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Introduction: Interdisciplinary and Multiscalar Ethnohistorical Archeology

1.1 'Small Worlds' towards Modeling Evanescent and Permanent Markets

Using a bottom-up approach, this book focuses on a known gold source or production periphery (or margin) relative to the Indian Ocean–West Philippine Sea/South China Sea (IO–WPS/SCS) gold trade emporium – Northwestern Luzon Island, Philippines (Fig. 1.1) and its gold deposits in the Grand Cordillera Mountains. The work begins with the indigenous groups who started the chain of interactions that eventually resulted in gold ending up in production centers within the IO–WPS/SCS. The work, being both multidisciplinary and multiscalar, operated at various scales of analyses, weaving together available archival, historical, ethnographic, and archeological data on individual sites within larger networks and regions (Fig. 1.2). Modeling through geographic information systems (GIS) was particularly helpful in establishing a baseline predictive model that was used as a guide in remote sensing. The book, however, has identified several instances wherein these predictive models do not match reality. Historical models utilizing archival maps, written historical records, or oral tradition records, however, often do correspond strongly with the remote sensing analysis which is presented below. The GIS methods included basemap-georeferencing of ethnohistorical and archeological sites, visibility and viewshed analysis, least cost path analysis, suitability modeling, as well as other spatial analyst tools.

This book examines regional-scale interactions between upland extraction points, small-scale tribal gold miners and the lowland middlemen, and foreign maritime merchants in evanescent coastal markets to more permanent ones. It compares five regional coastal–upland trade systems in Northwest Luzon (Tonglo, Gasweling, Lepanto, Angaqui, and Abra regions) through historical, archeological, and ethnographic data, to examine how small, upland tribal groups mined gold and made complicated decisions on the best strategies for bulking and storing the gold in easily accessible areas along what were calculated as easily traversed routes to the coast in order to reach coastal markets and maritime traders faster than upland gold miner competitors. Based on trade and exchange commitment to the IO–WPS/SCS trade emporium, Northwestern Luzon settlements can functionally be classified into coastal settlements, bulking villages, or gold mines. It is argued in this book that these three settlement locales are articulated precisely because of the need to facilitate the movement of goods upland to lowland and vice versa. What is further argued is that the nodes to these transport networks lend a hand in determining if upland miner groups participated in either evanescent markets or permanent markets. Evanescent markets feature more land-based trails that cut into forests or follow mountain ridge trails on the way to the coast. Permanent markets instead have an added component of riverine transport networks that facilitate bulk movement of goods.

The location of bulking villages within these transport networks also allows us to differentiate evanescent from permanent market encounters (Fig. 1.3, Fig. 1.4). The bulking centers with surveilling capacity of the coast that facilitate ship-spotting allow goldminers to plan to meet the merchant ships and deal with them directly without going through middlepersons. A non-surveilling situation, on the other hand, is a feature of a permanent market since the important factor would be proximity to a riverine system that can facilitate movement of bulked goods through rafts. A third variable that also leads to a strong determination of a market situation is the presence of a trade diaspora, with the argument that coastal peoples occupying bulking villages indicate the presence of middleperson groups who facilitate the approval of credit that allows miners to get items in advance and be able to pay in the future. A trade diaspora from the highlands, on the other hand, will ensure that miners will not deal with middlepersons and be able to plan to meet trade vessels on the coast upon spotting their movement on the horizon.

It is the identification of either evanescent or permanent market situation that will ultimately provide a glimpse into the receding agentive position of the gold miners, receding resiliency especially with the advent of *reduccion* or Spanish assimilation, and finally an increase or prevalence of debt finance or '*utang na loob.*' The book is a palimpsest of the tenth to sixteenth century Early Historical Period and the seventeenth to early twentieth century Historical Period, with chronology facilitated by the multifaceted data (historical, archeological, ethnographic) employed in the book (Fig. 1.5 and Fig. 1.6).

Most historical and archeological work on the IO–WPS/SCS trade has tended to focus on the 'big picture' of large-scale trade powers from early to mid-second millennium AD (the East Asian empires, South Asian empires, mainland

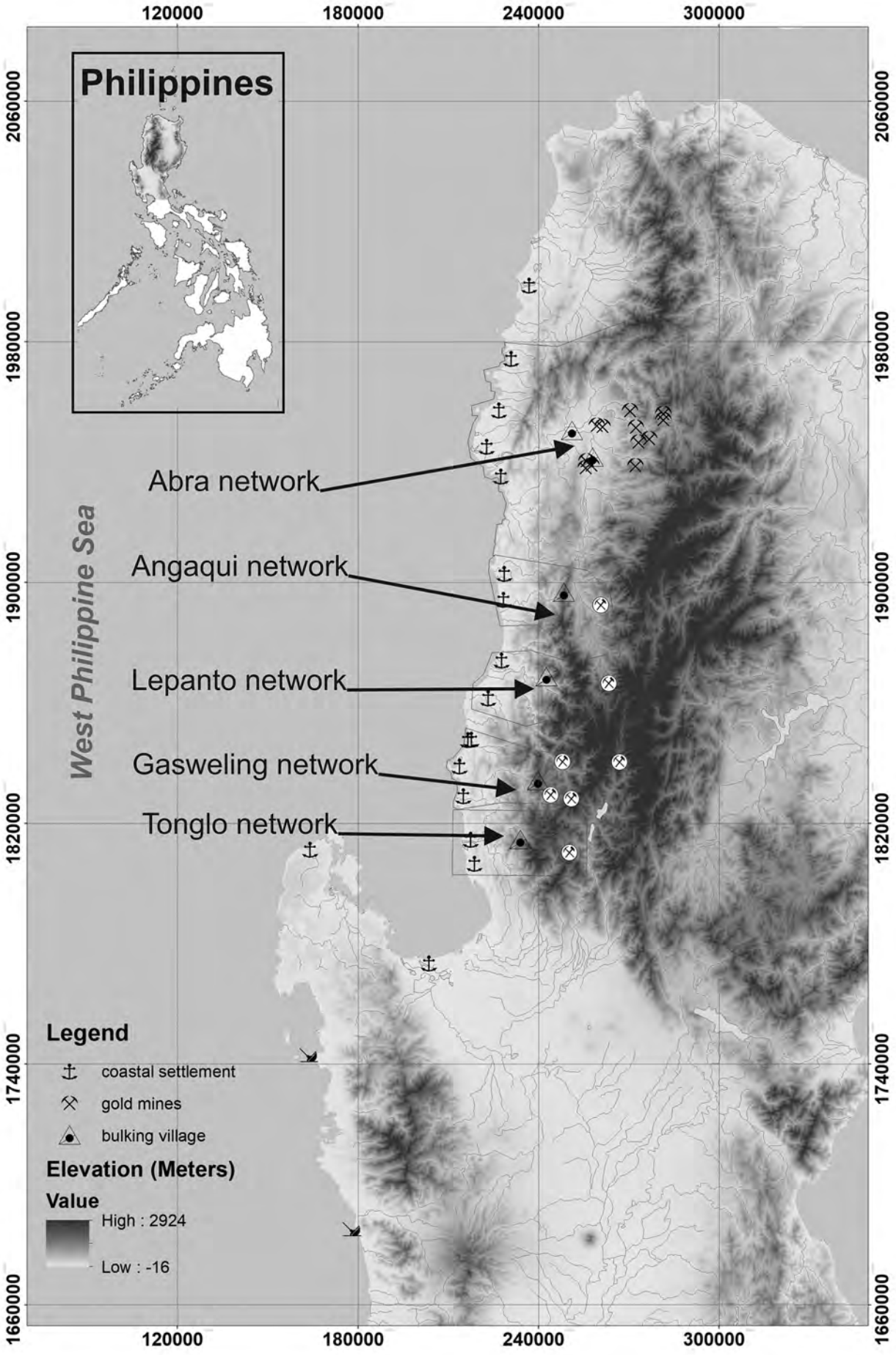

Figure 1.1. Five gold trade networks in Northwestern Luzon (ASTER GDEM is a product of METI and NASA). Note that data frame grid throughout the book is UTM WGS 1984.

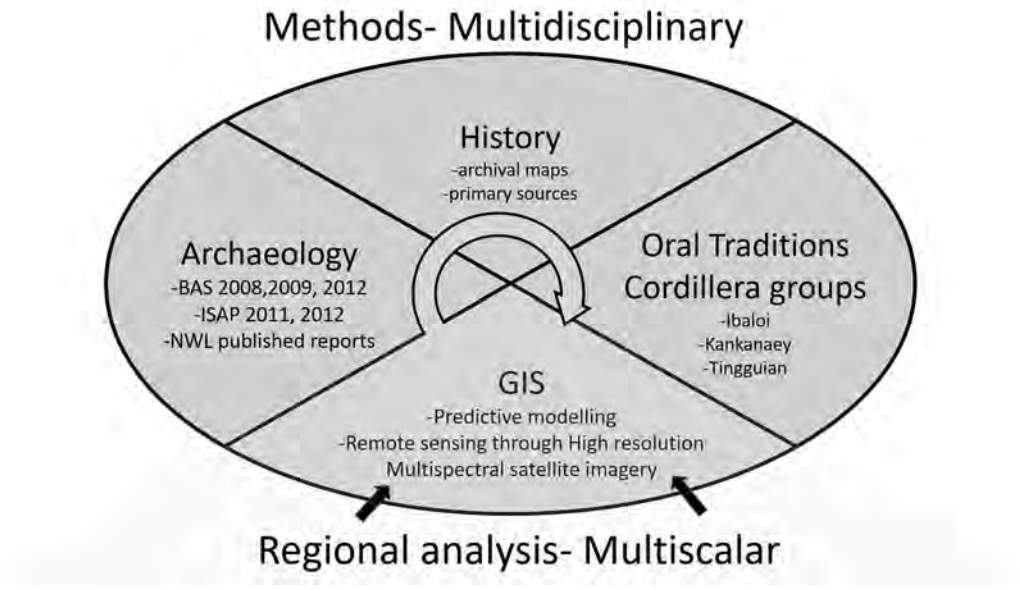

Figure 1.2. Diagram showing multidisciplinary datasets. Note that regional, multiscalar analysis is facilitated by GIS and Remote Sensing.

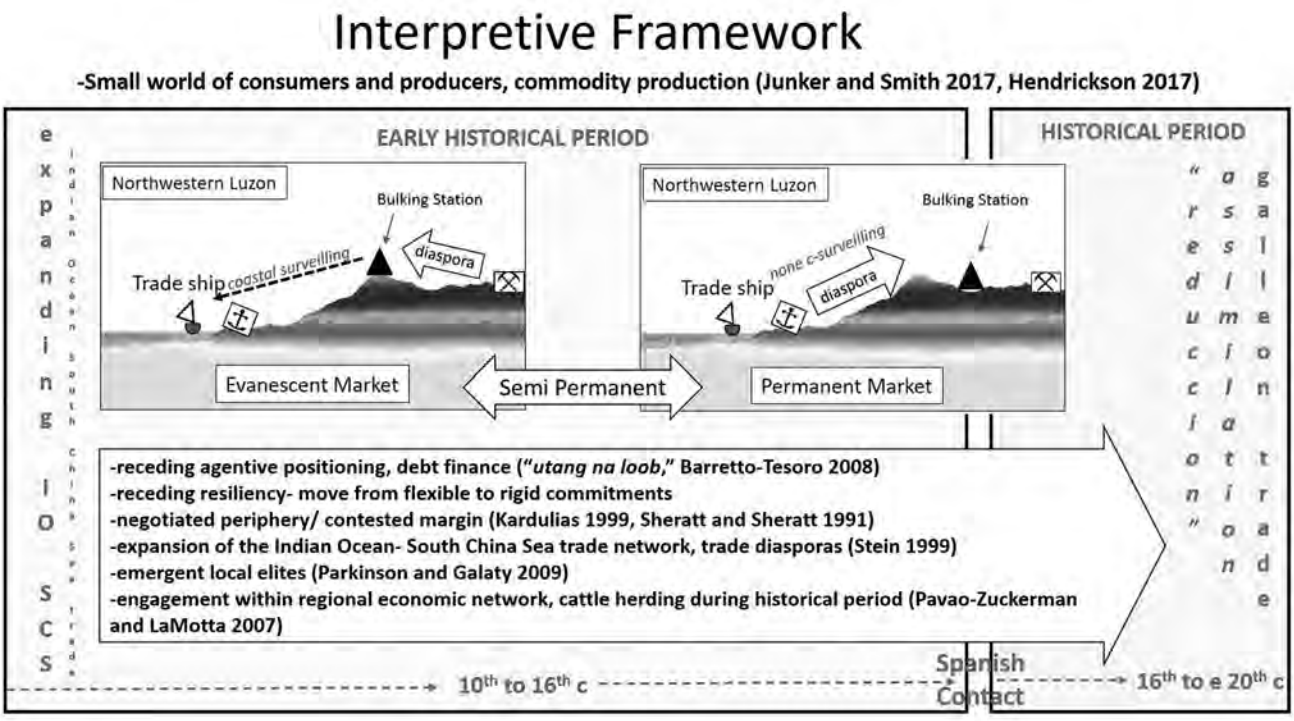

Figure 1.3. Interpretive Framework used in the book.

SE Asian states, and European colonizers) (see Hall et al. 2010, Stein 1999), with little emphasis on the multitude of small-scale producers and traders of the Southeast maritime sphere, where a wide range of economic and social transactions occur that keep these trade networks viable. Some of the known gold sources in Southeast Asia for instance include islands in the Philippine and Indonesian archipelago, the Malay peninsula, and parts of Burma.

It is only recently that some archeologists and historians have moved away from emphasizing centric control of commodity exchange by powerful states and empires within the South China Sea–Indian Ocean trade spheres (reinforced through the lens of 'histories' disseminated by literate foreign traders from distant state centers), instead examining the 'small worlds' of chains of producers and consumers in this complexly linked oceanic trade world. This approach is viable especially if these producers and consumers have available written and oral histories. In Northwestern Luzon, the various indigenous groups have recorded oral traditions as well as primary and secondary historical documents that contain information on gold extraction and working. Some of these data are in depth,

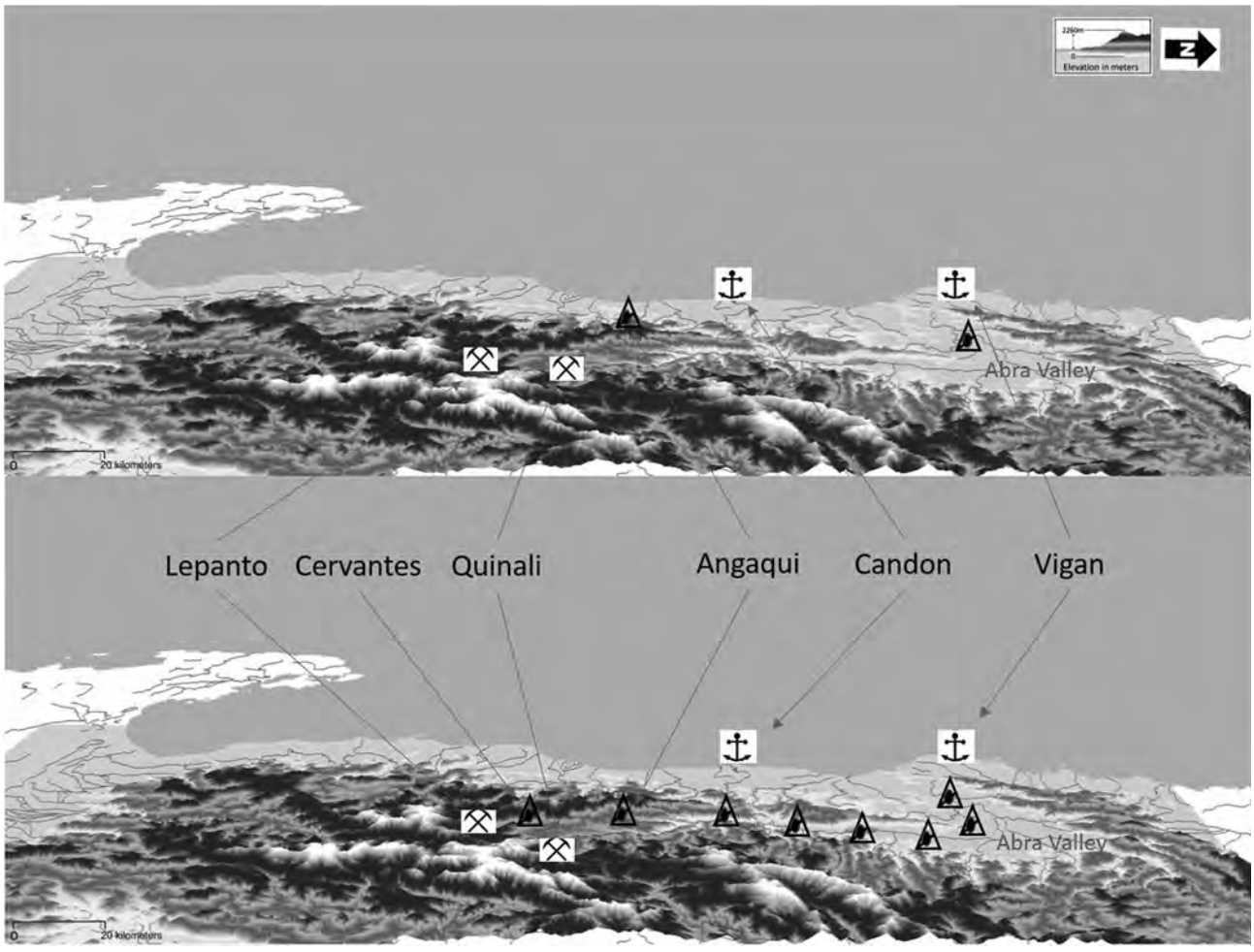

Figure 1.4. Map of change through time highlighting Angaqui, Abra networks in particular to illustrate shift from evanescent to permanent market (EHP tenth to sixteenth century). The top map shows thirteenth century prior to the rapid expansion of IO–WPS/SCS trade with Luzon in the fourteenth to fifteenth century, which is depicted in the lower map. Note that due to increases in trade interaction the bulking stations in Abra valley are established on the route leading upriver to the Quinali and Lepanto mines. Also worth noting is the move of Angaqui from the mountain peak with surveilling capacity for Candon to the river banks of the Abra with non-surveilling capacity for neither Candon nor Vigan, arguably to facilitate bulked goods raft transport.

providing a window into social political and economic aspects of this gold-producing lifeway.

Meanwhile, important new works have begun to emerge in the archeology of commodity production at various scales and diverse strategies of trade in both Mainland and Island Southeast Asia (see Junker 2018, Junker and Smith 2017, Hendrickson et al. 2017). In Junker (2018) and Junker and Smith (2017), the foragers in Island Southeast Asia and their exchange relationship with sedentary agriculturalists is viewed as a complex and agentive strategy of resilience. Research by Hendrickson et al. (2017) also emphasizes agency of the small-scale forest savvy Kuay groups of Cambodia who supported the Khmer Empire. While this book contributes to the dialogue on multi-ethnic trade by focusing on gold as a commodity, there is a nascent interest in once-peripheralized and unstudied small-scale societies who were key players in the Southeast Asia–East Asian–South Asian maritime and land-based trade sphere, as will be discussed in subsequent chapters. It should also be noted that this book attempts to contribute to the dialogue on multi-ethnic trade by focusing on mined gold as a critical upland product associated with social constructions of wealth and power in the client societies, but there is a significant potential to expand the work to other commodities, for example involving raw material extraction (e.g., archeologically retrievable tropical forest plant and animal products, including ivory, spices, hardwoods, etc.), which will provide a fuller picture of forms of engagement and power relations at multiple scales.

The book is a unique contribution to the study of gold production in Southeast Asia because it intensively studies the connections between chains of producers and consumers that eventually reached out of the Philippine archipelago and fuel; by the sixteenth century, a truly world system focused heavily on the gold economy. As noted above, this book investigates questions of agency vs. marginality of small-scale gold miners in Northwestern Luzon between the tenth century and the twentieth century. That is, the book privileges previously disenfranchised groups in this

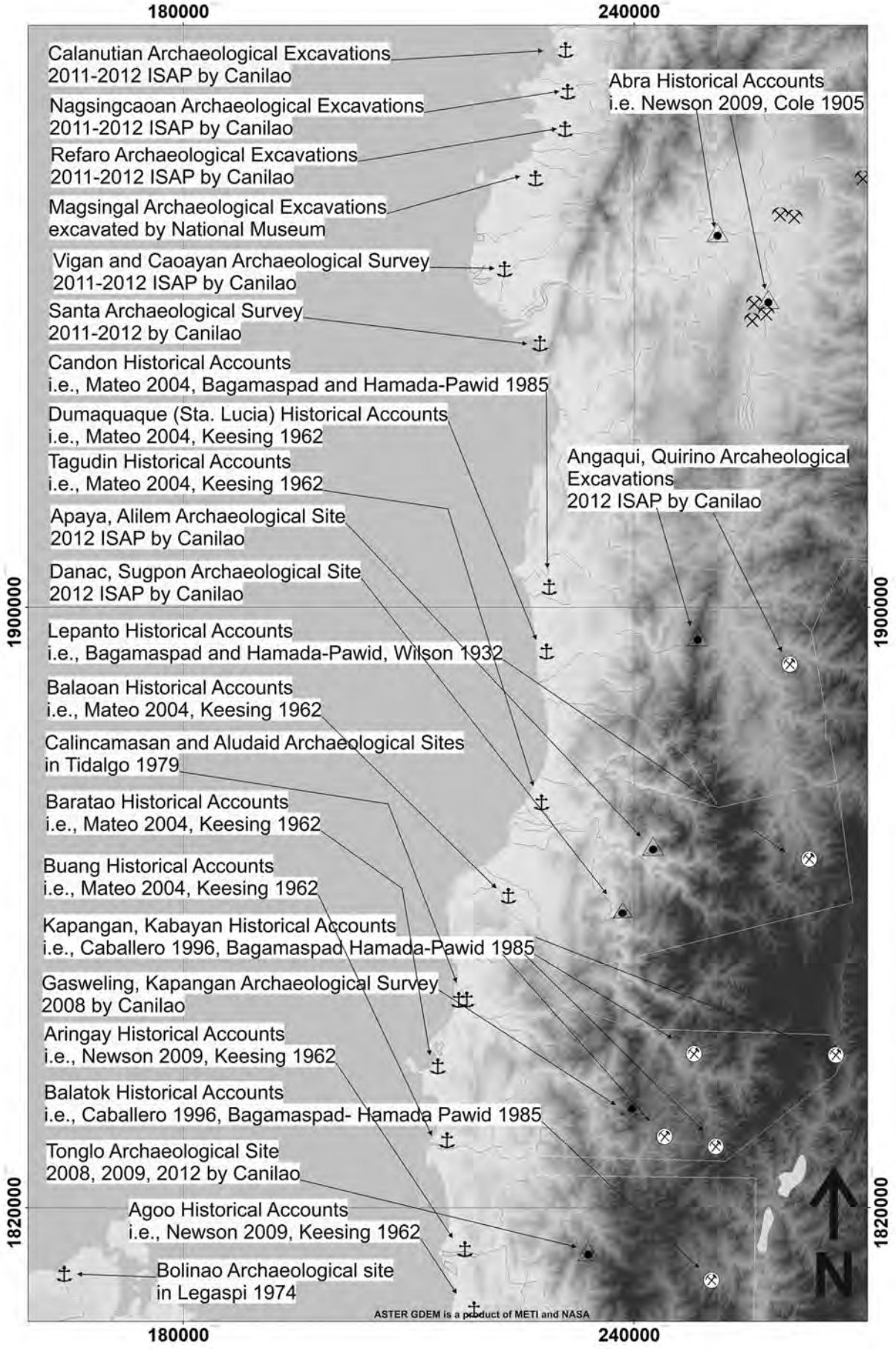

Figure 1.5. Relevant oral tradition, written historical or archeological data sources used in delineating Northwestern Luzon settlements on the book basemap (Early Historical Period tenth to sixteenth century and Historical Period seventeenth to early twentieth century).

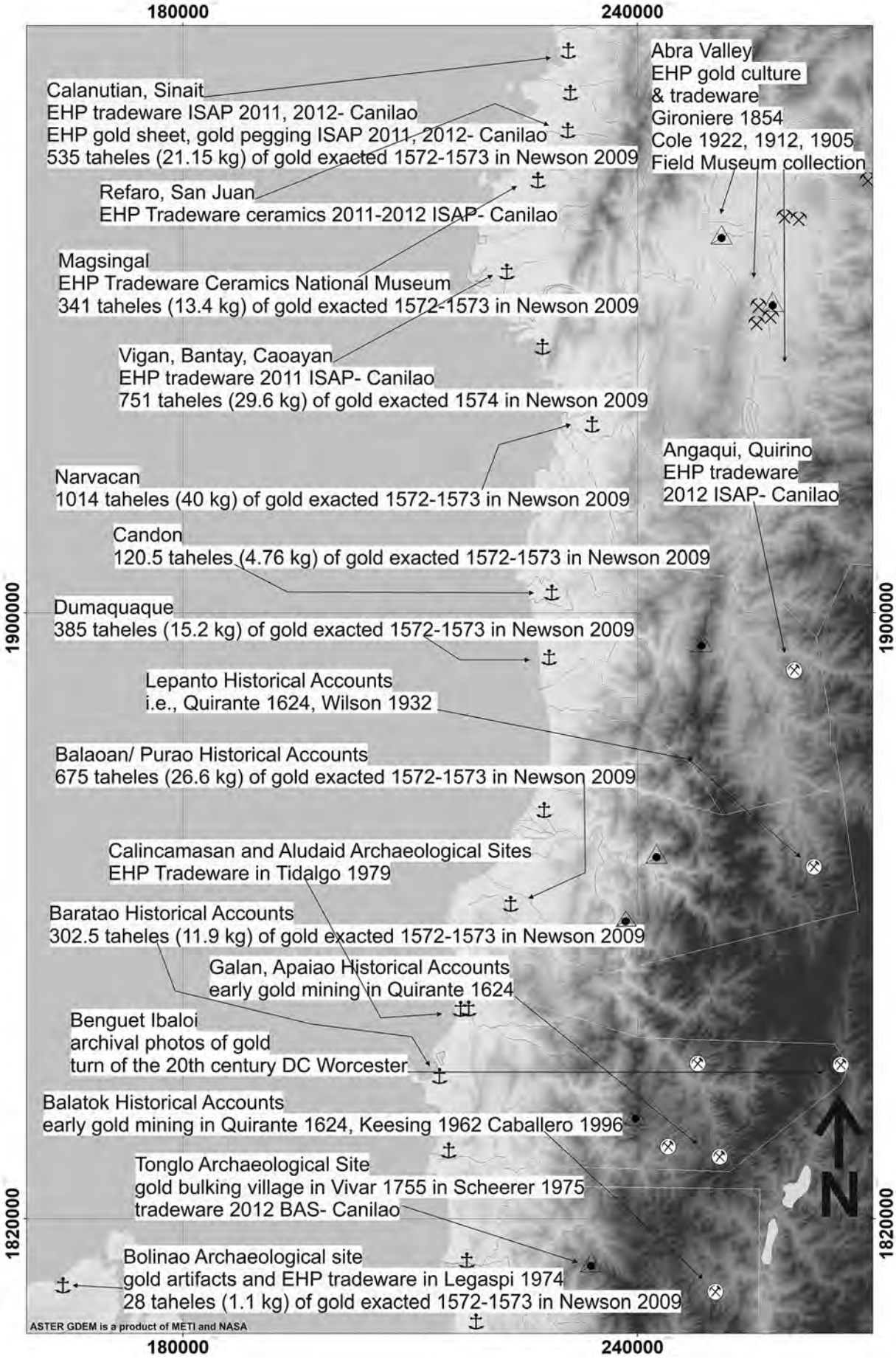

Figure 1.6. Map showing data on gold and tradeware quantities or gold and tradeware culture found on relevant settlements of Northwestern Luzon. Most of these sources pertain to the Early Historical Period tenth to sixteenth century.

analysis. The local and regional (multiscalar) analysis employed in the book utilized advanced remote sensing methods to analyze five gold trade networks in the Island. The book may be the first to use archeometrical methods, specifically GIS and satellite remote sensing, in West Philippine Sea/South China Sea regional gold studies, which is rich with historical and ethnographic data but in terms of theorizing gold production and distribution, has remained speculative in nature.

1.2 Interdisciplinary Methods: Historical, Archeological, Ethnological, and Geographical/ Spatial, Remote Sensing Studies

This book recognizes the diversity of the Northwestern Luzon gold data from centuries of various multi-cultural perspectives (e.g., written by Spanish, Filipino, foreign Asian traders including Chinese records) in the form of primary and secondary documents and oral accounts with information on production and trade systems, as well as recent archeological works on both single site and regional levels, ethnological studies (involving relatively recent oral histories and material culture through museum collections and archival documentation), and reconstructions of interactive economic land use and commodity transport systems through Geographic Information Systems data, in the analyses of these production and trade systems. This plethora of sources then necessarily requires multidisciplinary approaches that seek to avoid 'siloing' the knowledge from the various disciplines (History, archeology, Geography [GIS], and Cultural Anthropology). It is posited in this book that to truly understand larger systems of human interaction at various scales, one has to use a multidisciplinary approach.

1.3 A Multiscalar Approach to Examining Complex Regional Production and Trade Networks

It is vital to examine social and economic relations in NW Luzon within a regional level of analysis rather than single sites, since interaction spheres in prehistory and varying historical periods involve a plethora of actors and groups who dynamically shape the gold production and trade. While much of the archeology in the Philippines and in Southeast Asia in general remains focused on single sites rather than the larger regions in which people interact as social units with distinct ethnic/linguistically bounded identities, larger economic spheres are formed for material benefit, and distinct ethnic/culture 'edges' often form on the landscape where conflict or friction occurs around social norms and exchange.

This book focuses on the gold working indigenous groups within the Northwestern Luzon region. Accordingly, the gold extracting and gold working groups are lumped together within the cultural identities of Ilocano, Tagalog, Igorot, Pangasinan, etc. There are, however, more distinct subgroupings, which include Ibaloi, Tingguian, Itneg, Kankanaey, Bago, Bontok, Ifugao, etc. It is important to make the point that this book is not arguing that these varieties of identities transcended time, going back to precontact periods, but quite akin to analyzing a genealogical tree, one is able to reconstruct the relationships and connections of these more contemporary groups. This aspect of the work was facilitated through the analysis of 8,875 square kilometers of high-resolution and multispectral WorldView-2 (pansharpened at 0.46 meter resolution) and WorldView-3 (pansharpened at 0.31 meter resolution) satellite imagery of these five networks in Northwestern Luzon, provided by the DigitalGlobe Foundation. GIS predictive modeling was also made possible by Advanced Spaceborne Thermal Emission and Reflection Radar Global Digital Elevation Model (ASTER GDEM) from the Ministry of Economy Trade and Industry of Japan and the National Aeronautics and Space Administration of the USA. Open access shapefiles for educational use were also sourced from PhilGIS.org. Satellite imagery enhancement of the raw satellite imagery was also carried out using ERDAS Imagine version 2016 software (Hexagon Geospatial, Madison, AL, USA)and Geographic Information Systems (GIS) analysis through ArcMAP versions 10.4, 10.5 (ESRI, Redlands, CA, USA) software also made possible the predictive modeling of trails and settlement locations within the five networks of Northwestern Luzon. But it should be emphasized that for crucial interlocutors of this regional, geographic data as well as ethnographic, historical, and archeological data were available for specific sites within Northwestern Luzon.

1.4 Overview of Book

The following chapter two will provide an overview of the historical, ethnographic, and archeological data available regarding gold trade in Northwestern Luzon, and how these various media can illuminate and expand our understanding of a complex and critical local system of production and trade that fueled the larger IO–WPS/SCS 'world trade system' of the late first millennium to the late second millennium AD. This is crucial in setting the stage for the theory as well as the method in this book. This chapter's multidisciplinary approach to material evidence and multi-vocal sources of written and oral histories over the span of the second millennium CE paints a complex picture of both the recorded memory and materiality of gold mining, its social and political configurations, its economic ramifications on local and regional scales, and the strategies used by mining and merchant communities over time and space in Northwestern Luzon.

Chapter three provides a background on the methods directly used in the analysis including the various GIS tools as well as the methods of enhancing high-resolution multispectral imagery. In terms of GIS methods, this book deploys least cost path analysis, visibility and viewshed analyses, weighted overlay technique, and historical map georeferencing, among others. In terms of satellite imagery both WorldView-2 with 8 multispectral bands featuring 1.85 meter resolution and one panchromatic band at 0.46 meter resolution and WorldView-3 with

eight multispectral bands featuring 1.24 meter resolution and one panchromatic band at 0.31 meter resolution were utilized. After image enhancement or pas sharpening WorldView-2 resolution is 0.46 meter while WorldView-3 resolution is 0.31 meter. Finally, a section of this chapter features Social Network Analysis of the Northwest branch of the Abra riverine trade network.

Chapter four provides a review of various models – such as World System Theory, modified forms of World System Analysis, a new emphasis on the 'periphery' or intersection of multiple interacting political and economic centers, multiscalar approaches to socio-economic interactions, and formalized 'social network analysis' – as theoretical representations of relationships at a regional level that have some utility in both predicting and analyzing on-the-ground spatial patterning of regional-scale archeological sites associated with gold production systems in the interior and their articulation with lowland markets on the coast feeding into larger oceanic maritime trade within and beyond the Philippine archipelago. The chapter also attempts to integrate these larger scale prototypes of interactions with structural theories of agency and reciprocity at a smaller scale, focused heavily on historically and ethnographically documented elements of social relationships that appear to persist over time in the region.

Chapter five provides the analysis on the results of the methods and its direct implications on the data of chapter two, historical, ethnographic, and archeological data, and chapter three. Here we begin to see the differentiated articulation of the local gold trade system among the five trade networks. Chapter six provides a discussion of the implications of the findings based on the analysis.

Finally, chapter seven will provide the conclusions, which will wrap up the important findings of the book, arguing that various commitments to the overseas gold for porcelain trade reflect the variable agentive decision making of the Igorot gold miners.

1.5 Significance of this Book

A major contribution of this research is the focus on the use of anthropological theory to understanding local small-scale gold miners who were articulated to a broader global world system. The book focuses on the small worlds of disenfranchised mining groups who used to pursue a latitude of agency before some of these groups became fully interfaced with the IO–WPS/SCS trade system. The research in Northwestern Luzon will stand as a model on how to redress archeological inquiry starting from the margins or peripheries before moving to the centers. The impact may also reverberate across the South and East Asian region as scientists interested in the historical and archeological research of gold will see the immense utility of combining high-resolution remote sensing techniques as well as GIS spatial analysis in answering fundamental questions about the gold trade. Further, the analysis in Northwestern Luzon will be the first step to a continuing effort to broaden the reach of this research, noting the other areas with gold sources in South and East Asia like Sumatra and Borneo and gold centers like Southern China, South India, Vietnam, Thailand, and Singapore, among others. As part of what is hoped to be a postdoctoral project, this research will blossom into collaborative and multidisciplinary projects among gold specialists in South and East Asia. The researcher will align his postdoctoral studies pursuing these international partnerships true to the multiscalar characteristic of the book. The research is also multidisciplinary in as much as it uses a conjunction of methods from oral tradition studies, written ethnohistory, remote sensing, and GIS.

Studies have shown that gold was still being exploited by small-scale indigenous miners of the Cordillera Mountains of Luzon who resisted *reduccion* (assimilation) into the *cabeceras* (colonial villages) well into the Spanish period. This is directly in contrast to other areas around the world where the mining of precious minerals was centrally organized as a state affair for the colonial government (i.e., Peru, Mexico). For several centuries, this gold was traded in evanescent to more permanent markets in the coastal settlements and frequent clients included Chinese and Japanese merchants. Evanescent markets allowed the small-scale miners to bypass middlepersons and deal directly with foreign merchants. On that basis, these innovative miners may have been a real driving force with agency in a way that we are not used to thinking about with regards to mining labor.