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Assessing continuity in the ancestral territory of the Tsleil-Waututh-Coast Salish, southwest British Columbia, Canada

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ABSTRACT

Archaeological interpretations of continuity and abandonment can have significant implications for descendent communities. Such interpretations are contingent on the social and spatial scale of analysis. We assess the evidence for continuity among the Coast Salish at four of social-spatial scales using a suite of radiocarbon dates derived from Tsleil-Wat (Burrard Inlet and Indian Arm) and the Fraser Valley (~3500–250 cal BP). We define continuity as the ability to pass on place-based knowledge inter-generationally – conservatively a span of 60 years. For each social-spatial scale, we evaluate whether we have the minimum number of radiocarbon dates required to assess continuity. We also utilize demographic modeling of the radiocarbon dates to evaluate whether there are significant gaps in the data that would indicate discontinuities in occupation. Overlapping radiocarbon dates suggest continuity at various social-spatial scales, but our ability to detect long-term continuity increases with sample size and size of the social-spatial unit. The modeling did not reveal gaps in occupation, but low statistical power limits our ability to make conclusive interpretations. These analyses highlight both the importance of choosing appropriate scales of analysis and the potential limitations of archaeological data sets for evaluating continuity at culturally meaningful scales in the past.

1. Introduction

Continuity, along with the inversely related notions of abandonment, depopulation, and discontinuity, are fundamental concepts in archaeology (Edinborough et al., 2015; Kobylínksi, 1994; Lindo et al., 2017; Nelson and Hegmon, 2001). These concepts underlie our formulations and interpretations of past cultures and shape how we think about the intergenerational transmission and development of knowledge, language, and practice, as well as long-term connections to place. How archaeologists interpret continuity, or the absence thereof, also has direct relevance to a myriad of current social and political issues (Borgstede and Yaeger, 2008; Diaz-Andreu and Timothy, 1996), and in particular to assertions of Aboriginal rights, title, and cultural identity (Martindale, 2014; Smith, 2001; Stahl, 2012).

Archaeological interpretations of continuity hinge on a number of interrelated factors including how the term itself is defined, the kinds of data used to assess continuity (e.g., technology, radiocarbon dates), sample sizes, geographic and temporal scales of analysis, and the social unit of inquiry (e.g., household, community). Interpretations can be further complicated by the fact that culture historical frameworks can impose spatio-temporal divisions on what are more fluid changes in culture and demographics (Edinborough et al., 2015; Ritchie et al., 2016). Finally, interpretations of continuity will be muddied by discrepancies between our bureaucratic and sometimes artificial delineations of place (i.e., a "site") and how people actually viewed and lived their connections to the landscape. This potential for ambiguity suggests that robust investigations of continuity should incorporate diverse analyses that are based on clearly operationalized definitions of the concept.

Our working definition of continuity, as it applies to place-based cultural traditions and identity, is, *connections across generations through which language and cultural knowledge are shared, maintained, and reinforced* (with a generation conservatively being ~30 years [Fenner, 2005]). According to this definition, cultural continuity would be

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maintained when the grandparents of one generation (e.g., of ~70 years old) are alive to pass on cultural knowledge, including language, to their grandchildren (e.g., of ~10 years old). Cultural threads, of course, can be maintained over longer intervals, especially when knowledge and identity are place-based and landscape queues can constantly reify cultural identity beyond the lifetime of an individual. In our work with Indigenous communities, it is common to hear of place-based knowledge especially when travelling through the landscape, and to hear of experiences that originate from several generations removed from the current one.

Such a definition of continuity does not preclude ongoing cultural change and fluidity, including the occurrence of significant changes resulting from demographic decline, technological change, conflict with neighboring groups, or temporary relocation. Rather, it recognizes that as long as knowledge and experience can be communicated across generations, there will be on-going links to inherited heritage and identity, or in Coast Salish terms, access to ancestral knowledge (McHalsie 2007). Such inter-generational continuity, or disruptions thereof, is often reflected in local oral traditions (e.g., Ames and Martindale, 2014; Assu and Inglis, 1989: 8–13; Martindale and Marsden, 2003). When such continuity is linked to specific places, such as settlements or watersheds, place-based knowledge, inherited rights, and identity are continually recreated and re-enforced through generations of cultural practice.

Compiling an array of radiocarbon dates from meaningful socio-geographic areas is a powerful tool for identifying continuity in the archaeological record. According to our conservative working definition of continuity, a minimum of one occupation every ~60 years is needed for knowledge-transfer from a 70-year old grandparent (the average life expectancy of hunter-gatherers; Gurven and Kaplan, 2007) to a 10-year old child. Based on this, it is theoretically possible to determine the minimum number of dates needed to evaluate continuity in a given temporal sequence. For example, in a 3000-year period, a minimum of 50 dates, spread evenly over the entire period, would be required (i.e., $50 \times 60 = 3000$, or ~4 dates/250 years). Any number less than this would not be adequate to demonstrate continuity according to our definition. However, even this minimum number is unlikely to be adequate for evaluating continuity, given that radiocarbon dates are not point-data, and the sample of dates will not be distributed evenly through time. For this reason, archaeologists are increasingly using large radiocarbon data sets to model past population dynamics (Shennan et al., 2013; Timpson et al., 2014), as well as calculating the chances of detecting occupational gaps in the sequence if they exist (e.g., Edinborough et al 2017; Rhodes et al., 2014).

The social-spatial scale selected for analysis has major implications for how archaeologists interpret continuity and change. In particular, larger regional scales will tend to obscure discontinuities as a result of larger radiocarbon datasets. Conversely, settlement and house studies based on relatively smaller radiocarbon datasets will tend to suggest localized gaps in occupation that are not consistent with more landscape-based views (Ritchie et al., 2016).

In this paper, we use various methods to examine continuity of social units at expanding social-spatial scales in the ancestral territory of the Tsleil-Waututh-Coast Salish of southwest British Columbia (B.C.) (Fig. 1). Tsleil-Waututh identity and territory, like that of all Coast Salish people, are expressed and anchored, in fluid social groups of increasing size. These social groups range from households to tribes and correspond with spatial units that are well documented in both the ethnographic and archaeological records (i.e., household → house; settlement → settlement site; extended settlement → settlement cluster, tribe → watershed; Table 1; Carlson, 2010; Elmendorf, 1974; Ritchie, 2010; Suttles, 1987; Suttles 1955). Beyond the tribe, the Tsleil-Waututh were and are closely connected by language, shared history, and geography to other Halkomelem-speakers in the Fraser Valley (Fig. 1). These regional level relationships were maintained and reinforced over millennia through inter-marriage, ceremonies, and exchange. At all scales of this nested hierarchy, knowledge was shared inter-generationally to affirm and pass on these cultural identities.

To explore continuity, we first compiled a radiocarbon dataset from the core Tsleil-Waututh territory of Tsleil-Wat (Burrard Inlet, Indian Arm, and Port Moody Arm). This allows us to examine the evidence of continuity at a range of social-spatial scales. We then combined the Tsleil-Wat radiocarbon data set with that from the Fraser Valley to examine the evidence for continuity at the scale of the larger Tsleil-Wat social network. At these different social-spatial scales, we ask whether we have sufficient data to assess continuity (i.e., a minimum number of radiocarbon dates) and whether the data are consistent with continuity if the sample size is sufficient. At the scale of the tribal watershed and the larger Halkomelem ethno-linguistic group, we also use demographic modeling to make inferences about continuity in place-based identity, and scrutinize the efficacy of our demographic model for evaluating continuity at these different social-spatial scales.

Our analyses of continuity indicate the importance of having a large sample of radiocarbon dates and selecting the appropriate social-spatial and temporal scale of analysis. We found that our relatively large number of radiocarbon dates allows us to infer continuity by some measures at varying spatial and temporal scales. At the scale of the tribal watershed of Tsleil-Wat, we can infer continuity through overlapping dates from at least 2250 years ago. When examined with our demographic model, our sample is not large enough to infer continuity except at the scale of the ethno-linguistic group. When considered together with oral historical evidence, these results bolster the conclusion of continuity within the region, especially after 2250 years ago. These results highlight the difficulties in empirically testing, using radiocarbon dates alone, whether continuity is reflected in the archaeological record (Weninger et al., 2015). Given the social importance of documenting continuity today, inferences about continuity should be based on clear criteria and derived from multiple lines of evidence, including oral traditions, language distributions, and the artifactual record.

2. The cultural and physical landscapes of the Tsleil-Waututh

Tsleil-Waututh territory is centred on a body of water called Tsleil-Wat, now known as Burrard Inlet (including its extensions Indian Arm and Port Moody Arm) (Figs. 1, 2, and 3). The very name Tsleil-Wat (literally a single Tsleil-Waututh person) highlights how the watershed frames the identity of the Tsleil-Waututh tribe. A rich corpus of oral histories describes Tsleil-Waututh origin in Tsleil-Wat and the linear descent between themselves and the first humans of Tsleil-Wat (George, 2014; Morin, 2015:37, 42–62; Mortimer and George, 1981:161–163; Talbot, 1952:2–5; Thornton, 1966:171–172). While these oral histories describe wars, famines, and times of relative depopulation, they emphasize Tsleil-Waututh resiliency and attachment to the place of their creation (George, 2014; Morin, 2015: 42–62). Historically, and into the deeper past before colonial contact, Tsleil-Waututh people resided in large settlements along the shores of Tsleil-Wat. As a result of contact with Europeans and introduced diseases, the Tsleil-Waututh coalesced at three of their primary settlements in the mid 1800s, which in turn were designated as Indian Reserves (Sleil-Waututh DhRr-20, Tat-ose DhRr-15, and Inlailawatash DiRr-18, Figs. 1 and 2).

The Tsleil-Wat watershed is bounded by tall, steep mountains (1700 masl) to the north and east. To the west, the inlet opens to outer Burrard Inlet and the Salish Sea. To the south, gently rolling terrain extends for about 10 km to the Fraser River (Fig. 1). Trails from Tsleil-Wat allowed overland access to adjacent regions, including in-land lakes, the Fraser River to the south, and the Coquitlam and Pitt Rivers to the east. The Fraser River, for example is less than a two hour walk from Tsleil-Waututh settlements at the head of Port Moody Arm, while traveling west to the mouth of the Fraser River from the head of Port Moody by canoe would take about six hours (Morin and Hunt, 2014:46–47) (Fig. 1). The relatively protected water of Burrard Inlet facilitated