Early Historical gold trade networks in Northwestern Luzon, as reconstructed from ethnohistorical accounts, WorldView2 satellite remote sensing and GIS predictive modelling: The Gasweling case

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ABSTRACT

The paper shows the utility of high resolution multispectral WorldView2 (WV2) satellite imagery in remote sensing archaeological features associated to the gold evanescent market encounter within the Gasweling network in Northwestern Luzon. Image enhancement of the features was done through the Brovey transform (Panchal and Thakker, 2015) pan-sharpening technique and data fusion (Kvamme, 2006) of WorldView2 indices. These features include Ijang/Ili or hill fort defenses as well as trail segments. In delineating the area with potential archaeological features, a close reading of conquistador accounts of Juan de Salcedo in 1572 and Alonso Quirente in 1624 was performed. Also geographic information systems (GIS) least coast path predictive modelling as well as visibility analysis was implemented in order to model the evanescent market (Allegre, 1998) encounter that took place at the coastal settlements.

1. Introduction

The paper is third in a series of articles attempting to reconstruct Early Historical to Historical Period gold-trade networks in Northwestern Luzon Philippines (10th to early 20th c). Data sets examined and cross-compared, were, ethnohistorical accounts, Spanish colonial reports, and maps and other data from primary and secondary historical sources. These data sets were then analyzed and coordinated through satellite remote sensing and GIS modelling in order to come up with a predictive model/picture of the gold-trading network as a whole. The output of the research series is a general map of the routes connecting identified bulking stations in the highlands to lowland evanescent markets. The paper is the third case study on archaeological modelling of the gold evanescent market encounter in Northwestern Luzon, Philippines (Figs. 1 and 2). The evanescent market (coined by Allegre, 1998: 148–149) for gold in Northwestern Luzon Early Historical Period springs into life in the coast where a merchant ship has anchored. This encounter facilitates the exchange of local and overseas products including gold, ceramics, bronze gongs, ivory, and other products by small-scale producers (Canilao, 2017a, 2017b; for primary documents, Mirandaola, 1574: 224; Rada, 1569: 224–225). What is interesting is that there seems to be parallelism in the conditions of maritime trade in the Aegean Sea and the South China Sea and the evanescent market may be somewhat analogous to what Fernand Braudel (1972: 107) has termed the travelling bazaar, where trade is tramping from port to port. While Allegre (1998) used the term to describe trade during the pre-colonial to present-day informal trade systems in Southern Philippines as his translation of ‘tabu-an’, the term is also found applicable in Northwestern Luzon and is locally called ‘tiangge’.

The first case study dealt with the Tonglo network while the second case study dealt with the Lepanto network. In the Tonglo network likeness between GIS least cost path predictive model and ethnohistorical model was shown to be indicative of how settlements positioned themselves in terms of strategic control of the trails and the volume of trade that passed through these trails (Canilao, 2017a). In the Lepanto gold network, it was shown that a social variable, the Thiessen midline or the halfway line/boundary between settlements was more attuned as a mechanism for locating bulking stations wherein initial processing of gold and bulking is done before it is brought to the coastal trading centers (Canilao, 2017b).

This paper will tackle the Gasweling network, which has been identified prominently in the ethnohistorical literature and other datasets. The Gasweling network encompasses parts of present-day Benguet and La Union Province. The network connects three coastal settlements to one midway bulking station, which is in turn articulated to four mining settlements. In this paper Spanish accounts and oral tradition accounts as well as old maps, will be analyzed and cross-
Fig. 1. Three case studies in Northwestern Luzon (ASTER GDEM is a product of METI and NASA).

Fig. 2. Sites in the Gasweling network including three coastal settlements, one bulking village and four mining sites.
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