends on how many children have participated in helping their mothers and the average working hours they assist. For example, if a woman working in the warehouse has one child working with her, her child can process incense about a quarter of the total incense processed by the mother, or if the mother mobilizes two children, they may process half of the mother's total incense processed. The reason is that the children combine work with school, and they assist their mothers during the half day when they are dismissed from the school (A14, A11). Since this dissertation is anchored in political economy/domestic mode of production, this child labor represents a form of surplus labor extraction. This labour is remunerated in that it becomes part of the mother's production and enhances their income. This situation in essence reflects a form of child labor exploitation by their mothers. This is like child labor appropriation by mothers working in craft work or even cash employment (Webbink et al. 2012).

Table 8.1. Number of household dependents breakdown in incense processing (N=85)

Number of dependents	Age ranges							Total	%
	18-24	25-34	35-44	45-54	55-64	65-74			
1-2	14	10	4	4	0	0	32	37	
3-4	2	11	8	5	2	0	28	33	
5-6	0	6	8	5	0	2	21	25	
7-8	0	1	1	2	0	0	4	5	
Total	16	28	21	16	2	2			

Household dependency is determined here based on the number of children or family members who depend on the household head for their living. It is important to note that dependents are not necessarily burdens to their respective families (A4, A12, A13, A42, A53, B1, B3, and B8).

Although dependents need to be supported, they are also a source of labor for male and female household heads and contribute to household income. For example, if a woman has daughters, then she usually has labor until they marry, and even sometimes after their marriage. Of course, some dependents are more helpful than others, depending on their upbringing and family work-ethic values.

A major factor in women's poverty in Tigray is the political economy of land tenure, land governance practices and patriarchal systems of inheritance that routinely take women's land from them. The issue of land tenure administration in Tigray has considerable inconsistencies. The land policy allows unlimited use of land for the title holders if the user stays in the village where his/ her land is located and can transfer land rights temporarily for a period of two to three years on a contractual basis. People only have usufructuary rights at the discretion of the state. Male landowners stand a higher chance of retaining their lands than women. This is partly because unlike women, men are likely to approach the *tabia* leaders freely at bars and local liquor houses, where they can bribe authorities with some treats.

Women do not have similar opportunities to seek the favour of local authorities to retain their land and / or consolidate their land holdings. The stories of some women incense processors who lost their land is evident. For example, one 50-year-old woman from Shire Inda Selassie (A14) stated that her land was confiscated by the local administrators (*tabias*) because she was regarded to have had a job as an incense processor, and the land was transferred to the landless and jobless. Another participant, A46, explained that her husband, who was a former TPLF

combatant, had obtained land in Shire Inda Selassie's hinterland, but their land was later confiscated by local administrators when he moved to the city. This participant is now a widow raising two children without adequate means of income, save for her incense processing income. If women have any small access to income in rural Tigray, they are likely to lose their land even though the income is not enough to sustain them. One incense processor (A40) states that she still has small farmland in a rural area which is managed by her brother, and she receives the produce every year. A11, an 18-year-old girl who pursued her education at Shire Inda Selassie, indicated that she receives crop subsidies from her family, who live in the countryside because she has no farmland. She reciprocates by giving them money that she obtains from incense processing.

The constraints of women's land use can be explained by Donham's "reproductive schemas" or productive inequalities. While women are granted land, their access to it is compromised by the following factors: 1) lack of oxen ownership 2) cultural restrictions against females ploughing 3) mobility due to marriage and increasing deterioration of land fertility and productivity; and 4) lack of ploughing labor either due to widowhood or divorce. Land remains a source of social and political value, and women without male labor to plough the land are unable to maximize land production. Men with ox-teams effectively increase their access to land at the expense of female landholders (Dokken 2015; Lyons 2014). Even when some women have access to land (means of production), they are limited from exploiting it by productive inequalities that prevent women from ploughing their own land with ox-teams (that define relations of production) and that are necessary to establish legal land "ownership" through usufruct. This shows contradictions in the agrarian production system that disadvantage women,

with incense processing emerging as one strategy for women victimized by production inequality and patriarchal structures.

Most female incense processors have the same socio-economic status. They have neither farmland nor other sources of income to support their household other than incense processing. From the 85 research participants only five have retained their own farmlands (A5, A31, A40, A45, and A85). Thirty-five participants claimed that they never received farmland from the outset because they were underage during the last land redistribution in 1991. Although these individuals were allocated farmland as members of households in 1991, they lost their farmland when they married into other villages or if they moved out of the household at any time. Another 18 young women who were born after the 1991 land redistribution are also landless. Seven landless women, who moved to cities²⁸ with their spouses, found no other livelihood options. Of these participants again, three of their marriages ended in divorce, thereby eroding their household income. The remaining 27 women were born as urban dwellers and were ineligible for farmland allocation as per the land tenure legislation, and two additional participants moved to Shire Inda Selassie from far off places.

8. 2. Household Incense Consumption

Incense processors are also consumers of incense at the household level. Participants were asked about their household incense consumption patterns. This question was also asked of other groups of participants, including wholesale traders (N=7), small scale incense traders (N=18), religious scholars (N=20), incense company managers and workers (N=8), and randomly

²⁸ Large numbers of unemployed youth in the rural sector were forced to move into cities in search of jobs and new livelihood opportunities because of the lack of land and economic diversification in rural villages (Bundervoet 2017: 23-25; Zenaselase 2017:1334).

selected non-incense processors (N= 15), to provide a cross-section of social groups and differences of household wealth. These group of participants were consulted in their position as consumers of incense for household and church services. Only 7% of the female incense processors claimed that they offer incense for church services on pay days. However, 38% of company managers and department heads, 100% of church scholars and laity, and 39% of small-scale traders offer frankincense for church services when convenient and whenever they have pledges, which suggests the more privileged groups provide more incense, another form of religious discrimination or disadvantage experienced by poorer women. Each of these research participants usually offer frankincense to the church in quantities of 1-2 kg per offering. More than 90% of women processors indicated that they use various types of incense during the coffee ceremony, to fumigate their house, as medicine to treat humans and animals, and to repel insects. The average household consumption of each participant is estimated to be 0.5 kilogram per month and the average cost for this amount is approximately 40-50 ETB. The incense they use is either *mitin* or a mixture of different aromatic woods/ plants, which is perceived as inferior in quality compared to frankincense. None of the incense processors had used frankincense for household consumption because frankincense is too expensive, and only six incense processors offered incense to the church. However, aromatic plant material is routinely used in rural homes in the coffee ceremony (Dr. Lyons pers comm June 2021, and personal observation).

Table 8.2. Incense consumption in households.

Questions	Participant responses	N=85 Participants	%
Average monthly expense of incense consumption per household	Zero	11	13
	20-30 ETB	25	30

	31-40 ETB	7	8
	41-50 ETB	18	21
	51-60 ETB	7	8
	61-70 ETB	6	7
	71-80 ETB	5	6
	81-90 ETB	2	2
	91-100 ETB	4	5
Incense type used during coffee ceremony and holidays in households	<i>Mitin</i>	29	34
	<i>Jawi</i>	16	19
	<i>Aden adrus</i>	17	20
	Both <i>Mitin</i> and <i>Jawi</i>	10	12
	myrrh	1	1
	Mixture of aromatic plants	1	1
	I do not use incense	11	13

During the interviews, incense processors, wholesalers, and retailers identified two types of incense burners made from clay and metal. All participants use clay incense burners in their homes. Four Muslim participants (C1, C2, C4 and C5) noted that clay incense burners are also used to offer incense in mosques. The incense burners are locally made with a similar style and

decoration and are used until they are broken or replaced if the user feels he/she needs a new one. In urban areas, the municipality workers discard broken incense burners together with other garbage in landfills, but presumably in the past these were discarded in fields or around houses as are broken ceramic vessels today (Dr. Lyons personal communication 2021).



Figure 8.2. Incense burners used in household contexts

8. 3. Incense Trade and Gender Relations

If we look at the full chain of incense from resin tapping, incense processing to consumption, the business is largely managed by men. Women are the largest employed group in the incense business, but they are in the lowest paid jobs of processing and grading. The government, which controls access to frankincense trees for tapping, has given big companies a monopoly over incense production. These companies are almost exclusively run by men, partly as military reward for their previous service during the civil war and loyalty to the TPLF. Lower status male labor as tappers has higher payments than that of the female incense processors. Furthermore, men are the only wholesale merchants in the more lucrative regional and local trade, while women are subsumed in the less profitable small-scale retailing sector.

Table 8.3. Key research questions presented to small scale traders.

Question		Participant response	Number of participants (N=18)	%
Average monthly income from the incense trade?		1000-1500	4	22
		1501-3000	14	78
Types and volume of incense sold /month?	<i>Mitin itan</i>	10-25 kg	0	
		26-50 kg	5	28
	<i>Aden kirfit</i>	10-25 kg	0	
		26-50 kg	5	28
	<i>Lubanja /Jawi</i>	10-25 kg	0	
		26-50 kg	4	22
	<i>Meker (normal frankincense)</i>	10-25 kg	3	17
		26-50 kg	6	33
	<i>Ian Emni</i>	10-25 kg	0	
		26-50 kg	6	33
	<i>Kerbe (myrrh)</i>	10-25 kg	4	22
		26-50 kg	0	
	Shutara	10-25 kg	18	100
		26-50 kg		
	B'erir	10-25 kg	18	100
		26-50 kg		
	Saeri Saero	10-25 kg	18	100

		26-50 kg		
	<i>Kufkuaf</i>	10-25 kg	4	22
		26-50 kg	5	28
Is incense trading a family business for you?		yes	10	56
		no	8	44
Average years engaged in incense retailing?		1-10	8	44
		11-20	7	39
		21-30	3	17
Do you give incense to the church?		yes	7	39
		no	11	61

As shown in Table 8.3 above, 78% (N=14) of the female small-scale incense traders earn a monthly average income from incense sales in the range of 1501-3000 ETB. The remaining 22% earn between 1000-1500 ETB per month. There is a tendency for some sub-specialization in the sales of incense varieties. For instance, six older women focus on the sale of aromatic plants and woods while the newer entrants (without market stalls) tend to sell different blends of frankincense and aromatic plants. The latter also possess items such as frankincense and *mitin*, which is often sold by wholesale merchants (see Table 7.9). The younger and newer entrants into the incense trade have a comparative advantage in deriving better profit by virtue of their market diversity and flexibility. Like wholesalers, small-scale trading tends to be a family business. As

indicated in Table 8.3, approximately 56% of small-scale incense traders began their trade as members of a family business, whereas the remaining 44% joined the sector for lack of alternative jobs. Thirty-nine percent of all small-scale traders claimed that they give incense to the church.

In all weekly and daily markets, women predominate as small-scale traders in selling and buying incense and other aromatic plants. These women stated that they have depended on this small-scale trade (10 of 18 participants) as their main source of income for many years. However, men are now entering this sector. Men's growing participation in retailing is attributed to the general landlessness of young men and lack of alternative opportunities. David and Kramer (2001:309) also related similar trends elsewhere when men take over sectors of women's trade when cash is involved. In West Africa (Mintz 1971) states that Ibo and Yoruba men, and in Haiti, Haitian men, took over sectors of trade that were formerly controlled by women. These facts suggest that the traditional predominance of female traders in much of Nigeria and Haiti is being threatened by the expansion of men's commercial activities (Mintz 1971:264). According to Martin and Voorhies (1975:40), men's amassing of wealth from cash crop and industrial wages has reduced women's productive significance. This encouraged the formation of a self-contained nuclear family, which exacerbated women's domestic isolation.

Based on my personal observation and communication with three young male retailers of frankincense, young male retailers who sell myrrh and other aromatic plants, tend to attract more customers than the aromatic plant material sold by older women. The comparative advantage of older women is that they have permanent stalls in the marketplace despite market changes. They are knowledgeable about the nature of the sector. Young men have different advantages, in that they are far more mobile than the older women. The young men frequent churches on monthly

festivals, and they use more visible but largely unregulated sites at the margins of the market, where they attract customers with the scent of their products. Both male and female incense sellers have very good communication skills in persuading clients to purchase products.

Five participants (D1, D3, D4, D8 and D9) engaged in retail run by their own families' business. While women engage in selling incense and other items during weekly market days, their spouses do other jobs such as construction or any other available job to enhance their household income. These young adult women essentially hold a small niche trade (*gulit*) throughout the week. They also frequent Shire Inda Selassie and Adwa markets to help their spouses in the purchasing of aromatic woods/ plants.²⁹

Income from incense selling appears to be meager and small-scale incense trading is a marginal occupation because these traders have little economic and no political influence. This is not a marginalizing occupation associated with cultural perceptions that these women are *buda*. They are not considered to harm others. However, they are marginalized as women who are landless and they are marginalized in society by their lack of income, social status, and political influence. During interviews, they said that no one has changed their situation or working conditions. Ethnoarchaeological studies of pottery in Tigray (Lyons 2014; Lyons and Freeman 2009; Lyons et al. 2018; Cascadden et al. 2020) argue that potters are socially marginalized and socially avoided as respectable marriage partners, they are insulted by others, and sometimes they are victims of violence. However, not all potters are perceived as 'buda' by local people even though outsiders might perceive them to be buda. However, metalworkers are widely feared for their evil eyes (Lyons 2014). Women incense processors and retailers are not subjected to

²⁹ Participant D9 from Adwa was working as a tapper long before he became a full-time incense and aromatic retailer.

social avoidance practices like smiths and potters. Nevertheless, many incense-processors and sellers are from female-headed households that are landless, and the few that have land must sharecrop with a man with an ox-team at the cost of half of their small crop. In general, patriarchal societal structures economically favour men's access to economic resources, and disadvantage women, particularly widowed, divorced, and abandoned women. Although female incense processors and retailers are not socially avoided, these women fall within the same category of landless or virtually landless people, who are generally uneducated, work in poor conditions, use child labor, and do dirty work that is relegated even by poor men, as 'women's work'. Landless men are also relegated to work that other people do not want to do, but they receive better payments than women in incense tapping, although their activity is perceived as shameful.



Figure 8.3. Incense retailers display incense, aromatic plants, dates, pendant crosses, and spices in Shire Inda Selassie (left), and Aksum (center and right).

I asked female incense sellers if they are socially marginalized by virtue of their occupation and they stated that they are neither rejected nor highly venerated but treated like any member of the community (D1, D3, D4, D5, D6, E2, E3, E4, and E9).

8. 4. Summary

The overwhelming majority of single female-headed households have few economic options in both rural and urban contexts. Even though female incense processors are not socially demeaned, their work does not upgrade their social status because the work pays very poorly. These women are too poor to provide incense to the church to elevate their status within their communities. Only a few female incense processors and small-scale retailers achieve an income that covers their monthly household expenses year-round. The study shows how frankincense processing is the primary source of household income that meets subsistence and daily needs of incense processors in Central and Northwestern Tigray. The sector provides women with access to the cash economy that is used to purchase basic household consumption and cover monthly rent. Women used to predominate in trading small-scale incense and other aromatic plants, but men are now entering this sector. Small-scale incense trading is a marginal occupation because these traders have little economic and no political influence.

Incense consumption has a class dimension. Frankincense is consumed by the church and higher social echelon, while other types of incense and aromatic plants are consumed by the lower classes at a household level. Few incense processors offered frankincense to the church because frankincense is too expensive for them. The next chapter will elaborate the use of frankincense in the church context, where an institutional monopoly of a higher quality frankincense consumption is contrasted with the laities' preoccupation with low quality incense and aromatic wood/ plants. This indicates a structural inequality in terms of access to a higher-grade frankincense consumption.

CHAPTER 9: INCENSE IN RELIGIOUS CONTEXTS

Introduction

This chapter seeks to answer how to determine material differences between elite and non-elite contexts of incense use? It highlights the roles of the Ethiopian Orthodox Tewahedo Church as an important client in incense consumption, in institutionalizing incense trading, and its place in stimulating continuous local demands. A lot of the higher quality incense in Central and Northwestern Tigray goes to the church. The people's deep devotion to the church and the church's religious events involving ordinary people have greatly shaped trends of incense giving and burning. The chapter describes church rites performed using frankincense and myrrh offerings during Mass, and the significance of incense rites in the church power structure. Two types of incense, frankincense and myrrh, are burned in church rituals.

9. 1. Socio-demographics of participants

Twenty church scholars and members of laity from Aksum and Yeha provided rich data on the use of frankincense and myrrh in the Ethiopian Orthodox Tewahedo Church. Research participants ranged in age from 35 to 80 with an average age of 59 years. The participants were composed of 16 males and 4 females (including one nun). Out of the 20 participants, eight are clerics, seven *merigetas*³⁰ (including one nun), and five laity. In terms of marital status, 80% are married and 10% are single, while the remaining 5% are divorced and another 5% are widowed. Except for five participants, all others are experts in fields³¹ of church education. Most clerics have first and second degrees, including one medical doctor, two Master of Arts, two Bachelor of

³⁰ Prominent teachers and scholars of the church.

³¹ *Zema Bet* (specializing in church music including Mass celebration and administration) *Qene Bet* (composition of poems that are played during religious and public ceremonies), and *Metshaf Bet* (school of commentaries) (Dagne 1970:91-94).

Arts, and two high school certificates. In terms of interviews, 15 participants were recruited from Aksum St. Mary³² while the other five participants were drawn from Yeha based on their knowledge of the use of frankincense and myrrh within the church. Yeha offers information on religious rites performed using frankincense and myrrh in both rural and urban contexts.

Table 9.1. Demographic composition of participants

Age	Male	Female	Single	Married	Widowed	Divorced	Secular Education
35-45	4	2	0	6	0	0	6
46-55	5	2	1	6	0	0	4
56-65	2	0	0	2	0	0	0
66-75	3	0	1	1	0	1	2
76-85	2	0	0	1	1	0	0
Total	16	4	2	16	1	1	12

The church is a major consumer of frankincense and myrrh, and it is a parallel institution of power to the state. The church plays an important role in people's daily lives, particularly in rural contexts. As stated in Chapter 3, people paid tribute to the church in incense in the past, and the church received land from the state that they rented to local ploughmen for half-shares until just after the civil war. Women pledge incense and other gifts to demonstrate their adherence to the church, cleanse their sins, to comfort their earthly life, and enhance their ascent into heaven

³² Aksum St. Mary is the primary site of Ethiopian Christianity. Three major churches were built in the same compound by successive emperors: Ezana (4th CE), Fasiledes (1608-1632), and the contemporary cathedral by Emperor Haile Selassie in 1965.

for eternal life. These pledges impact their household economies. In Mali, Cunningham (2009) found that young women collect a trousseau of enamelware to increase their value as a person within the political economy of their husband's family. Similarly, in the study area, frankincense and aromatic plant materials are used by women to increase their value in their households and communities economically, socially, and spiritually. This does not mean that men do not offer gifts to the church. Men gift labor to the church, and they provide money and umbrellas. Umbrellas are often used to shade the *tabot* during annual festivals and more regularly to shade the celebrants and the holy communion during the Mass, funeral services, and public holidays. I also interviewed participants in both Aksum and Yeha about their household incense consumption.

The Church is the major domestic consumer of frankincense and myrrh. Interviews with religious scholars and the laity were conducted to determine the types of incense used in certain rituals, incense consumption rates, incense suppliers, and actors involved in incense burning ceremonies.



Figure 9.1. Yeha's archaeological sites: Pre-Aksumite temple (left) and Grat Beal Gebri (right).

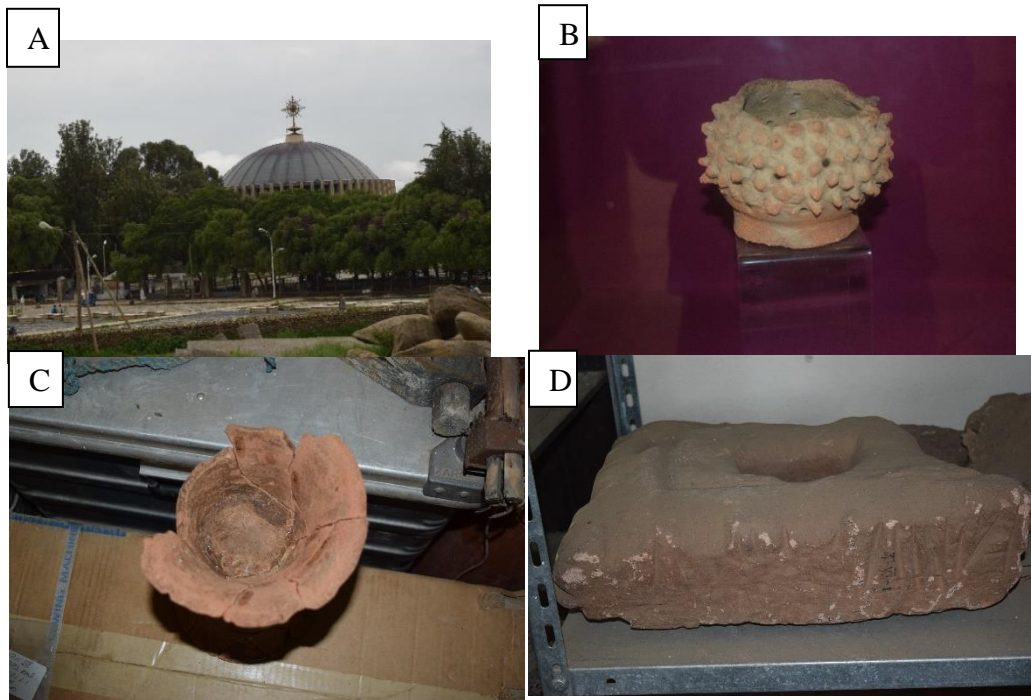


Figure 9.2. Aksum St. Mary Cathedral (A), and incense burners from Aksum Archaeological Museum (B-D).

9. 2. Incense Use in the Ethiopian Orthodox Tewahedo Church

9. 2. 1. The Historical Context

Fourteen research participants (the clerics and *merigetas*) stated that the use of frankincense and myrrh in the church dates to the Old Testament period when they claim that Ethiopia adopted Judaism. Some stone incense burners with Sabean and Ge'ez inscriptions are displayed in the Aksum Archaeological Museum and in the Yeha Church vestry that date to the Pre-Aksumite period (see Figures 9.2 and 9.3). These research participants argue that the use of incense became common with the expansion of monasteries and churches, and with the adoption of Christianity as the state religion in the 4th century CE. Frankincense and myrrh are the two

incense types burned in the rites of the Ethiopian Church. According to a former rector of Aksum St. Mary Cathedral (E1), use of aromatic woods/plants are not allowed in church rites and offerings because they would be considered as worshiping idols. This is because aromatic plants are consumed in the *zar* cult ceremony. In Ethiopia, Zar is possession or sickness caused by spirits. Its symptoms are showing immature/ childish behaviour, uncontrolled emotion, and lack of interest or concern (Grisaru et al. 1997: 225; Kahana 1985:130).

However, another scholar (E5), who has specialized in commentaries and *qine* (poems), argues that the following nine aromatic plants are identified as “trees of incense” (ፀፀፀ ፅፀፀ) in the Revelation (7:4) commentary. These are *M'a* (ሚኦ), *Selik* (ሰሊክ), *Sehin* (ሰኒን), *Sendros* (ሰንድሮስ), *Abemo* (አቡሞ), *Abiemo* (አቤሞ), *Mestek* (ሞስተክ), *Qenmos* (ቀንሞ) and *Qenanimos* (ቀንኒሞስ). She believes that the Jerusalem frankincense burned in the church is prepared by blending these nine aromatic plants. Four participants state that the church uses both domestic and imported frankincense for all church rites.



Figure 9.3. Abba Aftse Church (top), pre-Aksumite stone incense burners with disc and crescent motif of Sabeian religious beliefs, and inscriptions in Hamyaritic in the Aksum Archaeological Museum (left) and in Yeha church vestry (right).

The frankincense consumed in the church is classified into pure white and regular. All religious leaders and scholars interviewed claimed that pure white frankincense is valued for its fragrance, and that it is imported from Jerusalem and Greece, hence known in the church as the ‘Jerusalem incense’ and ‘Greece incense’ (participants E1, E3, E4, and E5). Due to its high price and small quantity, its consumption is restricted to specific prominent churches such as Aksum St. Mary Cathedral and other big churches located in major cities. Seven participants stated that the regular frankincense consumed by every church in the country comes from Western Tigray (E4, E5, E6, E7, E11, E16, and E19). Although participants are familiar with the different grades

of frankincense produced in Western Tigray, they described the frankincense used by the church simply as high-quality incense. A company manager from Shire Inda Selassie had observed the fourth-grade special frankincense sold in shops in that city as church frankincense (C7). The fourth-grade special frankincense might be consumed in the church, since the first three grades produced in the country are not available to the domestic market.

It is estimated that one large church could consume up to 150 kg of frankincense per year (Fritsch 2008:134). However, a church official (E9) and nun *merigeta* (E5) from Aksum estimated that the average monthly consumption of each church amounts to 15 kg of frankincense. The same church official (E9) claimed that there are around 1070 churches and monasteries in Central Tigray. Based on this claim the estimated frankincense consumption in the same zone could reach about 38,520 kg per year. The volume of frankincense consumption varies from church to church depending on the type and frequency of services they provide, and the size of the population they serve. For the purposes of this study, I assume that each church consumes 3 kgs of frankincense per month as a conservative estimate.³³

9. 2. 2. Church Rites Performed Using Frankincense

Thirteen participants cited various texts from the Bible and traced the origin of incense use to biblical stories of Aaron and Zacharias. These stories are used to justify the sacredness of incense and how it was adopted into church rites. Research participants from amongst the clerics (E3, E5, E8, E9, E10, and E11) identified times of incense burning during liturgical rites such as

³³Monasteries and ordinary church do not have equal monthly consumption. Big monasteries such as St. Mary's in Aksum could consume from 10 to 15 kilograms per month whereas, other big churches in urban areas can consume from 3 to 5 kilograms per month, but rural churches might consume 1 to 2 kilograms per month because they do not render regular services or diverse services (baptism, weddings, and commemoration feasts) (E10, E11 and E12).

Seatat (Book of Hours) and *Mahlet* (cantillation/chanting), and the Mass. During these rites, large quantities of frankincense are consumed, and every church is censed from midnight up to 8 am when the church is opened for worship. There are prayers in which frankincense is burnt as the catalyst to ascend the prayers to God.

Frankincense offering is also a fundamental practice in various life cycle events, including baptism, matrimony, and funeral rites (Fritsch 2008:134), which are led by a priest and deacon and assisted by a group of clerics. After a child is born into an Orthodox family, he /she is expected to pass through the baptism ceremony. Children born into an Ethiopian Orthodox Tewahedo Church must be baptized on the 40th day after birth for boys, and 80th day after birth for females. Baptism service is an elaborate ritual that involves the first part of the Mass³⁴ accompanied by continuous incense burning, which is concluded by anointing with *meron* (literally, the holy ointment). A similar incense burning ritual is commonly practiced during matrimony. Every Orthodox youth who celebrates his/her wedding is sanctioned through the rites of matrimony. This blessing ritual is also accompanied by incense burning, prayer, and chanting ceremonies within and around the church (E1, E3, E5, E8, E9, E18, E19, and E20). The association between funeral rites of the Church and incense burning is separately discussed at length in section 9.2.2.2.

Not only does the church engage in incense burning rituals during events of baptism, matrimony, and funeral rites, it also offers more extensive incense burning rituals as a central component in celebrating various holidays connected to the life of Christ, St. Mary, angels, and martyrs. Among the noted holidays, the celebration of the foundation of the true cross (*Meskel*)

³⁴ known as synaxis.

(September), annual pilgrimages (*ametetawi kibre be 'al*)³⁵, Epiphany (*Timket*) (January), Christmas (*Lidet*) (December), and Easter (*Fasika*) (April). Each church in the study area and other parts of Ethiopia are censed every day with the recitation of *Tselote Itan* (E1, E3, E5, E8, and E19). There are seven major fasting seasons³⁶ in the church. On fasting days, the church service and offering of incense concludes with Mass celebration in the afternoon, which lasts up to three hours, from midday to 3 pm.

There are two major types of church floorplans within the Ethiopian Orthodox Tewahedo Church: circular and basilica. In the case of the circular floorplan (which is the ancient style, but still operational), there are three compartments including *meqdes*, *qeddist*, and *qene mahlet*. Each compartment is censed every day when the church is opened for a service. The offering of incense begins from the *meqdes* (solely attended by celebrant priests and deacons), then proceeds to *qeddist* (occupied by the laity) and ends at the *qene mahlet* (attended by the clerics). The

³⁵ This is a commemoration for saints, angels, and martyrs. For example, November 29 is the annual commemoration day of Aksum St. Mary Cathedral, which is believed to have been the day when the Ark of the Covenant arrived at Aksum from Jerusalem.

³⁶ There are seven official fastings that prohibit the consumption of meat, dairy, and egg until the end of the fasting months. No food or drink is consumed before noon, or as late as 3 to 5 pm, depending on the person's preference or ecclesiastical position in the church. Every Christian has to fast except children under 7 years old or persons with health conditions. The fastings are: (1) all Wednesdays and Fridays, except for the 50 days after Easter; (2) The Fast of the Prophets, 43 days; it often starts during late November and ends early January; (3) The Nineveh Fast of 3 days. It is like a prelude to the Lenten Fast and tend to occur some 15 days prior to it; (4) The Lenten Fast of 55 days commences during mid-February and ends mid-April; (5) The Vigils, or *gahad* occurs on the eves of Christmas and Epiphany; (6) The Fast of the Apostles (minimum of 14 days to maximum of 44 days). It fluctuates annually but overall tends to commence mid-May and end July 12; and (7) The Fast of the Assumption, 15 days in August; it is fixed fasting observed from August 7 to August 22. Although every Ethiopian Orthodox Tewahedo adherent fasts, women and children are particularly keen to observe it because it is associated with St. Mary's Assumption. It is colorfully celebrated by female youths, locally known as *Ashenda*. It is associated with allowing more freedom for women in terms of free interaction with the populace involving singing and dancing from dawn to dusk for a week.

meqdes or the Holy of Holies is a sanctuary where the most sacred object (locally known as *tabot*)³⁷ of the Ethiopian Orthodox Tewahedo Church is placed. No church service can be delivered in the absence of the *tabot*. Access to the *meqdes* is restricted to ordained priests and deacons. *Qeddist* is the second sector located between the *meqdes* and the *gene mahlet* and is reserved for laity ready to receive the Holy Communion. In the basilica church floorplan, the *gene mahlet* is divided into three quarters with curtains and each quarter is occupied by the clerics at the center, while men and women attendants assume the left and right sectors, respectively (Hable Sellassie and Mikael 1970:65). All three physical church sectors, including the attendants and paintings, are always censed with frankincense during the church services.

All research participants stressed that before incense is used for indoor and outdoor church rituals, the prayer of *Tselote Itan* (Prayer of Incense) should be recited and then blessed by the cleric with the highest ecclesiastical rank who is present (Daoud 1959:8). According to the female church scholar, on every Ethiopian New Year (September 11 or September 12 during leap year) a general prayer and blessing is performed on various gifts provided by the laity, including incense, after the conclusion of *Bahre Hasab* (calendar calculation) narration to the laity. The blessing of incense has symbolic meaning that every gift repositied in the church is sacred. However, the incense used in everyday church rituals must be blessed when it is consumed. Pre-incense burning rituals are important in converting incense from a secular product into a sacred substance. After the blessing, only the cleric can touch the incense with his hand. The Eshete et al. (2005) study in northern Gondar indicated that people are reluctant to offer locally collected frankincense for church use, because they perceive incense obtained at its

³⁷ The *tabot* is a replica of the Ark of the Covenant that is believed to contain the tablets inscribed with the 10 commandments by God and that were given to the prophet Moses.

venue of production as less sacred than the one purchased from the shop. The latter is presumed to have received the bishop's blessing and is suitable for church censing (Eshete et al.2005:67).

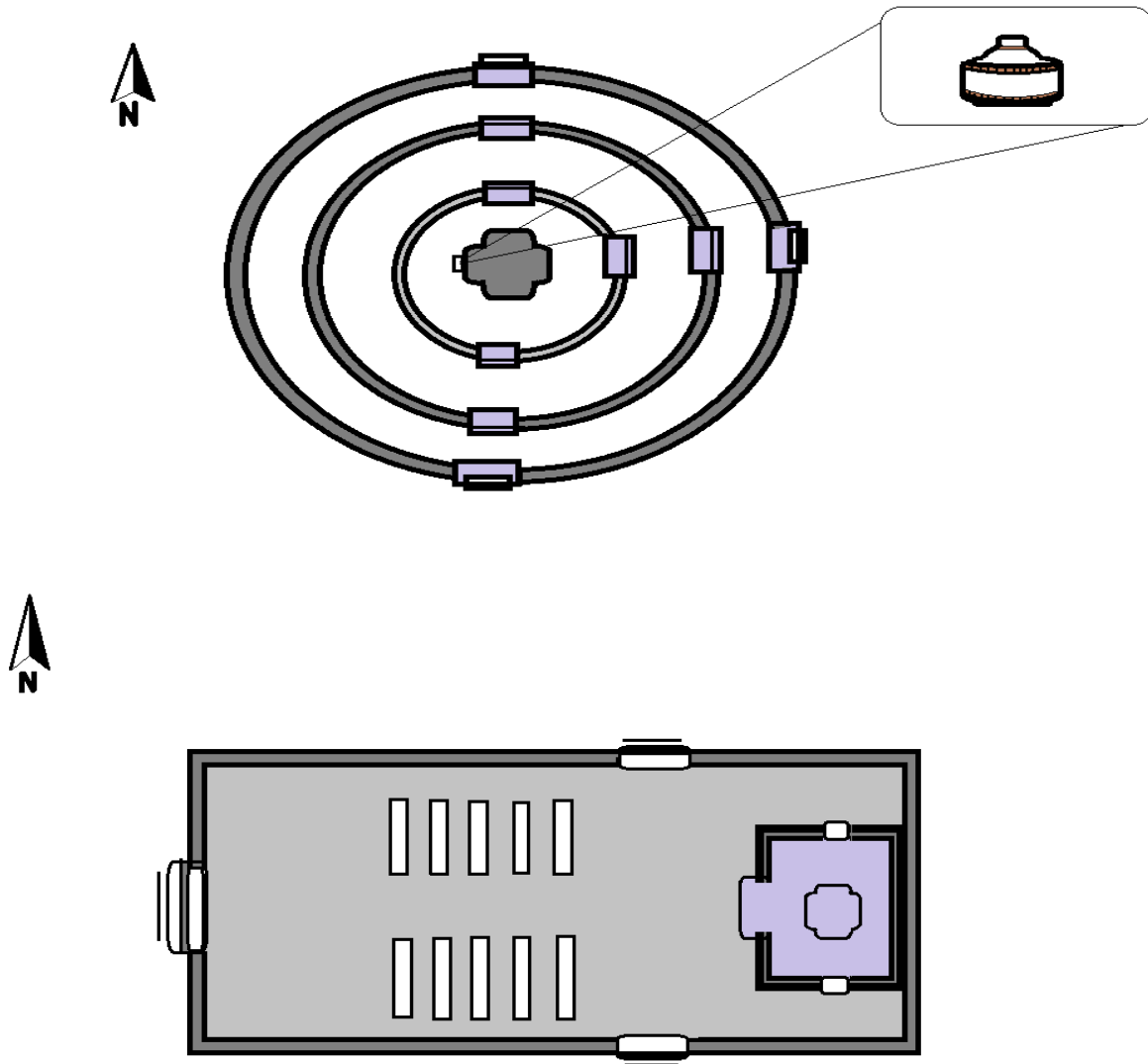


Figure 9.4. Circular church plan with frankincense basket and rectangular plan

9. 2. 2. 1. Incense Offering During Mass

Several European travelers in different centuries have consistently admired the Ethiopian Orthodox Tewahedo Church utilization of incense as the most cleansing item in different rituals. In relation to this, Poncet (Foster 1949:139) was very much amazed that the churches were “very

neat”, due to their extensive use of incense. All research participants indicated that a minimum of two priests and three deacons conduct regular Mass services within each Ethiopian Orthodox church. Only a few monasteries employ a minimum of seven persons to offer the same services (see also Hable Sellassie and Mikael 1970:66). Five cleric research participants from Aksum and Yeha stated that the Mass service begins with incense offering when the assistant priest and deacon go to Bethlehem³⁸ to fetch the eucharistic bread and wine. This particular incense offering event seems to be skipped or absent because it was done differently (the only incense offering ritual performed outdoor during the Mass service) from detailed descriptions from both *Metshafe Qeddase* and *Fetha Negest*. This is because the incense offering carried out during the *Be’inte qedsat*³⁹ litany (literally in the name of the saints) is considered the first incense offering event during the regular Mass service (Malaty 1992:70-71). The incense⁴⁰ burnt by the assistant priest on his way to Bethlehem is the one which the *semonegna* (ሰጦነኛ)⁴¹ priest blesses the moment he opens the church for night services (E10).

The liturgy identifies five incense offering phases of the Mass service. Each offering is accompanied by specific prayers recited by the celebrant priest. Certain steps are followed in preparation for the incense offering. Both the assistant priest and deacon avail the materials necessary for incense offering to the celebrant priest: while the deacon provides the incense within a *muday*,⁴² the assistant priest offers the thuribles (metal censer) to the priest. The priest selects five incense grains with his right hand while holding the censer in his left-hand, and

³⁸ A small building usually located on the eastern side of the church.

³⁹ *Be’inte Kidsat* is a prayer recited by the deacon during liturgy for the congregation, deceased and sick people, travelers, and natural resources (water, and plants) (Malaty 1992:70-71).

⁴⁰ ቆቆር (koker) is the term used to designate a piece of frankincense grain.

⁴¹ The priest who serves weekly, or on a specific week.

⁴² Emahoy (nun) Tsigge Gabru (1982:25) describes the *Muday* as a small round box with a lid made from coloured straw material that contains the ritual incense.

proceeds to the highest ecclesiastic present to bless the incense and the censer. If the priest is the highest cleric present, then he blesses the incense and the censer by stating the current year and reckoning of night and day, which is known in *Ge'ez*, *asrqot* (አስርቆት) (Daoud 1959:27). Then the priest recites the following prayer from *Tselote Itan* (the Prayer of Incense) before he begins censuring the church and the people attending the Mass: “I pray and beseech Thee, O Lord my God, as Thou was well pleased with the offering of Abel Thy beloved, and the sacrifices of Enoch, Noah, and Abraham, and the incense of Aaron, Samuel, and Zacharias: in like manner accept from me this (pointing) pure incense as sweet smelling fragrance for the remission of my sin, and forgive the sins of all Thy people...” (Daoud 1959:27).

The five incense grains represent the Old Testament symbolic offering/sacrifices by Abel, Noah, Abraham and Isaac, Aaron and Moses, and Melchizedek all of which are dedicated to the Almighty God (Bible commentary). In the first incense offering, the priest places three incense grains into the censer from three directions, symbolizing the Holy Trinity. This offering is performed during the *Be'inte Kidsat* (በእንተ ቅድሳት) litany (Altaye 1983:69; Fritsch 2008:134). The priest stands on the western gate of the *meqdes* and censes the altar where the ark resides by bowing his head and, after reciting a prayer from where he stands, roams around the altar thrice (Altaye 1983:69). The ‘A’ chapter within the *Fetha Negest* is dedicate to the Mass regulation and describes the incense offering. It states that “the bishop shall take the thurible and go around the altar thrice in honor of the Holy Trinity. He shall give the thurible of incense to the priest, so that the latter may go with it around all the people” (Tzadua and Strauss 1968:83). Thus, the *Fetha Negest* stipulates that *meqdes* should be censed by the higher ecclesiastical figure in attendance, and then transfer the censer/ thurible to the priest, who in turn performs the ritual at *qeddist* and *gene mahlet*.

However, *Metshafe Qeddase* states the process somewhat differently, as the duty of the priest is to cense the *meqdes*, the Patriarch and the bishops in attendance. Before the priest exits from the *meqdes*, he shall cense the priests attending the Mass from the western door of the *meqdes*. Then the priest must exit from the *meqdes* through the northern door (right side) following two deacons, one with a *twaf* (tapered candle) and the other with processional cross and *twaf*. The priest censes the people attending the Mass from *qene mahlet* and *qeddist* in the order of their ecclesiastical rank and gender, and the four corners of the church. The deacon remains in the *qene mahlet* to read one of the Epistles of Paul to the laity. The priest enters *meqdes* through the south door (left side) with the deacon who holds the processional cross and accompanies him in the incense offering process (Altaye 1983:75; E3 and E8). Upon his return, he censes the *tabot* thrice (Daoud 1959:29-30). Frisch (2008:373) argues that the incense offerings in each door of the church has a symbolic meaning. When the priest offers incense to the laity, it implies the ascent of prayers of all church attendants. In addition, incense is offered during *Zew'tu* (literally This is the Time) before the reading of the gospel. The incense offering is carried out by the celebrant priest escorted by his companions singing/praising names of Jesus, Mary, saints, and angels. The recitation begins as “this is the time of blessing; this is the time of chosen incense, the time of the praise of our Savior, lover of man, Christ” (Daoud 1959:32; E3, E5, E8, and E11).

The fourth incense grain is burnt before the priest exits from the *meqdes* accompanied by the two deacons and the assistant priest to the *qene mahlet* to read the gospel. This incense grain is reserved for the veneration of the gospel. Then, the priest keeps incensing the gospel book until he hands the censer over to the assistant priest to read the gospel. The fifth and the last grain is offered to honour the Holy Eucharist when the Mass prayer says: “remember us all in Thy

Kingdom... as Thou remember the thief on the right hand when Thou was on the tree of the holy cross” (Daoud 1959:45). Then the assistant priest places the incense grain into the censer and provides the censer to the celebrant priest. The celebrant priest crosses his hands in the smoke of the censer and spreads the scent over the bread and the cup thrice (Daoud 1959:45).

The next step of incense offering within the Mass is when the assistant priest and deacon leads the singing of Serawite *Mela’ektihu* (literally the Hosts of Angels), and *Egziota* (literally a prayer with a hymn which says Lord, Have compassion upon us, O Christ). The incense offering during *Serawite Mela’ektihu* and *Egziota* is done by the assistant priest and deacon (E3, E5, and E11). At the end of the Mass service, the celebrant priest gives benediction (by laying his hand) on the attendant’s forehead. Thus, one can feel the sanctity and aura of mystery from the scent of frankincense during the celebrant priest’s blessing on the forehead and the lip.

9. 2. 2. 2. Incense and Funerary Ritual

All research participants stated that incense offering is a common ritual practice in the funerary rituals of the church. These rituals are carried out as per the instructions stated in *Metshafe Gnzet*, a book which provides the prayers for the dead at the moment of their passing, and thereafter. All research participants from Aksum and Yeha stated that when a member of the laity passes away, the church treasurer (*gebez*) sends clerics to the deceased’s house to bring the individual’s corpse to the church with prayers and hymns. The clerics take ecclesiastical objects needed for the funerary service including incense and incense burners. *Metshafe Gnzet* also instructs the family of the deceased person to bring incense, wheat, and a tapered candle (*tuwaf*) to the church on the same day that the person died (Haile 2005:72). Rites celebrated with incense and the eucharist will bring redemption for the deceased’s sins (Haile 2005:74).

A discussion with three research participants from Aksum St. Mary Cathedral revealed that the incense provided by the deceased's family cannot be used in the funeral service immediately because it must first be blessed, and the *Tselote Itan* should be recited. The incense and the other offerings will be used for eucharist preparation and prayers to commemorate the deceased person on the third day. *Metshafe Gnzet* emphasizes the significance of incense offering and reciting the Prayer of Incense for redemption of sin by citing Abba Pachomius, the recognized founder of monastic life in the Coptic Church:

If one of the brothers dies, let them absolve him every hour/day with Prayer of Incense. On the fortieth day, let all the saints assemble in church at compline, and the priests apportion incense, and the deacons all the holy fathers perform prostration, as much as they can, before him who has died. Then, let them spill their tears on the incense and incense vigilantly all night, for I have found which says, 'He will be like an infant when he stands before the Creator. And for those who prayed it will be a great reward (Haile 2005:73).

Metshafe Gnzet states the corpse must be cleaned and the priest must cense the body to give a pleasant smell while reciting the prayer of incense before entering the church premises. Seven different funeral rituals are recited at seven different locations/stations. The first prayer station begins at the house of the person who has passed away and the last prayer concludes at the church, the final resting place for the dead. The remaining five prayers are recited at five separate places chosen randomly between the church and the house of the deceased. Each prayer is celebrated by reciting the Prayer of Incense and incense burning by moving around the bier of the deceased person (Haile 2005:74; E3, E5, E8, E9, E10, and E11). The church commemorates a deceased Christian and offers a sacrifice from the third day after their death for a period of one year for every deceased Christian (Tzadua and Strauss 1968:123). Travellers who came to

northern Ethiopia and visited the study area in different centuries have confirmed that such practices of incense rituals are central elements in baptism, patrimony, and funeral ceremonies (Alvarez 1881; Barradas 1996; Bruce 1790; Salt 1814; Parkyns 1853) and appear unchanged since the 16th century.

All research participants argue that the burning of incense on tombs is a tradition bequeathed from the Old Testament and, to a certain extent, is still practiced in the study area. There are current debates surrounding the application of frankincense and myrrh around tomb sites and at the laity' houses. Three research participants (E4, E6, and E9) claim that the New Testament has revoked this practice⁴³. Thus, the church is not interested in sustaining the incense offering practice at tombs. They argued that the prayer and incense offering should be restricted to the indoor service of the church. On the other hand, other participants (E7 and E10) argue that the tradition should continue because there are enough priests and deacons who could render services regularly. They also argue that if the practice is suspended it will disappear forever, and subsequent generations will not inherit it. There is a further claim that frankincense burning should not be practiced outside the premises of the church. One exception to this rule is when it is an extension of church rituals such as funeral prayers and during the epiphany ceremony. In the latter case, once a year, the arks are relocated to temporary tents installed at designated epiphany ceremonial centers.

⁴³ The only exception to this rule is incense burning practice for the Ark of the Covenant (also called the Ark of Zion), housed in a separate Chapel, situated within the compound of Aksum St Mary Cathedral. It is under the exclusive custody of a holy monk delegated to burn incense every day as per Judaic tradition. The Ark of the Covenant, presumed to have been handed over by God to Moses, is strongly believed to have been brought from Jerusalem to Aksum by King Menelik I, son of King Solomon of Israel and Queen Sheba of Ethiopia.

There is another debate on the use of frankincense and myrrh in Christian households, including during the coffee ceremony, and for church icons dedicated to saints and Holy Trinity in peoples' houses. One group endorsed that those types of incense could be burnt within Christian households if the incense is blessed by priests (E16, and E10). The other group object that this would encourage idol worshiping practices (E3, E11, E12, E13, and E14). However, this debate has not stopped people from burning frankincense in their homes unless the church makes this an excommunicable offence. Excommunication is a powerful instrument of the church to prohibit any act believed to be against the church's teaching.

9. 2. 2. 3. Incense, Rites, and Power within the Church

There are seven sacraments in the Ethiopian Orthodox Tewahedo Church. Six of them are performed by a bishop or a priest. Some objects associated with these sacraments are sacred and access to these objects is restricted from the laity. Incense has a special place in the church. The *Fetha Negest* underlines the values to “honour widows and orphans as [as we praise] the Church; and virgins [should] also [be respected] as the altar and the offering of incense” (Tzadua and Strauss 1968:49). Priests only have the authority to offer incense in various sacramental services. Deacons participate in incense offerings, but their participation is limited to providing the incense container and the lighted charcoal to the priest. Manuscripts such as the Ethiopic *Didiscalia*, the *Fetha Negest*, and *Metshafe Qeddase* have specified the performers of certain rituals associated with incense burning during Mass and other services. The manuscripts have also identified disobedient people from the Old Testament who failed to comply with the orders of the church and the subsequent wrath this brought upon them. Four research participants endorsed this point. They argued incense offering to be the mandate of priests, while other people are not allowed to touch incense burners. Even deacons are not qualified to touch the

censer or the incense grains with their hands. Incense offering shows the hierarchy, power relations, and implications for the intercession between God and society. Research participants (E1 and E3) identified stories of three people from the Old Testament who had been condemned for their impudence to offer incense. One example is Uzziah, the king who attempted to usurp the office of a priest and became a leper for his disobedience (Harden 1920: 49, 92). The other examples are sons of Korah, Dathan and Abiram, who went down alive into hell and were consumed by fire. These persons are also mentioned in the *Fetha Negest* and *Metshafe Qeddase* as examples of those who transgressed God's orders.

9. 2. 2. 4. Incense as a Donation to Redemption

The above section demonstrates the numerous rituals in which the church uses enormous quantities of high-grade frankincense and, to a lesser extent, of myrrh. This section addresses the crucial question: who supplies incense to the church?

All participants stressed that the faithful and devoted laity are incense suppliers to the church. However, women are the major suppliers of frankincense to the church. The aroma of frankincense is sweet, and one man (E4) stated that women like aromatic fragrance. Historically, Mary Magdalene was renowned for offering perfume to the Lord Jesus, who praised her for the gift while the Pharisees rebuked her for being sinful. Afterwards, women followed her example (E2, E4, and E9). Women often purchase incense produced in Western Tigray for both their homes and for the church. Men too purchase frankincense for the church, but their number is not as significant as women. Men often offer umbrellas or money to the church and participate in church construction (E2). Research participants claim that the laity tend to give an average of 2 to 3 kg of frankincense depending on life cycle events (matrimony, annual religious holidays, and *s'let* (pledge). For example, 48 of 138 research participants claimed that they purchase

frankincense for church services during major holidays, when their pledge is fulfilled, or on occasions of monthly commemoration days of saints and angels.

The church of St Mary at Aksum also receives a huge amount of frankincense as gifts from Orthodox Christians who make an annual pilgrimage to Aksum from different parts of Ethiopia. Five research participants (E16, E17, E18, E19, and E20) from Yeha and two participants (E2, and E7) from Aksum noted that the church itself may purchase frankincense if it is in a remote rural area by allocating a budget to do so. Sometimes, such churches may receive gifts from other prominent churches with large laity, or from masses of worshipers in return for their redemption. Aksum St. Mary Cathedral is a very large church that redistributes incense and other ecclesiastical objects that it receives during the annual pilgrimage (usually on November 29) to poorer surrounding churches such as the Church of Peter and Paul, Debre Benkol, and churches from Beyeda in Semien Gondar, when they come during the annual pilgrimage to Aksum St. Mary Cathedral (E3, E4). All participants concede that there are changes that have occurred in the use of frankincense and other types of incense in the church during their lifetime, in terms of both quality and quantity, because of increased prices.

There are many texts from the church manuscripts which inspire the laity to offer incense to the church. In the Ethiopian Synaxarium, it states that if a person gives incense or other gifts to a church in the name of one of the saints, or in the day of his / her commemoration, the person's sin will be cleansed and they will qualify to enter the kingdom of heaven to enjoy eternal life after death (Budge 1928:23, 308, 441). In addition, one prayer from *Metshafe Qeddase* is recited to the laity to motivate people to make gifts to the church including incense:

Remember, Lord, them that have presented unto Thee this offering and this incense, and those on whose behalf they make the offering, and those from whom they have

brought it: grant them a good recompense in heaven, and comfort them all in their distress (Daoud 1959:36) ...And bless those who give gifts of incense (blessing over the people), bread and wine, ointment and oil, decorations and reading books, and vessels for the sanctuary, that Christ our God may give them their reward in the heavenly Jerusalem (Daoud 1959:44).

The *Fetha Negest* also reminds Christians not to forget offering the Eucharist sacrifice and incense, and that they should give their offerings with pleasure. It also specifies that the church should not accept gifts from wrongdoers⁴⁴ (Tzadua and Strauss 1968:79).

All participants recognized that the church gives much credit to gifts of incense because it has critical value within church sacred rites. In doing so, the gifting and burning of incense in lifecycle events, which is routinely experienced by the faithful, steadily draws upon household economies to serve the church, a practice that integrates people daily into the power structure of the church, and its rituals and beliefs.

9. 3. Interpretation and Symbolism of Frankincense and Myrrh

In the Ethiopian Orthodox Tewahedo Church, every religious object and the activities performed using these objects have symbolic meanings connected to biblical stories or sacraments of the church. All research participants are familiar with the symbolic meanings of the gifts given to Jesus and Mary by the Magi and the superb blessings that resulted. The

⁴⁴ “The offering of the following people shall not be accepted, namely, blasphemers, murderers, idol worshippers, thieves, idol makers, drunkards, those who oppress widows and orphans, publicans and robbers, wicked soldiers who vex the poor, those who put people in fetters unjustly, those who rule with tyranny over their subjects and ill treat them, those who act unjustly and with oppression, merchants who sell wine mixed with water, and all the transgressors of the law”. Tzadua and Strauss. *The Fetha Negest* (The Law of the Kings) (1968:85).

Ethiopian Synaxarium notes that the wise men reached Bethlehem two years after Jesus was born and they offered him gold, which symbolizes his tribute, incense his Godship, and myrrh his death. A similar symbolism is also found in the Thursday's *Weddase Maryam* (Praise of Mary) “ሎቱ ሰገዱ ሰብአ ሰገል አምጽኦ ዕጣነ ከመ አምላክ ውእቱ ወርቀ ከመ ንጉሥ ውእቱ ወከርቤ ዘይትውሀብ ለሞቱ ማህየዊ በእንቲአነ” (The wise men worshiped Him, and brought unto Him incense because He was God, gold because He was king, and myrrh which was given for His death which gave life unto human beings).

Metal incense burners are exclusively used in church contexts and are of two types: thurible or simple *tsinha* (censer). The former has a bowl and a lid with long chains decorated with different motifs. *Tsinha* is a censer with a bowl and chains, but it does not have a lid. *Tsinha* is used in everyday church services such as during baptism and funerary services. However, the thurible is often used for Mass services, major holiday celebrations, and rarely for funerary services of very important individuals. Old incense burners are discarded within the compound of Bethlehem or may be kept in the vestry of the church due to the sacred nature of these objects (E2, E3, and E7). These are curated or discarded in special contexts, unlike the clay household incense burners that are thrown in fields or are deposited in garbage dumps. These different practices of incense burner discard from churches and households will potentially skew the archaeological recovery of incense burners from church contexts. However, metal may be recycled to make new incense burners or other objects for the church.



Figure 9.5. Censers from Yeha Church

The following three inputs are required for incense offering: the incense, an incense burner, and charcoal. These objects have symbolic meanings when they are used in church services. For example, incense burners are essentially made of either gold, silver, or bronze, which symbolizes Christ, his disciples, and the laity respectively. Moses' censer, which is used to offer incense, represents St. Mary. The lighted charcoal symbolizes Christ, the smoke/odor designates the prayer ascended to heaven, and the chains of the censer represents Jacob's ladder upon which he saw the angels ascending and descending (Book of Genesis 28:12). In addition, the odor of the smoke is interpreted as representing the Apostles, Prophets, Martyrs, and Monks who disregard worldly life in the hope of inheriting the kingdom of God (Budge 1928: ixxvi, 150). In *Metshafe Qeddase* in the *Zew'tu* hymn, the following symbolism is recited during the Mass "Mary is the incense, and the incense is He, because He who was in her womb is more fragrant than all chosen incense. He whom she bore came and saved us" (Daoud 1959:33).

Incense also has secular value. For example, incense is referenced in certain place names, and prominent personalities used to be named after incense. To illustrate, one of the last Zagwe Kings, Neakuto Leab (r. 1270) built a church at a place called Wegre Sehin⁴⁵ which refers to a mountain of incense (Huntingford 1989:68). The name of medieval King Lebne Dengel (r. 1508-1541) meant ‘an Incense of the Virgin’ (R. Pankhurst 1967:49).

9. 4. Summary

The Ethiopian Orthodox Tewahedo Church is one of the major domestic consumers of frankincense and myrrh. It has institutionalized incense utilization within and outside the church. The incense ritual is embedded in the power structure of the church, involving a hierarchical order of blessing starting from the patriarch down to the priest, based on their availability. The church is patriarchal, in that women hold fewer and lesser roles in church administration and rituals and cannot be priests. These church roles give people a certain status and respect. Women are not involved in burning or censuring with incense within the church, nor do they appear to lead any major rituals. The church structure and its use of incense reproduce the patriarchal order and structure, which is observable in the incense trade. Women offer gifts to the church, but they are amongst the poorest members of the congregation.

The church encourages its members to contribute to incense consumption. Its teaching and preaching promise heaven for the laity who offer incense to the church. The church made frankincense offerings fundamental in various life cycle events, including baptism, matrimony, and funeral rites that are performed by the church. However, the monopoly of the church over the utilization of frankincense and myrrh has become a center of controversy amongst the clerics.

⁴⁵ found near Lalibela town.

There are those who endorse its use within Christian households, and those who wish to limit its use to church premises and its administration to priests. This controversy is also about the church's assertion of control over people's actions at the household level as a form of religious power. There is still an unsettled debate over frankincense use within the church compounds. Some would endorse the fumigation of tombs of the deceased with a view that it would expediate the ascent of the soul to heaven, and others reject the practice as a pre-Christian phenomenon. This chapter has focused on the use of frankincense with the church context. The next chapter focuses on laboratory studies of plant and incense burner residues to determine the use of incense in both church and household contexts. Phytolith, starch, and charcoal analysis were carried out to determine the domestic and religious contexts of ethnographic incense burners.

CHAPTER 10: PHYTOLITH, STARCH, AND CHARCOAL ANALYSIS

Introduction

This chapter investigates how the material evidence of incense trade can be determined through residue analysis of burned incense. It presents laboratory experiments and analysis of phytoliths, starch, and charcoal acquired from incense burners and plants collected in field work. This helps to identify the use of aromatic plants and incense in incense burners within domestic and religious contexts. These results also help create reference material and/or chemical signatures of aromatic woods consumed in the study area to compare with the residues recovered from incense burners. At every church, there are censers within which frankincense (and very rarely myrrh) are burnt using a lighted charcoal. In individual households, however, clay incense burners are used for incense and aromatic woods burned in rituals. In both cases, long-lasting residues are created and accumulated, leaving their chemical and other organic signatures. Laboratory analysis was conducted on these accumulated residues to determine the types of aromatic plants and incense consumed within church and household contexts, and to identify contaminants within burners. The microbotanical analysis serves as reference material to determine the specific contexts (domestic/religious) of incense burners discovered within archaeological sites in the study area.

Experiment

Incense burners, frankincense, and other aromatic samples were collected for analysis during fieldwork. The sample collections were exported to Canada under permit and analyzed in Dr. Brian Kooyman's paleoethnobotany laboratory in the Department of Anthropology and Archaeology at the University of Calgary. Prior to the fieldwork, two experiments were conducted to evaluate the feasibility of extracting microbotanical components. The first

procedure involved burning three samples of frankincense in an oven for 7 hours. The ash was then washed in a centrifuge tube, concentrated, and then mounted on a microscope slide. Some unknown structures were noted. The second experiment involved attempting to extract microbotanical components directly. Frankincense and myrrh were suspended in filter paper in boiling water to dissolve the water-soluble gum. The oils floated out in the water and any microbotanical materials that might have been present were deposited on the filter paper. The residue was washed into a centrifuge tube, concentrated, and then mounted on a microscope slide. No microbotanical remains were recovered, leading to the conclusion that such materials were not trapped in the frankincense and myrrh. The plan was to use the results from these experiments to identify residues recovered in the ethnographic incense burner samples. The other aromatic leaves /woods collected during fieldwork were also collected with the aim of identifying different types of incense. The experiments were conducted to determine if the incense burners, microbotanical and microbotanical remains (if found) could provide independent lines of evidence for the use of specific types of incense burners and botanical remains in specific contexts (ritual, domestic). If so, then it would be possible to track types of incense use and its variation and change in the past. It is hypothesized that frankincense/myrrh are used primarily in the church, and aromatic plants largely in domestic contexts.

The original research plan to collect discarded metal incense burners from the Orthodox churches located in Central and Western Tigray was abandoned because church authorities were not comfortable with such use due to the sacred nature of the artifacts and fear that this might be considered illicit trafficking. Laboratory analyses of the phytoliths and starches found in the samples of incense obtained during fieldwork from households were useful in identifying secular/domestic contexts of the incense. Other scientific methods are possible, including gas

chromatography—mass spectrometry. For example, Archier and Vieillescazes (2000) identified to species-level for various resin samples collected from the markets of Djibouti, Somalia, Sudan, Yemen, and India using gas chromatography—mass spectrometry. Baeten et al. (2014) performed a similar analysis, which helped to uncover frankincense resins from the late medieval funerary pots from southern Belgium. Mathe et al. (2004) conducted an experiment on ointment vase residue collected from the Egyptian tomb of Princess Sat-mer-Hout of the XIIth Dynasty. The experiment indicates frankincense was among the ingredients used to prepare the ointment. Regert et al. (2008), using gas chromatography– mass spectrometry (*GC–MS*). It determined the trading resins exported from Sharma (Yemen) to other parts of the world were imported from Madagascar and East Africa. Van Bergen et al. (1997) have established the chemical characterisation of frankincense from Qasr Ibrim (Egyptian Nubia) archaeological site applying GC/MS and pyrolysis-GC/MS. However, all these methods are expensive and beyond the budgets of most African researchers. The methods used in this study are far more cost effective.

10. 1. Sample Collection and Preparation

10. 1. 1. Phytolith Extraction Collection and Preparation

Samples of aromatic wood/leaves produced in Western and Central Tigray were purchased from Shire Inda Selassie, Aksum and Adwa markets. Frankincense (*Boswellia papyrifera*) (Grades 1 to 5) were acquired from companies found at Shire Inda Selassie engaged in producing and trading frankincense. *Eucalyptus* samples were collected from Victoria, British Columbia by Dr. Kooyman to determine whether *Eucalyptus* was used as aromatic plants or as fuel in incense burning in Ethiopia. A total of seven in-use clay incense burners were obtained from participant households for residue analysis. These materials were prepared and processed in Dr. Kooyman’s laboratory in the Department of Anthropology and

Archaeology (University of Calgary) to identify any microbotanical signatures. The archaeological incense burners displayed at Aksum Archaeological Museum and Yeha vestry are not part of the residue analysis for two reasons. Although I got permit to take photographs of the incense burners at Aksum and Yeha, I was not permitted to take samples (if any) for residue analysis. However, I did not observe any visible ash or residue accumulation on the incense burners found at Aksum Archaeological Museum. The incense burners at Yeha are kept at the church's vestry mixed with religious objects and are exposed to contaminants.

10. 1. 2. Specimen Preparation for Burned Plant Samples.

Two aromatic plants—*Securidaca longipedunculata* Fresen (*Shutara*) and *Pennisetum glaucifolium* Hochst. ex. A. Rich (*B'erir*) — from Tigray and *Eucalyptus* species from British Columbia were selected for phytolith analysis. Two procedures, burning and heavy density liquid flotation, were used to extract phytoliths from plant samples and incense burners collected in fieldwork. The two procedures used in this analysis were designed by Dr. Kooyman, generally based on modifications of the standard procedures used in his lab (Kooyman 2015). Phytolith extraction by burning involved the following steps: the plant materials were washed and soaked for 30 minutes in water to remove dust. The plant materials were then rinsed with distilled water, broken into small pieces about the size of a ring finger and put into labelled approximately 50 ml ceramic crucibles. The crucibles were placed in a programable furnace and were processed through ramp and hold pre-set temperature stages to 300 degrees C for 60 minutes, 400 degrees C for 30 minutes, then 500 degrees C for 7 hours. The samples were reduced to ash.

The ash was put in a 15 ml centrifuge tube and 1M/10% hydrochloric acid (HCl) was added to remove carbonates. The mix was centrifuged for 5 minutes at 3000 rpm. The liquid was poured off, distilled water was added by filling up to 12 ml mark on the 15ml centrifuge tubes,

and the centrifuge was repeated at 3000 rpm for 5 minutes. The distilled water wash was repeated two more times. The final pour-off was clear and the remaining ash was ready for mounting on slides. The slide preparation and mounting procedures are described in section 8.5. In addition, a 2-hour final burn (rather than the 7-hour final burn noted above) of olive and Shutara was conducted to create charcoal (rather than the ash in the above phytolith extraction procedure), which is further discussed at sections 10.7.3.2 and 10.7.3.3. below.

10. 2. Extracting Phytoliths, Starches, and charcoal from Incense Burner Residue

10. 2. 1. Sample Preparation

From the seven samples of incense burners (hereafter IB) collected from Aksum and Shire Inda Selassie, only four incense burners (IB#1-4), which contained residues (ash), were selected for residue analysis. The residue from each incense burner wall was separated using scalpels and placed on small pieces of aluminium foil, then disaggregated by judicious pounding with a pestle in a mortar, and then the residue was weighed. The following amounts of residue were recovered from the four incense burners.

Table 10.1. Residue samples recovered from incense burners.

Incense burners	Residue recovered
1	3.26 grams
2	1.50 grams
3	3.15 grams
4	1.43 grams

In addition, little fragments of charcoal were identified from the IB#1, which was picked out with tweezers. From IB#3 residues, some were picked out with tweezers and floated out with

water. The excess ash from the IB#1 and IB#3 residues was removed because the ash was occluding the slides and it was impossible to see the phytoliths. The result of this analysis is discussed under section 10.7.3.5.

10. 2. 2. Sieving and Hydrochloric Acid Carbonate Removal (HCL)

The incense burner residues were sieved onto glossy magazine paper through a 0.25 mm screen to remove extraneous larger material. The sieve was brushed and wiped and then washed with distilled water and dried with a paper towel between samples to avoid contamination. Four beakers were washed and rinsed with distilled water before use. Each residue sample was placed into a labelled beaker. A 10ml of 10% HCL was added to the residues in the beakers to disaggregate the samples and remove carbonates. Each sample was left in its beaker until it stopped fizzing by adding a small amount of HCL. Once the carbonates were removed, the residue from each sample was transferred into its own 15 ml centrifuge tubes and topped up with equal heights of distilled water as necessary to remove the HCl. The tubes were centrifuged for 5 minutes at 3000 rpm. The supernatant was poured off, more distilled water was added, and the centrifuge was repeated for another 5 minutes. A third wash ensured that all HCL was removed. This was followed by the addition of 10ml of 0.1% EDTA (ethylene diamine tetra acetic acid) to deflocculate the samples (i.e., to disperse clays and neutralize their surface ionic charge).

The tube was shaken with a vortex mixer every 30 seconds for about 4 to 5 minutes to mix and disperse the residue, then topped-up with de-ionized water and centrifuged at 2500 rpm for 2 minutes. The liquid was poured off and the residue was washed 2 more times with de-ionized water and centrifuged again. The samples were now ready for the heavy density liquid extraction.

10. 3. Floating Phytoliths (Burner Residues, Grade 5 Frankincense, and Burned Plant Samples)

The samples were dried before adding 2.5 ml sodium polytungstate (SPT) solution of 2.3 density to separate the phytoliths from the burned residue or ash particles (depending on the sample type). SPT density must be between 2.2 to 2.7 to keep phytoliths in suspension while allowing quartz grains to sink.

Three ml of the SPT solution was added to 15ml centrifuge tubes. Three scoops of each sample, using a small metal spatula, were added to a centrifuge tube that was capped and placed in the centrifuge for 5 minutes at 3000 rpm. The supernatant with phytoliths was transferred into a new set of centrifuge tubes. The supernatant float was diluted with distilled water by filling up to the 12 ml mark on the 15ml centrifuge tube and centrifuged again to get all the phytoliths to precipitate from the now diluted SPT. The phytoliths sank to the bottom in the (mainly) distilled water. After the liquid was poured off (recycled for future use), distilled water was added to wash the SPT out of the sample and it was then centrifuged again for 5 minutes at 3000 rpm. The distilled water wash was repeated for a third time and then the phytoliths were ready for mounting on microscopic slides for analysis.

The SPT was reused by filtering the SPT solution to remove dust, and then it was re-concentrated by allowing some water to evaporate. Initial filtering with 8 μ pore size filter paper was done to get most out so the 1 μ pore size paper did not clog. Then, filtering was carried out with a funnel positioned in a stand with a circle of filter paper (1 μ pore size) folded twice into a $\frac{1}{4}$ disk. The paper was then partially opened and fitted back into the funnel. A clean beaker was used to catch the filtered SPT solution from the funnel. The 1 μ filter paper was used to be sure all

phytoliths and other contaminants were removed so the SPT could be re-used. Evaporation was done in a beaker under the fume hood to re-concentrate the reclaimed SPT.

10. 4. Starch

The need for preparing reference materials was prompted when starch granules began to appear in the incense burner samples prepared for phytolith analysis. An experiment was conducted on teff, wheat, and barley grains to check if these cereals' starches are among the starches recovered from the incense burners. The cereals selected for the experiment were obtained from an Ethiopian store in Calgary and from individuals who imported teff, wheat and barley flour to Calgary for household consumption. These cereals were selected because they are the main dietary cereals that are cultivated in the study area and in the Ethiopian highlands for millennia (Boardman 1999:143-145; D'Andrea et al. 1999:104-105). The flour samples were prepared by mixing them with deionized water.

10. 5. Slide Preparation and Mounting

Slides for all comparative starch and phytolith samples, as well as samples extracted from incense burners for starch and phytoliths, were prepared in the same manner and used glycerin as the mounting medium. Two slides were prepared for each burned plant sample and each incense burner. Each slide was labelled with sample number, provenance, and investigator's name. A small amount of the extract was spread over the labelled microscopic glass slide. Then two drops of glycerin were added to the extract and mixed with a toothpick. The liquid mount was preferred because this gives an opportunity to view the phytoliths' three-dimensional forms (Kooyman 2015:509). The slide was covered with a clear coverslip that was sealed with nail polish so the phytoliths and starch granules could be rotated on the slide. Toothpicks were used

in this procedure but were discarded after each use to avoid contamination between samples. Mounted slides were stored horizontally in a box to prevent the extracts from spilling beyond the coverslips.

10. 6. Charcoal

Charcoal fuel samples (n=7 samples) were purchased from Aksum market to identify the type of fuels used in cooking activities, and to obtain insight regarding the environmental implication of the plants represented. In addition, *Olea europea* (*Awl'e*), *Securidaca longipedunculata fresen* (*Shutara*), *Commiphora myrrha* (*Kerbie*), *Boswellia papyrifera* (*Del.*) *Hochst.* (*Meqer/Walwa*) (all from Aksum market) and *Eucalyptus* (from British Columbia) were sampled. Samples were burnt in the lab to produce charcoal for comparative reference. However, no charcoal was produced from *Eucalyptus* because the sample was taken from leaves and bark. In fact, the focus of the experiment was on looking for phytoliths in the eucalyptus, not in the charcoal. The purpose of this experiment was to determine if charcoal features could be used to identify these fuels (*Eucalyptus* and *Olea*) and aromatic incense plants from charcoal remains in incense burners. Only *Awl'e* and *Shutara* produced charcoal, but the remaining plants/resins turned into ash. There is a lack of known modern reference materials or chemical signatures from the study area. Based on the suggestion of Dr. Kooyman, I prepared one using the frankincense, fuel woods, aromatic plants and charcoal samples collected from Aksum for future research purposes. The plants were burnt to charcoal and were then cut into three planes of view (transverse, radial, tangential) for microscopic analysis.

The charcoal samples were prepared for microscopic identification using scalpel, tweezers, and microscope slides. The fracture pieces were mounted on microscope slides and inspected under a Nikon microscope to view the transverse, radial and tangential anatomical surfaces of the

charcoal. The cross/transverse section was prepared by snapping the charcoal horizontally, and the other planes were prepared by using the scalpel to fracture the piece vertically at the center of the charcoal (the radial section), and parallel to the bark (tangential section; so, at 90° to the radial section). In addition, charcoal was extracted from the incense burners during the phytolith extraction process and analyzed using the microscope.

10. 7. Results and Discussion

10. 7. 1 . Phytolith Analysis

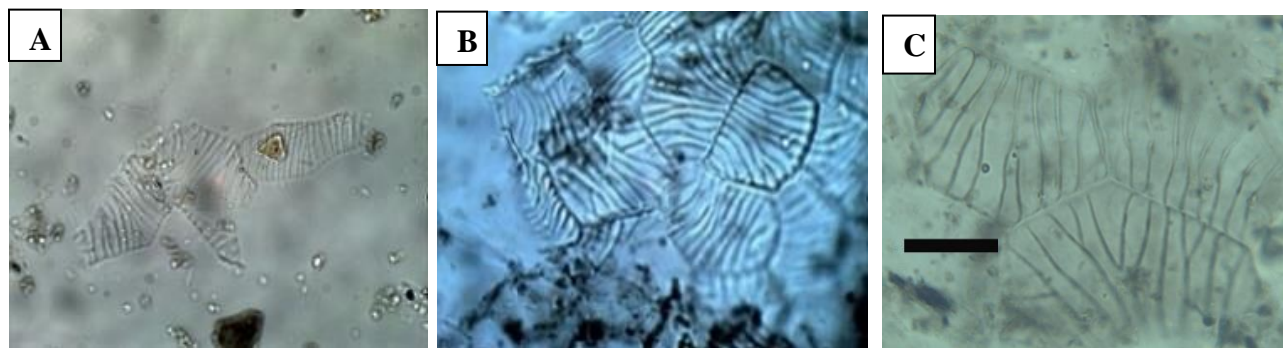
The content of all slides was viewed with a Zeiss Photomicroscope fitted with a digital camera at 200X, and 400X magnifications (objective lens, with an additional 10X magnification due to the ocular eyepieces). Slides were scanned from left to right and identified phytoliths were recorded by their x-y coordinates. The use of two polarizing filters and color type helped differentiate phytoliths based on their amorphous silica content. Phytoliths usually disappear from microscopic view when using polarized light with a second polarizing filter at 90° to the first (although this is also true of many organic materials). When phytoliths are viewed in a mounted slide under normal light, they are pink or purple grey in color (Kooyman 2015:521). The residue specimens that disappeared from view when exposed to polarized light, and that exhibited phytolith colors are described here (Sections 10.7.1.1 to 10.7.1.3). The phytoliths recovered from clay incense burners are presented in section 10.7.1.4 based on identifications from the comparative material.

10. 7. 1. 1. Grade 5 *Boswellia papyrifera* (Del.) Hochst. Phytoliths

The *Boswellia papyrifera* (Del.) Hochst. sample presents various epidermal and non-epidermal phytoliths that consist of tabular elongate phytoliths. Phytoliths recovered from

coniferous species have polygonal shapes and vary in size (Carnelli et al. 2004:55). The non-epidermal phytoliths are found in coniferous species (Lisztes-Szabo et al. 2019:654). These types of characteristics are observed in the phytoliths identified from *Boswellia papyrifera* (Del.) *Hochst*, a coniferous species that grows in warm temperatures, although such forms are found in other species as well and hence these are not diagnostic of conifers per se.

Grade 5 incense has “shell-like” structures (represented in Figure 10.1.A-D) that are likely epidermal phytoliths. As well, Grade 5 incense has some cells that are probably quadrangular phytoliths or referred to as “elongate entire” (Madella et al. 2005:257, 259; Neumann et al. 2019: 190-192) (Figure 10.1. E-L), phytoliths. Figure 10.1. M may represent a vessel element phytolith. None of these phytoliths are typical of any particular group of plants, though the elongate nature of those in Figure 10.1. K may indicate they are from a grass (Poaceae). Whether these phytoliths are contamination from plants that were incidentally included with the incense or if they are from the *Boswellia papyrifera* plant itself is not known at this stage in the research. Regardless, the presence of these in an incense burner residue is probably an indication that Grade 5 incense was burned in the burner.



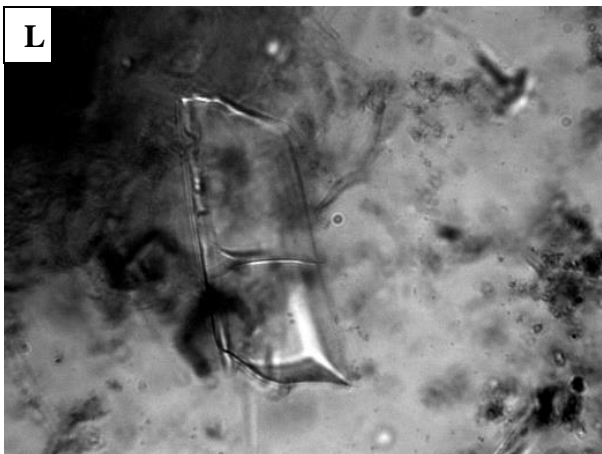
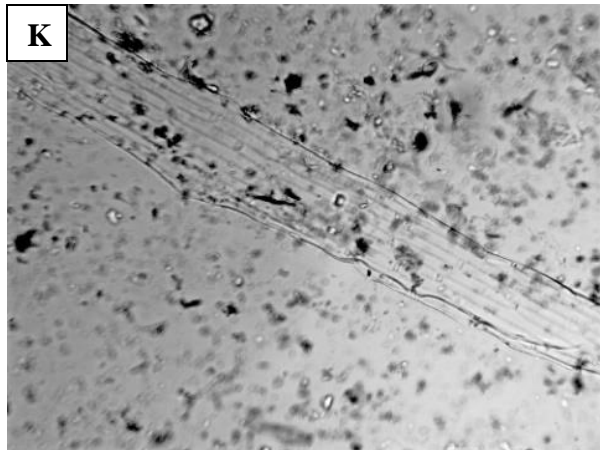
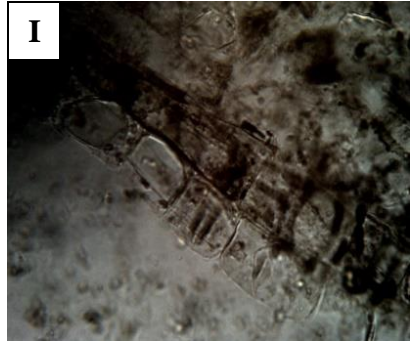
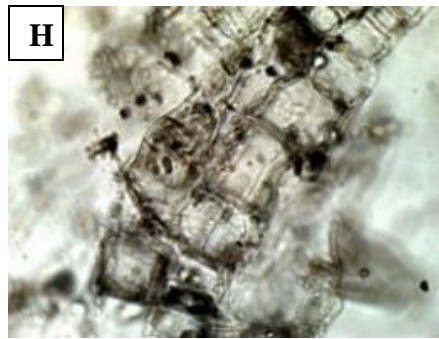
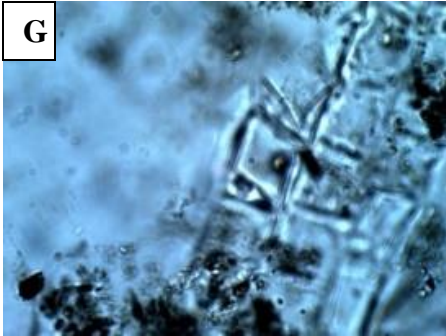
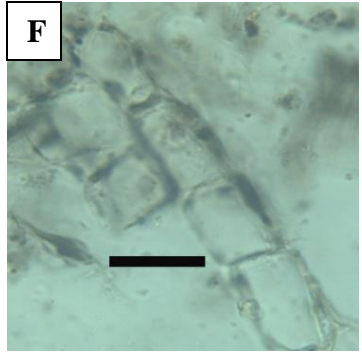
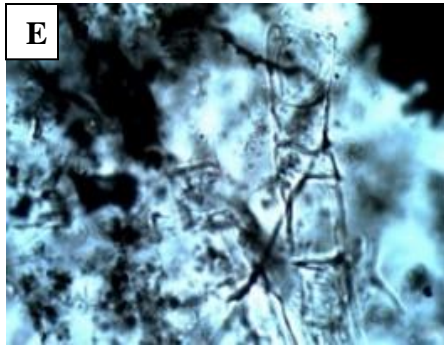
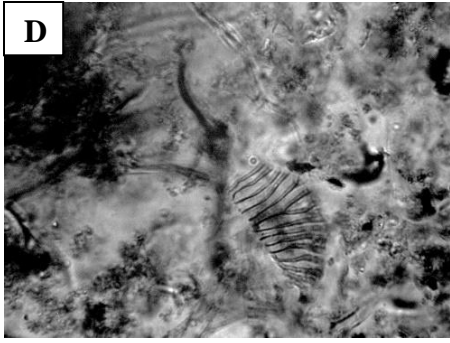


Figure 10.1. *Boswellia papyrifera* Grade 5 incense remains: Shell structure (A-D), quadrangular cell structure (E-L), vessel element phytolith (M), (original images 400X).

The phytoliths recovered from the *Boswellia papyrifera* frankincense can be used as reference material for future archaeological research. Particularly, the recovery of elongate phytoliths in both IB #2 (see below) and in the Grade 5 frankincense indicates the microbotanical analysis can be used to determine the specific contexts (domestic/religious) of incense burners. Grade 5 frankincense is often burnt at the domestic household level, while higher quality frankincense is consumed in church contexts. The elongate phytolith is an example that confirms the pattern of domestic use of "aromatic" plants—incense.

10. 7. 1. 2. Pennisetum glaucifolium (*B'erir*) phytoliths

The *Pennisetum glaucifolium* (*B'erir*) sample produced phytoliths, and some plant cells which may be phytoliths. At least one of the phytoliths is a grass phytolith. The certain grass phytolith recovered from *B'erir* is a saddle (Figure 10.1. A). The acute bulbosus (edge spine) phytolith (Figure 10.1. B) is likely from a grass, although this is not certain. The simple quadrangular rectangular (elongate entire) phytolith (Figure 10.1.C) could be from many different plant Families and was already noted in the *Boswellia papyrifera* sample. The recovery of a saddle in *B'erir* indicates that the collection of *B'erir*, incidentally included grass. That said, the recovery of such phytoliths in an incense burner (see IB#1 and 2, Figure 10.4) can probably be taken as evidence of use of *B'erir*. The grass phytolith contamination most likely occurred when *B'erir* was collected in the forest. Saddle phytoliths are classified under short-cell grass phytoliths as diagnostic of leaf epidermis (Madella et al. 2005:255; Neumann et al. 2019:190; Piperno and Pearsall 1998:2). Twiss et al. (1969:111) recognized saddle as a major feature used to distinguish Chloridoideae, a large grass subfamily that grows in arid and subtropical grassland

environments. This saddle phytolith demonstrates the existence of an ecological setting for the growth of Chloridoideae in the study area.

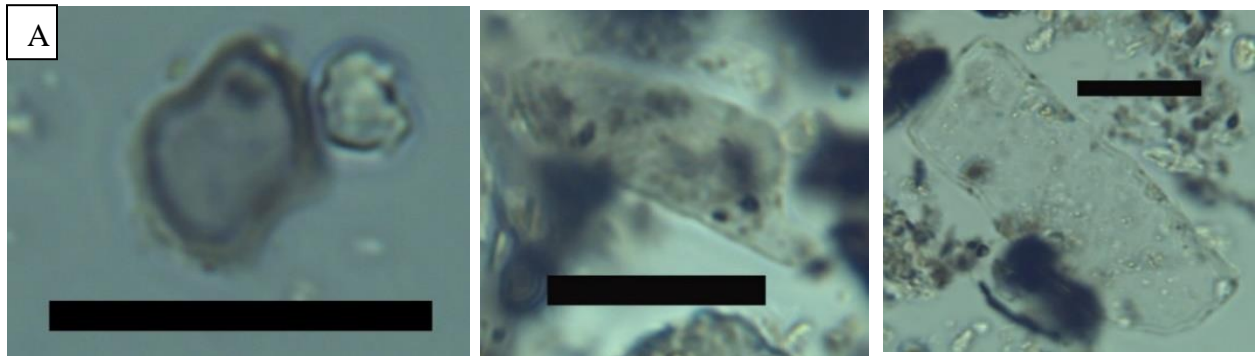


Figure 10.2. *Pennisetum glaucifolium* (*B'erir*) phytoliths: Saddle (A), Acute bulbosus (B), elongate entire (C) (scale bar =20 μ m)

10. 7. 1. 3. Eucalyptus Phytoliths

The phytoliths recovered from *Eucalyptus* came from its leaves. These include tracheary phytoliths (Figure 10.3. A and B) (tracheids transport water and minerals in leaves), a thin quadrilateral type (elongate entire or blocky) (Figure 10.3. C), and another elongate entire phytolith containing bordered pit features (Figure 10.3. D). These features and phytoliths are not distinctive of *Eucalyptus*, but in a restricted context associated with incense burners may be useful in identifying use of this wood as fuel, the leaves being incidentally incorporated in the collection and burning activities.

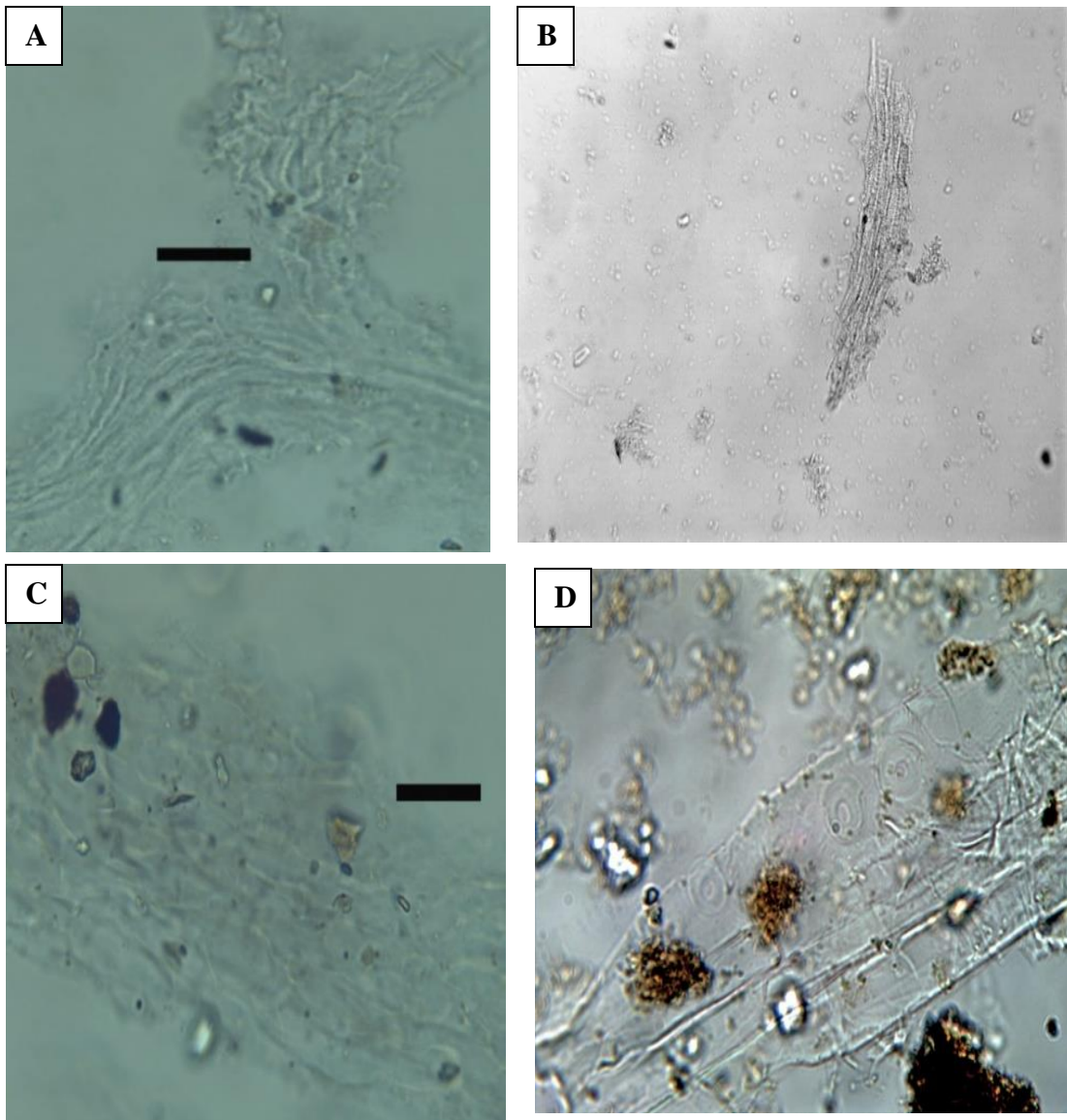


Figure 10.3. Non-quadrilateral epidermal cells, tracheids (A-B) (A scale bar 20µm, B original image 160X), elongate entire or blocky (C) (scale bar 20µm), elongate entire with bordered pit feature (D) (original image 400X).

10. 7. 1. 4. Incense Burner Residues

Analysis of incense burners residues recovered saddle and elongate entire phytoliths. Grass saddle phytoliths (Figure 10.4) were discovered from both IB#1 and from the *B'erir* sample

burnt and processed in the laboratory. This indicates that IB#1 might have been used to burn *B'erir* at the domestic household level. Meanwhile, IB #2 contains elongate entire phytoliths. This means IB#2 was used to burn one or both *B'erir* and Grade 5 frankincense. Interestingly, Grade 5 frankincense is commonly used at the domestic household level as an ingredient of *mitin* (mixed) incense, while *B'erir* is burnt as an aromatic plant in traditional medicine. The phytolith laboratory experiment helps to understand the use of incense and aromatic plants in incense burners used in a domestic context. The remaining two incense burners (#3 and 4) did not contain any phytoliths.

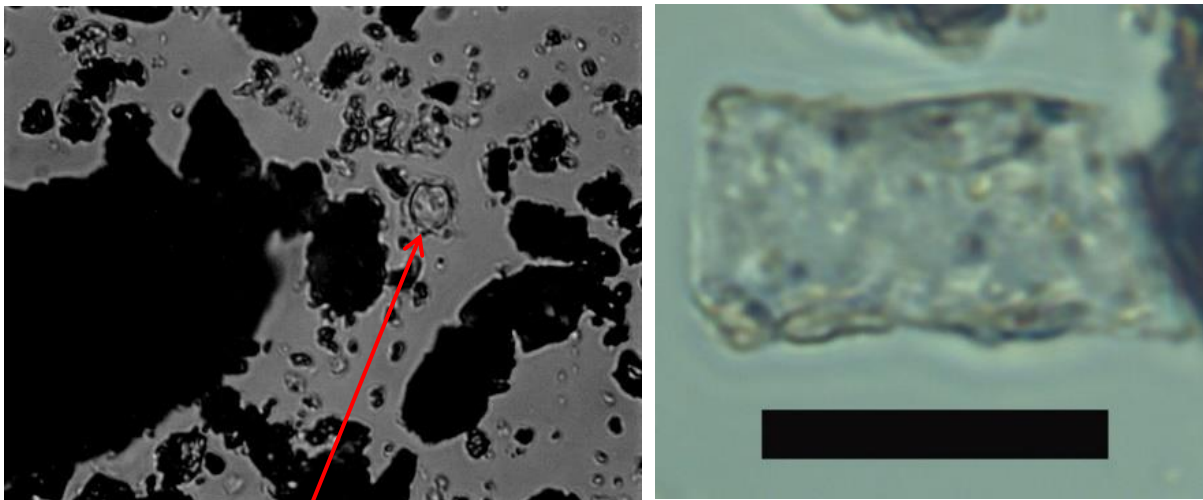


Figure 10.4. Grass saddle phytolith (original image 200X) from IB#1, and elongate entire phytolith from IB#2 (scale bar 20 μ m).

10. 7. 2. Starch Analysis

The samples were mounted on microscope slides and starch granules were observed from different directions to observe their shapes. Starch granules were characterized by using polarised light and by observing the appearance or disappearance of the extinction cross from the hilum of the starch granule (Gott et al. 2006:44).

10. 7. 2. 1. Barley, Wheat, and Teff Comparative Samples

Starch granules that emanate from barley and wheat resemble each other. They both have a spherical shape and a large size. The teff samples produced starch granules that vary in size but are very small and polygonal in shape (Figure 10.5. B and C). The teff flour also had large aggregates of the smaller individual granules (Figure 10.5. A). The teff grains collected from Calgary yielded minuscule granules (Figure 10.5. B and C) that are significantly different from barley and wheat granules.

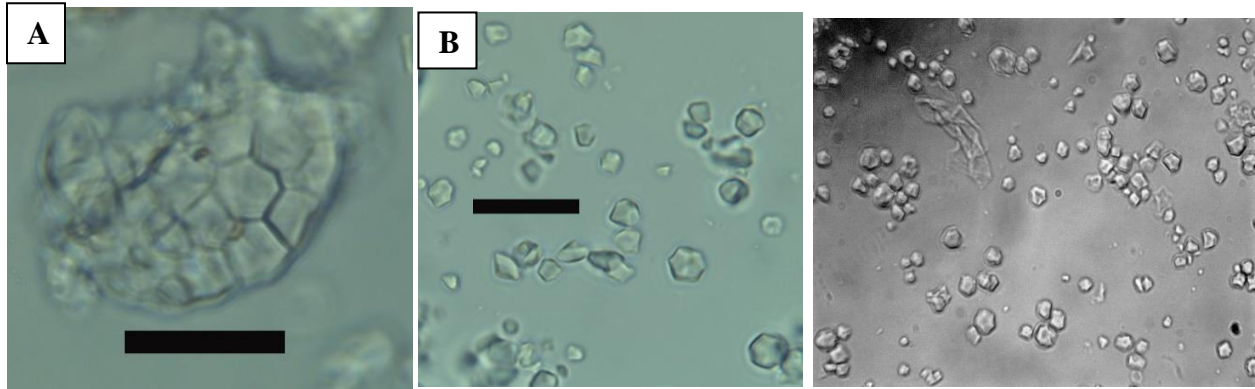


Figure 10.5. Teff flour starch, Ethiopia (A), Red Teff grain, Calgary (B), White Teff grain, Calgary (C) (scale bar 20 μ m).

Barley (Figure 10.6.A) and wheat (Figure 10.6.C) provide morphological attributes that match some of the starch granules extracted from the incense burners. But the size and shape of some wheat granules are more similar to the granule in IB #3 (Figure 10.6.B) than to the barley starch granules, which are smaller in size. Zhou et al. (2013:6) argues that wheat and barley granules are similar in size but differ in shape. Wheat has a lenticular shape, while barley has an elliptical shape. It appears that the incense burners might have been exposed to wheat starches in the houses where they were used, and in at least one case to teff.

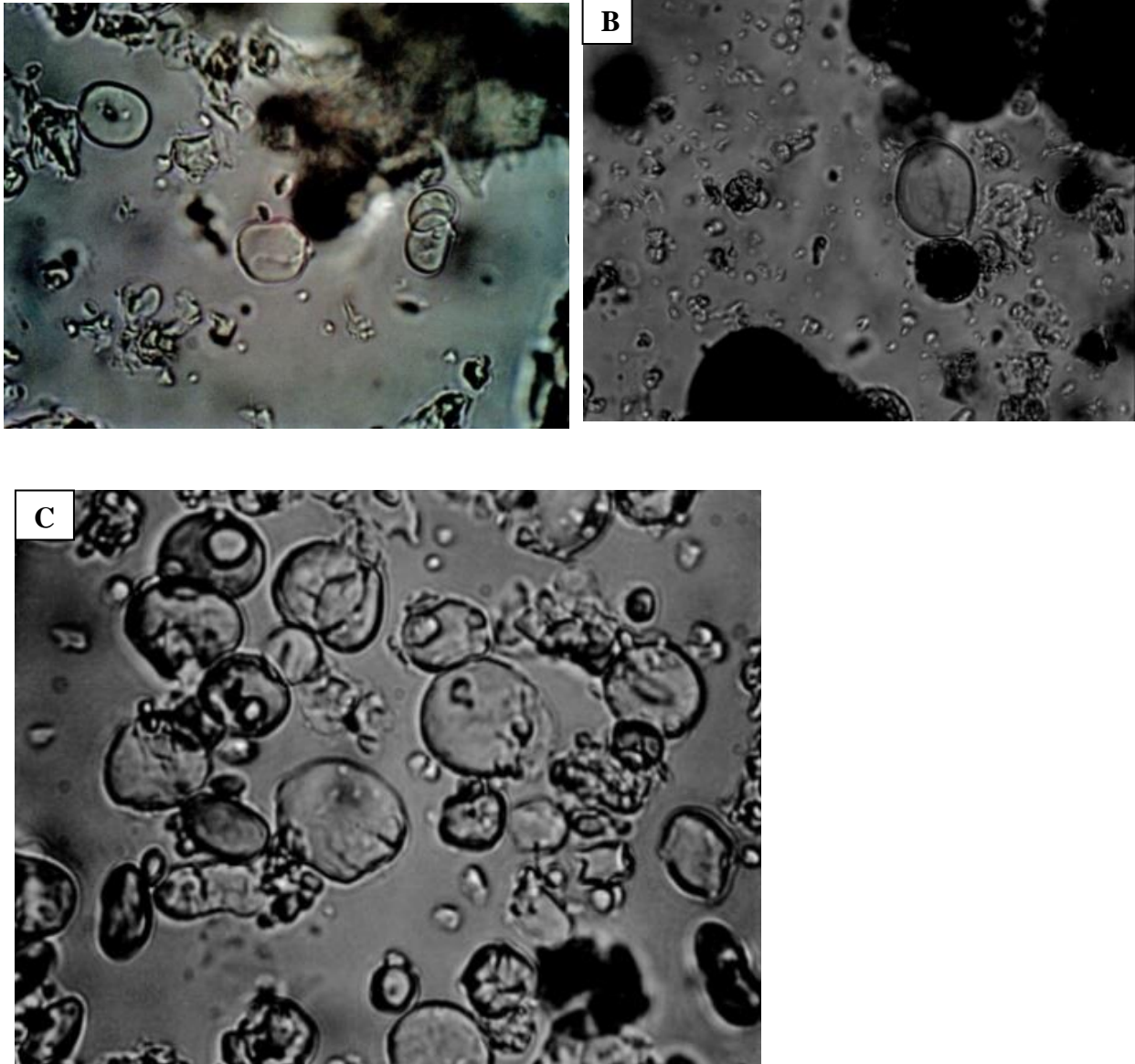


Figure 10.6. Barley modern sample (A), IB#3 (B), wheat modern sample (C) (original image 400X).

All the four incense burners selected for analysis contained at least 1 starch granule, mainly wheat (Figure 10.6 B; Figure 10.7. B) but there is also at least 1 teff granule, a small polygonal shape (figure 10.8.A) and a possible pea or bean (figure 10.7. A. and 10.8. B) at IB#1 and 2.

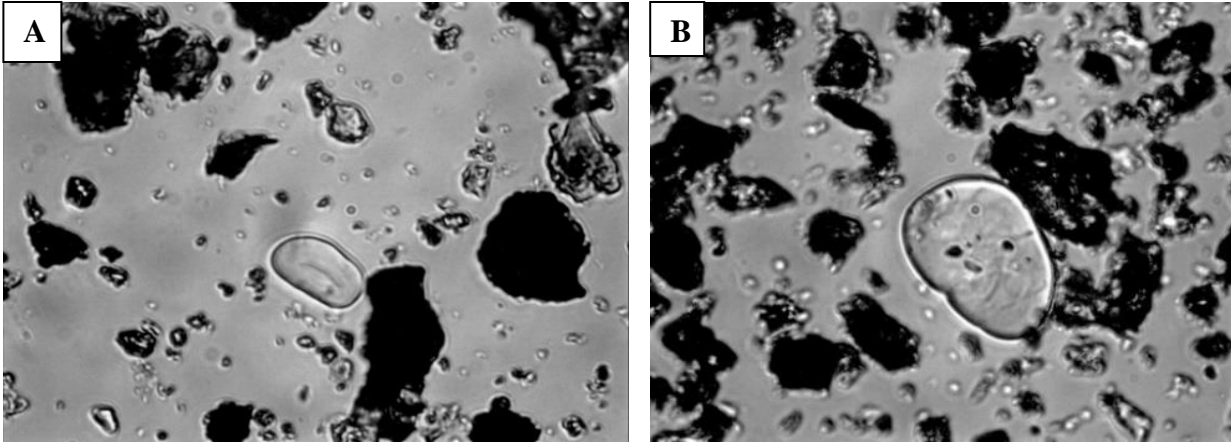


Figure 10.7. Starches from IB #1 bean shaped (A) and unidentified starch (probably wheat?) (B)
(original image 400X).

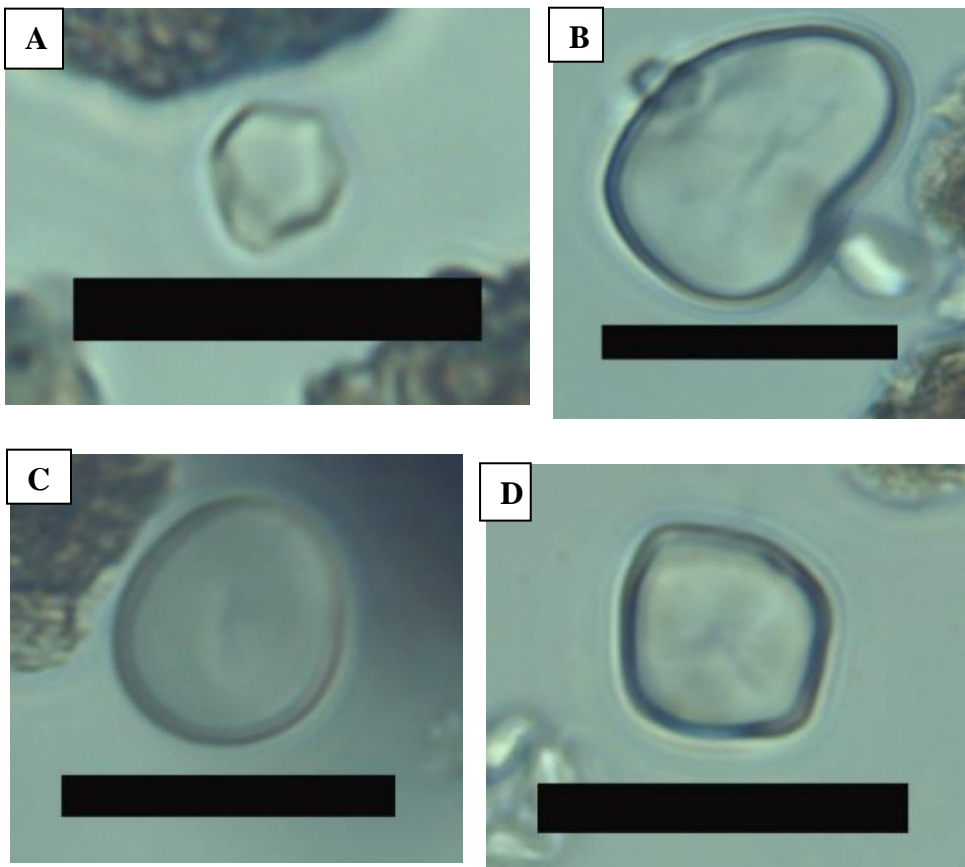


Figure 10.8. Starches from IB#2 teff (A), possible pea or bean (B) unidentified starches C and D (scale bar 20µm).

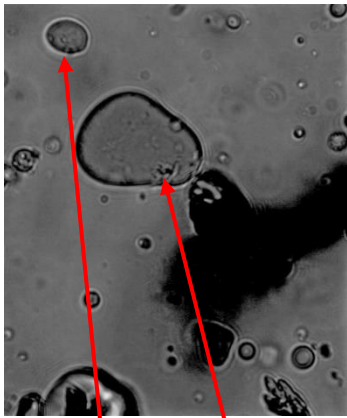


Figure 10.9. Ovate and spherical starch granules, IB#4 (original image 400X).

During the initial lab analysis, Dr. Kooyman had suggested the kidney-shaped starch granules from IB#1 and IB#2 are likely from pea or bean. This aligns with starch investigations carried out on legumes elsewhere. For example, Li et al. (2011) have identified kidney-shaped starch granules in mung beans. Agunbiade and Longe (1999) also observed a similar granule shape in cowpea. Starch residue was not expected in the incense burner residues. When the plant is burned, the starches should be destroyed, but any phytoliths should survive (Pearsall 1989:191; personal communication with Dr. Kooyman 2019). The presence of starch (wheat, maybe teff, maybe pea or bean) in incense burner residue could be indicative of the burners' use in a domestic situation rather than in church contexts. The existence of contaminants may indicate that the burners are exposed to household activities from the setting in which incense burners were used, or stored, or more likely exposed to starches in the air from grinding and pounding of cereals. In sum, contamination of incense burners from food processing is likely within domestic contexts (see table 10.2. for possible contamination from household food processing). In the Ethiopian Orthodox Tewahedo Church context, however, metal burners are

kept in a vestry and inside the holy of holies within the church building, which does not contain cereals or any type of fruits. It is unlikely that metal incense burners in the church would be contaminated by cereal processing. Although it is rare, incense burners in the church could be exposed to wheat and grapes (as wine) which are used in the holy communion. In addition, cereal starch floating in the air might also intrude into the church. However, starches in incense burners most likely indicate domestic contexts. Future research that includes a study of residues from incense burners used in Tigrayan churches may distinguish domestic from ritual sites. The sample size collected was small and the results presented here are preliminary. However, the research shows that simple analytical techniques can provide very useful information.

Table 10.2. Possible plants which might be used as fuel and incense for ritual in domestic and religious contexts.

Number	Latin name	Common Tigrigna name	Common English name	Aromatic plant	Sources	Uses
1	<i>Olea europaea</i> L.	Awl'e	Olive	✓	Aksum, Adwa, Shire	fuel, smoke is used for beauty and to fumigate the house

2	Acacia	Seraw/Che'a	Wattles		Aksum, Adwa, Shire	Fuel
3	<i>Klinia odora</i> <i>Forssk</i>	<i>B'erir</i>		✓	Adigrat, Aksum and its hinterland, and (Mai Tsebri /Shire	incense at domestic level
4	black frankincense?	<i>Itan emni</i> (literally stone incense)	black frankincense	✓	Western Tigray/ Shire	incense for spiritual purposes in church and home
5	<i>Boswellia</i> <i>papyrifera (Del.)</i> <i>Hochst.</i>	Meqer/ Walba	frankincense	✓	Central and Western Tigray	incense for ritual in church

						and home
6	<i>Securidaca longipedunculata Fresen.</i>	Shutara	Violet Tree	✓	Aksum and Shire	incense for home
7	<i>Silene macrosolen</i>	Saeri- Saero		✓	Aksum and Shire	incense for home
8	mixture of <i>Ades (Myrtus communis L.), Tsihidi (Juniperus procera)</i>	Tishatish		✓	Raya, and other parts of Ethiopia	the smoke is used for beauty, like sauna
9	<i>Eucalyptus</i>	Kalamintos			Aksum, Adwa, and Shire	fuel

Aromatic woods/plants are collected using axes and sickles by village women living in the rural areas of the study sites. The plants are packed together in bags and transported either by donkey or by the women to the markets in Adwa, Aksum, and Shire towns. The methods used for harvesting, collecting, and packing these plants are subject to contamination. The plants are further contaminated in the market when the retailers displayed them in the stalls of the markets.

Aromatic woods/plants are used for beauty, traditional medicine, rituals and fumigation of houses and pots. For example, olive wood (*olea*) is used to smoke pots and calabash that are used for brewing *sewa* (local beer), containing milk and water (D7, D10, D12, and D13). It makes them smell nicer and enhances the preservation, hygiene, and flavor of the beer, water, or milk. Cascadden et al. (2020:76) have also identified various plants including olive wood smoke used for pottery surface treatments in the study area and in Eastern Tigray.

The smoke is also used for cosmetic purposes to enhance women's beauty and as a spa treatment. In the floor of a house, an 80cm deep circular hole is excavated. The hole wall is plastered with mud, manure and a piece of wood is placed at the top/lid of the hole to rest the legs during fumigation. A fire of charcoal and aromatic plants (*olea*, *Terminalia Brownie* (*weyba*), myrrh, Tishatish, and other plants) is made within the hole to create the smoke. Then, the woman sits naked on the hole, wrapping herself with a dark blanket and a sleeping leather mat for 45-60 minutes to contain the smoke and absorb it into her body. The smoke passes between the legs to enter the woman's cervix and fumigate the whole body. This treatment is believed to cure uterine infection and back pain. Since newlywed women and women following childbirth frequently engage in this practice, it is common to find a hole dug in the houses of these women usually in bedrooms or living rooms depending on the setting of the house. The holes remain in function for many years. It may be possible to identify the holes, burnt woods, and charcoal in the ruins of old houses when the compounds of these houses are tilled for gardening or new houses are built on the ruins.



Figure 10.10. Aromatic woods - olive wood and Tishatish/qufquaf from Shire Inda Selassie (left) and Aksum (center and right)

There is another aspect of herbal treatment administered through a mix of such herbs as *B'erir* (*Klinia odora* Forssk), *Aftuh* (*Plumbago Zeylanica* L.), *Shutara* (*Securidaca longipedunculata* Fresen.), and *Saeri Saero* (*Silene macrosolen*), which are used to treat supernatural possession caused by sorcery. In addition to their medicinal use, aromatic plants (such as *Kunamini* and *Tishatish*), are employed by poor women to fumigate their houses, repel insects, during the coffee ceremony, and to soothe the body during the chilly summer rainy season (D1, D6, D7, D10, D12, and D13).



Figure 10.11. *B'erir* (left), and *Shutara* (center) and *Itan Imni* (right) displayed in Aksum market.

Table 10.3. Phytoliths and starches identified from experiments and incense burners.

Specimen	Phytolith Type	Specimen	Starch Type
Grade 5	shell-like phytolith	Barley	- spherical shape, large granule
	elongate entire	Wheat	- spherical shape, large granule
		Teff	- minuscule granules

		IB#1	- bean/pea - wheat
<i>B'erir</i>	Saddle	IB#2	- teff - possible pea/bean
	acute bulbous/ edge spine	IB#3	- wheat - teff
	elongate entire	IB#4	- ovate and spherical starch granule - unidentified starch
Eucalyptus	Tracheary		
	elongate entire/blocky		
IB#1	grass saddle		
IB#2	elongate entire		

10. 7. 3. Charcoal Analysis

10. 7. 3. 1. Features of Wood Anatomy

Woods are generally classified into soft wood (gymnosperms) and hardwood (angiosperms), based on the leaves and flowers they produce. Soft woods lack the vessel elements that are a diagnostic of hardwoods (Asouti and Fuller 2008:128; Bond and Rappold 2019:3). Soft woods are characterized by having simple transverse section anatomical structure. Vessels or pores are used to transport nutrients in plants and they vary from one species to another by their size and distribution patterns in the growth ring of hardwoods. Pores can be observed in hard woods when they are sectioned transversely (Hoadley 1990:31).

Hardwoods can be divided into three categories based on their pores to identify the species transition from early wood to late wood: ring-porous (pores are arranged from small to large abruptly changing in the growth ring and the density distribution is uneven), semi-ring-porous (pores that change from small to large but gradually across the year ring) or diffuse-porous (uniform size and distribution of pores) (Bond and Rappold 2019:5). The size and arrangement of these pores on the transverse section are vital for identifying plant species. For example, a ring-porous pattern is used as the diagnostic feature to determine the type and age of the species by looking at the transition from early wood to late wood (Barnes 2004:21-22; Bond and Rappold 2019:4-5; IAWA 1989:236-237; Jones 2010). In ring porous, early wood/ spring wood and late wood/summer wood in the growth ring can be distinguished by the size of pores presented in each part of the wood. The pore sizes in the earlywood are larger than the pores in the late woods (Barnes 2004:22).

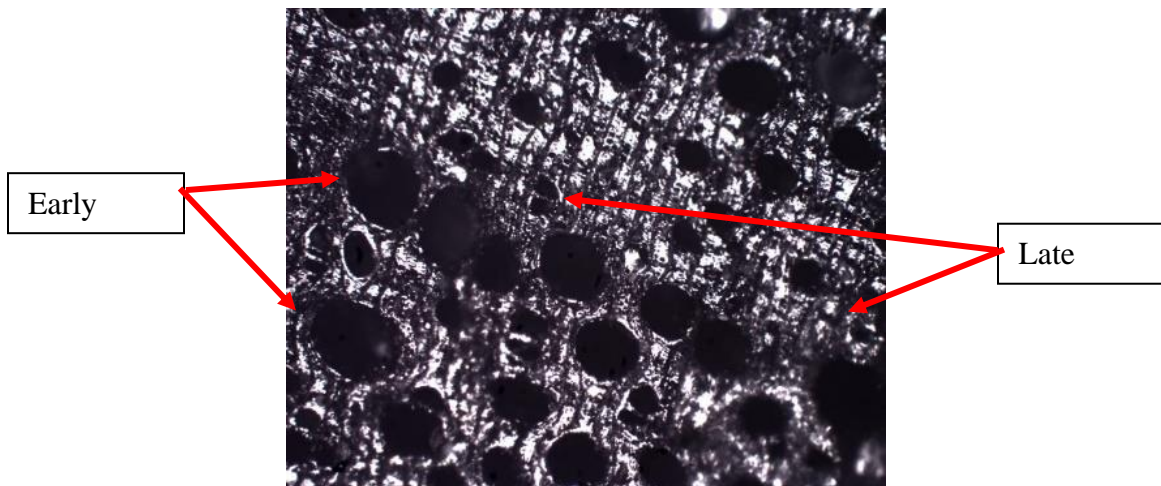


Figure 10.12. Early and late wood from charcoal sample 4 (original image magnification 100X).

Pores can also be arranged into four main categories based on their distribution in the transverse section and their relative position. Solitary pores are arranged evenly and never contact adjacent vessels. Pore chains occur when adjacent pores touch each other and form a

(linear) chain. Pore multiple is another category that forms when many pores (two to five) connect with one another and are usually referred to as radial multiples because they are arranged radially when viewed in the transverse section. Nested/clustered pore is less common and is formed when the pores come into contact with the adjacent pore from vertical and horizontal sides. The last arrangement is wavy bands/ulmiform pores which have zig zag shapes (Hoadely 1990:33; Jones 2010).

The microscopic identification of the samples reveals that all charcoal samples and the modern reference materials prepared in the laboratory are hardwoods. Table 10.3 shows the main wood features for the 3 most likely species to be used as fuel in the study area. The pore arrangements of the charcoals under investigation varies from solitary to chained, and a combination of the two. The pore arrangement classification scheme allows species identification of the charcoals used in the study area. Investigators have identified solitary pore arrangements, diffuse porous, and growth rings are not well defined in *Eucalyptus* trees. *Eucalyptus* rays vary from uniseriate to triseriate (Dadswell 1972:1-4; Gouwentak 1935: 6-7; Wheeler et al. 1989:242; http://www.hobbitthouseinc.com/personal/woodpics/_anatomy/diffuse%20porous/eucalypts/eucalypts.htm; <https://www.wood-database.com/wood-articles/hardwood-anatomy/#arrangement>). Acacia morphology shows diffuse porous or semiring porous. The main vessel type is solitary, but the species have chains and even some complex clusters/chains with variable size pores. Acacia rays may be uniseriate or biseriate and they are homo cellular (Maiti et al. 2016:3,7; Marchiori 1991:67; Nirsatmanto et al 2017:11; Sahri et al. 1993:247-251; Santos et al. 2018:15-16; Warwick et al. 2017; 1257-1259; Wilkins and Papassotiriou 1989:201, 203). Olive shows occasional solitary pores but mainly chains with mainly 2-4 pores that are often 2 large and 2

small as a chain (Baas et al. 1988: 109; Cherubini et al. 2013:2; Terral and Mengüal 1999:76) (see Table 10.3).

It appears that the charcoal samples in the study area were produced either from olive or acacia. From the 7 unknown charcoals, 6 are more likely produced from olive trees, and the remainder is produced from acacia. *Eucalyptus* morphology has shown some features observed in acacia. However, acacia is the more likely identification because charcoal #7 has a homocellular feature, a trait found in acacia more often than in *Eucalyptus*. *Eucalyptus* has more extensive local uses for house construction and firewood in this region. *Eucalyptus* is a species imported from Australia in the late 19th century (R. Pankhurst 1995:127). It was planted in most parts of Ethiopia over the past century for house construction, firewood and sometimes for charcoal purposes (Geissler et al. 2013:13). As a cash tree, *Eucalyptus* has greater value when used for purposes other than charcoal. Wilson (1977:243) and Nyssen (1997:49-50) recognized a variety of acacia trees in Tigray. Acacia is grown as wild forest and is relatively more accessible to charcoal producers than *Eucalyptus*, the latter is grown by some farmers for timber and fuel on their own land.

Table 10.4. General microscopic features of acacia, eucalyptus, olea, and Shutara.

Wood	Laboratory result		Literature	
	Transverse	Tangential	Transverse	Tangential
Acacia			- mainly solitary but some chains/ complex clusters/chains - diffuse porous/semi ring porous	- homocellular rays - uniseriate with some biseriate - marginal parenchyma

<i>Eucalyptus</i>			- solitary - rings are generally indistinct or not well defined	- weakly heterocellular - mainly uniseriate with some biseriate
<i>Olea</i>	- mainly chains with some solitary - semi ring/diffuse porous	- homocellular and heterocellular rays - mostly biseriate with some uniseriate	-distinct annual growth ring -diffuse-porous -no marginal parenchyma bands - semi-ring porous to ring-porous -vessel multiples in combination with solitary vessels	- simple perforation plate - uniseriate and biseriate
<i>Shutara</i>	-solitary pores	-mostly uniseriate (homocellular) with some biseriate (heterocellular) rays		

There is evidence that shows production of charcoals from *Olea europaea*, *Acacia abyssinica* and other angiosperms from fossil wood charcoal deposits in northern Ethiopia in the Mai Mekden and Adikolen areas north of Mekele, the regional capital of Tigray, and in Gulomekeda *woreda* in eastern Tigray (Gebrekidan 2018:63-65; Gebru 2007:45-48; Terwilliger et al. 2011:137). It is noted that charcoals from gymnosperms were identified, but the percentage

of charcoals produced from angiosperms was higher in the past, and the modern charcoal assemblage are dominated by gymnosperms (Gebru 2007:45-48). The charcoals from the study sites are identified as coming from gymnosperms because specific woods (*Acacia etbaica* and *Olea europaea*), (angiosperms) are preferred for producing quality charcoal, which produces a lot of heat (Mehari 2008:58). Recent archaeological study on charcoal fragments from pre-Aksumite and Aksumite sites in eastern Tigray identified acacia and olive tree traits (Ruiz-Giralt et al. 2021). The study denotes that both acacia and olive were used for charcoal making in the past. Lyons found in research in Eastern and Central Tigray, that iron and cuprous metal casting use olive and acacia wood charcoal for the forge (personal communication, Dr. Lyons, August 2020). Today, people are prevented by law from cutting trees in forests, but cases of illicit cutting and charcoal making are substantial. None of the charcoal samples under investigation showed gymnosperm traits.

In households, incense or aromatic plants can be ignited in three ways on incense burners in the study area. First, the incense burners are filled with burnt charcoal, then frankincense and other types of incense are added. Second, charcoal is used as fuel on the incense burner, then aromatic plants are added. Finally, aromatic plants are mounted on the incense burner, then they are lit either using matches or burning is started in an oven and then transferred into a burner. In the case of the church, however, incense is burnt by mixing burnt charcoal with frankincense or myrrh for fumigation.

10. 7. 3. 2. Olive - Fuel Wood

The olive transverse section indicates mainly chains and some solitary features (Figure 10.13). The tangential section has both uniseriate and biseriate rays, both homocellular but also

some of the biseriate are heterocellular (Figure 10.14). Olive is semi ring porous and has a simple porfuration plate.

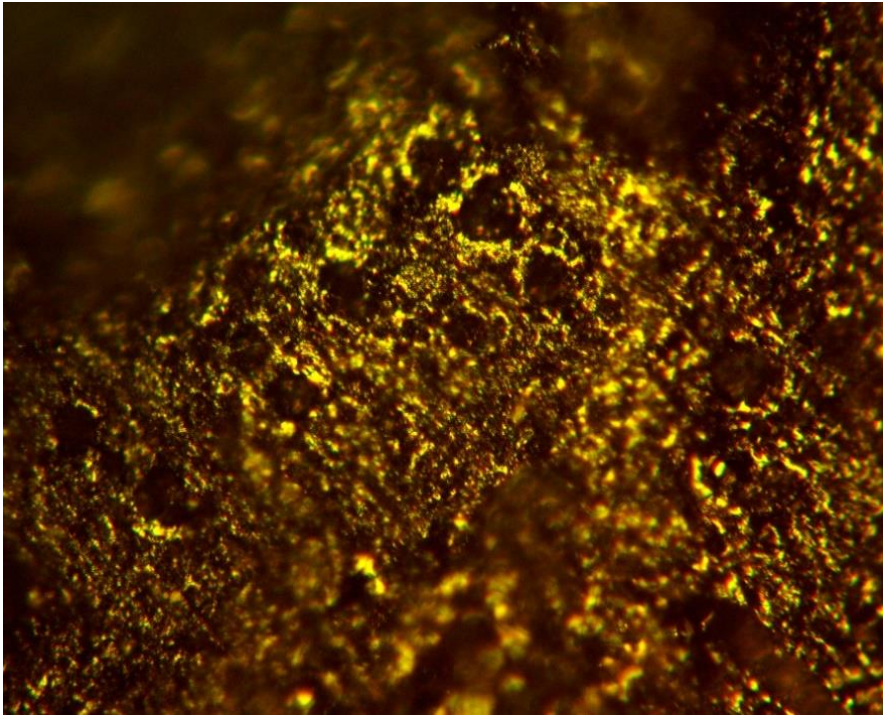


Figure 10.13. Olive transverse section (original image 160X).

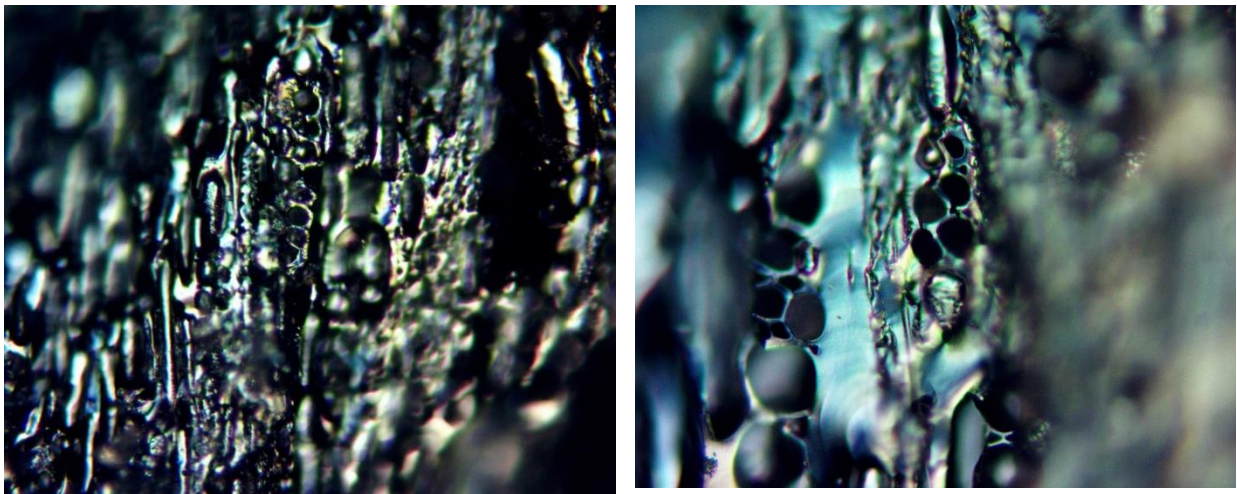


Figure 10.14. Olive tangential section, uniseriate (homocellular) (original image 250X (left), and biseriate (homo & heterocellular) rays (right), (original image 500X).

10. 7. 3. 3. Aromatic Wood (Shutara)

The transverse section of *Shutara* (figure 10.15) displays solitary pores with uniseriate (Figure 10.16, left) and biseriate (Figure 10.16 right) rays, the former homocellular and the latter heterocellular.



Figure 10.15. *Shutara* transverse section (original image 400X)

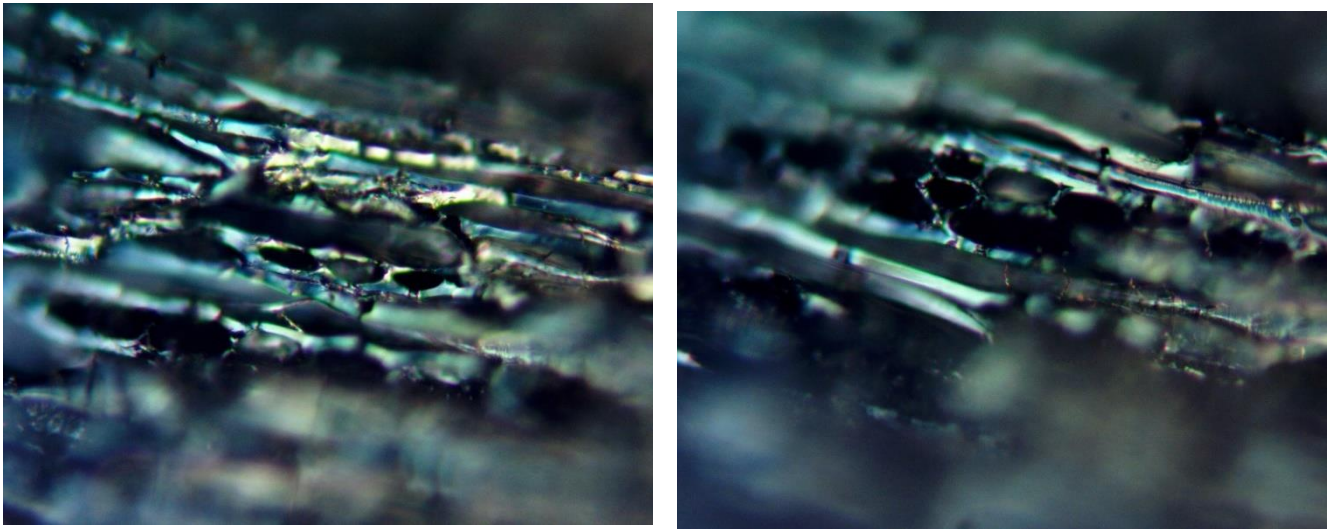


Figure 10.16. *Shutara* tangential section, uniseriate ray on left and biseriate ray on right (original image 500X)

10. 7. 3. 4. Charcoal Samples from Aksum Market

The anatomical structure of the charcoal samples was examined under a Leitz Laborlux 12 Pol S microscope at 160X and 500X and Nikon microscope at 100X and 400X (objective lenses, with 10X oculars) mounted with a Tucsen camera connected to a computer. The International Association of Wood Anatomists (Wheeler et al. 1989) terminology is used to describe wood and charcoal structure in this study. The seven charcoal samples are divided into four groups based on common features displayed in the transverse and tangential surfaces of the samples, specifically vessel size and pore arrangements.

Charcoal#1 displays mainly chains with some solitary pores. This sample is diffuse porous, with homocellular rays that are mainly uniseriate (one cell width) with some biseriate (two cell width). These features are found in olive or acacia trees. Overall, this charcoal seems to have come from the olive tree.

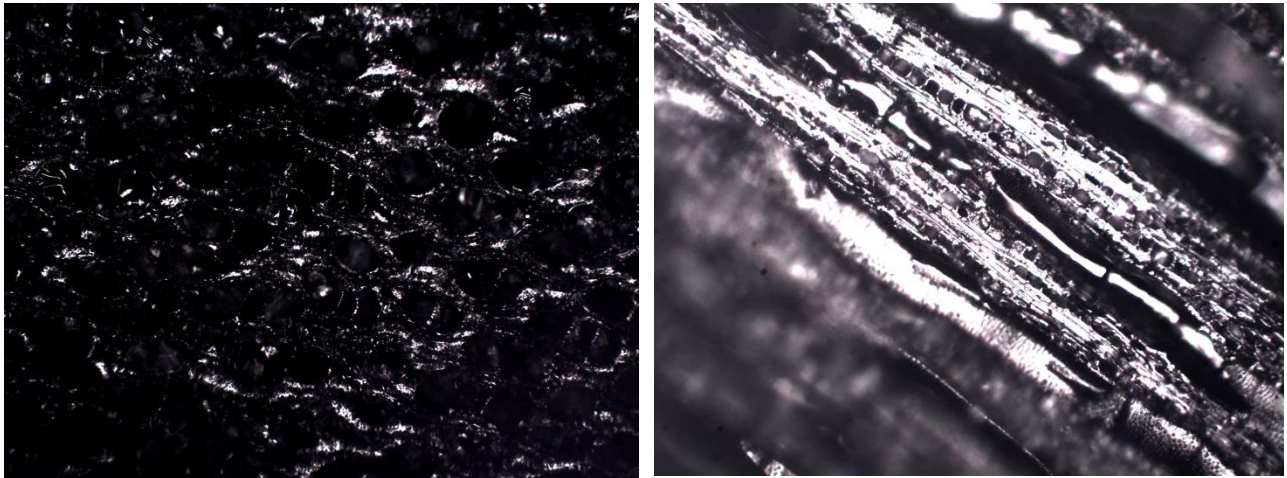


Figure 10.17. Charcoal #1 transverse section (left) -chain & solitary- (original image 100X) and tangential section (right)- homocellular uniseriate rays (original image 400X)

Similarly, charcoal #2 is characterised by chain and solitary features (Figure 10.18, A and B). It also presents (Figure 10.19) both uniseriate and homocellular rays, and some biseriate, in common with charcoal #1. The ray evidence shows that this charcoal is olive or acacia but appears to be closer to olive.

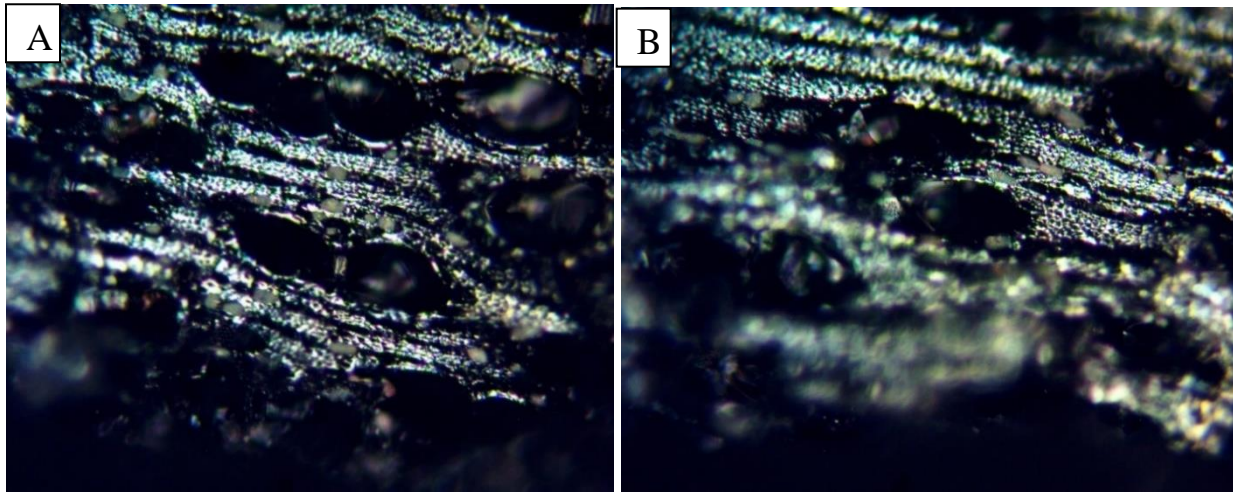


Figure 10.18. Charcoal #2 transverse section A (chain) and B (solitary) (original images 160X)

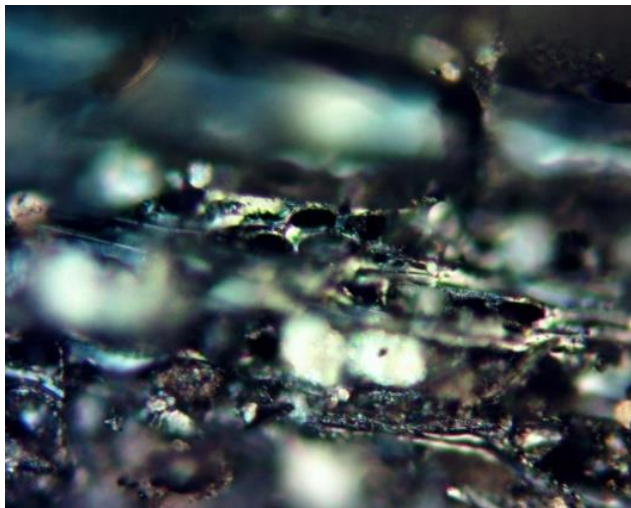


Figure 10.19. Charcoal #2 Tangential section biseriate ray (original image 500X)

The transverse section of charcoal #3 (Figure 10.20, left) presents solitary pores and is semi-ring porous. The rays are a mix of uniseriate homocellular (Figure 10.20, right) and biseriate heterocellular. A considerable pore size difference is observable in this sample, and growth rings in the late and early wood are distinct. From the complexity of the rays, it looks more like olive than acacia. Acacia has only homocellular rays.

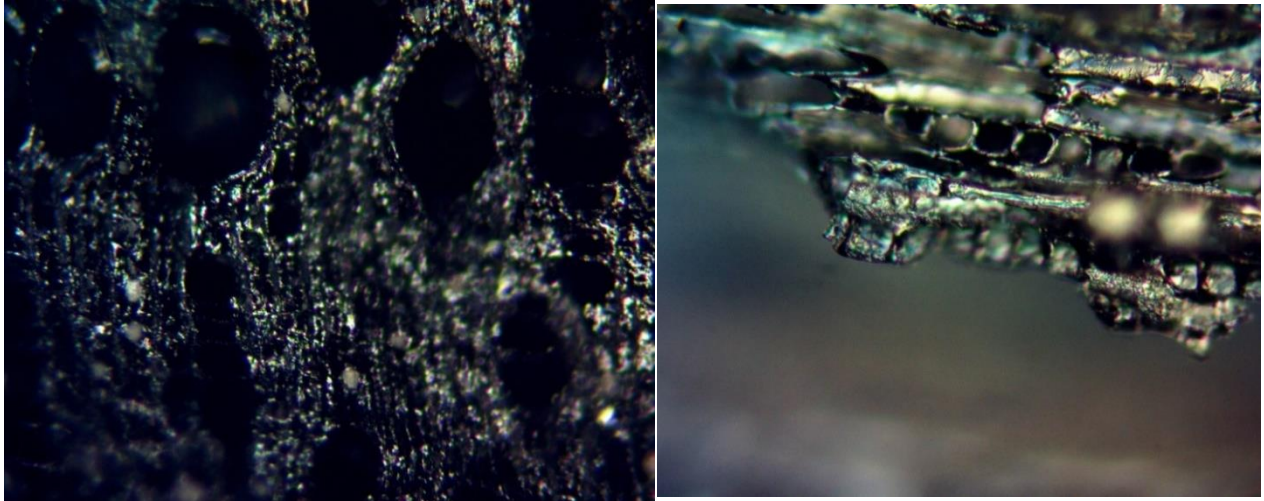


Figure 10.20. Charcoal #3 transverse section (A) semi ring (original image 160X), and tangential section (B), uniseriate, homocellular (original image 500X)

Charcoal #4 shows mainly solitary and chain pore arrangements, and a mix of uniseriate and biseriate rays. Uniseriate and biseriate patterns are evident in both olive and acacia trees but overall, this charcoal looks like olive due to the mix of solitary and chain.

Charcoal # 5 displays mainly solitary and a few chain pore arrangements (Figure 10.21A), and uniseriate homocellular rays (Figure 10.21.B). The mix of solitary and chain pores over all again suggests olive, but it is inconclusive because the pattern is not strong.

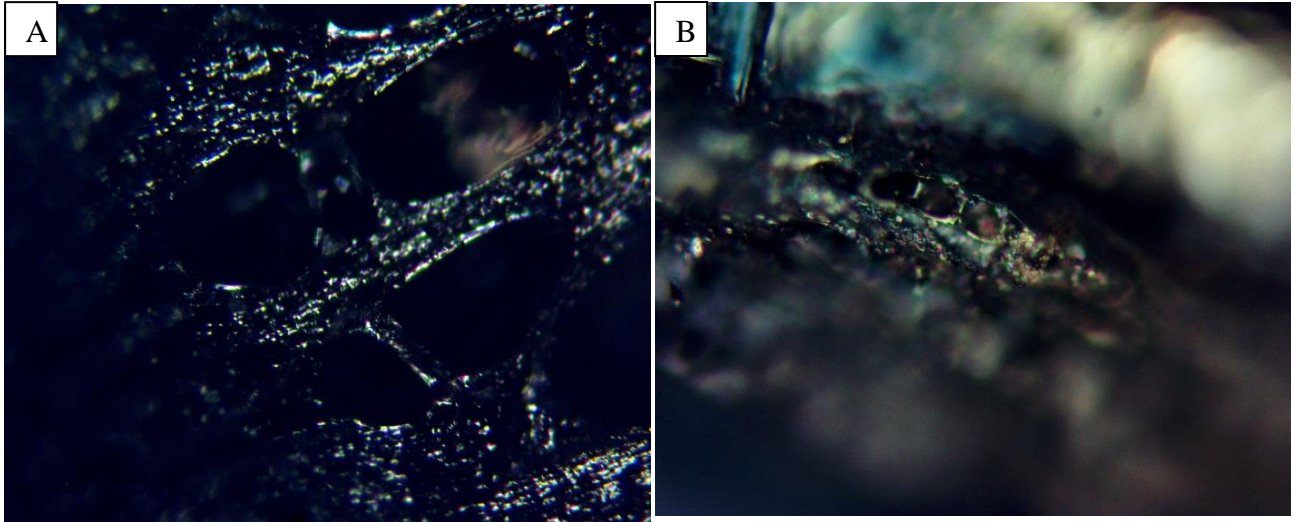


Figure 10.21. Charcoal #5 transverse section (A) solitary and chain (original image 160X), and tangential section (B), uniseriate (original image 500X).

Charcoal #6 has a mix of chains and solitary pores, with mainly solitary pores. It has both biseriate and uniseriate homocellular rays. Olive is the best candidate for its identification. This is also supported by the presence of ring porous.

Charcoal #7 reveals diffuse pores with exclusive solitary pores when viewed in the transverse section; no contact is observed with the neighboring vessels. The rays are uniseriate and homocellular (Figure 10.22) with some heterocellular. Wheeler et al. (2007:202) identified diffuse porous, solitary vessels, uniseriate and multi seriate rays, and a marginal parenchyma features in acacia trees from Ethiopia. Based on these features and the traits observed in Charcoal #7, acacia is the best candidate.

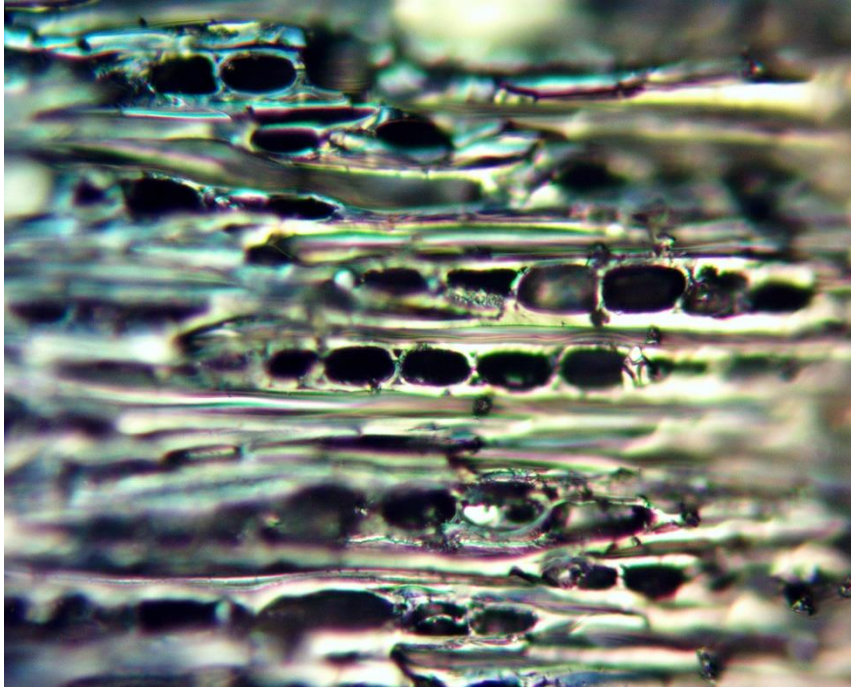


Figure 10.22. Charcoal #7 tangential section, uniseriate homocellular (original image 500X)

10. 7. 3. 5. Charcoal from Incense Burners

Incense and aromatic plants are burned on incense burners inside a house or within the compound of a house. Different types of incense (e.g., frankincense, myrrh, *mitin*) and aromatic plants (e.g., *b'erir*, *olea*, *shutara*) can be burned in a single incense burner. As a result, a wide range of microbotanical residues are accumulated in a single incense burner. Incense is consumed by both Christians during the coffee ceremony and Muslims during coffee and khat chewing ceremonies. Khat is a plant whose leaves and twigs are chewed as a stimulant intended to give a person strength and increase productivity. As refreshment, it is served to guests and offered in other social and religious festivals, often accompanied by smoking and drinking. Muslims use incense as a companion to khat and coffee drinking ceremonies at home. There is a high probability of contaminating the incense burners with the twigs and leaves of khat.

Charcoal was extracted from two out of seven incense burners imported from Central Tigray (Ethiopia) to determine the type of woods the inhabitants employed for burning incense. Only IB #1 offers a partial diagnostic feature that comes from the tangential section of the wood (Figure 10.23). Based on the scanty evidence, it can be argued that the wood belongs to angiosperms due to the presence of vessels/pore. The rays in acacia are all homocellular, but in olive the rays are both homocellular and heterocellular. The biseriate rays in figure 10.23 are heterocellular and hence the plant burned in IB#1 could be olive. A tiny charcoal sample was extracted from IB#3 but no adequate diagnostic feature was identified (Figure 10.24) because the fractured surfaces were too small to have any useful features.

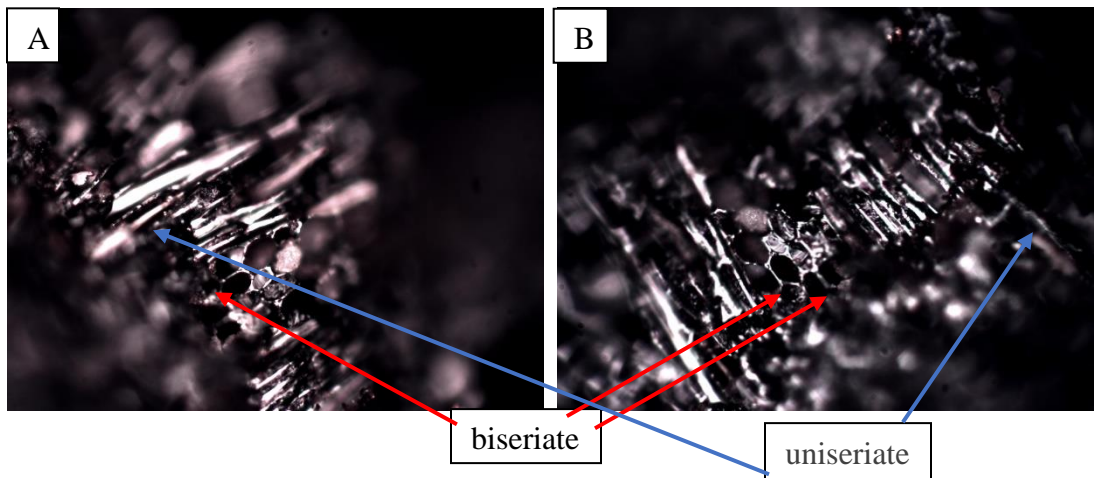


Figure 10.23. Charcoal feature extracted from IB#1 (original image 100X).

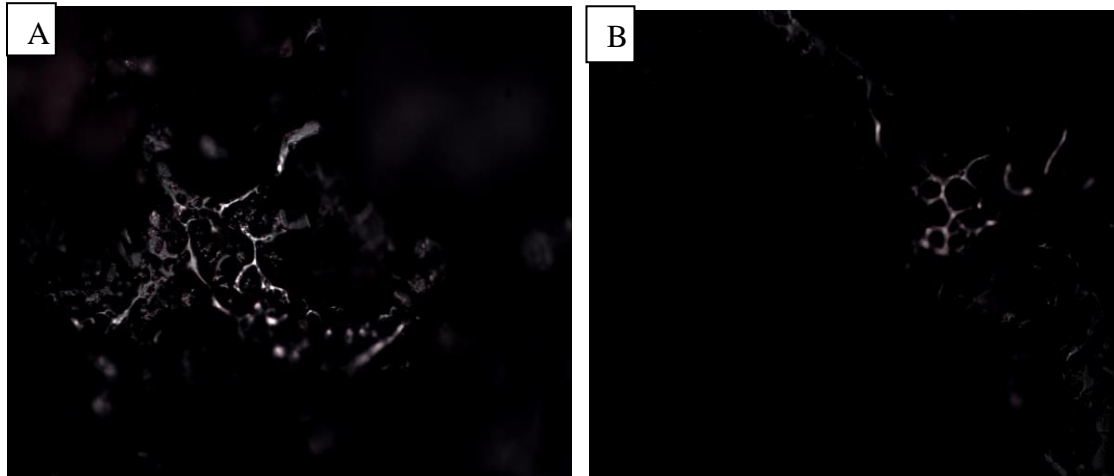


Figure 10.24. Charcoal feature extracted from IB#3 (original image 100X).

10. 8. Summary

Three methods are used to cross reference the residues of incense burners and the charcoals imported from the study area. First, phytoliths were recovered from incense burners and sample plants which were processed in the laboratory. The grass saddle and elongate entire phytoliths extracted from the IB#1 and 2 aligned with phytoliths recovered from *B'erir* and Grade 5 frankincense samples. Specifically, the identification of saddle phytolith, a grass contamination, in IB#1 and in *B'erir* sample is indirect evidence that people burnt aromatic plants in domestic contexts.

Second, although starch residue was not expected to be found in the residue in incense burners, their presence likely results from contamination from household activities. When plants are burned, their starches are likely destroyed but phytoliths should survive. These contaminants (cereals and legumes) very likely formed residues on the incense burners later, either after the incense was burnt or after the incense burners were no longer used. The existence of these contaminants helps to determine the respective domestic and religious context where an incense

burner was used. This study identifies wheat, teff, and perhaps bean or pea starch granules from four incense burners that were likely contaminants from use in a domestic household context.

The contaminants under discussion are not commonly used in church contexts.

Third, plant samples were burnt in the lab to produce charcoal for a comparative reference. This evidence was compared to the charcoal samples randomly bought in Aksum market. The result indicates that possible plants used as charcoal fuel came from olive and acacia in the study area. The identification of olive from charcoal fragments of IB#1 indicates the use of olive as fuel or aromatic wood. The plants used for charcoal do not necessarily mean that they are produced in the study area. Charcoal may have been procured from adjacent Afar and Amhara regions and were brought to Tigray. Overall, the laboratory methods contribute to reconstructing the domestic and religious uses and functions of incense burners and plants in archaeological contexts. Overall, the experiment shows that simple analytical techniques can provide very useful information.

CHAPTER 11: CONCLUSION

11.1. Research Questions and Discussion

This dissertation presents an ethnoarchaeological study of the trade in frankincense and aromatic plant material in Tigray, northern highland Ethiopia. This study provides a clearer understanding of Tigray's contemporary incense trading network, and how this network is integrated in local and regional political economies. It demonstrates that Tigray's contemporary incense trade has integrated different categories of people. The study substantiates the contribution of the incense trade to the production and reproduction of social complexities and inequities that are based in societal subjectivities of gender, age, class, religion, levels of education, and individual connections to elite political and religious institutions. This study does not suggest that Tigray's contemporary incense trade is identical to ancient incense trading networks in this region or in other locations. Instead, the Tigray study provides insight into how non-mechanized practices of incense production, processing, distribution, and consumption are integrated into local, regional, and state-level political economies in Tigray. Incense trade is important in the history and archaeology of northeast Africa for at least three millennia, but it is a trade that is poorly documented including in contemporary times. This dissertation contributes significantly to this gap in research and discussions of the incense trade in present and past polities in this region.

This study further adds to the discussion that Tigray could have been a source for frankincense in ancient times, and potentially was a geographic outlier of the land or region called Punt. The location of Punt may never be resolved as stated by Phillips (1997) but a region or regions did exist that supplied frankincense and other exotic goods sought by elites in ancient

polities in northeast Africa for use in rituals or as medicines as they are used in Tigray in contemporary times.

This study answered four basic research questions. *The first question* was “How does the incense trade integrate ordinary people into social hierarchies and larger scale economies in the history of the study area?” The study focused specifically on the roles of household actors, merchants, and local company managers and owners at local and regional levels. In Ethiopia, the EPRDF-led federal government and the TPLF-led regional state government control access to frankincense woodlands, and they allocate incense concessions to domestic companies to produce incense for international and domestic markets, the former to obtain foreign currency for the state. The EPRDF maintained long-standing land policies that favoured big incense companies. Licenses and access to frankincense woodlands are reserved for specific persons or corporations that have either bureaucratic ties or the wealth to invest in forest resources. Local communities are not authorized to collect incense from their farms or the adjacent forest reserves and these communities feel marginalized by their exclusion from exploiting their own resources. In addition, members of incense production cooperatives include traders and investors that come from different parts of Tigray and are not local investors. Other state licencing requirements to tap incense are too costly for ordinary people to pay, which further excludes them from participating in state-approved tapping cooperatives.

The policy of state control of incense tapping has historic precedent, although practices have changed over time. The previous imperial state government also claimed control over valuable resources that were used to reward loyal subjects for their military service, or valuable resources were extracted as tax/tribute from landholders to strengthen the state’s domestic authority over its subjects (see R. Pankhurst 1968). Since the 1940s, private and government

companies have profited from the incense trade. These companies accessed large capital via credit facilities, as well as hard currency through contacts with the state bureaucracy, and they generated enormous profits in the Imperial and the EPRDF periods. These companies further dictate incense workers' payments and working conditions that impact compensation for local traders, women retailers, and day laborers. In addition, the EPRDF government makes deals with international companies, including the Boswellian project, to market Tigray's incense in Europe to obtain foreign currency for the state.

The *second question* is “What is the lived experience of the women engaged in the processing and trading of incense and aromatics?” The contemporary structure of Tigray's domestic incense trade reproduces historic political structures that are patriarchal and that perpetuate unequal access to resources based on gender, class, age, level of education, and religion. Historically, landless people had little power or social status in the northern highlands, and the landless often survived by doing work that other people would not do—they were generally marginalized and had no political or social capital to draw upon. Landless people were long used as cheap labor for the state, and the landless were exploited by wealthy and powerful local aristocrats and nobles (R. Pankhurst 1968). Today, frankincense companies exploit landless male youths as tappers, and landless and poor women as incense processors, by giving poor remuneration for their labour, providing poor working conditions, and delaying payments.

Landless male youth tap incense trees in Metema in the northwestern Amhara region, but the work is perceived by society as shameful, and they are called *meqeray* (incense tappers) in Tembien, Central Tigray. Landless and poor women process incense, the piece-rate system is determined by class, levels of education, age, and gender. Until recently, the wholesale incense trade was controlled by the region's Muslim merchants (also landless) and poor Christian female

small-scale incense retailers. Muslim and Christian traders also do work that carries little social status, but wholesalers are better compensated than the men and women performing socially shameful or demeaning work, including tappers and processors in the incense trade. The elite class of male, and rarely female, managers and owners of parastatal companies have military or political connections, higher levels of education, and reap the rewards of the incense trade from high profits on graded incense achieved through very low payments given to tappers and processors. The involvement of the regional government and people who have connection with political elites aligns with Bayart's (2009) 'politics of the belly'. Politics of the belly' is a metaphor used to describe African elites who use their political and governmental positions to accumulate wealth and status. The focus of these elites is to control vast economic shares and absolute political powers to enrich themselves. TPLF affiliated business companies under the umbrella name Endowment Fund for the Rehabilitation of Tigray (EFFORT) exploited the country's economic resources while consolidating their political position until 2018. Although EFFORT was established to rehabilitate the war-torn Tigray region, the Endowment was used by "a few corrupt TPLF elites to enrich themselves" (<https://addisstandard.com/analysis-inside-controversial-effort/>).

Poor, landless women work as incense processors, the largest labor sector in the incense trade. Incense processing uses domestic tools that are employed in rural farms for food processing, and processing occurs inside buildings. The technologies and spaces where female incense processors work is perceived by Tigrayans as feminine and feminizing. In the piece-rate system, supervisors consider the labor deployed by each worker to determine the volume of frankincense that female processors are given to sort, which affects the payments they earn. The women are able to exploit the labor of their young children and older daughters. Since the

companies used a piece-rate system based on outputs, the women with more skill and more children sort more quickly and earn more money which encourages child labour, particularly that of girls.

Women are involved in the distribution of frankincense and other forms of incense as small-scale retailers. Women engage in this work during a period of vulnerability, and then leave as soon as they can, particularly young adult women. Women with young children benefit more than other women because their children help them in sorting the incense. These women earn more money than other women while simultaneously doing childcare. Thus women with children may choose to sort incense as an employment option at specific points in their life. Women are also expected to provide gifts of frankincense to the church. As Mauss has explained when humans receive a gift, they feel obligated to recompense the gift in some kind. Women incense processors and retailers feel that they are obliged to give a certain gift, particularly incense, to the church for their own salvation. They feel the need to reciprocate for Christ's sufferings to redeem human beings.

Women have little control over, or the capacity to change their working conditions and payments, as is demonstrated by their high rate of illiteracy resulting from their general exclusion from education until the past two decades. Farther, it is notable that only one woman held a managerial position in one incense company studied. Women's roles within the incense trade reflect and reproduce patriarchal structures that have long disadvantaged women from direct access to resources. The conditions that make women poor and landless are rooted in societal preference to give men control of subsistence resources, particularly farmland and oxen. Divorced and widowed women face serious economic challenges because they cannot farm their own land without male labor and ox-teams. Even though some women gain access to their crop

through share cropping, the amount is usually 1/3 of the total crop yield, which is not enough to cover their annual food needs. Women are also disadvantaged because they lose their land to their parents or male relatives when they marry into their husband's village. These societal practices alienate women from land and the means to farm it without a husband, and force divorced and widowed women into urban settings seeking paid-labor. Although some of these women who joined the incense companies are exploited by these companies, who pay them badly, these landless, poor women eke out an important part of their household economy by processing incense or distributing incense as small-scale retailers. However, over the last decade young unemployed but high school graduated men are entering in the retail incense trade, which was an exclusive domain of women. Local and regional distribution of incense was undertaken by landless Muslim merchants who have controlled trade in general in the region. Wholesaling is a family business, usually conducted by men, and profitable. Muslims do not form a trading caste, but they have a long history in trade in Tigray, and families maintain the business across generations.

The Orthodox Church is also an historic and deeply influential hierarchical and patriarchal institution of power and influence in the state and in Tigrayan society, which is devout. The church has a hierarchy of bishops, clerics, nuns, deacons, and laity with different privileges in performing rituals. The church constantly reinforces its power and position using different strategies. One strategy is exerting economic and spiritual power over its congregants. The church is the largest domestic consumer of high-grade frankincense in daily rites, life-cycle rituals of baptism, marriage, and funerals, and in festivals centered on the life of Christ. Rituals involving incense burning are the right of male clerics, and bishops and priests perform rituals that are essential in transforming incense from a secular into a sacred substance. The church's

steady demand for frankincense creates a virtual monopoly on the use of high-grade incense within the country, a practice that may extend back to the mid- to late first millennium CE as the church evolved, and there is evidence that the use of frankincense in services appears unchanged since the 16th century. As early as the 9th century CE, people were obliged to provide incense as tribute to the church (R. Pankhurst 1982:75), a practice that was reaffirmed in the 15th century, and frankincense is one of the gifts provided to the church by the laity on a regular basis.

Women, in particular, are symbolically associated with incense and are expected to provide gifts of incense to the church to improve their status in the religious and social communities.

Women are also consumers of non-elite incense for non-Christian practices. Women use low-grade frankincense and aromatic plant materials in their homes, often as part of coffee ceremonies (performed by women), to fumigate their homes, protect against dangerous spirits and the evil eye, as a balm for the body, and to perfume their bodies after childbirth. Male *debtera* also use incense in medical treatments, and female traditional healers employ incense smoke to read clients' ailments, to divine their future through incense smoke, and in *zar* rituals also associated with women. It should be noted that Bruce (1790:52) observed that the elite used incense to perfume their handkerchiefs, an additional secular use of incense that is not practiced today. This broad range of secular and non-Christian uses of incense and different types of incense, largely by women in domestic activities, supports the suggestion of a long history of the non-elite incense trade in the region's past, practices that require more research.

The study also contributes to the discussion of Tigray's role as an incense producer over the past two millennia. Today, the Orthodox church consumes large quantities of both domestic and imported frankincense. While there is inscriptional evidence at Adulis of an Aksumite king securing international trade routes to obtain incense and other luxuries (Breton 2011:73;

Bukharin 2009: 66-67; Kobishanov 1981:392, 399; Mekouria 1988:558; Wolde Argay 1997:33, 37), the volume of international trade and domestic consumption of incense in this period is unknown. However, it seems reasonable to suggest that some of the demand for incense, presumably by the church, was met by local frankincense production. Tigray has natural woodlands populated with the *Boswellia papyrifera* (Del.) Hochst trees that produce large volumes of incense and are used today in large scale trade. These woodlands are close to super-highways of trade used since the pre-Aksumite period (Curtis 2008) that linked market centers, and religious centers including Aksum, which is the center of Ethiopian Christendom. Trade routes for imported incense would also have been disrupted by warfare in the past, creating shortages of imported incense that could have been met by local incense production.

The third question was “How are material differences between elite and non-elite contexts of incense use determined?” The study identified two contemporary incense trades in Tigray: the elite trade in frankincense and myrrh that is largely consumed by the church; and the non-elite trade in aromatic plant materials consumed routinely in ordinary households. These two types of incense are burned in very specific social and ritual contexts, and in different types of incense burners. High-grade frankincense, and to a much lesser extent myrrh, are only consumed in church rituals led by priests using metal incense burners and thuribles. Aromatic plant materials and lower grade incense are only burned in clay incense burners in domestic contexts. Clay incense burners are made by female market potters and sold in the marketplace. The latter form of incense is never burned in the church and is considered by ecclesiastics as idolatry and a pre-Christian practice. As figure 9.2 shows, the earlier Aksum incense burners are clay as well as stone. There appears to be a change in the materiality of incense burners over time although when this occurs is not known.

Broken incense burners are discarded differently today in church and domestic settings. The church would not allow me to sample metal incense burners because these were gifted to the church and were sacred. Broken metal incense burners are discarded in church grounds, and it is possible that metal burners are recycled into other religious objects. It should be noted that the materiality of incense burners was meaningful, including types and colors of the metal used in the burners.

While not stated by the women interviewed, modeling objects in clay is considered a female practice, and men who work with clay risk their fertility (Dr. Lyons, personal communication). Clay vessels, like winnowing trays, are women's technologies. Clay incense burners are used in domestic households and mosques (mosque incense burners are the same as those used in households) but never in churches. Unfortunately, the discard behavior of incense burners in mosques was not documented. Household burners are thrown into the fields, burned with the garbage in pits near the house, or abandoned in old houses. Based on these different types of discard behaviors, frankincense burners are more likely to be recovered from church building contexts than from household buildings if a similar pattern of discard occurred in the past. However, there are far more clay aromatic plant/wood burners produced than metal ones, and clay burners are more fragile and frequently replaced, which suggests that clay burners will be more plentiful in the archaeological record if a similar pattern of discard occurred in the past. Clay incense burners are likely to be recovered in the contexts of domestic middens or fields (aromatic plants/woods), but not that of churches (frankincense) based on contemporary discard changes.

The fourth question was "How can the material evidence of the incense trade be determined through residue analysis of burned incense?" The laboratory experiments conducted

on plant materials and incense purchased in markets in Tigray and from residue in discarded domestic incense burners show that it is possible to determine the context in which incense residue was burned. Specifically, the identification of saddle phytolith, a grass contamination, is indirect evidence that people burnt aromatic plants in domestic contexts. In addition, starch residue found in incense burners likely results from contamination from domestic household activities. The process used in this study contributes a simple and cost-effective method to analyze incense residues for African researchers.

11. 2. Conclusions

In conclusion, the study provides a rare example of elite and non-elite luxury incense trades; the former is used in the Ethiopian Orthodox Tewahedo Christian religious practices and for state-sanctioned international trade, and the latter is used for secular and informal domestic rituals, some of which may pre-date Christianity that was widespread in Tigray after the 5th century CE. The evidence suggests that both the elite and non-elite incense trades had long histories. Furthermore, the study provides insight into how the large-scale production, processing, trading, and consumption of incense in Tigray is integrated into local and regional political economies and how the trade is structured by historic political practices and societal inequities based in gender, class, age, religion, and level of education.

Archaeologists might consider how other internationally traded luxury goods were integrated into local power structures and how these trades impacted people of all social scales (but see Lyons 2021). Luxury goods express social differences because of economic and cultural values associated with their production and consumption that allow them to create unequal social relationships (Bourdieu 1984:226, 250) and maintaining social ties among elites (Mintz 1985:96). Elites distinguish themselves through sumptuary laws and control over status symbols.

They manipulate other groups through patronage and distribution of valuable exotic goods (Mintz 1985). Mintz (1985) further illustrates the transformation of sugar from a luxury of kings into an item consumed by ordinary people, detached from its old symbolic meaning to an item available to anyone. The study challenges the simplicity of large-scale top-down theories of the trade of elite luxury goods as symbols of state power and recognizes that the production of luxury goods at the local and regional level creates more complex webs of social and economic complexity that are essential to the development of the political economy of states in pre-colonial Africa.

11. 3. Limitations of the Study

I faced only two issues during fieldwork. First, I was unable to collect discarded metal incense burners from the churches in the study area. Objects that are considered sacred cannot be moved from the premises of the church.⁴⁶ Second, written consent was difficult to obtain for fear that written documents might be used against the participants by political authorities. One of the two closest acquaintances advised me to refrain from requesting written consent from people. This is because participants feel uncomfortable for fear of unforeseeable legal repercussions or quasi-political accountability. In addition, local church and societal tradition gives greater credence to personal trust and good faith than written consent.

11. 4. Ideas for Future Research

The study focuses on women who play a significant role in incense processing, distribution, and consumption. It also provides patterns of incense products used across social groups in the study area. This study paves the way for future research on gender scholarship in

⁴⁶This is important in the site formation processes of churches and the potential recovery of incense burners near churches.

the areas of long- standing crucial trading items such as sesame and cotton and expands available literature on trade in the region such as the salt trade (Apaak 2008; Gebrelibanos 2012; Woldekiros 2014). Ethnoarchaeological research in trade will contribute to a more comprehensive understanding of the political economy in Tigray and perhaps past polities. The study also raises questions that require future residue analysis of archeological incense burners to determine their contexts of use, particularly to provide more conclusive information on incense burners and incense used in domestic and church contexts.

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APPENDIX A

Interview questions for female incense processors and small-scale incense traders

1. Interview questions for female incense processors

1. Do you live in the town or in a village and what is your occupation?
2. What is your marital status?
3. What is your educational status?
4. What is your religion?
5. What is the size of your household or how many dependants do you have?
6. Do you have your own house? If not, how much did you spend for house rent?
7. Do you have a farm and ox? Who ploughs your farm?
8. Does your farm produce enough grain to support your household for the entire year?
9. When did you start working at this company? Have you worked for another company before?
10. What was your earlier occupation before joining incense processing companies?
11. Do you receive financial support from you spouse or family member?
12. How many burlap bags of incense you processed monthly or annually and how many additional household members participate in the task?
13. What are the different grades of frankincense and how does frankincense grades affect payment determination?
14. How is payment determined? Is there variation in payment? If so , what are the factors for this variation?
15. What is your average annual income?
16. Is your income enough to cover your monthly household expenses?
17. What do you do when you are laid off from incense processing seasonally?

18. What kinds of support are available from companies or government to improve the working conditions and lives of women incense processors?
19. Why is incense processing the work of women and children, and incense tapping the work of men?
20. Who in your household is involved in selling /buying/burning or giving incense to the church?
21. What are the approximate volumes of different types of incense that you use in your home each week and for special events in the year?
22. Which markets do you purchase/sell incense on a regular basis?
23. Which types of incense do you consider to be a luxury? Is it all types of incense or do you consider certain types of incense to be a regular household necessity? Why?
24. If, when and why do you burn frankincense in your home?
25. If, when and why do you burn aromatic leaves/wood in your home?
26. Do you purchase frankincense to give to the church? If so, why, when how much and how often?
27. Who in your home purchases incense for the church?
28. Do you purchase incense for any other groups or people? If yes, who and why?
29. How much is the price of incense or aromatic woods?
30. Where is incense stored and burned in households? How often do you use different types of incense in your home and for which events?
31. What types of incense burners do you use (clay or metal), how often do you replace them, and where do you discard old incense burners?
32. What types of charcoal do you use in burning incense?

33. What kinds of plants are used to make charcoal in your area?
34. Why is the incense trade mainly a trade of women and children? In your opinion what are the reasons for this?
35. Why do women become incense processors and is this a good occupation for women?
36. Do you experience any prejudice from people for this occupation? What type of prejudice do you experience?
37. How has the incense trade and incense use changed in your lifetime, and what are the reasons that you remember that caused these changes?
38. Who give frankincense to the church, who are these members (men, women, children, rich, poor), how much do individuals provide to the church, when do they provide incense, and for which rituals?

2. Small scale incense traders

1. Do you live in the town or in a village and what is your occupation?
2. What is your marital status?
3. What is your religion?
4. What is your educational status?
5. What is the size of your household or how many dependants do you have?
6. Do you have your own house? If not, how much did you spend for house rent?
7. Do you have a farm and ox? Who ploughs your farm?
8. Does your farm produce enough grain to support your household for the entire year?
9. When did you start working as incense retailing?
10. What was your previous occupation?
11. Do you receive financial support from you spouse or family member?
12. What types of incense do you sell?

13. From which markets do you purchase and sell different types of incense?
14. From which areas aromatic woods/ plants are collected?
15. Who distribute aromatic woods/ plants to retail merchants?
16. What is the cost for you to purchase different types of incense from wholesalers?
17. Do you always purchase incense from the same wholesalers? If so why? If not, why not?
18. What type of transportation do you use to come to market? For example, do you come on foot, or by bus or do you use pack animals to transport your products/purchases?
19. What kinds of measurements do you use to determine the price?
20. Which days you sell incenses?
21. Who purchases incense from you (men, women, regular customers)?
22. What is the volume of incense sales per week?
23. Is the incense market seasonal? For example, are all types of incense available all year round or are certain types of incense less/more expensive or not available in certain seasons?
24. What is the contribution of incense sales to your household economy?
25. Who are more prominent in incense retailing? Men or women? Why?
26. Who are more frequent in buying incense and other aromatic plants?
27. Which incense are consumed at household level and which ones are used in church?
28. Why people burn incense at home and church?
29. Which incense types have medicinal values?
30. What changes have happened in the incense trade in your lifetime?
31. Does the choice of market location or transportation to market change with age?
32. Why are young men and women entering the retailing occupation?

33. Do you experience any prejudice from people for this occupation? What type of prejudice do you experience?
34. Do you give incense to the church? When and how much?
35. Why do you give incense to the church?

APPENDIX B

Interview questions for wholesale vendors and incense trading companies

1. Interview questions for wholesale vendors

1. Where do you buy different types of incense?
2. Do you know where the incense is grown or produced?
3. Do you know how the incense is produced and processed before it comes to the market?
If so, can you describe this process? Do you have to do any processing of the incense before it can be sold or used in the home or church?
4. What are the different grades of incense and their prices? Who purchases the different grades of incense and why?
5. How often do you purchase these types of incense, and what is the approximate volume of each type of incense that you sell each week?
6. Do you buy incense from other wholesalers or directly from incense producers? Where are the different types of incense produced and who produces the different types of incense (e.g., men, women, children, poor people)?
7. What is the cost for different types of incense for you as a wholesaler and what are the prices that you charge for incense to the individual incense traders? Do you have regular suppliers and customers? If so, where and why?
8. What type of transportation do you use to transport your product to your shop? Bus or truck? Which trade routes you used the trucks and buses that transport incenses to your area? What is your transportation cost?
9. Do prices change at different times of the year?
10. Are certain months better for incense sales than others and why?

11. Does the choice of market location or transportation to market change with age?
12. Who are your customers?
13. Where do your customers come from? For example, do you know how far villagers come to the market to buy incense?
14. How long have you traded incense in the marketplace? Why and when did you become a trader and how important is this trade for your household economy? Are other members of your family merchants?
15. Why is wholesale the occupation of men?
16. Why wholesale vending in your area dominated by Muslim merchants?
17. What types of incense are burned in your home for daily activities or for special events during the year?
18. Who burns incense in the home and where incense is stored?
19. What type of incense burner do you use?
20. Is there variation in incense use throughout the year?
21. Do you give incense as gifts to the church or mosque or to other people?
22. What type of charcoal is used to burn the incense?
23. Do you remember any changes in the use or trade of different types of incense in your lifetime?

2. Interview questions for incense trading companies

1. How many companies are engaged in incense tapping and processing in Tigray?
2. How many years do your company conducted incense processing and trading?
3. Where is incense grown or produced in Tigray?
4. What are the production and processing procedures of frankincense?

5. Does your company produce frankincense by itself or buy from cooperatives? Since when?
6. How many employees are hired by your company?
7. Why is incense production and processing gender based?
8. How do you recruit your workers and what other benefits are provided to employees?
9. What types of incense do you produce other than frankincense?
10. How are employees payment determined?
11. What is the total volume of frankincense produced in Tigray annually?
12. What is the total volume of frankincense produced and processed by your company?
13. What is the managerial composition of your employees?
14. Which counties purchase the frankincense produced in Tigray?
15. Who are your domestic customers?
16. How is grading determined?
17. What is the contribution of frankincense to the GDP of the Tigray region and Ethiopia?
18. Which trade routes are used to for both domestic and international market?
19. Do you remember any changes that have happened in the incense production and trading?
20. What kinds of support are available from companies or government to improve the working conditions and lives of incense processors and tappers?
39. Who in your household is involved in buying/burning or giving incense to the church?
40. What are the approximate volumes of different types of incense that you use in your home each week and for special events in the year?
41. Which markets do you purchase incense on a regular basis?

42. Which types of incense do you consider to be a luxury? Is it all types of incense or do you consider certain types of incense to be a regular household necessity? Why?
43. Do you purchase incense for any other groups or people? If yes, who and why?
44. Where is incense stored and burned in households? How often do you use different types of incense in your home and for which events?
45. What types of incense burners do you use (clay or metal), how often do you replace them, and where do you discard old incense burners?

APPENDIX C

Interview questions for church scholars and laities

1. Who provides or sells the incense to the church?
2. If church members give frankincense to the church, who are these members (men, women, children, rich, poor), how much do individuals provide to the church, when do they provide incense, and for which rituals?
3. Who participates in the use of incense in ceremonies (men, women, lay people, church officials)?
4. What church rites are performed using frankincense and myrrh offerings?
5. Do you recall any specific church manuscripts that refer to incense use for church rituals?
6. What are changes that have occurred in the use of frankincense or other types of incense in the church in your lifetime and why did these changes occur?
7. Which types of incense are used in the church?
8. What are the approximate volumes of frankincense consumed by each church per week or month?
9. What are the debates around incense offering within the church?
10. Is there restriction on participating in incense offering rituals based on gender?
11. What types of incense burners does the church use and how often are replaced, and where the church discard old incense burners?
12. Where is incense stored and burned in the church?
13. Do you purchase frankincense to give to the church or other people? If so, why, when how much and how often?

14. Do you know how the incense is produced and processed before it comes to the market or to church? If so, can you describe this process? Do you have to do any processing of the incense before it can be used in the home or church?
15. Do you burn incense at home? If so, what type of incense and who purchases the incense? Why do you burn incense at home or at church?
16. Do you burn aromatic woods/leaves? If so, when and why do you burn aromatic leaves/wood in your home?
17. Which markets do you purchase incense/ aromatic woods on a regular basis?
18. What are the approximate volumes of different types of incense that you use in your home each week and for special events in the year?
19. Which types of incense do you consider to be a luxury? Is it all types of incense or do you consider certain types of incense to be a regular household necessity? Why?
20. Do you consider incense traders or producers to be of the same social status as your family? If no, why not?
21. What types of incense burners you use at home?
22. What type of charcoal is used to burn the incense at home and church?

APPENDIX D

Letter of support from the Ethiopian Orthodox Tewahedo Church Patriarchate Office



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Ethiopian Orthodox Tewahedo Church
PATRIARCHATE HEAD OFFICE

ቁጥር 6504/8555/09
Ref. No.

30/10 2009 ዓ.ም

Date _____ 20 _____

TO Whom It May Concern

Mr Getachew Nigus, a PhD candidate at the University of Calgary, Canada, has requested our office to establish a collaboration in the study of the use and value of frankincense and myrrh in the rites performed in the Ethiopian Orthodox Tewahedo Church.

As our Church manuscripts and documents testify, frankincense and myrrh were used in various rites of the church since its foundation. These two types of incense are still used in rites performed in the church. We believe that Mr Nigus' investigation on the use and value of incense will illuminate the religious and social contributions of the church to the society. This study will also give a chance to get insight into the use and value of incense in the church from a scientific perspective. To meet these objectives, the church gives its consent to work with Mr Nigus by providing the necessary resources (e.g. references, interviews, access to church manuscripts, and other resources) related to his investigation. There fore, I give my consent for our church to work with Mr Nigus in his endeavour to study the role of frankincense and myrrh in the rites performed in the Ethiopian Orthodox Tewanedo Church.

Peace of God be with us.



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Abba Dioscoros



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Special Manager of the E.O.T.C. Archdiocese
P.O. Box 1269
Addis Ababa, Ethiopia
TEL: 011-155 00 98

ARA ADD
ADDIS ABABA
FAX 57-45-14

APPENDIX E

Letter of support from the National Regional State of Tigray Culture and Tourism Bureau

 <p>ትግራይ መብቶል ስልጣን Tigray: Cradle of Civilization</p>	 <p>አብ ብ/ክ/መንግስት ትግራይ ቢሮ ባህልን ቱሪዝምን National Regional state of Tigray Culture and Tourism Bureau</p>	
ቁጥር/Ref No: 859/55	ቀን/Date: 20/11/10	

ናብ ቤት-ዕሕራት ባህልን ቱሪዝምን ወረዳ ዓድዋ


ዓድዋ

ቀረብ፡- ብዛዕባ ትሕብብር ይምልከት

ተምሃራይ ሳልሳይ ድግሪ (PHD) ዝኾኑ አይተ ጌታቸው መረሳ ንጉሰ ሳልሳይ ድግሪአም ብኢትዮ ኣርኪኦሎጂ ስፔሻላይዜሽን እንዳ ተማሃሩ ስለ ዝኾኑ ንመመሪቲ ዕሑሮም ኣብ "ጥንተ ዘመን ንግዲ ዕጣን" ኣመልኪቱ ኣብ ኣኸሱምን ኣድዋ ከባቢ ይኣን ነቲ መመሪቲ ዕሑሮም ዝኸውን መረዳኢታ ይእክቡ ስለ ዘለው ናብ ማሓውርና ድጋፍ ክንዕሕራሎም ሓቲቶምና ኣለው። በዚ መሰረት ዝምልከቶ ኩሉ ኣድላዩ ምትሕብባር ክግበረሎም ነተሓሳስብ።

ቅዳሕ

- ንአይተ ጌታቸው መረሳ
- ንምምሕዳር ሰባ ማእኸል



ምስ ሰላምታ!

ዝኾኑ ልዩ ልዩ ዝኢዳን
ምክትል ሕላፊ ቢሮ

አድራሻ፡ መቐለ ትግራይ ኢትዮጵያ Address: Mekelle, Tigray, Ethiopia	ፋክስ፡ Fax: 034 440 1032	ድ.ሕራ-ገፅ፡ Website: www.tigraitourism.com
ስልኪ፡ Tel: 0344409360 0344402028 0344414990	ቱ. ፖ. ላንዱኻ፡ P.O.Box: 124	ኢ-መይል፡ E-mail: tigray.tourism@ethionet.et