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IDENTITY AND COMMUNITY STRUCTURE IN NEOLITHIC MAN BAC, NORTHERN VIETNAM

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ABSTRACT

This paper explores the evidence for social structuring principles and other aspects of identity at Man Bac, an early Neolithic (2066-1523 cal. BCE) community in northern Vietnam. Drawing on a wealth of work over the past 15 years, we examine identity with respect to three fundamental classes of data: intrinsic biological variables (age-at-death, sex, kin group, biological ancestry), mortuary treatment, and body modification (patterned tooth removal, or ablation). We find that kin groups, biologically and affinally defined, likely played a substantive structuring role at Man Bac. Moreover, a political tension between genetically and phenotypically distinct groups inhabiting Man Bac appears to be visible in the mortuary record. Social organization aside, shells appear to have had a significant role in referencing cosmological and gendered aspects of identity. Nephrite, with regard to some artefact types, would appear to cite magico-religious and/or elite status components of identity. While unique items, such as a ceramic copy of a barrel drum, may have spoken to exchanges of shamanistic beliefs between northern Vietnam and what is now southern China. Identity at Man Bac would appear to have been complex, fluid, negotiable, and ever changing; or just what one might expect.

1. Introduction

This paper explores various aspects of identity, including socio-political structuring principles, at Man Bac, an early Neolithic community in what is now geo-politically northern Vietnam. While anatomically modern humans settled in Southeast Asia at least 50,000 years ago (Oxenham and Buckley, 2016a), if not millennia earlier, evidence for deliberate mortuary treatment is not archaeologically evident until approximately 20,000 years ago in Mainland Southeast Asia (MSEA) at Mái đá Ngườm in Vietnam and within Island Southeast Asia (ISEA) at Lemdubu in eastern Indonesia (Oxenham et al., in press). The evidence for mortuary treatment prior to the Neolithic, c 4,500-4,000 BP, tends to be located in cave settings (perhaps a function of preservation) but is nonetheless highly variable and includes various forms of cremation, secondary burial practices, body manipulation and primary burial. In terms of primary interment, side-flexed and supine-flexed burial generally predate squatting burial, which becomes normative in northern Vietnam by the mid-Holocene (Oxenham et al., in press). While grave goods are rare in pre-Neolithic contexts throughout the region, highly complex mortuary rituals, and presumably cosmological beliefs, manifest in terms of elaborate body manipulation and mutilation in northern Vietnam and southern China from the early seventh millennium BP in what have been characterized as complex forager communities (Oxenham et al., in press; Oxenham et al., 2018).

The Neolithic in MSEA is characterized by the emergence of mixed farming-foraging communities originating from what is now southern China (Bellwood et al., 2011; Matsumura and Oxenham, 2014; Oxenham et al., 2015; Oxenham and Buckley, 2016b). Mortuary ritual generally involved supine body positioning with the frequent inclusion of varied grave goods. Mortuary variability in Neolithic MSEA is relatively poorly known due to the small number of large cemetery sites (see Huffer, 2005 for an early assessment of Man Bac). Khok Phanom Di, occupied c. 4000-3500 BP, perhaps the best published large Neolithic cemetery in Thailand, included 154 burials, 86 of which were aged <15 years of age (Tayles, 1999) spanning 17 to 20 generations (Higham, 2015). Extensive work by Higham and collaborators (e.g., see Higham and Thosarat, 2004) argue for increasing funerary elaboration over time at Khok Phanom Di including mortuary houses, ritual feasting, development of gendered burial customs (e.g., males with turtle carapaces, females with pottery making tools), matrilocality, and evidence, in the later phases at least, for "social aggrandizers seeking and obtaining prestige" (Higham, 2015:286). Notwithstanding, debates over the hierarchical as opposed to heterarchical (essentially flexible social ranking or horizontal stratification) structure of ancient

MSEA communities have occurred in the context of the subsequent Bronze and Iron Ages (e.g., see White, 1995; O'Reilly, 2000, 2003; Higham, 2011), rather than the Neolithic. Further, while the majority of mortuary research on MSEA has focused on Bronze and Iron Age socio-political organization, other scholarship has explored issues in gender (Baccus, 2006, 2007), age-identity (Ross and Oxenham, 2016; Ross, 2018), and the archaeology of childhood (Oxenham et al., 2008).

The chiefdom, as an exemplar of hierarchy, has arguably been the dominant socio-political model for Bronze Age MSEA, and it was in this sense that a heterarchical approach offered an alternative interpretive context.

> Every individual operates on a number of different levels, and the interactions on each level are of varying intensity and intricacy. These relationships are not, of course, static but undergo constant metamorphosis. The value of the notion of heterarchy lies in its ability to embrace these truths. (O'Reilly, 2003:301).

It is perhaps not coincidental that aspects of an ostensibly different theoretical approach, relational personhood, can be seen in O'Reilly's characterization of heterarchy. Brück and Jones (2018:237-8) note

> [a]rchaeological thinking concerning mortuary practices is now well developed, and, as a discipline, we are acutely aware of the relationship between the archaeologist-as-interpreter and excavated mortuary assemblages…, so why do we still so often see grave goods as a direct reflection of the social status of deceased individuals?

Brück (2006a:74) argues that "the positive value accorded to competitive individualism is key to the development of capitalist economics". Whilst admitting to the significance of exchange in British Bronze Age societies, Brück substitutes the ethnographic analogy of capitalism with one of ethnographically-informed gift exchange, which also provides an entrée into the dividual as opposed to the capitalist[1] constructed individual:

[1] It is beyond the scope of this paper to review the considerable literature on the dividual-individual debate which has been a significant part of anthropological and funerary archaeological debates for decades, however, both concepts are based on ethnographically derived models regarding the nature of personhood or the self. For a good coverage of recent theoretical discussions of these concepts both Fowler (see especially 2004, 2016) and Brück (e.g., 2004, 2006a) are useful starting points. While the dividual- individual continuum, as theoretical constructions of self, defy a dictionary-like definition, it may be useful to see the individual as a persistent and delimited conception of self, one which Brück (e.g., 2006a), for instance, has seen as a function of models that prioritise individual attainment through competitive accumulation, often translating into ideas regarding social status and hierarchy. The idea of the dividual or relational personhood, on the other hand, sees the actor as a variable, fluctuating, fractal, milieu of identities and relationships. In this paper we suggest

> It is no surprise, then, that in societies where gift exchange is the main mechanism by which objects circulate, the self is constructed as a fractal, relational entity, an aggregate of substances constituted through a network of links with persons and things outside of the physical boundaries of the body (Brück 2006a:76).

Others have also been heavily influenced by anthropological theorizing on relational personhood, (and the individual-dividual tension) in the context of ethnographic accounts from the Asia Pacific (e.g., see Fowler, 2004, 2016; Crossland, 2010 and references therein).

Spriggs (2008), while not the first, has eloquently argued the folly of populating the European Neolithic and Bronze Age with a cut and paste of western ethnographic accounts of post-colonial (and colonially informed) societies. It would seem all we may have achieved is to substitute one euro-centric model for another, albeit one based on another place and a presumed (and implicitly sought?) socio-cultural evolutionary stage of development. We fully agree that any *a priori* expectations of the meaning(s) of mortuary treatment (including identity, personhood, status, gender, age, readings of grave goods, body treatment and such like) need to be avoided. However, this does not mean that characteristics of socio-political organization (or any other facet of identity) are never apparent in the archaeological record.

The aim of this paper is to examine various aspects of identity, including any evidence for socio-political organization at Man Bac, an early Neolithic community in what is now geo-politically northern Vietnam. This will be investigated through various combinations of (1) mortuary treatment (e.g., burial treatment, grave inclusions) in tandem with (2) intrinsic aspects of their biology (e.g., sex, age-at-death, kin group, and ancestry) as well as (3) extrinsic modifications to their appearance (specifically, deliberate and patterned removal of certain teeth: tooth ablation) that may reference transitional or liminal[2] or phases of life. Due to the wealth of biological and cultural information available, an opportunity exists to explore identity at both an individual and community level synchronically (i.e., a life course approach) and diachronically and in much more depth than is usually possible.

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the use of the concept heterarchy by O'Reilly (2003) has a particular resonance with the concept of relational personhood, or the dividual, as espoused by Brück, Fowler, and others.

[2] For a good discussion of this concept in Southeast Asian Archaeology see Paz (2012), and for specific use with respect to mortuary archaeology and identity see Cave and Oxenham (2018).

2. Biocultural context

Man Bac (Figure 1) is an early Neolithic (farming and foraging subsistence) cemetery site on the southern edge of the Red River Delta, 25km from the current coast, in northern Vietnam. Radiocarbon dating of the site (seven charcoal and four human bone sources) positions occupation between 2066-1523 cal. BCE (Oxenham et al., 2010; Vlok et al., 2020). The site has been excavated on four occasions between 1999 and 2007 with the last two excavations a collaborative effort between the Institute of Archaeology, Hanoi, Ninh Binh Provincial Museum, Sapporo Medical University and the Australian National University (Nguyen, 2001; Oxenham et al., 2010). A total of 101 individuals have been excavated, with a high proportion of subadults translating into a high fertility rate (6.8 births per woman) and concomitant very high rate of natural population increase (4.3% per annum) (McFadden and Oxenham, 2018; McFadden et al., 2018). In terms of population health, Man Bac has generally poor levels of oral health and high rates of physiological stress (Oxenham and Domett, 2010), limited evidence for healed trauma (Pedersen 2017), in addition to the earliest clear evidence for treponemal disease (Vlok et al., 2020), malaria (Vlok et al., 2021) and serious disability with concomitant care (Oxenham et al., 2009; Tilley and Oxenham, 2011) in the region. Man Bac captures a community undergoing considerable demographic change in the form of substantive genetic (Matsumura et al., 2011, 2015; Matsumura and Oxenham, 2014; Lipson et al., 2018) and cultural interactions between migrant farmers (morphologically and genetically East Asian) from what is now geo-politically southern China and phenotypically distinct indigenous complex foragers (morphologically and genetically Australo-Papuan) that managed plant and animal resources (Oxenham et al., 2018) and who were the descendants of the first modern humans to colonize the region over 50,000 years ago (Oxenham at al., 2010).

An earlier mortuary analysis of Man Bac (Oxenham et al., 2008) suggested that while young children were less likely to receive grave goods, all individuals received normative funerary treatment (supine inhumation, head normally to the east). Moreover, an apparent social or developmental period among children aged around 2 years of age was tentatively identified. Some children received grave goods that might be interpreted as connoting an economic contribution to society, while some females (but see Discussion below) and children shared certain grave goods (various shell items), that may speak to gender or gender-age composite aspects of identity (Oxenham et al., 2008).

3. Methods

Sofaer (2006) has stressed the need for a much greater integration of osteological and material cultural data. It is clear that if we wish to understand past societies in all their complexities, we need to consider all the evidence. To this end our approach is twofold: First, the core socio-culturally informed variable mortuary treatment is summarized and compared with respect to (a) intrinsic biologically informed variables such as sex, age-at-death, kin group and ancestry, in addition to (b) the extrinsic bio-social (deliberate modification of one's outward appearance) variable of deliberate and patterned tooth ablation (removal). Secondly, putative relationships between subsets of these variables are statistically modelled in order to uncover any meaningful correlations or patterns in the broader dataset.

3.1 Core socio-culturally informed variable: Mortuary treatment

In order to facilitate both a general and statistical analysis, a categorization of individual burial ensembles was carried out based on an assessment of a combination of raw material and/or artefact rarity, investment (e.g., skill, time to create) in the manufacture of given objects, and a combination of the heterogeneity (or overall variability) and quantity of grave goods. Virtually all adult interments included a ceramic vessel, with other important categories including shell, lithic objects (e.g., nephrite beads, adzes) and bone implements (see Oxenham et al., 2008). The most common form of ceramic (63/101 vessels) was a globular cooking pot (see Figure 2) which could be plain or incised with basic parallel or cross-ribbed lines. Other ceramic vessels included footed forms (15), bowls (7), pedestalled ceramics (4), waisted/carinated vessels (4), imported fine Phùng Nguyên (early Neolithic) ware (3) and two unique vessels.

Interments lacking evidence for preserved grave goods were assigned a 0 score; burials with one or two items (with two items this would typically include a ceramic vessel and one other object) were scored as 1; two to four varied items were scored as 2 (this always included minimally two ceramic vessels and at least one other non-ceramic object, with a necklace classed as a single composite item); an excess of four varied items was scored 3 (which always included multiple ceramic vessels, at least one of which was not a globular cooking pot, and at least one rare and high energy investment item, such as worked nephrite[3]); while the three individual interments, that would otherwise be scored as 3, but which also had very rare high

[3] See Nguyen (1996) for a discussion of the skill and investment required to manufacture ancient nephrite objects in the context of ancient Vietnam. The reader is also referred to Shao (2011) for a detailed discussion on jade working in Neolithic China.

energy expenditure items (T-section nephrite bracelets) were scored as 4. This approach meant that otherwise rare items, such as worked nephrite, were sometimes associated with class 1 (e.g., a nephrite bead and a cooking pot) or class 2 graves. However, the chief demarcation lines in terms of mortuary investment appear to be between the three categories of: no grave goods, class 1 and 2 burials and then a substantive jump to class 3 and 4 burials.

Whether this classification has any discernible (or recoverable) meaning in terms of identity, including structural relationships within the community, (e.g., descent, social rank etc.) will be explored in the analysis and subsequent discussion. In this context it is worth noting that the burials with T-section bracelets (scored 4) were furnished with significant amounts of other material and/or energy expenditure. For instance, the young adult male designated MB07H2M32 had two T-section nephrite bracelets, two cowrie shell bracelets, 8 ceramic vessels (including 3 globular pots with cross-ribbed decoration, 1 footed jar with cross-ribbed decoration, 2 footed carinated jars including incised designs, and 2 pedestalled dishes with incised designs), a nephrite bead necklace and a field anthropological assessment indicating the only clear instance of coffining (Anna Willis pers comm) at the site (Figure 3).

3.2 Intrinsic biologically informed variables

Age-at-death and sex determinations for the Man Bac sample are detailed in Domett and Oxenham (2010). Detailed burial descriptions, including preservation and a summary of grave goods for each interment, in addition to *in situ* and post-excavation photographs, are provided in Appendix 1 and 2 of Oxenham et al. (2010).

Biological ancestry was determined by an analysis of qualitative and quantitative cranio-dental morphology (Matsumura, 2010a, b) as well as ancient mtDNA haplogroup (Shinoda, 2010). Haplogroups F and B predominate in contemporary Southeast Asian populations, while D and G have a high occurrence in East Asian populations (Shinoda, 2010). In 7/8 cases where both cranio-dental and mtDNA data were available, Haplogroups F and B correspond with an Australo-Papuan (indigenous) or mixed morphology. In 3/4 of cases Haplogroups D and G correspond with an East Asian morphology. A total of 25/38 (65.8%) individuals also assessable for tooth ablation (defined below) could be ascribed a cranio-dental ancestry, with 13 of these also having mtDNA data; only one individual had mtDNA data alone. Emphasis is given to the cranio-dental data, which rarely contradicts the mtDNA data, and covers a much larger proportion of the sample. In summary, ancestry is determined as indigenous (Australo-Papuan morphology), migrant (East Asian morphology) or mixed (indigenous/migrant).

The results from Huffer et al.'s (in press) work on Man Bac kin grouping was used here. Essentially, putative kin-groups were established using 31 non-metric cranial traits that had at least moderate heritability and displayed minimal correlation with other traits used. Cluster analysis was then undertaken to sort individuals into probable kin groups.

3.3 Extrinsic bio-social variable: Tooth ablation

Tooth ablation refers to deliberate tooth removal for cultural, rather than medically related or violently induced - including accidental – reasons. Its identification requires an assessment of other potential causes of antemortem tooth loss (AMTL), which is itself recognized by way of remodeling of the alveolus, or the bony structures that hold the teeth. In general, the approach taken by Tayles (1996), Domett et al. (2013) and Newton and Domett (2017) in the identification of tooth ablation was used here. The possibility of agenesis (congenital tooth absence) and non-eruption were assessed by way of an examination of tooth spacing and adjacent tooth interproximal wear faceting at the site of a tooth suspected to have been avulsed (removed). AMTL potentially caused by caries, extreme wear, alveolar lesions and/or periodontal disease was also assessed for each tooth, while that caused by incidental or deliberate trauma was examined in the context of any other signs of cranio-facial trauma (see Stojanowski et al., 2014). While the presence of symmetrical AMTL was a major consideration in the differential diagnosis of ablation, Stojanowski et al.'s (2014) point regarding the occurrence of non-symmetrical tooth ablation in some cultures also informed final decisions. The key point here is the presence of patterned (or discrete patterns of) AMTL within the sample as a whole. Finally, given the mean age of complete eruption of all incisors (the maxillary lateral incisors being the last to fully erupt) is 9.5 years (AlQahtani et al., 2010), 9 years is the effective cut off age for inclusion in the tooth ablation denominator.

3.4 Statistical modelling

Our modelling is based on a working hypothesis that biological kin groups are associated with fundamental aspects of social structuring (e.g., see Prevedorou and Stojanowski, 2017) at Man Bac. In order to test and explore the potential relationship between each putative biological kinship group and other variables, simple linear, multiple linear and logistic regression were employed. Simple linear regression was used where independent variables were either continuous or dichotomous: this included 'grave goods' which is a continuous variable ranging from no grave goods to an increasing number and complexity (rarity and energy expenditure), 'morphology' which was a dichotomous variable with individuals being assigned with M

(migrant) or I/Mix (indigenous/indigenous-mixed) morphology, and 'biological sex' as a dichotomous variable (based on available sex estimation methods which cannot accommodate non-binary sex). Simple linear regression was run separately on grave good class, morphology and sex against each individual kinship group as a binary dependent variable, i.e., kinship group 1 – member (1) or non-member (0). For ablation pattern, which minimally had three condensed categories (6I, 2I and 0I-see Results for definitions), and age-at-death (for which categorical age was used), multiple linear regression was applied using binomial dummy variables for each pattern or category (i.e., each individual receives a 0 or 1 against each pattern/category, and can only have a 1 in a single category) and run separately for each kinship group as previously described.

Logistic regression was also applied, as the dependent variable 'kinship group' is binary. However, simple and multiple linear regression were found to be more informative tests for exploring the predictive power of each variable. While multiple regression on all variables could have been applied in a single test, using simple and multiple regression maximized the number of individuals in each analysis as data were missing for different variables by individual. This is partly driven by the nature of the variables, e.g., ablation pattern applies to permanent dentition only so children could not be categorized, but children can be assigned morphology and grave goods. Thus, this approach meant the maximum number of individuals could be included in the analysis of each independent variable. Emphasis is given to statistically significant results, with nil results potentially representing a range of scenarios from a lack of a true relationship to indistinct kinship groups. All analyses were performed in SPSS (2018).

Equifinality, as illustrated above by the capitalist vs. gift exchange example, is an issue to be cognizant of in the interpretation of the results. In addition, there is also a need to be aware of a mortuary version of an aspect of the osteological paradox: in this instance the death and subsequent funerary treatment of anyone at Man Bac, regardless of age-at-death, is not representative of all individuals at risk of death and subsequent funerary treatment. For instance, not every female aged 20 years at death would have had a similar repertoire of relationships, knowledge, personality traits, dietary habits, or occupation as others that did not die at her age. Moreover, death results in a renegotiation of relationships; the community one dies into will never be the same as the one previous or future individuals experienced. Notwithstanding, some level of stability in terms of mortuary customs and beliefs must be assumed in order to make any progress in such an investigation.

4. Results

4.1 Summary findings

Before examining how mortuary treatment varies by both the intrinsic biological variables and extrinsic bio-social variable of body modification (tooth ablation in this instance), the ablation results need to be considered. Three main categories of tooth ablation status were identified (Figure 4): 6I, lateral maxillary incisors and all mandibular incisors removed (total of 6 incisors ablated); 2I, maxillary lateral incisors only removed (total of two incisors ablated); 0I, no evidence for ablation. Several other forms were recognized that may be variants of the main forms of ablation, or unique cases. For instance, a single individual (MB07H2M12) was similar to 6I but retained the left maxillary lateral incisor while also displaying AMTL of both central maxillary incisors (they were classed as 6I for the purposes of the statistical analysis). A further single individual was similar to 2I but with retention of the remains of a pathological right lateral maxillary incisor that may, however, not have been visible above the gum line (potential ineffective ablation attempt and as such classed as 2I). A further form (4I) included a single individual characterized by the removal of all mandibular incisors while the maxillary teeth were intact.

Three additional individuals lacked preserved maxillary remains and were excluded from the statistical analysis as no clear ablation category attribution could be performed. One individual was characterized by the removal of their central mandibular incisors and possibly belongs to the 6I form, although they may also be a second instance of the 4I form, or perhaps a third unique form. Two individuals did not show any evidence for mandibular AMTL and as such, could belong to either 2I or 0I.

All individuals assessed in this study were afforded some form of mortuary treatment, in as much as the body was laid out within an earthen grave cut and buried while fleshed and intact. Additional mortuary treatment (class 1 to 4) is summarized in Table 1. With the exception of one mid aged female, all adults received some form of non-perishable grave offering with 72.4% of children (aged 6-10 years) and 52.6% of infants (aged from neonate to < one year) also receiving some form of grave good.

Perhaps the clearest general pattern relates to class 3 and 4 mortuary treatment, where males (35.3%) were more likely to receive this than females (6.7%), while young adult males were more likely to receive such treatment than older males. The only female to receive class 3/4

grave goods was also a young adult. Only one older child received class 3/4 burial goods, with the majority of children and infants having class 1 burial treatment when afforded grave goods.

Looking at tooth ablation by sex, males are more likely (82.4%) to have ablation than females (53.8%). Slightly more females have 6I ablation, while the 2I form is more common among males (52.9%) than females (15.4%). The isolated 4I case was an older adult male.

All older adults have tooth ablation compared to 63.6% of mid adults and 35.3% of young adults. The youngest certain age at which ablation occurs is a female aged 18-20 years (MB99M3), who had the 2I form. Among older adults, the 6I form occurs more frequently (55.6%) than the 2I form (33.3%), with this trend reversed for mid and younger adults.

Table 2 summarizes mortuary treatment and tooth ablation status in terms of biological kin group (KG) and, additionally, describes ablation status with respect to ancestry. Minimally, at least 80% of each kin group received some form of additional mortuary treatment, the most common form being class 1. No one in KG2 nor KG4 received class 3/4 grave goods, with KG5 being an outlier with 35.7% of all members having some form of grave good being class 3 or 4. Regarding kin group and ablation status, KG6 had the lowest level of ablation (33.3%) with at least 50% of the members of all other kin groups having ablation. Of the nine cases of 6I, five (55.6%) of these belong to KG5 with the 6I pattern absent from KG4 and 6. The 2I form occurs in all kin groups with 4/11 (36.4%) occurring in KG4. The unique 4I case was a member of KG2. Further, a greater proportion of indigenous individuals (76.9%) have ablation compared to migrants (54.5%), while 6I is more common among indigenous individuals (53.8%) than migrants (18.2%). Finally, Table 3 looks at the interaction between ancestry and kin group and indicates that most indigenous individuals belong to KG5 (53.8%), while most migrants belong to KG3 (36.4%) and KG4 (27%).

4.2 Statistical modelling

The results of the regression analyses are reported in Table 4. Significance was set at $p \leq 0.05$ two-tailed. Only two kinship groups returned significant results across analyses: KG4 and KG5, with KG4 producing a significant result for ancestry and KG5 producing significant results across all three variables. The non-significant results for kinship groups 1 to 3 and 6 may be the result of small sample sizes in some cases, a genuine lack of predictive relationship between variables and kinship groups or may be a product of the delineation of the kinship groups themselves. As such, non-significant results are interpreted cautiously. What is clear is that KG5 demonstrates a statistically significant relationship with ablation pattern 6I, ancestry

(indigenous/indigenous mixed) and an elaborate funerary treatment, while KG4 is made up of migrants with no local genetic admixture. It would also be expected that biologically constructed kin groups would be more or less genetically homogenous. Sex and age were not significant for any kinship group, as might be expected.

5. Discussion

Much of the current theoretical discussions surrounding identity and personhood are attempts to grapple with ways to break away from previous, often structurally evolutionary and/or Marxist, ways of perceiving the past (ways of thinking rooted in our own ways of perceiving the world). If feminist archaeology revealed the hidden females, and children for that matter, within the archaeological discourse, explorations of the dividual, or relational personhood, have questioned mortuary interpretations of status and socio-political hierarchies (e.g., Brück, 2006b:297). However, fundamentally, every question that is asked of the past is embedded within a particular theoretical framework. Prioritizing discussions over aspects of relational personhood is no more 'right' or 'wrong' than discussions seeking evidence for social structure and differential status. The questions in all archaeological discourses are part of the specific (and purposefully selected) ontological fabric in play. As noted above, Brück's (2006a) gift exchange model is as much a function of a particular ethnographic (and implicitly socio-evolutionary in application) lens as is, say, Kristiansen's (2011:206) rejection of the dividual in Bronze Age Europe and argument for "well-defined bounded institutions and social identities" or individuals.

In a bioarchaeological life history approach, specific periods of ill health that are sometimes measurable in terms of age of occurrence and duration of assault can be uncovered from a set of human remains (Guatelli-Steinberg et al., 2004; McFadden and Oxenham, 2020; Temple, 2016). In a funerary context such life histories can be constructed through specific ways in which individuals are treated with reference to their age at death (among other things). The assumption here being that age identity may be an aspect of the individual being represented at death (Lucy, 2005; Appleby, 2010, 2011; Gowland, 2006; Ross and Oxenham, 2016; Cave and Oxenham, 2018), while being aware of the mortuary paradox (those buried at any given age are not necessarily representative of the cohort they died within). Nonetheless, body modification provides insight into a cultural practice that took place prior, sometimes measured in decades, to the death of the individual (like biological sex or age-at-death, it is not something that can be edited by subsequent mourners). Further, extrapolation to a particular time(s) or set

of circumstances during which such body modification was likely to occur may be possible, thus providing insights into liminal periods during an individual's life in deep antiquity.

Biological data, that would have formed the basis of a range of socio-culturally constructed aspects of individual and community identity, available from the Man Bac series, includes biological sex, age at death, ancestry (genetically based and likely culturally expressed) and biological kinship (noting that affinal kin is not included in this variable). Additionally, there are some isotopic data that speak to sex-based mobility, specifically matri-locality (or residence of the couple with or near the wife's parents), at Man Bac (Huffer et al., in press). How such biological aspects of identity have interacted to create a range of identifiable identities and how these in turn constituted the community of Man Bac drives the subsequent discussion here. First, potential insights into social structuring principles at Man Bac are discussed and the idea of corporate identities is explored. Following this, other visible aspects of identity in the context of the employment of shell, jade and unique funerary items are investigated.

5.1 Social structuring and corporate identities

Huffer et al. (in press) suggest "that age and sex demographic distributions within each [biologically defined kin] cluster are suggestive of small family groups", although the spatial integrity or propinquity of the six putative kin groups is considerably weakened when considering children. Huffer et al. (in press) have also interpreted the small variance in female strontium signatures as being consistent with matri-centric kinship systems as argued for in contemporaneous Thailand (Bentley et al., 2005). The question arises, is there other evidence supportive, or otherwise, of kinship being a significant organizing principle at Man Bac?

The statistical analysis identified two putative kin groups of particular interest. Membership of KG4 is associated with what are phenotypically and genetically migrant individuals; nothing else seems to stand out in characterizing this kin group. On the other hand, membership of KG5 includes predominantly phenotypically indigenous individuals, class 3 or 4 mortuary treatment and the 6I form of body modification. The most elaborate mortuary treatment of any individual, the young adult male designated MB07H2M32 described in Figure 3 above, also a member of KG5, is phenotypically (and genetically) indigenous and has the 6I form of tooth ablation. Further, the only subadult (aged <10 years) in the cemetery with class 3 mortuary treatment is a 9-year-old individual (MB05M10) who also belongs to KG5. This child's mortuary treatment included four cord marked or cross-ribbed globular pots, a small ceramic bowl, a footed ceramic vessel, bivalve shells, and a worked bone implement. A final point to note in the

context of ablation is that tooth ablation status is correlated with age in as much as the older one is the greater the likelihood of having teeth ablated. This indicates membership of these putative sodalities (or intra-group status) may not be axiomatic with respect to kin group but needs to be earnt in some manner.

This begs the question what, if anything, is the fundamental basis for membership of this putatively non-kin dependent group? Membership is not exclusive to KG5, 6I ablation or class 3/4 mortuary treatment, nor sex or age for that matter and as such may be more characteristic of a sodality albeit with some form of kin component (see Ware, 2018 on this issue with respect to American Southwest Pueblo sodalities[4]). While we will continue to use the term sodality in this looser structural sense, the observation that 55.6% of class 3 or 4 graves, regardless of ablation status, belong to KG5, including the 9-year-old mentioned above, does suggest membership is primarily a function of kin affiliation. Given that kin membership is biologically constituted (a function of heritable cranial and dental traits), affinal kin (related by marriage to KG5, for instance) will remain invisible for the most part, although if 6I ablation formed a signifier of affinal relationships with KG5, all 6I individuals may have had membership of this (biologically and affinally defined) kin group, or more broadly construed sodality (henceforth named the primary sodality).

Tacitly accepting membership of the primary sodality is partly a function of biological relatedness (KG5), affinal relationships (perhaps signified by 6I ablation) and, to some extent, relatively more elaborate mortuary treatment, what was the role of the primary sodality in this community? It would appear to have had access to resources unavailable to other sodalities, but whether this was a function of economic control of resources or particular cultural prescriptions in place is difficult to assess. It is clear from global systematic ethnographic analyses that vertical social rank is very rarely associated with the relative quantity of grave goods, but the kind of grave goods afforded a burial as well as energy expenditure (measured in terms of both grave goods and grave architecture) can speak to vertical social rank (Carr, 1995). Whether the primary sodality represented an elite group in terms of socio-political power or whether a significant number of its members received more elaborate funerary treatment due to other characteristics of this sodality (e.g., spiritual specialists, artisans) is difficult to demonstrate. It is plausible that the primary sodality represents a socially distinct,

[4] Sodalities are typically seen as groups constructed along the lines of some form of shared practice with membership based on one or more aspects of age, gender, skill etc. However, we have adopted Ware's appropriation of the term that allows for a kin-based component, either historical or current.

essentially kin-based, group within a ranked (as distinct to a stratified) community (see Ames, 2008 for a discussion on the differences between ranked and stratified societies). Status in such systems can be either achieved or ascribed (Ames, 2008:489), with the class 3 funerary treatment of the 9-year-old KG5 individual being more consistent with a system of ascribed status. However, as Oxenham et al. (2008) have previously noted, numerous factors, including differential parental grief, can influence the burial treatment of children, or adults for that matter.

While an argument can be made for the primary sodality having a distinct social function, perhaps a ruling family, the temporal spread of the cemetery ranges between 383 and 314 years, or 13.7 to 11.2 generations, over which this purported elite sodality may have maximally operated[5]. Moreover, membership rules of this sodality may have allowed considerable flexibility thus facilitating both horizontal and vertical mobility within the community. Assuming the evidence points to a (loosely?) ranked society based on kinship, what is the significance of body modification and ancestry, both of which, in addition to elaborate funerary treatment, are associated with KG5 and the primary sodality?

Man Bac is a smoking gun with respect to the population history of the region. Modern day Southeast Asia represents the result of millennia of variable migration, assimilation and perhaps some degree of replacement by farmers of indigenous foraging and plant/animal management communities that had been inhabiting the region for tens of thousands of years (Matsumura et al., 2011, 2015; Matsumura and Oxenham, 2014; Oxenham et al., 2018; Lipson et al., 2018). Man Bac was occupied during a relatively short period of time of this process. Is some form of ethnic politics at work here, with an indigenous led elite KG5 on the one hand and a migrant majority KG4 on the other hand? Is 6I tooth ablation being used to further signify, characterize, and even emphasize membership of this sodality? Migrant and indigenous phenotypes at Man Bac were more than likely highly visually distinct, and even potentially further referenced by way of hair styles, clothing, or even other forms of body modification such as tattooing, scarification, piercing and so forth. If such is the case, then we might ask why is further body elaboration required? Whatever the case, it would appear that the mortuary record is speaking to a form of corporate identity at Man Bac. Shared burial treatment, shared

[5] The date range includes the 68% (shorter date range) and 95% confidence intervals for the youngest and oldest dated burials at Man Bac (Vlok et al. 2020). The estimate of the number of generations this represents is based on Fenner's (2005) sex non-specific recommendation of 28 years representing a generation for non-modern populations. It is, of course, possible that the duration of the site was somewhat less than 300 years and/or average generation length was longer or shorter in duration.

body modification and shared kin (both biological and affinal) appear to affect a form of shared membership of one in particular, but likely two if not more, sodalities. Assuming certain features of mortuary activity at Man Bac references corporate identity and social structuring to some degree, can other aspects of identity be observed at Man Bac?

5.2 Other identities, other relationships

5.2.1 The significance of shell inclusions

If mortuary treatment at Man Bac is indeed reflective of a range of complex and intersecting relationships that speak to kinship, genetic ancestry, and perhaps differential rank, what other aspects of group or individual (dividual, heterarchical) identities are visible? Twenty burials (nine <10 years, eleven > 12 years old) included shells, for the most part unworked. Ross and Oxenham (2017) discuss the potential role of unworked shell (genus Unionidae, or freshwater pearl mussels) at Man Bac and other MSEA cemetery sites in detail and conclude they potentially speak to religious, philosophical or cosmological facets of identity. Differential placement of such objects (head as opposed to hands, mid-line as opposed to outer body) may reference different interpretations of cosmological concerns and/or mediate specific aspects of belief in terms of age and gender at those sites that utilize shells in mortuary contexts. Looking at unworked mussels, eleven individuals are 'actively' grasping these items in their hands (see also Oxenham et al., 2008; Ross and Oxenham, 2017), three of which are adult males, one an adult female, with the other an adult of unknown sex. Of the six children grasping mussels, two have been aDNA sexed as male (Mark Lipson pers comm), with the remainder unsexed. Six individuals, four of them male, have clusters of cowrie shells (Cypraea) around their wrists. Of these six, three were class 3 or 4 adult males, one a class 1 male child and two unsexed class 2 children. One of the male children (aged c. 9 years) holding a mussel also had a cowrie shell necklace. All in all, this suggests a potential gendered dimension to such shells, in addition to their possible cosmological symbolism and it would be interesting to see if the other children with such shells turn out to be biologically male. Apart from the single female holding a mussel in her hand, the only other female with shell was the sole class 3 female (MB05M28) who had a perforated shell disc necklace, which was unique at Man Bac.

5.2.2 A unique drum

In addition to this necklace, the young female MB05M28 belonging to KG5, having the most elaborate female and/or unsexed adult grave at Man Bac, was also buried with seven ceramics (three incised footed cups one of which had ringed feet, a pedestalled bowl, two globular

cooking pots, a unique ceramic vessel), and a nephrite adze. The unique ceramic (see Nguyen and Yamagata, 2005) is formed in the shape of a barrel drum (Figure 5), and while it would not have been functional as a drum, details included grooved bands on the outer edges of the barrel section mimicking the manner in which the skin of a functional drum is attached to the body. The Man Bac 'drum' is reminiscent of two Shang Dynasty (c. 1600-1046 BCE) bronze barrel drums (see Tong, 1983, Figs. 42, 43; Nguyen and Yamagata, 2005), with an everted rim on top of the drum in place of the 'saddles' seen in the Shang drums. Interestingly, Jiao (2011:83) illustrates what is presumably a ceramic 'copy' of a bronze barrel drum from a Huangtulun culture (c. 3500-3000 BP) site in Southeast China that also mimics the 'saddle' seen in the bronze drums. Ceramic drums first appear in northeastern China during the Neolithic Dawenkou culture period c. 3500-3200 BCE and occur in the far northwest during the Machang phase (2300-2000 BCE) of the Neolithic Majiayao Culture in Gansu province (Tong, 2002:35; Lawergren 2006). Liu (2000) describes a Majiayao, Banshan phase (2600-2300 BCE), cemetery site in Qinghai Province that included three unusual graves each of which, among other features, included a pottery drum and a large stone axe. Liu (2000:149) goes on to suggest drums tend to be associated with high social status tombs, and that evidence for alligator drum skins is only associated with royal Shang burials. Tong (2002) argues at length the role of pottery drums both in antiquity and recent times (particularly among Southwest China minority groups) in shamanistic ritual activities. Tong (2002:43) also notes that among several minority groups in Southwest China there is a close relationship, sometimes a shared role, between magicians (shamans) and political leaders.

Turning back to MB05M28, her membership of KG5 and being the only female to display class 3 funerary treatment suggests a special social status. Further, the presence of two unique items, a perforated shell necklace and a ceramic drum that was most likely a copy of a wooden or bronze barrel drum, may suggest a unique social role. The presence of one of only four nephrite adzes is also intriguing, particularly in the context of the Majiayao culture burials mentioned above. Not only did these contain pottery drums, but also large lithic axes, the combination of which suggested to Liu (2000) high social status. There is little doubt communities such as Man Bac had social contact with southern China and it is not implausible that the symbolism and associated meaning of pottery drums was appropriated, with the drum itself, into the Man Bac cultural and ritual fabric and, specifically, formed part of the particular identity of this young female.

5.2.3 Nephrite grave inclusions

The final exploration of identity at Man Bac focuses on the potential roles and significance of nephrite artefacts, which occur as small adzes, tubular beads (in the form of necklaces or perhaps pendants in some cases) and T-section bracelets. Only 15 individuals have nephrite beads with the majority being male: six males, two females, two unknown sex adults and five children < 12 years, one of which is aDNA sexed as male. Six of the ten adults with beads are class 3 or 4 burials, while beads co-occur with each of the three male individuals displaying T-section bracelets. The equally rare nephrite adzes never co-occur with other nephrite items and are found with a male and female class three burial, a class 1 male and an un-sexed 5-year-old child of class 1.

Worked jade would appear to occur in mortuary contexts in northern China by the seventh millennium BP at least (Li, 2015). Jade objects, in general, are considered to be items of value not least due to their color, luminosity and difficulty in working (Rowan, 2012:18) and were believed to possess supernatural powers by the Chinese in antiquity (Li, 2015:315). That nephrite beads occur in limited instances and among both adult and children's graves, across all grave good categories (1 to 4), makes further discussion of the nature or role of such items, let alone any references to identity, difficult. T-section nephrite bracelets are another matter (Figure 6).

Bracelets made from lithics, shell and pottery are present in China by the seventh millennium BP with many jade rings (bracelets) recovered from Hongshan culture sites (c. 4700-2900 BCE) in northern China (Qin, 2011). T-section pottery bracelets have been noted in the central Chinese Miaodigou culture site (c. 3300-2000 BCE) and are believed to be ancestral to T-section jade bracelets which appear to occur from 2000 BCE (Qin, 2011). Jade bracelets are also common in the (late) Neolithic sites of Southern China, including T-section forms (Ji, 1994, Qin, 2011). In general, Qin (2011) notes jade bracelets are found in elite burial contexts in China, occur in both female and male graves but rarely with children, originated in northern China and, presumably, spread into southern China and Vietnam (Ji, 1994) during the late Neolithic in China or (corresponding) early Neolithic in Southeast Asia. Indeed, while written over 25 years ago, Ji (1994, Table 32-1) noted at least 24 sites in Vietnam that have T-section bracelets. Nguyen (2019) also states that over 70 Phùng Nguyên sites (to which Man Bac is culturally associated) in the Hong (Red) River valley include nephrite artefacts. Nephrite

workshops are concentrated in Neolithic Northeast Vietnam and include Trang Kenh, dated to 943-1936 cal BCE 95% (IntCal 13 Reimer et al., 2013, OxCal 4.3, Bonk Ramsey, 2009; calibrated after the five dates reported in Nguyen, 1996), which has furnished thousands of nephrite objects including jade bracelets and associated discoid cores (Nguyen, 1996, 2019).

While the three Man Bac burials with T-section jade bracelets have not been individually dated, they all fall within the temporal span of the site: 2066-1523 cal. BCE, during or shortly after their appearance in northern China (Qin, 2011). Apart from general aspects of the potential significance of jade objects, the rarity and complexity of manufacture of T-section jade bracelets, in addition to the inherent fragility of this artefact, may speak to the identity of these three males. It is worth noting that three of these four bracelets had been repaired (small holes drilled adjacent to breaks to facilitate binding) which suggests they were highly regarded/valued, worn frequently and/or circulated within the community (inter-generational use?) for some time. It is worth noting that repair of lithic bracelets, bangles or rings is well documented by Moore and Pauk (2001) in the region, including some of the Nyaung-gan rings from Myanmar, stone bangles from Bronze Age sites in Thailand, e.g., Ban Chiang, Ban Na Di and Nong Nor (see O'Reilly and Shewan, 2016) as well as a marble bangle from Iron Age Cambodia (O'Reilly and Shewan, 2016). Such objects may have been heirlooms with their own extended biographies, that referenced a specific aspect of the identity(ties) of the individual displaying it, although why such heirlooms were ultimately disposed of in mortuary contexts is difficult to say with reference to Man Bac (see Lillios', 1999 discussion of heirlooms, including reasons for ultimate disposal). That they are only found with what are otherwise the most materially elaborate male burials (the equally elaborate female pottery drum burial lacked such a bracelet), in an ostensibly matri-locally structured community, suggests they are citations of political status, community heads perhaps, an idea consistent with other evidence for a (inherited?) ranked social structure at Man Bac. Notwithstanding, these rare and evocative artefacts potentially reference other or additional (multiple?) aspects of the identities of their owners.

One intriguing point to note is that while these T-section jade bracelets are quintessentially East Asian in form, manufacture and indeed origin, they only occur in association with indigenous rather than migrant (East Asian) individuals. Given these items are presumptively foreign (in form at least) having been introduced by migrants into the region, can this co-option (possibly through copying) of exotic prestige items be seen as a mechanism through which perceived migrant power can be assimilated by an increasingly minority indigenous population?

Whatever the case, it is also worth noting that each of these bracelet burials is spatially close to similar (class 3) burials. Two bracelet burials (KG5 with 6I; KG1 with 2I ablation) cluster with a class 3 burial (young adult male, KG5, 6I ablation). The other bracelet burial clusters with two other class 3 burials (an old male, KG6, 2I ablation; a young female with indeterminate KG and ablation pattern). While these burials form putative spatial clusters, they are nonetheless surrounded by (sometimes intercutting) other less elaborate burials: distinct from but at the same time part of the community. The lack of evidence for spatial segregation of these ostensibly elite burials suggests an expectation that their role (spiritual, magical, shamanistic, political, or a variable combination of such identities) within the society of the living would continue within the community of the dead.

6. Conclusions

This paper set out to explore a range of aspects of identity in an early Southeast Asian Neolithic cemetery site. It is apparent that, despite certain theoretical developments in the discipline, for instance the dividual-individual debate, throwing out the baby (mortuary signatures of social structuring principles) with the bath water (the, now, obvious view that funerary treatment does not just reference status) in exercises that essentially substitute one form of ethnographic modelling for another are fraught. This study explored how pursuing apparent signatures of social structuring principles at Man Bac, within the context of a mortuary analysis, is both a valid exercise and provides a broader tapestry of behavior within which to tease out threads or other glimpses of identity that more broadly reference age, biological sex and/or gender, ethnicity, cosmology and so forth. Ignoring the evidence for social organizing principles, when the archaeological evidence lends itself to an investigation of such a pursuit, reduces the discussion of other potentially visible, or ultimately inferable, aspects of identity to a card of cotton without a loom. Moreover, this study demonstrated that explorations of social structure in mortuary contexts is in no way inconsistent with an engagement with a raft of other aspects of identity. Revisiting O'Reilly's (2003, 301) comment in the Introduction, it is indeed very clear that "[e]very individual operates on a number of different levels, and the interactions on each level are of varying intensity and intricacy [while] [th]ese relationships … undergo constant metamorphosis." This study has shown that some of these relationships can relate to kin-based structuring principles at Man Bac, while others perhaps indicate the role of religious or shamanistic specialists (the female drum owner, for instance). Indeed, the socially distinct Kin Group 5 members, or the primary sodality in general, may not have been the *s*ocio-political elites, but rather magico-religious specialists or even artisans. Whatever the case, everyone at

Man Bac was involved in a myriad of relationships, activities, and roles from birth to subsequent burial, and beyond: we have traced but a few threads of their highly complex lives and deaths.

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DECLARATION OF COMPETING INTEREST

The authors declare no conflicts of interest.

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FIGURE CAPTIONS

Figure 1. Location of Man Bac (triangle) with Hà Nội (1) and Ninh Bình (2) for reference. Background map prepared by Treehouse Maps, Arnhem, Netherlands.

Figure 2. Globular cooking pots from burial 9, 2004/5 excavation. Pot on the left has an everted rim and notched rim and the body if cord marked. The pot on the right also has an everted rim, while the body has a cross-ribbed decoration. (Photo credit Nguyen Kim Dung).

Figure 3. Burial 07H2M32 prior to lifting. T-section nephrite bracelet can be clearly seen on the right wrist, while the left bracelet is partially visible. Cowrie shells are visible at the wrists, while nephrite beads can be seen just below the mandible. (Photo credit Nguyen Lan Cuong).

Figure 4. Tooth ablation pattern 6I (left) with removal of all 4 lower incisors and both upper lateral incisors. Note the mesial drift of the adjacent canines and disto-occlusal wear of the central incisors. Tooth ablation pattern 2I (right). Note removal of both upper lateral incisors. (Photo credit Hirofumi Matsumura).

Figure 5. Ceramic vessel (associated with burial MB05M28, young adult female) mimicking a wooden drum or perhaps a bronze copy of such a drum.

Fig. 6. Burial MB05M29, mid adult male. T-section jade bracelet on right wrist. Note hole drilled on upper aspect of the near fragment for the purpose of repairing the break (a corresponding perforation is obscured by soil on the left lower section). (Photo credit Nguyen Lan Cuong).

Figure 1

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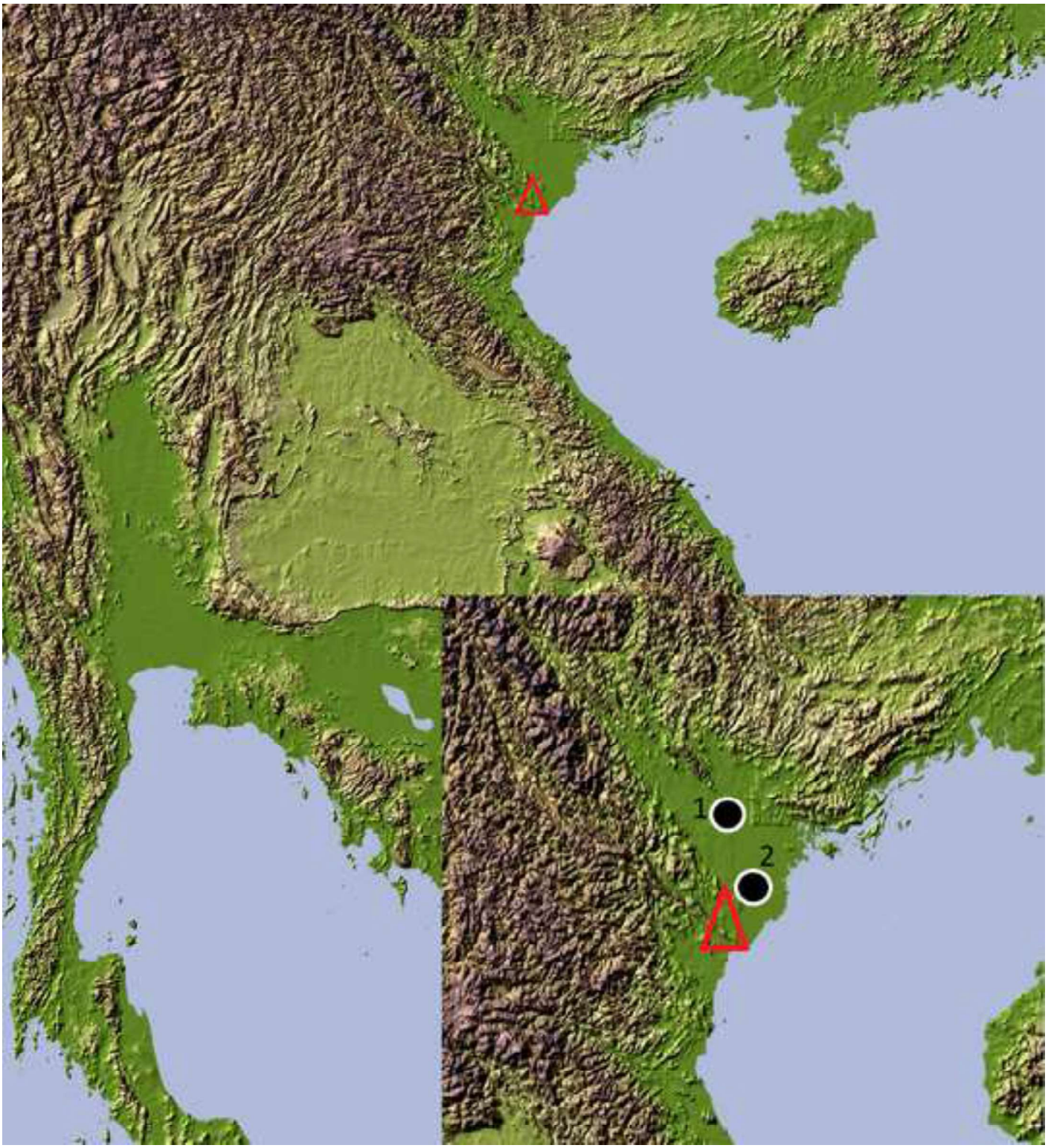

Figure 2

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Figure 3

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Figure 4 Left

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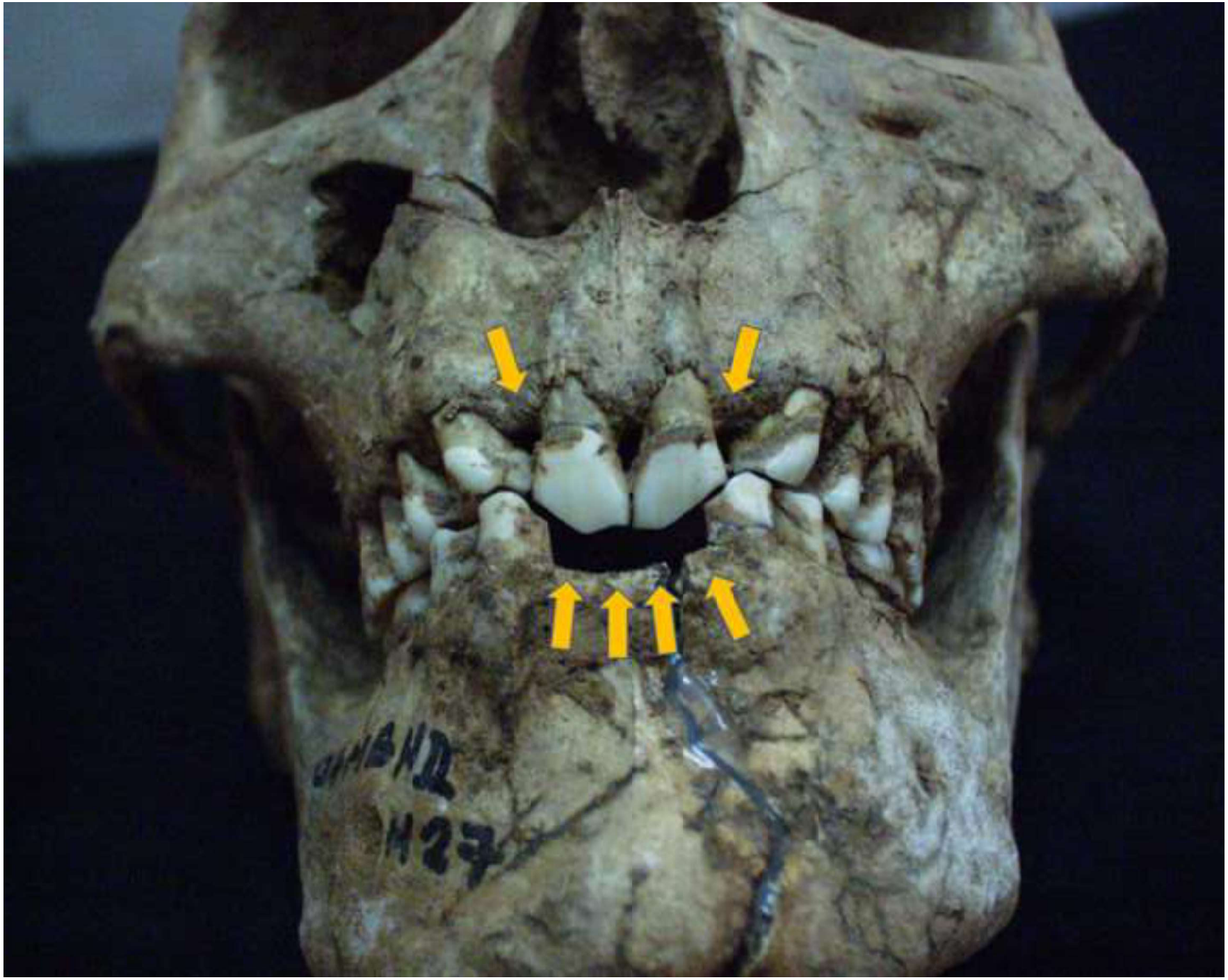

Figure 4 Right

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Figure 5

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Figure 6

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Table 1

Table 1. Mortuary treatment and tooth ablation by sex and age

		Ablation									Mortuary Treatment									
			6I		2I		4I		**Total**			Class 0		Class 1		Class 2		Class 3/4[1]		**Total[2]**	
Sex	Age	n	obs	%	obs	%	obs	%	obs	%	n	obs	%	obs	%	obs	%	obs	%	obs	%
Male	OA	4	1	25.0	2	50.0	1	25.0	4	**100**	4	0	0.0	3	75.0	0	0.0	1	25.0	4	**100.0**
	MA	7	1	14.3	4	57.1	0	0.0	5	**71.4**	6	0	0.0	2	33.3	2	33.3	2	33.3	6	**100.0**
	YA	6	2	33.3	3	50.0	0	0.0	5	**83.3**	7	0	0.0	2	28.6	2	28.6	3	42.9	7	**100.0**
	Total	17	4	23.5	9	52.9	1	5.9	14	**82.4**	17	0	0.0	7	41.2	4	23.5	6	35.3	17	**100.0**
Female	OA	5	4	80.0	1	20.0	0	0.0	5	**100**	6	0	0.0	5	83.3	1	16.7	0	0.0	6	**100.0**
	MA	3	1	33.3	0	0.0	0	0.0	1	**33.3**	3	1	33.3	1	33.3	1	33.3	0	0.0	2	**66.7**
	YA	5	0	0.0	1	20.0	0	0.0	1	**20.0**	6	0	0.0	4	66.7	1	16.7	1	16.7	6	**100.0**
	Total	13	5	38.5	2	15.4	0	0.0	7	**53.8**	15	1	6.7	10	66.7	3	20	1	6.7	14	**93.3**
Non	OA	0									0										
sexed	MA	0									0										
adults	YA	5	0	0.0	0	0.0	0	0.0	0	**0.0**	5	1	20.0	1	20.0	2	40.0	1	20.0	5	**100.0**
	A	0									2	0	0.0	1	50.0	1	50.0	0	0.0	2	**100.0**
Total	OA	9	5	55.6	3	33.3	1	11.1	9	**100**	10	0	0.0	8	80.0	1	10.0	1	10.0	10	**100.0**
	MA	10	2	20.0	4	40.0	0	0.0	6	**60.0**	9	1	11.1	3	33.3	3	33.3	2	22.2	8	**88.9**
	YA	16	2	12.5	4	25.0	0	0.0	6	**37.5**	18	1	5.6	7	38.9	5	27.8	5	27.8	17	**94.4**
	A	0									2	0	0.0	1	50.0	1	50.0	0	0.0	2	**100.0**
	OC	3	0	0.0	0	0.0	0	0.0	0	**0.0**	3	0	0.0	1	33.3	1	33.3	1	33.3	3	**100.0**
	C										29	8	27.6	16	55.2	5	17.2	0	0.0	21	**72.4**
	I										19	9	47.4	9	47.4	1	5.26	0	0.0	10	**52.6**
	Total	**38**	**9**	**23.7**	**11**	**28.9**	**1**	**2.6**	**21**	**55.3**	**90**	**19**	**21.1**	**45**	**50.0**	**17**	**18.9**	**9**	**10.0**	**71**	**78.9**

OA old adult (40+ years), MA mid adult (30-39 years), YA young adult (12-29 years), A adult (age unknown), OC older child (6-10 years), C child (1-6 years), I infant (neonate to < 1 year)

1. Class 3 and 4 is combined due to small sample size

2. Class 1 to 4 only (i.e., % with at least one grave good)

Table 2

Table 2. Mortuary treatment, tooth ablation, and kingroup

		Ablation								Mortuary Treatment									
		6I		2I		4I		**Total**			Class 0		Class 1		Class 2		Class 3/4[1]	**Total[2]**	
KG	n	obs	%	obs	%	obs	%	obs	%	n	obs	%	obs	%	obs	%	obs	%	obs	%
1	4	1	25.0	2	50.0	0	0.0	3	**75.0**	8	0	0.0	6	75.0	1	12.5	1	12.5	8	**100**
2	4	2	50.0	1	25.0	1	25.0	4	**100**	5	1	20.0	3	60.0	1	20.0	0	0.0	4	**80.0**
3	4	1	25.0	1	25.0	0	0.0	2	**50.0**	11	1	9.1	4	36.4	5	45.5	1	9.1	10	**90.9**
4	8	0	0.0	4	50.0	0	0.0	4	**50.0**	11	1	9.1	6	54.5	4	36.4	0	0.0	10	**90.9**
5	10	5	50.0	1	10.0	0	0.0	6	**60.0**	14	0	0.0	8	57.1	1	7.1	5	35.7	14	**100**
6	6	0	0.0	2	33.3	0	0.0	2	**33.3**	15	3	20.0	8	53.3	3	20.0	1	6.7	12	**80.0**
Ancestry																				
I	13	7	53.8	3	23.1	0	0.0	10	**76.9**											
M	11	2	18.2	3	27.3	1	9.1	6	**54.5**											

KG kingroup, I indigenous, M migrant

1. Class 3 and 4 is combined due to small sample size

2. Class 1 to 4 only (i.e., % with at least one grave good)

Table 3. Kingroup and ancestry

	Kingroup	1		2		3		4		5		6	
Ancestry	n	obs	%	obs	%	obs	%	obs	%	obs	%	obs	%
Indigenous	13	2	15.4	2	15.4	1	7.7	0	0.0	7	53.8	1	7.7
Migrant	11	0	0.0	1	9.1	4	36.4	3	27.3	2	18.2	1	9.1

Table 4

Table 4. Results of regression analyses

	Ablation pattern (multiple linear with dummy variables)			Ancestry (simple linear regression)			Mortuary treatment (simple linear, continuous)		
KG	n	p	r*	n	p	r*	n	p	r*
1	5	>0.05	n.a	3	>0.05	n.a	8	>0.05	n.a
2	3	>0.05	n.a	3	>0.05	n.a	5	>0.05	n.a
3	5	>0.05	n.a	6	>0.05	n.a	12	>0.05	n.a
4	8	>0.05	n.a	4	**<0.05**	**0.47 (ancestry M)**	11	>0.05	n.a
5	9	**<0.05**	**0.35 (6I ablation)**	10	**=0.05**	**0.38 (ancestry I/Mix)**	13	**<0.05**	**0.32 (class 3/4)**
6	5	>0.05	n.a	1	>0.05	n.a	12	>0.05	n.a

KG: kingroup

* strongest predictor

M: migrant ancestry

I/Mix: indigenous and/or mixed ancestry

Declarations of conflicts of interest

None

AUTHOR CONTRIBITIONS

MFO and RC designed this study and drafted the manuscript. MFO, THH, HM, KD, DH, and NLC excavated the site, collected and analysed (with RC and CM) the materials that formed the dataset used for this study. CM performed the statistical modelling. All authors contributed additional input to the manuscript including contextualization of the data and editing of the manuscript.