



Margins of the centre or critical peripheries?

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Introduction

Building an understanding of cultural innovations and the mechanisms of their dispersal, in which new technologies, foods, or ideas were made available for adoption or rejection, requires both good data and good theory. Not surprisingly, our picture of long-term patterns of inter-regional cultural interaction has largely been shaped by the study of European prehistory, given that the discipline grew out of early intellectual advances in European antiquarianism (Trigger 2006). However, increased global interest in a rigorous and evidence-based understanding of the human past has now begun to shape our understanding of prehistory in notable ways. Recent and transformative examples include the identification of a Pleistocene tradition of figurative rock art in Southeast Asia (Aubert et al. 2018, 2019), new understanding of the distribution and chronology of Early Pleistocene hominins in China (Li et al. 2017), and the earliest use of pottery as early as the Late Pleistocene by Northeast Asian hunter-gatherers (Keally, Taniguchi, and Kuzmin 2003). Many of the basic theories and approaches for understanding regional interaction that had developed from the framework of Mediterranean and European archaeology have been reinforced by this global florescence, but that regional emphasis has sometimes also affected an ignorance of alternative trajectories – largely those of politically and economically underrepresented groups, including the indigenous peoples of colonized nations and the hunter-gatherer and nomadic pastoralist societies that exist on the periphery of powerful nation states (e.g. Teixeira and Smith 2008; Hall, Kardulias, and Chase-Dunn 2011). This tendency is reinforced by the widespread, and often implicit, acceptance of world-systems perspectives within archaeology. One of the most influential models for understanding the inter-regional flow of materials, world-systems theory focuses on economic relationships between core, semi-periphery, and periphery countries as regulated by economic structures and power relations emanating from the core (e.g. Wallerstein 1974). These models were widely adopted within archaeology and applied at temporal scales far beyond the historic colonial-capitalist systems they were meant to describe (Hall and Chase-Dunn 1993).

Critiques of core-periphery models later emphasized the decision-making power of smaller-scale and formative state societies (Alexander 1999; Eerkens, Kantner, and Vaughn 2009; Hall 1986; Kardulias 1990; Stein 1999), but even today those societies remain underrepresented in theory-building while continuing to be characterized as peripheral (Peregrine 2007). This reinforces the idea that the archaeology of such regions has little to offer aside from their role in the literature as regional curiosities, sources of raw material supply for ‘centres’, or examples of the great reach and power of ‘civilizations’. As archaeology becomes more global, however, it is increasingly evident that more isolated small-scale societies offer critical knowledge on inter-regional relations and inform on some of the most common trajectories in human development. A recent study of global prehistoric land-use has, for example, shown that from ~8000 to 4000 BC, during the initial stages of plant and animal domestication, Southwest Asia was peculiar in its rapid uptake of systems of food production

(ArchaeoGLOBE Project 2019). The more common pattern observed was a gradual transition from a mixed foraging-farming economy to more intensive agricultural or pastoral lifeways, often after 2000 BC. What this means is that the regions described in this volume could be said to be more representative of human cultural patterns throughout most of the Holocene, as opposed to the agriculturally based sedentism and early urbanization observed in Southwestern Asia. The value of more detailed examination of regions that are traditionally considered as peripheral is that they not only comprise the significant portion of pre-industrial human populations, but also that 'life in the margins' provides considerable insight into how most people experienced life and interacted with centres of technological innovation and social transformation over this period.

The articles in this volume illustrate connections to larger global trends known to have been driving intensification of production and urbanization in agricultural centres in China, Southwest Asia, and the Mediterranean, but they more importantly highlight how local innovations preceded and interacted with a series of cultural changes that largely determined the nature of hunter-gatherer relations across northern Eurasia and North America. The nature of these relations defined how trade with sedentary states – whether in Bronze Age Europe, Iron Age China, or colonial period Canada – were to be negotiated. These examples reveal the largely autonomous nature of hunter-gatherer cultures with respect to their 'civilized' neighbours, including the quite peripheral role that those neighbours most often played in indigenous politics. While periods of heightened trade and interaction can be identified – marked here most notably by the tantalizingly absent evidence for either wholesale adoption of metallurgy or sustained interaction with domesticated species – it is the long breaks between first contact and regular use of these innovations that are perhaps even more compelling. Despite clear evidence for both the presence of metals and knowledge of metal production in far eastern Siberia beginning in the mid-second millennium BC (Dyakonov et al. 2019; Popov, Zhushchikhovskaya, and Nitikin 2019), iron was not regularly used and imported into Chukotka and Alaska until the eleventh century AD, more than a thousand years after its first introduction and nearly 2000 years later than its spread into Northeast Asia (Dyakonov et al. 2019; Mason and Rasic 2019). While this delay has been attributed to a glut on supply (Dyakonov et al. 2019), it is equally possible that these materials were not sufficiently capable of being integrated into local tool kits to the extent that a desire for them sufficiently stimulated demand.

Innovation in critical peripheries

The Circumpolar North (lands on or above the 60th parallel) is traditionally considered to represent the primitive margins of human societies (Lubbock 1865; Holly 2002) – groups who have relied primarily on hunting and gathering until very recently (after 1850 AD, see ArchaeoGLOBE Project 2019). Nevertheless, the archaeology of the region reveals one of the most remarkable feats of human adaptation: its very colonization was dependent on multiple cultural innovations that enabled the successful dispersals and settlement of environments defined primarily by a narrow range of evolutionarily specialized mammalian fauna. Colonization of the circumpolar north would not have been possible without the series of innovations that arose from increasing institutional and economic complexity across Northeast Asia, beginning at ~6000–5000 BC with widespread coalescence and resource management (Janz 2016; Popov, Tabarev, and Mikishin 2014; Shelach-Lavi et al. 2019). Of equal importance, a range of new ideas and technologies accompanied the use and limited production of metals as it spread into northern and eastern Siberia and Alaska, including plant and animal domestication (Popov, Zhushchikhovskaya, and Nitikin 2019), new funerary practices (Dyakonov 2019), increasingly elaborate and durable art (Mason and Rasic 2019) and the

mobilization of long-distance trade and migration (Friesen and O'Rourke 2019; Gjesfjeld et al. 2019; Mason and Rasic 2019).

The most relevant development to understanding the trajectory of societies covered here is the development of effective sea-mammal hunting (Takase 2019). This allowed local groups to progressively settle previously unoccupied and environmentally marginal settings (see Gjesfjeld et al. 2019). The geographic impact of this development is exemplified in the Thule, descendants of Bering Sea walrus/whale hunters, whose colonization of the vast Arctic coastlines stretched from Chukotka to Greenland (Friesen and O'Rourke 2019; Raghavan et al. 2014). This migration was one of the only two major population expansions beyond the Amundsen Gulf in the Canadian Arctic, expanding settlement of territories previously uninhabited for hundreds of years, and enabling the establishment of Inuit and associated cultures across a huge swath of the world's northernmost coastlines (Friesen and O'Rourke 2019). Here, from a broader perspective, we see the diffusion and incorporation of elements of Eurasian-derived ritual behaviour, material culture, and/or technology that eventually reached the eastern Canadian Arctic within a few hundred years of those influences arriving directly from Europe with Viking settlers. Over the course of ~5000 years, we can therefore more clearly envision exactly the types of large-scale shifts in material culture that we seem to think of elsewhere as occurring in the blink of an eye in earlier periods (see also Hoffecker 2005).

Relationship to 'centres'

Metallurgy, derived from western Eurasia (Roberts, Thornton, and Piggott 2009), as well as the attendant spread of domesticated plants and animals originating in Southwest Asia and China (Dyakonov et al. 2019; Popov, Zhushchikhovskaya, and Nitikin 2019), represent the enduring influence of 'centres'. These examples highlight not only the vast scale of diffusions in human ingenuity; the story of their diffusion additionally highlights great variation in the choices that northern peoples have made in selecting foreign innovations (e.g. metals), rejecting them or delaying their adoption (e.g. cereal cultivation), and adopting them with modifications (e.g. reindeer domestication – see Anderson et al. 2019). Evidence for the sporadic and non-permanent adoption of low-level cereal agriculture in the Russian Far East (Popov, Zhushchikhovskaya, and Nitikin 2019) and wide variability in the adoption of metallurgy across eastern Siberia (Dyakonov et al. 2019; Popov, Zhushchikhovskaya, and Nitikin 2019) exemplify the reality that technological change is often possible but not always sufficiently desirable.

Other important innovations are decidedly local in character. The pace of maritime exploitation and colonization of new territories across Hokkaido, the Kuril Islands, the Bering Sea, and even the Canadian Arctic exemplifies periods of exclusively indigenous cultural shifts. Hunting sea mammals on the open ocean were critical to the establishment of large villages in Hokkaido (Abe et al. 2016) and to the development of whaling cultures across the Pacific Rim. Although the exploitation of aquatic resources arose in the Palaeolithic, and maritime economies based on fishing and opportunistic exploitation of sea mammals were established early in the Holocene, it is not until the middle Holocene that we see the series of technological changes capable of catalysing complex extractive economies. Each stage of development facilitated larger cultural changes. The early colonization of the Kuril Islands, for example, Gjesfjeld et al. (2019); Yanshina and Kuzmin (2010), is broadly contemporary with the oldest evidence for harpoon heads in Hokkaido at ~5800 BC (Takase 2019). By ~3800 BC, both adult and juvenile seal remains are found in local faunal assemblages, suggesting that a shift had occurred from opportunistic hunting in coastal nurseries to the targeted exploitation of feeding grounds in the open ocean (Takase 2019). Much farther east, harpoon technology and

maritime-based subsistence were established by 4000 BC in both the Kodiak and Aleutian Islands (Davis, Knecht, and Rogers 2016; Fitzhugh 2016). Advancement in maritime craft-building and harpoon technology would have been required for open-sea hunting (particularly in the case of walrus and whale exploitation in later periods – see Mason and Rasic 2019). Parallel developments in maritime hunting technology on both sides of the Pacific are certainly possible, but the contemporaneity reflects a widespread continuity in resource exploitation that is more likely to have developed under either extensive geographical exchange of knowledge or under the influence of highly specific climatic drivers. Indeed, genetic affinities highlight enduring and cohesive networks across Chukotka, western Alaska, and the Aleutians (Rubicz et al. 2003; Gilbert et al. 2008; Crawford, Rubicz, and Zlojutro 2010; Rasmussen et al. 2010; Raghavan et al. 2014). Evidence of long-distance trade as seen in the distribution of both forged metal (Dyakonov et al. 2019) and Siberian obsidian (Mason and Rasic 2019) clearly illustrates the potential for diffusion of both ideas and objects, and reminds us that it is easy to underestimate the geographical scale over which knowledge transfer could occur.

The archaeological record reveals not just technological and genetic diffusion, but the influence of economic drivers. While these are theoretically closely linked to centre–periphery models, the importance of local developments is more compelling – and more instructive at a broader scale – when we investigate this relationship through the lens of critical peripheries. Takase (2019) highlights the culmination of a gradual trend towards intensified use of ocean resources that took place during the Final to Epi-Jomon transition in Japan ~600 BC. During this time the percentage, by *weight*, of fish in faunal assemblages reached 40–70% in Central Hokkaido and >70% elsewhere in Hokkaido. According to Takase (2019), this shift was interrelated with the rise of prestige status among fishers, including access to exotic goods such as shell and stone tube beads from southwestern and central Japan. In the Kuril Islands, the first major population pulse also dates to the first millennium BC, which Gjesfjeld et al. (2019) connect to greater intensification on marine mammal use and improved harpoon technology. These developments correspond with a tremendous rise in the accumulation of wealth and the mobilization of luxury goods (e.g. beads, textiles, horses) across East Asia, as evidenced archaeologically not only in the amplified circulation of iron, but also in the rise of production nuclei, fortified cities, increasingly elaborate burial structures with extravagant grave goods, and widespread shifts towards intensified production economies capable of fuelling revenue for trade (Di Cosmo and Maas 2018; Honeychurch 2015; Jaang 2015; Janz et al. *forthcoming*; Sun et al. 2018).

This burst of heightened materialism and long-distance trade in exotic and luxury goods clearly stimulated a new emphasis on marketable resources. We see here not only economic changes but also the spread of human settlement into regions that could help facilitate the social networks and resource acquisition necessary for heightened success in trade networks. Exotic trade goods (e.g. stone beads, metal tools, domesticated livestock) were often the primary focus of interaction with the ‘centres’. The role of ‘peripheries’ in those exchanges is typically less clear. They are assumed to have been suppliers of exotic raw materials to acquisitive centres (Peregrine 2007). In eastern Siberia and Hokkaido there are indications of the exotic imports associated with long-distance trade relationships, but no clear evidence of what goods were provided in return (but see Gjesfjeld 2014). Presumably, many such goods were organic perishables – skins, herbs, oil, and dried meats tend to characterize hunter-gatherers exports (e.g. Gjesfjeld 2014) – and the compostable nature of such goods remains an enduring problem in our ability to recognize the role of hunter-gatherers in long-distance trade networks (see Morrison and Junker 2002). Changes in settlement are one way to recognize key shifts in extractive resource exploitation connected with intensified trade partnerships, as noted by Hudson (2004) for the Okhotsk and Satsumon cultures of Hokkaido. Determining

whether these regions played other contributory roles, perhaps as innovators themselves, is an important question but under-scrutinized as innovations emerging in economic centres are rarely questioned as other than locally based (but see Jaang 2015)

The next major period of circumpolar innovation and development resulted from the convergence of advances in sea-mammal hunting, wider adoption of metallurgy, and long-distance exchange. This suite of developments was increasingly influential after ~500 AD when it reached its height and became closely entwined with the florescence of the Old Bering Sea culture (Mason and Rasic 2019). Engraving tools of metal allowed ivory to be manipulated in new ways (Mason and Rasic 2019) and walrus hunting itself was closely tied to the commercial export of ivory (Laufer 1913; Mason 1998, 2009), which Mason and Rasic (2019) frame as 'an economic linchpin that likely catalysed the entry of Bering Strait into the Eurasia world system'. The trade in ivory is an obvious marker of the contribution of hunter-gatherer societies to the economic development of state-level societies and the progressive intensification of their imperialist interests at a global scale.

Our critical peripheries perspective on the Circumpolar North provides a new lens through which we can view expansions and intensifications in trade, distribution/supply, and warfare between ~1000–1850 AD. This period represents a time when hunter-gatherer groups around the world were often becoming more interested in the commodities of their agricultural neighbours, enhancing the incentive for heightened extraction that would facilitate ever increasing levels of interaction, and eventually cooperative exploitation. By 'opting-in' to global supply chains, hunter-gatherers created heightened demand and opportunities for growth in production centres, as well as driving greater competition and extractive behaviour in their own territories. Such opportunities would have been critical to the expansion of production networks in China that originated in the Bronze Age (Jaang 2015), just as similar centre-periphery relationships drove the Viking slave trade with Rome, European maritime exploration during the Renaissance, and the African-Caribbean slave trade. Instead of conceptualizing these processes as under the control of urban agricultural centres, however, we turn the colonial nature of world-system theory on its head (c.f. Hall, Kardulias, and Chase-Dunn 2011) in order to investigate trails of interaction across the circumpolar north with the focus squarely on the 'periphery'.

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