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The cultural evolution of warfare practices: Examining the roles of social structure, political complexity, and resource ecology with cross-cultural comparative analyses

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Abstract

This thesis investigates how forms of wartime violence changed with the scale and complexity of past human societies. Data on aspects of social and political structures, subsistence practices, and warfare were coded from ethnographic and secondary historical sources for a global sample of societies. Four studies are presented that examine variation in warfare cross-culturally and historically, specifically the prevalence of self-sacrificial actions for other group members, levels of indiscriminate killing of enemies, and the taking of enemy body parts as trophies. These behaviors were tested for relationships with social complexity and associated variables, including military formalization and reliance on agriculture. Overall, there was no evidence for any clear relationships. These efforts resulted in the creation of datasets representing archaeologically, historically, and ethnographically recorded societies and defined new variables for specific wartime behaviors which had not previously been the focus of quantitative comparative analyses. More broadly, it contributes to the growing area of cultural evolutionary research with comparative historical databases and to research on the evolution of warfare through human history.

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Introduction

This project investigates why the nature and intensity of violence in war may vary across human societies from a cross-cultural historical perspective. There has been continued debate about whether warfare has become more constrained by humanitarian principles over time and how this may be linked with predominant forms of human social and political organization (e.g small-scale, decentralized societies or large, centralized states). This thesis seeks to develop a more systematic set of methods for addressing these issues. It focuses on two aspects of behavior during war: self-sacrifice on behalf of other group members, and forms of violence directed towards enemy fighters and noncombatants. Although these behaviors vary widely across different cultures, historical periods, and contexts, whether they demonstrate any persistent directional trends through human history has not been established. Because warfare is a context in which extremes of human behavior and moral reasoning about the treatment of others may be observed, clarifying any such patterns is relevant to understanding how humans' conceptions of moral behavior towards their own and other social groups have changed with the increased scale and complexity of these groups over time. The studies in this thesis assess evidence from ethnographic and historical sources that these behaviors are predicted by social group complexity and resource ecology.

Research aims and rationale

Several theories point to potential proximate drivers of self-sacrificial behavior and outgroup violence. For example, there is evidence that small groups in harsh, unpredictable environments or undergoing traumatic events can experience a sense of emotional oneness and be willing to take risks or sacrifice their own lives on behalf of the group (Sosis et al. 2007; Swann et al. 2009). Some theories, such as the Modes of Religiosity (Whitehouse 2004) and the evolution of prosocial religions (Norenzayan et al. 2016) posit that these circumstances would have been present in early human societies and that different mechanisms for generating cohesion would be required as societies increased in scale and complexity (e.g. widespread, routinized rituals or morally-concerned deities to engender within-group cooperation). There are also theoretical grounds for expecting more intense warfare and higher mortality rates among early small-scale societies and for organized violence to become more contained and formalized with the development of complex societies and professional militaries (Keeley 1996). This thesis investigates these possibilities by compiling a global dataset of societies spanning several thousand years and applying quantitative methods to test for patterns in the forms and levels of self-sacrificial behaviors and violence towards enemies during warfare among past societies.

Variation in these behaviors is linked with broader questions about the expansion of the moral circle over time, viewed here as the size and diversity of groups that people

are willing to extend a common identity and protect from harm (Buchanan & Powell 2018; Singer 2011). This forms part of the broader endeavor of the scientific study of human behavior, and more specifically the study of the evolution of large-scale cooperation in complex societies. Warfare is a highly cooperative behavior (Turchin 2015), and the possible biological and cultural evolutionary mechanisms for self-sacrifice on behalf of unrelated group members that occurs in war have been extensively debated (Choi & Bowles 2007; Glowacki et al. 2020; Zefferman & Mathew 2015; Whitehouse 2018). In particular, the lethality of intergroup war has been proposed as a mechanism by which individually costly behavior favoring other group members (parochial altruism) may have arisen in humans (Bowles 2009; Choi & Bowles 2007). The plausibility of these arguments depends on divergent views about the prevalence and nature of war in early human history. This thesis does not attempt to evaluate these evolutionary arguments through any theoretical or mathematical examination of multilevel or group selection, which has been undertaken elsewhere (e.g. Choi & Bowles 2007; Okasha 2008; Richerson et al. 2016). Instead, it attempts to systematically document available evidence from a historically and geographically distributed sample of societies for the contexts in which such behavior occurred to supplement and clarify the support for varying theoretical positions. While quantitative historical research, including the creation of cultural-historical databases, faces many challenges (Slingerland et al. 2020; Watts et al. 2021), through cataloging this data, I attempt to

document potential issues in evaluating ethnographic and historical sources on these particular aspects of war and how they might be addressed in this and future research.

The research questions this project investigates are:

1. Can levels of self-sacrifice in war be predicted from features of group ecology and social complexity among past societies?
2. Can forms and intensity of violence towards enemies in war be predicted from features of group ecology and social complexity among past societies?

Theoretical approach

The thesis takes a cultural evolutionary approach to the study of war. This holds that cultural systems share with biological systems the criteria for evolution by natural selection: variation, biased selection, and heritability, resulting in interactions and feedback loops between culture, genes, and the environment (Richerson & Boyd 2005; Mesoudi et al. 2006). While this thesis does not directly analyze transmission of cultural traits related to war or model aspects of fitness, it implicitly assumes the existence of shared human evolved psychology that is nevertheless highly plastic in response to social and environmental contexts resulting in the spectacular degree of cultural variation observed in our species. With regards to war, this is illustrated through the variation in spread and acquisition of norms for participation and cooperation, and for waging war in particular ways which may vary depending on internal and external social and environmental conditions.

Despite this variation, some widespread (though not universal) patterns observable across human societies include: the existence of war, here defined as collective lethal violence between social groups (for other definitions and debates, recent reviews include Glowacki et al. 2020, Kim & Kissel 2018, and Majolo 2019), and the existence of broadly comparable forms of sociopolitical organization which range from small-scale, politically egalitarian groups to large empires, with an overall trend of increased social complexity in most regions over time. Social complexity here is used as a non-normative term consistent with its meaning in the anthropological and archaeological literature, which encompasses factors such as population, territory, and settlement size, levels and degree of specialization of governmental institutions, social differentiation, and centralization and permanence of political authority, among others (Bliege Bird et al. 2021; Kim & Kusimba 2008; Turchin et al. 2018; Yoffee 2005). Research in anthropology and archaeology has moved past earlier ideas of unilinear steps towards 'civilization', and scholars of state formation and the development of social complexity in human history stress the diverse and unique pathways societies may take: evidence from multiple regions indicates that traits such as social stratification, sedentism, agriculture, population density, political centralization, and craft specialization may appear in different orders, degrees, and temporal proximities (Feinman 2013; Graeber & Wengrow 2021; Kim & Kusimba 2008; Lambert & Walker 1992). However, there are still clear similarities in trajectories of social evolution in

different parts of the world (Currie & Mace 2011; Flannery & Marcus 2012; Haas 2001; Spencer 2019; Turchin et al. 2018). Drawing on the literature discussed above, this thesis evaluates behaviors in war as they relate to this suite of associated variables.

To explore how self-sacrificial behavior in war varies cross-culturally, it uses data from a global sample of societies to test predictions generated by the 'Modes of Religiosity' theory and identity fusion theory, specifically those aspects relating to between-group differences in resource extraction and participation in violent intergroup conflict (Whitehouse 2018). According to modes theory, beliefs and ritual practices across societies tend to cluster around one of two forms: infrequent, emotionally intense rituals which take place among small groups and create close kinship-like bonds among participants- the imagistic mode- and frequent, standardized, low-arousal rituals practiced among large populations- the doctrinal mode. A group's reliance on one form or another is argued to result from necessary patterns and levels of cooperation among group members to successfully survive in a given environment (Whitehouse & Lanman 2014; Whitehouse & McQuinn 2012; Whitehouse et al. 2017). Ethnographic and cross-cultural studies have demonstrated how different resource bases (e.g. subsistence practices of agriculture, foraging, or livestock herding) are associated with different group sizes, hierarchical complexity, forms of military organization, and levels of internal and external war (Ferguson 1990; Haas 1990, 2001; Keeley 1996; Otterbein 2004). The modes framework predicts imagistic groups with higher levels of ingroup cohesion, and

therefore risk-taking and sacrifice on behalf of the group, among small-scale societies reliant on non-agricultural forms of subsistence (Whitehouse & Lanman 2014) where participation in combat is voluntary and mobilized through familial ties or friendships (Glowacki et al. 2017; Zefferman & Mathew 2015). In contrast, doctrinal groups reliant on diffuse immovable resources such as agriculture are expected to display lower levels of voluntary self-sacrifice during war, due to reliance on coercive recruitment scale-based military tactics characteristic of larger complex polities. The first chapter of this thesis examines whether these predicted patterns of behavior in war are supported by cross-cultural data through testing for correlations between measures of social complexity and subsistence practices with evidence for self-sacrificial behavior across a global sample of societies. If they are not, it is possible that alternative models which focus on the presence of material and cultural incentives (Wrangham & Glowacki 2012; Glowacki et al. 2017) are a better fit.

The other aspect of warfare this project aims to explore is the relationship between sociopolitical complexity and the levels of violence directed towards outgroup members. In particular, it will examine the degree to which enemy individuals are targeted/killed during war (Chapter 2), and whether mutilation or taking of body parts as trophies occurs and if it is part of a society's cultural institutions or status system (Chapters 3 and 4). Changes in military structure which accompany different levels of social complexity may affect the extent to which populations as a whole are involved in

fighting, formal or informal rules governing conduct, and norms around military skill and how strongly it is linked with political authority and social status (Flannery & Marcus 2012; Otterbein 2000, 2004; Trigger 2003). Differing aims of war depending on a society's size and form of political organization, such as defense, territorial conquest, or resource acquisition, have consequences for the levels and forms of violence directed at fighters on both sides as well as segments of the populations not directly participating in combat (Keeley 1996). Some researchers have argued for a pacifying role of centralized states with proportionally lower levels of people exposed to internal and external violence (Gat 2012; Keeley 1996; Pinker 2011). These arguments draw on a range of ethnographic and archaeological evidence for raids and ambushes among hunter-gatherer and other small-scale societies that often results in opportunistic and indiscriminate violence against enemies (Gat 1999; Glowacki & Wrangham 2013; Milner 1999; Otterbein 1997). However, there is also evidence for greater warfare intensity with the advent of agriculture and the growth of centralized states, and it is possible that more efficient and destructive military technology and greater ideological significance of warfare resulted in intensified violence against conquered or resistance populations (Ferguson 2013; Kim, Keeley, & Kusimba 2015; Otterbein 1970, 2004). Additional interacting factors include the distribution, scarcity, and predictability of resources, perceived social and cultural differences between warring societies, and social norms of militarism and violence (Arkush 2008; Ember & Ember 1992; Kim & Kissel 2018; Glowacki

et al. 2020). This project builds on previous cross-cultural work (Ember et al. 2013; Otterbein 2000) on the treatment of enemies in war, as well as theory from archaeological and historical perspectives on political complexity and warfare (Arkush & Allen 2008; Kim et al 2015; Turchin 2011) to examine whether distinct patterns emerge from a global, cross-cultural sample of societies with varying levels of sociopolitical complexity.

Previous research on the history of warfare

Moral consideration for other humans can range from general aversion to their experiencing harm– death, physical cruelty like torture, mutilation, sexual violence, captivity, etc.– to willingness to incur costs to prevent such harms. These costs may in turn range from trivial to sacrificing one's own life. The first chapter of this thesis focuses on the latter as one of the more extreme demonstrations of altruism that occurs during war. The remaining chapters focus on willingness to inflict various harms on wartime enemies as the inverse of such consideration. The following section reviews research on how patterns of war have varied through human history and in relation to social complexity, and how levels of moral consideration may have been expressed through wartime behaviors and norms of conduct.

My review of the literature focuses on three areas of research on warfare in the humanities and social sciences: quantitative historical and cross-cultural studies of war, historical/legal work on laws of conduct, and research on political and ideological

drivers of mass killing and violence against civilians. I have chosen to review the literature in these areas for three main reasons:

First, providing a rigorous review of quantitative studies on how warfare has changed with the historical growth of social complexity is necessary for a clearer understanding of what is currently known and debated about these patterns. In general, scholars have drawn differing conclusions depending on their data, methods, and definitions of warfare. However, this lack of consensus provides a starting point for reasoning about patterns in intensity and forms of wartime violence as they relate to social complexity. This includes how changes in predominant ideologies with the rise of states may have affected levels of violence in war, specifically whether expanded moral consideration with the formation of larger societies has been expressed through a reduction in wartime violence or merely altered its forms. This work also highlights opportunities to further explore and quantify the particular aspects of war which have not often been the focus of such studies, specifically self-sacrificial behavior and treatment of enemies, that will be examined in the current project in a global-historical manner.

Second, research on just war philosophy and laws of war provides qualitative context for the specific wartime behaviors this project is investigating. This work tends to be the most detailed on laws and restraints in different periods and regions, and the social and political contexts which may have shaped societies' moral thinking on

behaviors during war and how these may have changed over time. In particular, it explores how attitudes towards mass killing and display-oriented violence have tended to vary with levels of social complexity, and how social acceptability and legal codes may contrast with actual behaviors. This provides a theoretical basis for predictions about values and attitudes across different cultures and times, especially with regards to enemy treatment, and highlights cross-cultural similarities in beliefs at different levels of social complexity to give context for quantitative analyses.

Third, works on genocide and mass killing provide a perspective on how some of the behaviors these laws and codes attempted to limit may be systematically and deliberated implemented. Specifically, this research examines the institutional and ideological aspects of conflict and political regimes that may drive campaigns of mass violence. Although these studies tend to focus on the more recent past, their findings share themes with historical instances of mass violence. This provides an opportunity to analyze differences in the military objectives and other drivers of these events as they are shaped by political structures, and, when placed in the context of findings on the overall patterns of war and development of norms of conduct, whether episodes of mass violence differ in degree or kind depending on the level of social complexity. This work also highlights the important distinction between indiscriminate and exterminatory violence, which is especially relevant in the second chapter on killing enemies.

In sum, this research provides a) a demonstration of quantitative historical and cross-cultural research, which this thesis broadly aims to emulate in its approach and methods, b) a theoretical basis for the hypothesized patterns of particular wartime behaviors focused on in this project, especially forms and degrees of violence towards enemies, and c) an opportunity to extend findings and hypothesized drivers of mass violence in the present day to past societies, and to compare how differing capacities and motives for war among state and nonstate societies could lead to different or similar outcomes.

Quantitative cross-cultural research on warfare

Quantitative historical and cross-cultural research has focused on the origins of war and how it has changed over time with the development of complex societies. Overall, this research illustrates continuing debate and differing conclusions regarding overall trends, e.g. on levels of violence between nonstate and state societies. This can be seen through comparing two works, *The arc of war* (2011) by political scientists Jack Levy and William Thompson and *The better angels of our nature* (2011) by Steven Pinker. Levy and Thompson describe war as coevolving with environmental/social threats, economic (i.e. subsistence) systems, military organization and technology, and political systems. Under this model, there have been major transformations in the nature of war three times: approximately around 3000 BCE, with the increased urbanization and proliferation of agriculture in Bronze Age Mesopotamia, the half-millennium before 1

BCE with the Iron Age in the Mediterranean and China bringing more sophisticated weaponry in conjunction with inter-state competition and the development of larger armies, and 1500 CE through 1945 CE with European inter-state competition followed by the Industrial Revolution and the two world wars. In contrast to Pinker, they argue that political centralization is a primary force in these accelerations. Based on frequencies of inter- and intra-state wars, army sizes, and battle deaths estimated from various historical sources (some of which they acknowledge as rather shaky for the earliest periods), they argue that "the severity of warfare, defined in terms of the number of casualties, has increased dramatically over time throughout most of history" (7). While not specifically discussed for the period preceding industrialization, their argument for a concurrent rise in the lethality of war with the complexity of technology and political and military organization could be extended to the treatment of enemies or killing noncombatants. However, their analysis has been criticized for not considering the lethality and effects of war proportional to population size by political scientist Azar Gat (2012) in a review of research on war's historical trajectory, undermining their argument for an increase in severity over time. Gat also criticizes Levy and Thompson for relying on a "Rousseauite" perspective on war among pre-agricultural societies. Their statement that hunter-gatherer war had "very limited participation" (88), while not as definitively refuted as Gat states, is at least speculative based on archaeological sites and examinations of ethnographic sources (Kelly 2000; Kim & Kissel 2018). This sort of

classification is also complicated by recent research highlighting the diversity of social organization, including population sizes, settlement patterns, and degrees of (in)equality among hunter-gatherers (Boyd & Richerson 2022; Singh & Glowacki 2022), including evidence for complex societies dependent on foraging and other non-agricultural subsistence strategies which engaged in frequent war (Ember 1978; Glowacki et al. 2020; Marquardt 2014).

Anthropological studies have also been conducted on warfare and its relationship with political complexity, generally on frequency, causes, and mortality (Eff & Routon 2012; Ember et al. 1992, 2013, 2017; Kelly 2000; Otterbein 1970, 1985, 2000). While this thesis is not addressing questions of relative or absolute mortality of war, this can serve as an indirect proxy for both the proclivity of fighters to sacrifice themselves (although this depends heavily on military structure, recruitment, and levels of coercion, among other factors) and levels of violence directed at enemies. Lawrence Keeley (1996) uses data on war frequencies and casualty estimates along with ethnographic sources to argue why nonstate warfare, despite being smaller in scale and with less lethal technology than that of states, could still produce highly destructive and even exterminatory results for three main reasons. First, he argues that battles among nonstate societies tended to be less deadly but more frequent, so that when cumulative casualties are compared these could be proportionally equal to those of states. Second, nonstate societies would also rely more on raiding unsuspecting groups, and while

these did not necessarily kill large numbers of people at a time (though they sometimes did), they were more indiscriminate than battles as well as more frequent. Third, massacres which had as their explicit goal annihilation of the enemy were by their very definition indiscriminate, and, while infrequent, could decimate entire cultural groups when they occurred.

Keeley's arguments and data, along with other archaeological data on prestate violence and warfare, are centrally featured in parts of Pinker's book to support his overall thesis on violence through human history. *Better Angels* covers many different types of violence; for the purposes of this thesis, the arguments regarding the apparent decline of warfare during the "Pacification Process" during the development of agricultural societies and the effects of the "Humanitarian Revolution" in 17th- and 18th century Europe are most relevant. Within these parameters, two points relevant to this thesis can be considered; first, his arguments about the severity of war in nonstate and state societies; second, his arguments about the development of states in promoting expanding circles of reason and empathy. There have been extensive critiques of the data he uses for wartime casualty estimates, including by experts on the relevant regions and periods for the cited conflicts (e.g. Butler 2018; Dwyer & Micale 2021; Fibiger 2018; Fry 2013; Mann 2015). Brian Ferguson (2013) systematically checks the details and sources for the 21 archaeological cases of violent conflict in the first figure of Chapter 2, which purports to show a dramatically decreased rate of deaths in war among state vs.

nonstate societies, and finds that based on the original sources, some of them are more likely to be accidental or homicides in which only one or two (and in one case no) individuals died. Ferguson also argues that the other cases are exceptional instances of extreme violence. While this second point is more contentious based on one's interpretation of the archaeological and ethnographic records (Kim & Kissel 2018), some of the cases in Pinker's dataset are arguably not comparable with regards to how representative they are of overall levels of violence. To take an admittedly extreme example, his table of the percentage of warfare deaths in prehistoric archaeological sites, foraging groups, other non-state groups, and states (p. 193) lists as equivalent points of comparison the Crow Creek massacre, a 1325 CE archaeological site in South Dakota (60%) and the entirety of the world in 2005 (<1%), his point being that the latter is minuscule compared to the former. While choosing units of analysis is a constant challenge when working with conflict data, and it is difficult to say what is the correct decision in any one study (including the current one), an individual massacre that occurred in 2005 (or any other year) would arguably be a more appropriate analogue to a single recorded calamity endured by the villagers at Crow Creek. Linda Fibiger (2018) also notes that he omits Neolithic sites including mass graves from his analysis, although these and multiple sites across the globe during the early Holocene provide indications of violence and war among early settled and agricultural societies (Fibiger 2018; Kim 2015). This more complete archaeological record might actually strengthen

his argument about war in human populations before the advent of the state– Fibiger writes that according to his arguments, one would expect a decline with the start of agriculture, but he seems to place more importance on political organizations than subsistence practices and includes "horticulturalist societies" among those "in which our species spent most of its evolutionary history" (2011: xxiv). With regards to his overall methods, two studies (Falk & Hildebolt 2017; Oka et al. 2018) apply scaling relationships to estimates of nonstate and state casualty estimates and find that they do not significantly differ once power laws between population size, war group size, and casualties are taken into account. Falk and Hildebolt also point out in their re-analysis that his pre-state casualty estimates are all-encompassing while his state estimates only include military personnel.

Overall, continued disagreements over what type of society is most representative of our evolutionary past, and to what extent the gathered data on contemporary hunter-gatherers and various archaeological cases are representative of this type of society mean little consensus in the literature on the deep or shallow history of war. Opponents of the violent prehistory model, many of whom contributed to a volume edited by Douglas Fry which criticized several aspects of Pinker's thesis (Fry et al. 2013), have also pointed out that the figures of frequent and highly lethal warfare are often based on complex, non-egalitarian, semi-sedentary or sedentary foraging or farming societies, rather than the nomadic foragers purported to represent the human

evolutionary past (Ferguson 2013; Haas 2013; Lee 2018). To the extent the debate about war's antiquity is relevant to the questions posed in this thesis, it is whether there is in fact more lethal warfare among less politically complex societies. One conclusion that could be taken from the literature is that early farming and complex/hierarchical hunter-gatherer societies tended to experience more intense warfare. There is archaeological and ethnographic evidence that sedentary, farming societies engaged in frequent conflict with hunter-gatherer neighbors (Golitko & Keeley 2007; Keeley 1996, 2014). Peter Turchin (2015), while criticizing Fry et al. in the assertion that violence was largely absent prior to ten thousand years ago, discusses the possibility that warfare was most intense among prestate agricultural societies. This is supported by studies from archaeological sites that show signs of heightened violence during periods of increased sedentarism with the development of farming communities (Dye 2013; Fibiger 2018; Haas 2001). One multivariate analysis of cross-cultural data found reliance on agriculture was associated with greater warfare frequency only up to the point that societies were not primarily dependent on it, as would be the case with most complex societies (Eff & Routon 2012). These studies do not necessarily translate into enemy treatment or norms of conduct, although some syntheses of ethnographic material (Keeley 1996; Gat 2015; LeBlanc 2003) are probably the most explicit in this regard with their descriptions of the asymmetric combat and indiscriminate violence predominant among small-scale societies. Unfortunately, as Keeley notes, "ethnographers have seldom asked

individuals— men or women— about their attitudes toward and reactions to war" (1996: 146), so the justificatory mechanisms surrounding these three types of combat can in most cases only be inferred indirectly from the actions themselves and records of the cultural systems surrounding them.

A few cross-cultural studies have been conducted focusing on specific types of wartime violence. These include a study on killing of captives and noncombatants by Keith Otterbein (2000) and work by Carol Ember and colleagues on what they define as atrocities in warfare among state and nonstate societies (2013). Otterbein writes that his findings contradict those of Keeley's as up to a third of the societies he analyzes "do not invariably kill captured enemy warriors" (2000: 440). He also concludes that centralized societies were more likely to kill women and children than were uncentralized societies. Otterbein's findings, particularly that despotic early states and chiefdoms were most likely to kill captives and noncombatants, are somewhat consistent with a study by Ember et al. in eastern Africa that found the state societies were more likely to commit what they describe as atrocities during internal war. However, the results indicated states were not significantly more likely to kill combatants, noncombatants, or torture captives in external war (Ember et al. 2013). Both works note how the social meanings of wartime violence and the resulting treatment of enemies changed with increased political consolidation among state societies, a theme often explored in qualitative archaeological and anthropological work (Arkush & Tung 2013; Chacon & Dye 2007). In

particular, Ember et al. write that a connection between "military glory" and behaviors like killing noncombatants, torture, and trophy-taking in war exist in state but not nonstate societies (2013: 51). Otterbein similarly links the killing of captives and noncombatants, as well as the use of torture and mutilation, with strategies of terror used by hierarchical 'despotic states' to consolidate power (2000, 2004). In addition to the number and scope of enemies killed, how combatants and noncombatants are otherwise treated encompasses a multitude of attitudes towards and relationships with enemy peoples. Ember et al. speculate that reduced interdependence and increased social distance from enemies in state societies could facilitate killing noncombatants, although this is complicated by other incentives such as conquest or taking slaves. Trophy-taking practices may be more likely to function as methods of humiliation and terror to symbolize political authority of rulers and the state as a whole rather than individual status symbols or part of an exchange of life-forces between communities (Santos-Graneros 2008). It should be noted that Ember et al.'s sample focuses only on polities in eastern Africa, and though Otterbein's sample is global it is somewhat small, possibly limiting variability within each of political categories (for instance, all of the societies he terms "mature states" are African apart from Thailand). These caveats aside, their findings invite further examination on how social meanings of violence change with the consolidation of political power and how this affects how enemies are treated during war.

Based on this research, it is challenging to make generalizations about how societies situated enemies within their moral universes depending on their levels of complexity. The idea of an expanding moral circle through history seems self-evident as humans have agglomerated into larger and larger societies, improved our communication and transportation technologies, and developed more sophisticated systems of learning about the natural and physical worlds (Buchanan & Powell 2018; Singer 2011; Wright 2001). Whether this translates into the forms and severity of violence directed at enemies during war is less apparent. In *Ultrasociety,* Turchin points out that the 'expanding circle of sympathy' attributed by Pinker to 18th century Europeans occurred earlier in many parts of the world with the development of non-kin-based societies, moralizing religions encompassing multiple ethnicities, and eventually multi-faith and multiethnic national identities. Such expanded identities, while decreasing violence within societies, could contribute to more intense intergroup violence (Turchin 2015). Similarly, archaeologist Nam Kim writes in his review of Pinker's work that the liberalizing ideologies facilitated within spheres of control by political Leviathans may instead have resulted in a "greater externalization of violence" (Kim 2012: 245), as seen in the historical and archaeological records of expanding states. For instance, Pinker cites the number of American war deaths in 2005 including casualties in Iraq and Afghanistan as a small amount of the population compared to war casualties in pre-state societies, but does not account for the number of Iraqis or Afghans killed. This

does not necessarily detract from his argument– the civilizing effects of the state protect those within, not without it– but it remains unclear whether this externalization of violence is greater with more socially complex societies. Pinker writes on the pacification process of indigenous people that "though imperial conquest and rule themselves can be brutal, they do reduce endemic violence among the conquered" (211). He then attributes the increases in war in many areas after decolonization to those societies having "slid back" into a pre-European anarchy (214). While this is one possible interpretation, there are also the well-documented contributions of colonial rule in co-opting, exacerbating, or inventing divisions along ethnic or religious lines. Similarly, Gat writes in his review that war has primarily occurred since the 1800s because "ethnic and nationalist tensions often overrode the logic of the new economic realities…They continue to do so today, especially in the less developed parts of the globe, the world's remaining 'zone of war'" (2013: 153). It is true humans often act in ways contrary to rational self-interest. However, dismissing conflicts in parts of the world bereft of the "humanitarian sensibilities'' (151) of the European Enlightenment as illogical ignores large amounts of scholarship demonstrating the political and economic realities underlying many of these divisions and violent conflicts (Cammett & Issar 2010; Haddad 2017; Kalyvas 2006; Valentino 2014). Developed states are also susceptible to identity- or ideology- based motives for external and internal violence, and play a not insignificant role in financing, supplying, and perpetuating warfare in other parts of the

world. Efforts to link differences in the conduct of war among contemporary nation-states- specifically instances of mass killing or targeting of noncombatants- to more authoritarian versus democratic governments and associated values of liberalism or human rights have produced mixed results (Downes 2006; Mann 2005; Ember et al. 2018; Morrow 2007; Straus 2012; Valentino et al. 2004). This is not to deny that ideologies and expanded circles of moral consideration play a role in how intergroup violence is conceived and conducted. While this thesis does not directly attempt to quantify or determine the effects of moral ideologies on violence in war, searching for possible links with broad changes in political complexity and centralization associated with these ideologies could provide support for one direction or a basis for further research.

Qualitative work on the conduct of war

While providing interesting, if contradictory, syntheses of warfare through human history, these works largely do not have as their aim norms around treatment of enemies or violence directed at noncombatants/civilians. Works which do and take a broad historical view tend to be largely qualitative and to focus on ancient to modern state societies. There is evidence from comparative historical research for the presence of mutually understood norms of conduct between centralized small polities which frequently fought one another in multiple regions. Among some states in pre-colonial western Africa, there were mutually understood conceptions of proper conduct such as

formal declarations of war that gave both sides time to prepare and move noncombatants to safety and limits of types of weapons, as well as the introduction of more formally developed laws with the spread of Islam (Smith 1989). In early Greek and Roman warfare, conduct during war was linked with the conception of a 'world system' that, at least for a period, determined whether other states were extended "laws of mankind" or "law of the Hellenes" (Raymond 2010: 17). These codes of conduct may have become more common and detailed with the formation of complex polities, and often centered around religion and views of a natural or divinely ordained state of relations between human groups. However, these did not necessarily provide any protection for noncombatants or limits on other forms of violence. Instead, violence and rules of conduct during war were often used to defend the divine order of rulers and their territories from chaotic outsiders (Brekke 2005; Bryant 2021; Cox 2017). A commonly cited example is the role of *ma'at* in ancient Egyptian war, which characterized foreign peoples as barbaric rebels against the order and justice of the pharaoh, legitimizing offensive war, including widespread captive-taking and slaughter of defeated enemies, as self-defense and law enforcement (Cox 2017). Similarly, an analysis of rebellion in ancient Mesopotamia states that "Assyria uprooted communities in deportation and resettlement, and on the cosmological level, too, since enemies were ideationally relegated to the periphery, shrouded in disorder, awaiting only the peace and order of the Assyrian king" (Richardson 2016: 38). Some parallels to this can be

found in concepts of just war in early China which emerged during the Warring States and following Qin periods (481-207 BCE) (Lewis 2005). Mark Lewis writes that, with the emergence of a single autocratic head of state, "ideas of just war were linked to the theory that proper warfare was possible only under the command of a semi-divine ruler who brought killing in the world of men into harmony with the violence of nature" (2005: 185).

The rhetoric of imposing order did not necessarily mean that ultraviolence was a regular occurrence. For instance, during the Mesopotamian Early Dynastic period, it may have been intermittent and tactical rather than systematic in part due to the limited capacity of states at this time (Richardson 2016). War in this period was primarily centered around interactions between rulers and not state populations more broadly, in contrast with the increased scale of violence of the larger and more complex Neo-Assyrian Empire when society became militarized and a professional class of soldiers developed (Melville 2016; Richardson 2011). These policies were also dependent on foreign policy goals and perceptions of cultural distance, such as the use of political maneuvering and mustering native support when attempting to conquer fellow-Akkadian speaking Babylonians rather than the overwhelming force and destruction used against other peoples (Melville 2015). However, during Neo-Assyrian conquests of cities, civilians might be killed during sieges or taken captive, deported to different areas, and used as slave labor (Nadali & Vidal 2014). While the reasons and means of

waging war may have taken place within a system of moral thought centered on order, civilization, and divine rule, this appears not to have resulted in consideration of the morality of how enemies were treated.

Some scholars have argued for a decrease in these extreme displays of violence, both internally and during war, with the development of moralizing, broadly prosocial ideologies during the "Axial Age" (Bellah 2011; Bryant 2021; Turchin 2015). For instance, Michael Bryant writes in a historical survey of wartime atrocities and legal regulations that societies in the first millennium BCE "began to display an interest in curbing the unnecessary violence and destruction of warfare" with limits on war sometimes conceived of as applying to people of different cultures (Bryant 2021: 162). While recent research using historical data has indicated that the Axial Age did not in fact occur simultaneously in the time period or manner generally portrayed (Mullins et al. 2018), there are similarities in institutions and aspects of moral thought across many of these traditions including parallels in the development of concepts of just war (Johnson 1981; Brekke 2005; Hensel 2010; Kelsay 2005). This includes the extensive scholarship produced by Islamic legal schools (Abou El Fadl 2000; Kelsay 1990), norms outlined in Hindu war epics and literary statecraft (Brekke 2005), and ideas on justified military action in Confucian, Mohist, and other schools of thought in China (Graff 2010; Lewis 2005).

Studies on these sorts of restraints tend to focus on state societies, but a few studies on small-scale societies have also been carried out and illustrate many similar concepts. These include protection for some classes of people based on their supposed incapacity to fight (women, children, the elderly or disabled) or social occupation/class that marks them as peaceful (religious officials, diplomats, peasants). Among the Mae Enga of Papua New Guinea, norms included immunity for women and children, the wounded, refugees, or people from a clan with whom one was not at war, as well as injunctions against rape and corpse mutilation. In a survey of the pastoralist Samburu of Kenya, Belinda Straight (2017) found that cultural norms stipulated that small children, pregnant women, the elderly, and mentally disabled persons should not be harmed, as well as self-reported instances of warriors sparing such individuals in combat. They also stated that anyone climbing a tree or holding out grass should be spared, regardless of age, sex, or injury, as this was a plea for mercy that would invite greater spiritual contamination if disregarded than even killing a normally protected individual. Similar limits to violence in war can be found across many societies with different emphases and inclusions/exclusions of particular individuals or actions (Chirot & McCauley 2010; Dupree 1973; Hasluck 1954). Other common restrictions included forbidding the use of certain types of weapons, killing wounded enemies or captives, or defacing enemies' bodies (Alasow 2010; Keeley 1996; Wiessner 2019). Explicit or implicit norms based on social distance were also common and delineated applications of the other restraints

(Bohannan 1953; Solometo 2008). For instance, cultural familiarity would appear key to the codes among the Mae Enga as they had developed as part of an interclan exchange and reparations system that maintained a balance of power and provided an avenue for status-seeking through constrained war and peacemaking (Wiessner 2019). Among the Tiv of West Africa, the distances between lineage segments determined the intensity of fighting and whether poisoned arrows were allowed to be used (Bohannan 1953). Such codes could of course be highly variable across societies; for instance, some societies which engaged in trophy-taking were forbidden to mutilate the enemies' breasts or genitals or to harm pregnant women while others took genitalia and parts of the fetus as trophies and/or for use in religious rituals (Downs 1955; Hill 1936; Maschner & Reedy-Maschner 2007; Smith 1920; Spencer 2010). Many societies were recorded as regularly killing men, women, and young children without much distinction, apart in some cases from the desire to take them as captives or slaves (Straight 2017). Beliefs about proper conduct could vary within as well as between societies, as illustrated by a recent study on Turkana pastoralists that found high individual variation in fighters' beliefs about the acceptability of killing individuals of different ages or genders (Zefferman & Mathew 2020).

In larger complex societies with professional militaries, legal thinking on the conduct of war became more extensive and internally diverse with multiple schools of thought. As with small-scale societies, these norms interacted with military structures,

internal social hierarchies, and intergroup (or international) relations. For instance, Lewis (2005) describes how, after the bloodshed of the Warring States Period and the Qin Dynasty, doctrinal thinking on war in Han China reflected attitudes promoting the gradual removal of violence from mainstream society (Graff 2010; Lewis 2005). This included the idea that soldiers should be separated from common people and that the latter should not be subject to violence (Lewis 2005). However, due to the abolishment of universal military service during the Han period, the army came to largely be made up of exiled criminals and foreign recruits viewed as unfit for civilized society, whom Lewis argues lacked the incentives of class and prestige to develop codes of conduct or chivalry as was the case in feudal Europe. Instead, "the most brutal methods could be applied when necessary, and the model of warfare as a form of punishment justified virtually any conduct." (Lewis 2005: 197). As Lewis observes, chivalric codes were developed to regulate violence in war in Europe, based in large part on the individual honor and prestige of soldiers drawn from the nobility (Neff 2005). While this resulted in better treatment for enemy knights, there was generally complete disregard for noncombatant commoners (Johnson 1981; Neff 2005). Instead, a somewhat clearer parallel might be what Stephen Neff (2005) describes in his work tracing the evolution of laws of war in Europe. Neff argues that the conception of war as enforcing a (super)natural world order, which predominated in Europe until about the 1600s, was overtaken by legalistic approaches in which war was an instrument of policy used by

sovereign states. Under the latter system, opposing sides were not considered just or unjust– soldiers of both sides were entitled to equal treatment, and an emphasis on necessity meant restraint in the use of force. Increased professionalization and discipline of armed forces occurred alongside a growing belief that violence should be kept from affecting civilians. Consistent with the arguments by Pinker and Gat, this increased separation– in theory– meant less violence inflicted on populations as a whole, with war now primarily fought between professional militaries. However, Neff writes that these "only modestly" reduced suffering of civilians (88). Similarly, other scholars describing norms of restraint often note that these were somewhat to completely ineffective in actual historical combat (Armour 1922; Bryant 2021; Smith 1989), as they could often be ignored or used to justify violence against outsiders.

Scholars writing about the historical development of ethical thinking on war have observed that the degree to which war tended to be linked with moral righteousness, religious or otherwise, could have contradictory effects on wartime behavior (Neff 2010; Syse 2005). An emphasis on war as an instrument of policy entailed not using more force than was needed for victory, but any amount up to that point might be permissible (Neff 2005). Such an approach would discourage symbolic but militarily futile heroic behavior and disregard the degree of harm towards noncombatants. By contrast, heightened moralization of war could promote greater loyalty and altruism among soldiers and restraints on treatment of enemies, as illustrated by the prevalence

of Christianity, Islam, and other religious traditions in many early laws of war. This could potentially fit with predictions of greater levels of parochial altruism and self-sacrificial behaviors, as well decreased or restricted violence, in complex societies with moralizing religions. However, war as an exercise of moral behavior could also be part of a dichotomous worldview in which the enemies were not only outside the bounds of the moral ingroup but posed an active and perhaps cosmic threat to it, justifying or even necessitating extreme forms of violence (Syse 2005). The works discussed below outline some of the ways both approaches to political violence may result in mass killing and other atrocities.

Studies on mass killing and civilian victimization

Extreme instances of this could occur when enemies were not considered to be part of the moral universe to which such codes applied (indiscriminate violence) or were on the wrong side of them (deliberate extermination). These have been examined in the separate but increasingly overlapping fields of inquiry on genocide and the targeting of civilians during war (Straus 2012). This research has indicated that exclusionary ideologies, through which societies premise their identity on the exclusion of unwanted groups who are placed outside a circle of moral consideration, are a consistent contributing factor in genocide (Bellamy 2012; Harff 2003; Nyseth Brehm 2016). This can be manifested through a group's belief in its higher status and responsibility to civilize others. The norms Neff describes as developing in Europe around protection for civilians

were eventually codified in the Geneva conventions in 1899 and 1907; however, it was generally understood that they did not apply to the 'uncivilized' peoples living in colonized areas (Bellamy 2012). These themes are also apparent in Ben Kiernan's *Blood and Soil* (2007), one of the few works on genocide with a deeper historical approach. Kiernan analyzes multiple cases of extermination campaigns from different regions and time periods that he ties to "cults" of antiquity, agrarianism, racism, and expansionism. He argues that common themes in extermination attempts are a desire to return to an idealized past utopia of racial purity, which is often tied to a romanticized view of pastoral and agrarian life and a self-proclaimed right to conquer and cultivate lands wasted on their unproductive or unworthy inhabitants. The use of such worldviews to justify exterminatory violence is also consistent with an argument for a greater externalization of violence among complex societies engaging in conquest or colonization.

Another major focus of these works is how extreme violence may be used instrumentally to achieve political goals; namely, when mass killing is viewed as less costly by actors than any alternatives (Chirot & McCauley 2010; Straus 2012). Much of this research has indicated how the use of mass violence is often a tactic used by inherently insecure power structures in the face of what is perceived as an existential external or internal threat (Downes 2006; Straus 2012; Valentino 2007). This reasoning can apply in different senses to both ancient polities as described above and

contemporary nation-states (Levene & Roberts 1999) and is also somewhat consistent with the use of terrorism by relatively weak insurgent groups as part of an overall pattern of asymmetric war (Valentino 2014). Similarly, the broader themes of threatened group identity and fear are central to many psychological frameworks of outgroup hatred and mobilization for collective violence (Bar-Tal 2007; Chirot & McCauley 2010; Reicher et al. 2008; Staub 1989). These descriptions indicate that levels of violence in war would not necessarily track levels of social complexity (either positively or negatively) but be more pronounced among somewhat centralized political systems lacking security and stability.

There has also been debate among scholars of mass killing and genocide on the extent to which such campaigns are unique or should be defined as unique to (modern) states, generally in the context of analyzing those in the twentieth century and beyond (Chirot & McCauley 2010; Straus 2012; Weiss-Wendt 2012). This is an important question when attempting to understand or predict likeliness and scale, as centralized states have greater organizational ability and physical resources. However, this capacity for destruction is in absolute rather than proportional terms and does not necessarily indicate more exclusionary morality or worse intentions on the part of states. (Likewise, greater destruction in proportional terms among nonstates does not necessarily indicate the reverse.) For instance, while the reputation of extreme violence among the earliest Mesopotamian states may have been largely unearned, in part due to their limited

power (Richardson 2016), their occasional use of mass violence when expedient and within their abilities indicates that humane treatment of the enemy was not a principal moral concern. Based on this literature, a possible conclusion is that mass killing or other atrocities as an end in itself applies more to social groups with political goals beyond resource acquisition or revenge, rather than the indiscriminate killing often described in the ethnographic literature on small-scale societies where it appears to be more in the vein of collateral damage. However, there are instances of exterminatory warfare among small-scale societies as well (Boehm 2013; Karsten 1935; Keeley 1996), although driving factors such as fear of pollution by ideologically or ethnically impure groups, perceived threats to a centralized regime, or desire to achieve a utopia are less likely to be present among these groups. Instead, the motives for war described as exterminatory in intent cited in ethnographies include preventing the enemy from returning to enact revenge (Jivaros, Karsten 1935; Koryak, Jochelson 1905), taking possession of the defeated's territory (Chuuk, Fischer 1958), and fear of population growth of neighbouring group that would impinge on a society's own land and resources (Canela, Crocker 1990). These are descriptions by individual ethnographers with various potential biases and are comparatively shallow when contrasted with the cases studied in the literature on genocide and civilian victimization. However, based on this limited data, motives for exterminatory war resemble those for warfare overall among small-scale societies, centering around revenge and resource acquisition (Keeley

1996; Kim & Kissel 2019). It is therefore difficult to claim that violence in war decreased with the increase in codified restraints in state societies of any formulation. For instance, Keeley observes that rather than the overall lethality or destructiveness of a weapon, in modern war "the more personal the cruelty or destruction, the more likely it is to be regarded as reprehensible" (1996: 62). He likewise notes the continued occurrence of trophy-taking and other defacements of enemy bodies in contemporary war, despite this no longer being considered morally acceptable as it would be among many small-scale societies. Like the prevalence versus norms of trophy-taking and enemy mutilation, the need to justify rather than glorify mass slaughter may document a shift in norms of acceptable behavior in a globally interconnected human community more than actual changes in behaviors.

In addition to these factors, military organization may shape norms of behavior towards others in the same military structure, society, and enemy soldiers and civilians. The analyses in this thesis broadly proceed on the assumption that complex societies were more likely to have professional, centralized militaries whereas small-scale societies tended to be reliant on diffuse networks of community members who had other roles on a day-to-day basis. However, there is a large amount of variation between and within these ends of the military organizational spectrum. Military organization varies substantially across different societies in interaction with but not necessarily directly correlated with the complexity and structure of those societies as wholes. A major model

that illustrates how military group organization can promote internal cohesion and project external violence, and how this may differ from the overall organization of society, is Guy Siebold's standard model of military cohesion (2007, 2010). This model consists of primary and secondary modes of cohesion, defined as "a social-relationship product or form generated by the interactions and experiences of the group members in the context of their daily military activities, combat and noncombat" (Siebold 2007: 289). Primary cohesion, based on personal relationships, includes a horizontal bonding between peers at the same hierarchical level and vertical bonding with those directly above them (e.g. squad leaders). Secondary cohesion includes organizational bonding with the next higher structure, such as a particular segment of the military, and institutional bonding with the entire military institution and possibly the rest of society (Siebold 2007). These forms of cohesion map closely onto the relational and categorical ties that characterize the imagistic and doctrinal modes of religiosity. As with the imagistic and doctrinal modes, primary unit cohesion can be nested within institutions reliant on secondary cohesion in complex societies with professional, large militaries, while small-scale societies can be argued to be primarily reliant on primary group cohesion. Similarly, imagistic and doctrinal models can work together in promoting cohesion, particularly in centralized state forces and non-state forces while the imagistic mode may be solely present in decentralized non-state and community-embedded armed groups (Terry & McQuinn 2018). In complex societies, institutional (secondary)

cohesion can be projected onto society at large, integrating not only primary groups forming the military but also the broader state or empire. A classic study (Shils & Janowitz 1948) demonstrated the importance of primary group cohesion in maintaining the integrity of the German army as they were defeated in World War II, and how groups whose members were quickly thrown together or became physically isolated did not have this cohesion and were more likely to desert or surrender. Other research (MacCoun et al. 2006) has differentiated between task and social cohesion, arguing that the former and not the latter is relevant for group effectiveness. Siebold instead argues that "action has both an affective (or emotional) aspect to it and an instrumental (or task) aspect to it, and that action is both influenced by social relationships (cohesion) and influences them in return" (2011: 463). Both small-scale and complex societies would need to instill a sense of a shared goal and ideological commitment to that goal.

This framework describes how primary groups provide the close personal relationships and fictive kinship often invoked in explanations for self-sacrificial behavior, while secondary groups provide a "general sense of purpose and meaningfulness that is linked to the larger (usually national) society and culture" (Siebold 2007: 290) which could constrain or direct the contexts of self-sacrificial action. Within this framework, it is logical that the willingness of soldiers to take risks and sacrifice their lives would be largely dependent on a military's relative success in building primary and secondary group cohesion. More broadly, it is important to

emphasize that while societies with greater complexity are more likely to have hierarchical militaries, this is not a clear cut dichotomy. Military structures vary within societies at all levels of complexity and give rise to different norms and levels of cohesion that in turn have nonlinear effects on tendencies for self-sacrificial behavior.

In particular, military organization can determine how norms of violence and treatment of enemies are disseminated, adopted, and realized in war. A recent review of norms of restraint among contemporary armed groups (Terry & McQuinn 2018, McQuinn et al. 2021) presented a framework on the spectrum of armed-group organization, ranging from centralized state forces to decentralized, community-embedded groups (of the sort that would be classified as friend or family networks in the quantitative codes discussed in the chapters below). This framework illustrates how hierarchical military structures may be able to enforce norms of restraint (or violence) from a central authority, while those with more diffuse authority drawn from a local community will be strongly influenced by external non-military social norms (McQuinn et al. 2021). Therefore, military structures in societies classified at the same level of complexity in the current dataset might vary according to centralization of authority, degree of hierarchy, discipline/enforcement mechanisms for behavior, and how isolated the armed group is from the rest of society (McQuinn et al. 2021). These in turn can affect how norms about violence, perception of the outgroup, beliefs about how the

enemy should be treated, etc. are adopted from religious authorities, civilian political authorities, and society as a whole, and how these are enacted during and after combat.

Additionally, the foundations of cohesion differ based on armed group size, centralization, affiliation with the state, and various other factors. For instance, decentralized groups with small combat units may be reliant on shared combat experience, centralized state militaries on "group narratives and collective rituals" that engender loyalty to the broader military organization, and centralized non-state groups on ideology (Terry & McQuinn 2018: 22). In the organizational framework outlined by Terry and McQuinn, centralized and hierarchical state or nonstate armed groups may weave together imagistic and doctrinal modes to generate primary cohesion within units and levels and secondary cohesion across the broader organization, while decentralized and community-embedded groups without extensive hierarchies may rely solely on the imagistic mode. These forms of centralization, hierarchy, discipline, social isolation, and cohesion can have varying and inconsistent effects on relative restraint towards the enemy.

Terry and McQuinn also identify three types of socialization for norms of restraint. These include temporary, incentive-driven adoption for instrumental reasons, internalized conformity to group norms, and fully internalized norms that form part of an individual's identity. Variables influencing each type of socialization may vary within organizations and over time, interacting with the degree of centralization, hierarchy, and

level of community embeddedness. For instance, community-embedded armed groups in this organizational framework most closely resemble the typical model of military structure in small-scale societies, including the temporary mobilization of community members, unwritten community-based norms of behavior, and defense of community interests rather than a specific ideology. Without centralized leadership or formal indoctrination structures, restraint or lack thereof is dependent on informal norms among peers or traditional community values (Terry & McQuinn 2018). These norms may shift depending on the context and identity of the enemy, and be contested and variable within a community, particularly if the armed groups are relatively decentralized and lacking a defined authority. One example is cited of a South Sudanese political leader who had argued that concerns about nueer or spiritual contamination (discussed in the case study on the Nuer in Chapter 2) from violations of customary combat rules would not apply to fighting government forces. Individuals previously allowed certain immunity from violence (women and children) could be reclassified as 'government forces' and targeted without this contamination. Additionally, due to the many decades of civil war, fighters forced to engage in violence against family members and others they considered their own people sometimes considered themselves contaminated with nueer beyond redemption and therefore saw no point in adhering to combat norms (Pendle 2021; Terry & McQuinn 2018). These changed beliefs arising from conflict with government forces emphasize how traditional group norms of violence can be reshaped

for instrumental and internalized reasons in response to an altered political and military landscape. However, the report highlights that these shifts in beliefs were still contested among fighters and community leaders. This heterogeneity and lack of a unified set of norms for restraint are characteristic of a number of historical societies analyzed in the following chapters, particularly those without professional militaries. Even among centralized military organizations, norms of violence and restraint may differ across units and levels as well as over time, making it more difficult to accurately code for levels or forms of violence at the society level.

In summary, military centralization, hierarchy, disciplinary mechanisms, and levels of connectedness with the rest of society shape how and which norms of violence or restraint towards enemies are adopted and enacted. These interact with measures of social complexity and complicate any relationships between levels of violence towards enemies and social complexity overall. There is a high degree of variation in patterns of restraint and violence within organizations as well as over time. Due to time and data restraints, the theoretical and statistical models outlined in the following chapters only incorporate military structure as it relates to relative degree of formalization, with the aim of capturing downstream effects such as separation from the civilian population. However, these other facets of military structure will likely confound any pathways, either positive or negative, from social complexity to levels of wartime violence. Despite these challenges, the studies in the following chapters attempt to test for observable

patterns in various forms of wartime violence as they relate to social complexity, which I hope will contribute to and provide a further basis for historical quantitative research in this area.

Methodological approach and data sources

This section provides an overview of the sources used to construct the datasets for the chapters in this project, outlines the reasoning for combining different types of data from these sources, and the process used to construct datasets and variables. It also goes over some issues raised in cultural evolutionary work with the use of cultural and historical databases, how I attempted to address these, and remaining limitations.

Data sources

This project consists of four cross-cultural studies using ethnographic and secondary historical data. Chapters 1-3 use data coded from ethnographic documents accessible in the electronic Human Relations Area Files (eHRAF, https://ehrafworldcultures.yale.edu/), variables from the Ethnographic Atlas (EA, Murdock 1962-1971; Gray 1999; Korotayev et al. 2004) and the Standard Cross-Cultural Sample (SCCS, White & Murdock 1969) as accessible in the repository D-Place (Kirby et al. 2016), data stored in the Seshat Global History Databank (Turchin et al. 2015), and secondary historical sources. The units of analysis are equivalent to 'cultures' defined in eHRAF and D-Place as culturally distinct groups at particular locations and time periods,

and Seshat polities defined as independent political units, also in a specified region during a certain time range. Chapter 4 uses these sources as well as data from the Pulotu database of Austronesian cultures (Watts et al. 2016).

The Ethnographic Atlas (EA) is a cross-cultural database of 1291 societies, containing variables on political and social structure, resource ecology, supernatural beliefs, and various other topics. The Standard Cross-Cultural Sample (SCCS) consists of societies chosen from the EA based on various criteria, including depth of coverage and representation of different (ultimately 186) cultural areas from six major world regions, each pinpointed to a narrow location and date (generally the late 1800s/early 1900s CE). The SCCS sample was constructed in part to maximize independence of samples and avoid similarity between cultural complexes caused by historical relatedness (Galton's problem) (Murdock & White 1969). Both the EA and SCCS contain quantitative variables coded based on previously collected qualitative material. Unlike the EA and SCCS, eHRAF is a repository of qualitative ethnographic materials without quantitative codes. It is widely used in anthropological research and contains collections of documents on over 360 cultures on a wide range of topics. Documents for one or more cultures may be searched using a subject category, such as religious beliefs or war, as well as relevant keywords. There is also metadata for each document about the author(s), field dates and site of fieldwork, the HRAF publication date, and notes from an HRAF analyst who evaluated and subject-indexed the information

(https://ehrafworldcultures.yale.edu/documents). While there are not perfect matches between the cultures contained in eHRAF and those in the EA/SCCS, efforts have been made to find corresponding societies across these samples based on location and time period (Ember 2007). On the D-Place site, societies are listed with corresponding samples in the EA, SCCS, and linked with the culture page in eHRAF if it is contained there. The EA/SCCS are valuable sources of quantitatively coded data; however, variables on warfare are somewhat limited and codes (e.g. on frequency or casualty levels) sometimes contradict one another. These databases were primarily used to delineate cultural units of analysis for the initial dataset in each chapter and for the variables used to measure social complexity in each chapter, while eHRAF was used extensively to code the variables on warfare created specifically for this project.

Seshat is a historical database with quantitatively coded variables and qualitative evidence and descriptions on social complexity, religion and ideology, warfare, and other aspects of past societies. These variables are coded for independent political units (polities) representing different levels of social complexity across 30 natural geographic areas (NGAs) of the world (Turchin et al. 2015). As with the EA/SCCS societies, Seshat polities that occupied each NGA were used to delineate units of analysis for the datasets in each chapter, as geographically bounded, relatively culturally cohesive entities within a specified time range. This includes polities much further back in time than those in the ethnographic record, ranging from the Neolithic (in some areas, dependent on

availability of data and human occupation of the NGA) to the 1800-1900s CE (Turchin et al. 2018). Seshat also contains more detailed and relevant variables on warfare, including aspects and intensity of violence for each polity, although data coverage is somewhat patchy due to the nature of historical and archaeological data and difficulty finding sufficient details in the literature to code these variables (as well as data collection still being ongoing). However, the data that had been previously coded on these variables provided a starting point for additional data collection as well as an indication of the relative availability of data for different polities. Variables on social complexity such as population and degree of centralization were also used to construct the datasets in Chapters 1-3.

Reasoning for combining datasets

This project is somewhat different from previous studies in the use of variables and societies from multiple datasets, primarily Seshat and eHRAF. While this posed some difficulties with transferability of variable definitions and social units of analysis, it also allowed for greater heterogeneity in the predictor variables, especially social complexity, as well as increased time depth and coverage of different world regions. The societies covered in eHRAF (at least those included in the current datasets) are mostly cultures studied by western anthropologists for a relatively narrow span of time, generally from fieldwork in the nineteenth and twentieth centuries. However, it is an invaluable source of detailed, first-hand accounts of a range of human cultures including

hunter-gatherer and other nonstate societies. The societies in Seshat tend to be larger and more politically complex, and include societies that are only known archaeologically.

Some clarifications regarding the analysis of Seshat data in this project may be helpful here. The Seshat Databank was constructed with the aim of incorporating temporal information in analyses to answer questions about change over time and causality in cultural evolutionary processes (Turchin 2018), and recent publications with Seshat have applied dynamical regression models to time-series data (Turchin et al. 2021, 2022a). However, other studies have applied other methods such as agent-based models for the rise of complex polities (Bennett 2022), a quantitative survey of proxies for "axiality" over time in multiple regions (Mullins et al. 2018), and a qualitative documentation of the arrival and spread of mounted warfare across Afro-Eurasia (Turchin et al. 2017). Such studies demonstrate the utility of Seshat as a repository of historical data as well as its structure for a particular statistical approach. Rather than the dynamical regression approach which includes temporal data in the analysis, this thesis relies on a Bayesian approach using directed acyclic graphs (DAGs). These are a form of causal graph that outlines the proposed relationship between variables, making explicit the assumptions of each hypothesis and which variables are necessary to include or exclude to estimate an effect and avoid confounders (Bulbulia et al. 2021; McElreath

2020). For instance, given a hypothetical scenario of proposed relationships between the following variables:

K <- C + M + E
E <- C
M <- C

if wanting to estimate the effects of E (exposure) on K (outcome), it is necessary to include C in the model to account for its effects on K not going through E. M is independent of E given adjustment for C so is not necessary to include in the model (implementation of the models and software used for the calculation of adjustment sets will be further detailed in each chapter). This approach was chosen in part due to my greater prior familiarity with these methods, and because I was not necessarily able to find data on the variables of interest in particular regions at regular time intervals while covering a sufficient number of geographically-distributed societies. This approach also emphasizes model comparison rather than model selection (McElreath 2020), which is appropriate given the exploratory nature of the current research questions. Rather than being used to explicitly assess change over time, historically- and archaeologically-recorded societies in the current dataset were included to provide sufficient variation in the predictor variables of social complexity and subsistence practices, and to add validity to the dataset as containing forms of political structures present at different historical periods (e.g. archaeological small-scale societies and early states). However, because time-series were not used, it was necessary to account for regional and

temporal autocorrelation in datasets where the outcome variable of interest (e.g. trophy-taking) could potentially be present in a society due to cultural inheritance or diffusion. This was addressed through incorporating data on world regions in the first three chapters, and with the application of phylogenetic methods to explicitly account for historical relatedness and cultural proximity in the fourth chapter. These will be further detailed in the methods sections for each chapter.

Additionally, using Seshat when constructing datasets (largely Chapters 2 and 3) provided a starting point in terms of finding culturally and politically distinct groups of people within a demarcated region and time period, data on social complexity, and sources with detail on wartime behaviors to code the additional variables created for this project. Although there were not sufficient resources and time to make a database of wartime behavior truly representative of human history, this helped to extend the time depth contained in the current datasets, particularly chapters 2 and 3. Including historically, ethnographically, and archaeologically recorded societies also helped to validate results across chapters and make them less susceptible to biases from particular datasets.

Reasoning for chosen outcome variables

The overarching topic of interest- if not possible to directly translate into a feasible research question- is how human moral attitudes in the context of intergroup relations, and particularly violent intergroup conflict, have changed and been expressed

over time and with the cultural evolution of human social structures. Along with a historical trend of greater social complexity in the form of larger and more hierarchically complex forms of political organization, cultural evolutionists have also studied accompanying ideologies promoting morality and prosociality which helped to build and/or sustain such societies. These two developments are linked with changes in the conduct of warfare: differences in political complexity through military recruitment, organization, professionalization, and tactics; and differences in ideology through attitudes about violence and how social groups, their members, and outsiders are defined and their lives valued. The actual scope of the thesis chapters is far narrower and takes advantage of previous quantitative and cross-cultural work on warfare and social complexity. In particular, the dependent variables around which each chapter is centered were chosen both to represent wartime behaviors on which there was some previous research indicating possible links with social complexity, and for which it was possible to code from existing sources in a relatively objective manner. For the first chapter, self-sacrifice is explicitly the focus of theories of group mode and identity fusion, which incorporate research on group size, military structure, and other aspects of social complexity. Proxies used in previous studies include mortality rates and participation in dysphoric rituals (Atkinson & Whitehouse 2011; Sosis et al. 2007). However, self-sacrificial actions are often described directly in both ethnographic and historical sources and so a code based on these- ideally representing the actual

occurrence of such behavior– was chosen. This also serves as an exploration of the available sources and whether this was something possible to code reliably. For the remaining chapters, the outcome variables were originally conceived of as a combined scale that incorporated multiple types of violence against enemies, including captive-taking, slavery, torture, and sexual violence. However, separating out various forms of treatment was not always possible. For instance, captivity could encompass a wide range of treatments. Among some societies such as the Nuer, captured children and women were essentially adopted and treated as members of the community. Other societies used captives as slaves, and still others for human sacrifice, sometimes adopting them as community or family members beforehand. In other instances, they were released as part of the terms of negotiations/peace talks or ransomed. This was sometimes not specified in the sources apart from describing a certain category of people as targeted for capture; e.g. noting that children and women would be taken but not whether there were norms against other types of treatment or harm. A scale capturing these distinctions and nuances with regards to captive-taking, enslavement, sexual violence, and various other behaviors for each society could potentially be constructed, but considering the available time and resources, I decided to focus on two more specific and relatively definable forms of violence (killing and taking body parts as trophies).

Methods used to construct datasets

(The following refers to the first three chapters; for the fourth chapter on Austronesian societies the dataset was mostly built on previous studies.) To construct the initial dataset, eHRAF subject categories, particularly those on armed forces and war, as well as keywords were used in initial searches to find societies for which there was some description of warfare. Materials in eHRAF have been indexed according to the Outline of Cultural Materials (OCM) which contains a range of broad subjects ranging from religion, family life, economy and subsistence, and other aspects of human societies (Ember & Ember 2013). Specifying relevant subject categories when searching eHRAF is an established method for finding relevant ethnographic records often used when compiling datasets for cross-cultural studies (e.g. Atkinson & Whitehouse 2011; Ember et al. 2013; Jackson et al. 2020). For the purposes of this study, the OCM categories 700 (armed forces) and 720 (war) were primarily used. Keywords potentially contained in relevant descriptions may also be used to narrow eHRAF search results (Fischer & Ember 2018). For this study, keywords related to the outcome variables for each chapter were used to search across and/or within subject categories. A full list of the keywords used for each chapter are in Appendix 1.2. The keywords used would sometimes be adjusted based on the amount of material on warfare for different societies as well as the content of that material: for societies with extensive descriptions of warfare, fewer, more direct keywords were used while societies with limited

descriptions of warfare were searched with additional, broader keywords to find any relevant descriptions. Those descriptions were then used to code the target variable.

To expand the dataset to include historical and archaeological societies, Seshat polities that had been coded with some degree of certainty (present/inferred present or absent/inferred absent) for variables of interest in the 'Warfare Intensity' section (e.g. mutilation, torture, general massacre, and extermination) were also added. Although different variables on wartime behavior were created for this project, these Seshat variables provided an indication of available data and sources on warfare for the second study on indiscriminate killing and the third chapter on trophy-taking. The sources and evidence for the codes on mutilation and massacre/extermination were checked for each polity included; those for which the evidence was found to be insufficient and no additional sources were found were removed.

Societies which could not ultimately be coded for the outcome variable in each chapter were also removed. As these varied based on outcome variables in each chapter, the datasets are different for each, i.e. the first chapter on self-sacrifice is composed mostly of ethnographic and a few historical societies. More detailed information was found on the killing of enemies in ethnographic than historical sources, so there are fewer Seshat polities in the Chapter 2 analysis while there are far more for Chapter 3 on trophy-taking.

It should also be emphasized that none of the chapters include data from cases of interstate warfare or intrastate civil wars from World War I onwards (societies dated after this period are ethnographically-recorded nonstate societies). This was partly due to limitations in time and resources, and partly because extensive quantitative work on the nature of war after this period already exists in political science and genocide studies that analyzes such conflicts within the context of the modern nation-state system (e.g. Downes 2007; Eck & Hultman 2007; Harff 2003; Valentino et al. 2004). Instead, this thesis attempts to take a less detailed but broader historical perspective on the relationship between warfare intensity and social complexity across different cultures.

Use of comparative cultural databases

There has been a recent proliferation of cultural databases that have been used to examine, among other things, the evolution of human social complexity (e.g. Turchin et al. 2018, Watts et al. 2016) through applying quantitative methods from evolutionary sciences to comparative cultural and historical data (Gray & Watts 2017). Although these databases can be a way of systematically drawing together different sources of evidence to find previously overlooked patterns, or to formally test theorized/qualitatively observed patterns, there may be multiple issues that include defining and comparing units of analysis, variation within societies and within specified time periods, possession of relevant expertise to make coding decisions (which will still be subjective and open to different interpretations), inconsistently or inaccurately coded data, and biases in

sources, especially ethnographic sources from the 19th-20th centuries (Bliege Bird & Codding 2021; Slingerland et al. 2020; Watts et al. 2021). The latter is especially notorious with the study of war, which has alternately tended to be underemphasized or exaggerated by anthropologists (Allen 2014) and affects descriptions of topics like lethality of war and trophy-taking practices.

The research questions and hypotheses for this project draw on literature on how warfare has changed in the context of the overall expansion in the scale and complexity of societies through human history. Although it uses historical data, the samples are far from representative of the spectrum and patterns of sociopolitical organizations from the Pleistocene to the present. In particular, it uses character states coded from mostly nineteenth- and twentieth-century ethnographies available through eHRAF to represent small-scale (as opposed to complex) societies. Partly due to increased recognition of the limited diversity of samples in studies used to generalize to all humans (Henrich et al. 2010), many quantitatively and evolutionarily oriented social scientists have advocated the study of contemporary hunter-gatherer and other non-industrialized societies as providing a unique insight into our early social history. While studies of these societies are invaluable in expanding the available sample on human behavior, they should also not be used uncritically to make inferences about the human past (Broesch et al. 2020; Haas & Piscitelli 2013; Marlowe 2005). With regards to the current project, an analysis of something as culturally variable as war will be especially biased if a single model of

group size and structure is applied as the norm for early societies. Similarly, there is no archetypical 'small-scale society' and the particular societies which are studied have changed and adapted to their environments and various interactions with other societies over time.

Many of these concerns also apply more generally to the existing data on these societies in the EA and eHRAF (regardless of whether they are used to make inferences about early human societies). A recent article by Rebecca Bliege Bird and Brian Codding (2021) describes the many challenges in using such data (while they are specifically addressing the EA/SCCS, many of their points also apply to eHRAF materials). They point out that much ethnographic work was done from colonialist perspectives during limited timeframes, with intentions and focuses very different from research questions scholars tend to be interested in, as well as various ethnocentric, gendered, or personal biases. One example of this is Bronislaw Malinowski's somewhat odd description of Trobriander warfare, where he writes that following a battle between two villages, the victors would "rush on killing men, women, and children indiscriminately" but then states hardly anyone would be killed (Malinowski 1920: 11). Bruce Knauft (1990) and Erik Brandt (2000) critique this portrayal in the context of studies of Melanesian warfare and the predominant frameworks in anthropology at the time, as well as Malinowski's own background and personal biases when carrying out fieldwork that may have motivated him to downplay the severity of Melanesian war. Of course, observer biases have also

led to the exoticization of supposedly 'primitive' societies and an excessive focus or exaggeration of practices such as cannibalism, headhunting, and human sacrifice (Hoskins 1996; Roque 2010), which is especially relevant to the two chapters on trophy-taking practices. By contrast, well-intentioned efforts by scholars to counter such views led in some cases to a "pacification of the past" (Keeley 1996), in which hunter-gatherer and other nonstate societies were portrayed as peaceful and harmonious, ignoring ethnographic evidence for the existence of conflict prior to contact with state societies as well as archaeological evidence for violence and warfare. In some cases, this may have obscured the effects of colonization on suppressing pre-contact warfare (Keeley 1996; LeBlanc 2003).

Following previous methods used to construct databases and suggestions for best practices, regions and time periods are recorded for each cultural unit treated as a society in the dataset. For the purposes of this project, the unit of analysis is a group of people occupying a demarcated region over a specified date range, generally speaking the same language (in the case of politically uncentralized peoples) or under a consolidated political authority that might include people from multiple ethnolinguistic groups. Regarding comparability between units of analysis from combining datasets, Turchin (2018) notes that the political centralization code of a quasi-polity for Seshat is similar to the unit of analysis used in static cross-cultural databases such as the Ethnographic Atlas: "For those periods when the NGA is divided up among a multitude

of small-scale polities (e.g., independent villages, or small chiefdoms) it is not feasible to code each individual polity. In such instances we use the concept of "quasi-polity", which is defined as a geographic area with some degree of cultural homogeneity that is distinct from surrounding areas and approximately corresponds to an ethnological "culture" (Murdock 1967; Murdock and White 1969) or an archaeological sub-tradition (Peregrine 2003)" (Turchin 2018: 34). As this project centers around behaviors during warfare, this could be explained as: given a group of people called X (treated as a unit of study in ethnographic/historical/archaeological sources), and they engage in war against people called something other than X, it is safe to consider them as a cultural unit over the range of time covered by the relevant sources. There were some exceptions with societies that only engaged in internal war; however, in these cases they could still be demarcated by e.g. sharing a language not spoken by neighbouring groups. While there are still inconsistencies and disparity in 'types' of group that arguably make them not valid to compare, particularly with groups added independently (that are not present in existing datasets), the details and sources will be recorded and made open to critique by others so that any of the results may be considered in the context of these shortcomings (and hopefully improved upon by others).

Bliege Bird and Codding make a number of suggestions to address issues with data itself, including acknowledgement of data biases and limitations, validation of codes by consulting the original sources, and avoidance of misleadingly precise

variables such as exact estimates of population or categorical codes of difficult-to-code behaviors. In part due to these concerns, several relevant variables in the SCCS (e.g. value of war, acquisition of trophies and honours, etc.) were not used. In particular, much of the data used in Otterbein's 2000 study on the killing of enemies were unable to be sourced to any documents contained in eHRAF or corroborated by available documents. When no other data were available for a society Otterbein's data were used as a tentative code. In cases where the ethnographic or historical material used to code warfare behaviors was clearly in reference to a different time period than the one given for a society in D-Place, the predictor variables for subsistence, political complexity, etc. were re-coded to reflect the appropriate time period based on the same sources used to code warfare. An attempt was made to clearly define variables with sufficient detail that could be used to understand the rationale for each code. In an effort to improve transparency and reproducibility, analyses were preregistered on the Open Science Framework site (osf.io), where the codebook and datasets with evidence and sources will also be made available.

There are clearly still remaining limitations with the data used in each chapter. Recorded patterns of conflict might be subject to vagaries of ethnographic fieldwork and individual ethnographers. The dependent variables for the first three chapters were coded individually and so it is unclear if there would be agreement among multiple coders. This is in addition to the usual caveats of transforming qualitative data to

quantitative codes, primarily the loss of nuance and context that may miss important patterns. Bliege Bird and Codding suggest specifying testable and competing hypotheses, which is attempted in each chapter. However, it is not possible to measure, include, or even be aware of all the confounds that could be affecting the relationships between these variables.

Despite these limitations, as pointed out in a response to Bliege Bird and Codding, the reduction in uncertainty from a pooling of available data can still tell us something about the ways in which human societies function (Hamilton & Tallavaara 2022). This thesis attempts to build on extensive, multidisciplinary qualitative work and a smaller number of more recent quantitative efforts in cultural evolutionary studies. Although the results reported for each chapter are largely ambiguous and inconclusive, it is hoped that the analyses were still worthwhile exercises, in part to determine the sort of approaches that can be used to quantitatively and historically explore human behavior during war. Ideally, through this effort some of the specific challenges as well as what is possible will be clearer for future researchers.

Thesis structure

Each of the following chapters centers around a different aspect of wartime violence that had previously been theorized about and researched cross-culturally and historically in connection with the size and complexity of human societies but had not necessarily been the objects of quantitative historical analyses. As the study on self-

sacrificial behavior is the only one not focused on enemy treatment, it is placed first with the other studies grouped in Chapters 2 through 4. Chapters 3 and 4 are both focused on trophy-taking practices, with Chapter 4 extending the research in chapter three by focusing on a narrower subset of trophy-taking (headhunting) and cultures (Austronesian societies).

The samples for each chapter are slightly different due to different availability of data on each aspect of war. Dividing the thesis into multiple studies centered around different outcome variables allowed for a maximization of the available data for each; for instance, there was a greater number of societies for which the presence or absence of trophy-taking practices could be inferred with reasonable certainty than there was for levels of indiscriminate killing. Therefore, the dataset for chapter three is larger. This also allowed for the testing of different hypotheses centered around each facet of wartime behavior, in particular the testing of a quadratic relationship between social complexity and trophy-taking in Chapter 3. It also allowed for the application of different methods, specifically phylogenetic comparative methods in Chapter 4– sufficient ethnographic and historical records and a validated phylogeny are available for Austronesian societies, but would not be for a global sample of societies as there is as of yet no well-validated global phylogeny and many major families such as the Indo-European and Afro-Asiatic lack the amount of ethnographic data on warfare needed to code the outcome variables. Therefore, chapters one through three use non-phylogenetic regression

analyses. Chapter 4 allows for a limited application of these methods and a different way to test the hypotheses posed in chapter three on trophy-taking behaviors. Short case studies in Chapters 1 and 2 were added to assist with the development of the coding systems by laying out the nature of evidence for different behaviors in specific societies and how they were linked with those societies' resource ecologies and sociopolitical structures. These qualitative examinations help contextualize the results of the quantitative analyses.

The first chapter examines some of the available data on instances of and attitudes towards self-sacrificial behavior in war from ethnographic and secondary historical sources. It attempts to test hypotheses derived from Modes theory on the relationship between resource ecology and self-sacrifice for the group; specifically, that groups reliant on valuable, densely clustered resources will be more tightly cohesive due to the levels of small group cooperation required to extract and defend such resources (imagistic mode). In contrast, larger groups reliant on distributed resources require formal military structures and coercion to engage in risky and sacrificial behavior for others (doctrinal mode). In the context of the relationship between war and social complexity, the imagistic mode can be considered predominant among small-scale societies, particularly hunter-gatherer and pastoralist societies with widespread military mobilization, while the doctrinal mode is predominant among complex, agriculturally dependent societies with formal militaries.

Based on descriptions of behaviors during war for a cross-cultural sample of societies, the likelihood of self-sacrificial behavior as predicted by social complexity, subsistence practices, and military structures was tested using regression models. The results were somewhat supportive of a greater prevalence of self-sacrificial behavior among more socially complex as compared with small-scale societies, but no difference between societies reliant on agriculture compared with other subsistence means. Limitations to the data, particularly the difficulty of assessing self-sacrificial behavior from observational qualitative data on past societies, are discussed. I also go over some potential research directions, including a greater focus and more detailed data coding system on military structures and rituals, as well as integration with available historical and ethnographic data on battle casualties, although an examination of this question from a historical question is still faced with multiple challenges.

The second chapter collates ethnographic and historical descriptions of levels of violence toward enemies during war for a sample of societies in an effort to assess whether killing becomes more or less indiscriminate with greater social complexity. I attempted to develop a coding system that captures these levels of indiscriminate killing based on whether individuals of different ages and genders tended to be targeted during war and create a cumulative score for each society. Bayesian logistic regression was used to test for a relationship with social complexity, the presence of violent political expansion to control other populations and/or territories, and the presence of

formal military structures. The outcome variable of indiscriminate killing was modeled as a binary variable with measurement error to incorporate ranges for each society. The results did not indicate support for a clear relationship, either positive or negative, with social complexity or military formalization. There was a possible small positive effect from political expansion. Possible interpretations of these results are discussed, including the presence of multiple confounding variables unrelated to social complexity or related to it in a nonlinear manner, that also affect the degree of indiscriminate killing across societies. Limitations to the data and measurements that may undermine the acceptance of the null hypothesis of no relationship are also discussed, along with possible approaches for future research to address some of these limitations.

The third chapter examines the relationship between social complexity and the taking of human body parts from enemies in war (trophy-taking practices). Specifically, it looks at whether the presence of trophy-taking displays a quadratic relationship with social complexity in a similar manner as has been indicated in previous research on human sacrifice, drawing on literature on trophy-taking as a mechanism for status attainment in hierarchical non-state and early state societies. Based on archaeological and anthropological research on display-oriented violence and militaristic ideologies of early states, it also tests whether trophy-taking is predicted by violent political expansion. It also looks at whether the presence of trophy-taking is predicted by the degree to which a society is dependent on agriculture, drawing on anthropological work

connecting the taking of body parts to beliefs about crop fertility and community well-being among agricultural societies. Logistic regressions were used to test for these relationships between trophy-taking and social complexity/population size, political expansion, and agricultural dependence. The results did not indicate strong support for any quadratic or positive relationships. There was a negative effect of social complexity among historically (as opposed to ethnographically) recorded societies, and with population size among the entire dataset, but no effect of social complexity with ethnographically recorded societies. Possible interpretations of these results are discussed, particularly the overwhelming variation in trophy-taking behaviors that would undermine any consistent relationship with social complexity, military conquest, or subsistence practices. Limits to the data and methods as well as avenues of future research, including focusing on specific regional sequences and distinguishing between different types of trophy-taking, are discussed.

The fourth chapter uses a phylogeny of Austronesian cultures and previously published data to test for coevolutionary relationships between headhunting, agricultural intensity, and political complexity. This is an attempt to apply the theories and hypotheses from the previous chapter on trophy-taking globally to a specific set of related cultures to see whether the predicted relationships are found when examining a particular subset of trophy-taking practices with a regional focus. After replicating previous findings on the degree to which headhunting practices are predicted based on

cultural-historical relatedness, the data were analyzed using a phylogenetic test for correlated evolution with discrete traits to determine whether the gain or loss of headhunting was dependent on the presence of political complexity (measured through hierarchical levels of government) or primary dependence on agriculture. The results again did not indicate any correlation between these variables. Limitations, including variability in definitions of headhunting and an overly simplified measure of social complexity, are discussed, along with the possibility of incorporating more nuanced definitions in future research.

The final chapter summarizes the findings of the three previous sets of studies and places them in context of previous research on warfare practices and social complexity. It reviews the project approach and limitations, including the chosen units of analysis, choice of data sources, coding methods, and statistical analyses, and goes over some possibilities to address these in future research.

Summary and discussion

To briefly recap the objectives and intended methodological and scholarly contributions: this thesis attempts to examine how self-sacrificial behaviors and outgroup violence during war have varied cross-culturally and historically and what this indicates about levels of moral consideration for others within or outside a given society. To do this, I attempted to create variables and quantify aspects of warfare which had not previously been analyzed in both a quantitative and global-historical manner.

The specific behaviors that are the focus of each of the four chapters were chosen out of both scholarly interest to explore these social meanings, and practicality to be codeable consistently and with plausible accuracy. Although data on past societies is incorporated, because no direct analyses of change over time such as time series are used, this data is included to broaden and add validity to the sample rather than serve as a direct indicator of change in such behaviors over human history. Ideally, this attempt to create quantitative variables for these behaviors with some historical depth demonstrates challenges inherent in such an endeavor, how solutions to some of these might be implemented, and possible avenues to expand and improve on these. Discussions on best practices for creating and using historical-cultural databases have emphasized the need to understand the relevant historical literature and to draw on expertise from humanities scholars where appropriate. The use of case studies in the following chapters illustrates how qualitative analysis can complement the quantitative methods used, in ways that could be applied in similar database work in the future.

Overall, the results of the four studies in this thesis do not establish clear relationships between the examined wartime behaviors and measures of social complexity. More broadly, the analyses demonstrate many previously observed issues with the quantitative analysis of historical and cultural data (and human behavior generally), namely difficulty in capturing nuance, identifying possible confounding variables, and assessing causality. While historical data on warfare and narratives

constructed from them are sometimes used to draw inferences from human history that might be applied to the state of our current society, if anything is apparent in the following chapters, it is the variability and flexibility of behaviors which defy easy categorization. The results of this project can be interpreted as providing tentative evidence against attempts at clear overarching narratives of human moral progress as it relates to warfare, at least those which can be justifiably supported by historical data. At a minimum, they highlight some of the inherent uncertainties of such efforts. Following guidelines for best practices with this sort of research (Slingerland et al. 2020; Watts et al. 2021), the datasets for each chapter with codes, evidence, and sources will be made fully open and available, ideally to be scrutinized, refined, and expanded upon for future research.

Chapter 1: Self-sacrificial behavior in war

Chapter overview

This chapter examines the presence of self-sacrificial behavior in war across a global sample of societies in relation to resource ecology and social complexity. Self-sacrificial behavior is defined here as an individual knowingly and willingly risking or giving their life on behalf of another individual, group of individuals, or their society as a whole. Research on the role of ritual in human evolution and parochially altruistic behavior (undertaking cost to oneself to help one's ingroup) indicates that self-sacrificial behavior in war may have occurred frequently in early, small-scale human societies for survival and defense against outside threats (Whitehouse 2018). Other models of human evolution highlight low-risk patterns of war with limited casualties documented in contemporary small-scale societies, arguing that self-sacrificial behavior is absent or rare and requires the coercive institutions of complex societies (Glowacki et al. 2020). This chapter surveys ethnographic and historical sources on societies of differing levels of complexity and forms of subsistence to assess evidence for both these positions.

The theory of identity fusion posits that a visceral sense of oneness with a social group may emerge under certain social and ecological conditions similar to those faced by early human societies, and in instances of threat to the group, drive altruistic behavior including risking or giving one's life (Swann et al. 2012;

Whitehouse 2018). In the context of social complexity and warfare in human history, identity fusion is theorized to emerge among small-scale groups reliant on high-value, densely clustered resources requiring highly cooperative defense. Military units in such groups are formed through social and familial ties with voluntary/socially normative participation, while societies dependent on spatially distributed resources such as agriculture require a means of motivating and enforcing payment of tax or tribute via top-down policing. In contrast, theories of participation in warfare based on ethnographic studies of contemporary small-scale societies and primatological models indicate that small-scale societies that rely on voluntary participation and personal social networks for combat will primarily use low-risk tactics in war, and that when parochially altruistic behaviors occur this will be associated with material or social incentives (Glowacki & Wrangham 2013). In this view, only societies with categorical social identities beyond kin groups will promote the requisite levels of within-group cooperation and loyalty to encourage self-sacrificial behavior in war, with higher levels among large societies with organized militaries due to the need to inculcate non-kin bonding in combat units through training and ideology.

Although there have been large amounts of research on variation in warfare patterns, and some of this research theorizes and/or investigates links with environmental conditions and subsistence types (e.g. Kelly 2000; Otterbein 2004;

Vayda 1976), this research does not offer specific predictions on the extent of risk-taking or altruistic behavior on behalf of other group members. The evidence for an association between ritual modes and warfare patterns is still inconclusive (Sterelny 2019; Wiessner 2018), and there is mixed empirical evidence relating aspects of the two modes to distinct ecological contexts (Atkinson & Whitehouse 2011; Johannes 2017). While there is also research on parochial altruism and self-sacrificial behavior in intergroup conflict from an evolutionary perspective, this is primarily conducted by behavioral scientists in the context of contemporary violence between religious communities in industrialized nations (Ginges et al. 2009; Sheikh et al. 2014), with computational models (Choi & Bowles 2007; Lehmann & Feldman 2008; Rusch 2014), or in cross-cultural settings with relatively low-stakes (compared with intergroup violence) economic games (De Dreu et al. 2015; Purzycki & Lang 2019). Considering this theoretical background, this study will attempt to integrate predictions about sacrificial behavior from modes and identity fusion theory with behavioral ecological research on adaptation to resource ecologies and social structure.

The following hypotheses will be tested:

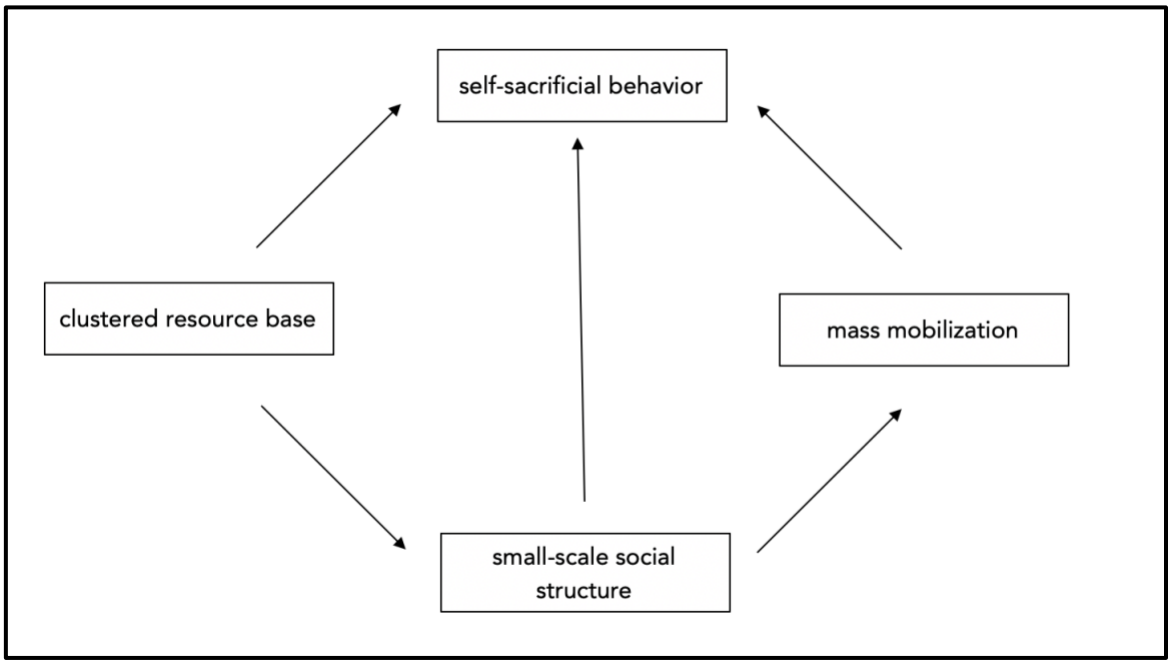
Hypothesis 1. Self-sacrificial behavior in war will be equally or more likely to occur in a) small-scale groups compared with socially complex societies, b) societies dependent on high-value, clustered resources compared with those dependent on less valuable and

more spatially distributed group resources, and c) societies with mass mobilization of fighters compared with those with formal militaries.

Rationale: Small-scale groups that rely on higher-value, densely clustered resources are vulnerable to raiding and will form combat units through social and familial ties with voluntary/socially normative participation and engage in strong within-group bonding necessary for extracting and defending such resources. Larger, complex societies dependent on spatially distributed resources and possessing professional militaries will use coercion, fictive kinship, and/or cohesion within small units embedded in larger military structures to promote self-sacrificial behavior.

Alternative 1. Self-sacrificial behavior in war will be more likely to occur in socially complex societies dependent on agriculture and possessing formal militaries.

Rationale: Fighters in small-scale societies without formal militaries will tend not to engage in parochially altruistic or self-sacrificial behavior on behalf of other group members, instead relying on greater numbers and surprise attacks to maximize individual benefits and decrease risk. Self-sacrificial behavior will increase with socially complex societies as cultural institutions of coercion, punishments, and rewards are correspondingly scaled up.



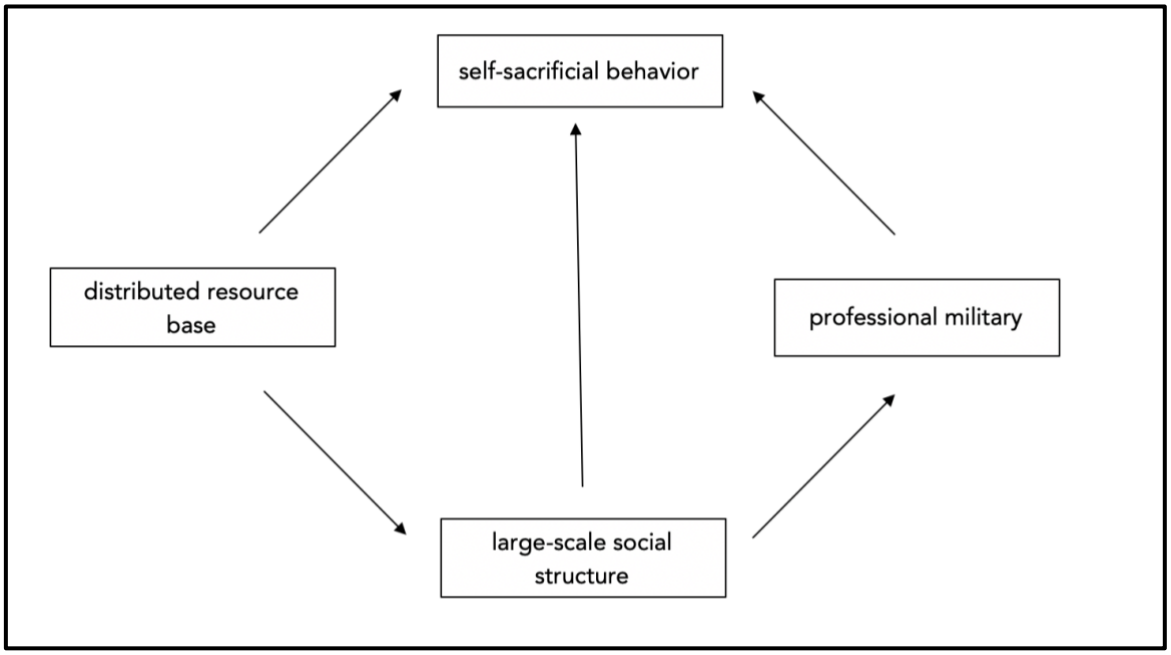


Figure 1. Diagrams representing Hypothesis 1 (top) and alternative hypothesis (bottom) on posited relationships between social complexity, resource qualities, military organization, and their possible contribution to self-sacrificial behavior.

Theoretical background

Identity fusion and self-sacrifice

The form and scale of an individual's attachment and identification with their social group have been shown to predict willingness for sacrificial behavior in the face of external threat (Ginges et al. 2009; Sheikh et al. 2014; Swann et al. 2012). Whitehouse (2018) integrates evidence from psychology, cognitive science, and anthropology into a theory which aims to explain self-sacrifice at both proximate and ultimate evolutionary levels. According to this framework, high levels of external threat among early hunter-gatherer societies would have created selection pressure for the formation of kin-like bonds among groups' members, who would need to cooperate to survive under intense resource competition with other groups or harsh environmental conditions. Such bonds are captured by the concept of identity fusion (Swann et al. 2012; Whitehouse et al. 2014), an intense kinship-like bond motivating group members to resist defection, take risks, and sacrifice their lives, if need be, in situations of intergroup conflict (Whitehouse & Lanman 2014; Whitehouse 2018). Survey studies comparing responses of identity fused with non-fused individuals found overall greater willingness to fight and die on behalf of other group members, a response linked to the perceived presence of familial ties (Swann et al. 2009, 2010). Such kinship-like bonds are more easily formed in the context of small groups in which members personally know one another, hence the predicted occurrence of fusion among warriors in small-scale societies or subsets of

larger military organizations (Whitehouse 2018). Mathematical modeling has indicated that fusion and reduction of individual fitness to zero- effectively sacrificing oneself for the group- can evolve under conditions of threat from natural stressors or intergroup conflict (Whitehouse et al. 2017). This is consistent with a range of evidence for external threat and conflict strengthening within-group cooperation and norms (Bauer et al. 2016; Gelfand et al. 2011, 2013; Gneezy & Fessler 2012; Schaub 2017; c.f. Silva & Mace 2014). Empirical studies (Jong et. al. 2015; Sheikh et. al. 2014; Whitehouse et al. 2014) have also shown that fused individuals demonstrate a willingness to participate in extreme pro-group behaviors, including self-sacrifice, during intergroup conflict. In contexts of endemic and severe external warfare, the threat from outgroup members combined with feelings of kinship towards the ingroup is proposed to result in increased risk-taking and self-sacrificial behavior during war. Such behavior should be most likely when both external threat and attachment to the local social group are highest.

Behavioral ecology of group cohesion and conflict

If certain subsistence ecologies, such as pastoralism or horticulture, predict both endemic conflict patterns over resources as well as strong group identity (such as that captured by social substitution or identity fusion in segmented societies) (Moffett 2013) then they may also predict whether individuals tend to sacrifice themselves in war. Behavioral ecology research on foraging niches and social structure in non-humans and humans indicates how a group's resource base affects the intensity and form of conflict

with other groups through shaping the relative value and necessity of cooperative defense. In particular, patterns of between-group interactions, and therefore levels of conflict and degrees of intergroup threat, can be predicted by resource patch predictability, distribution, and value (Field 2004; Fry 2007; Glowacki et al. 2020). For instance, the concept of economic defendability in behavioral ecology (Brown 1964 and Grant 1993 cited in Marean 2016) predicts territorial behavior when organisms are reliant on relatively predictable and densely distributed resources (Dyson-Hudson and Smith, 1978; Field 2004; c.f. Cashdan et al. 1983). In the context of human groups, such resources are better defended by cooperative coalitions against other groups (Field 2004; Glowacki et al. 2016; Marean 2016). Even with low population density, resources such as water sources in an arid environment can lead to intense fighting with high mortality (Gat 2000; Knauft 1991), while intergroup conflict may be less frequent in areas with widely dispersed resources and lower population density. For instance, Glowacki et al. (2016) describe how Nyangatom men participate in coalitional defense of their livestock herds when they feed in a common grazing area. Societies reliant on monopolizable but movable resources, including livestock and stored food, may be subject to intergroup conflict through raiding and defense (Dye 2009; Ferguson 1990, 1992; Kaplan et al. 2009; Knauft 1991). Kaplan et al. (2009) argue this to be the case in societies where males can increase their social status (and reproductive success) through acquiring additional resources from fighting, rather than only through inheritance.

Consistent with this, Raffield et al. (2017) argue that the polygynous marriage practices among Iron-Age Scandinavians would have led to greater participation in external warfare carried out through raiding other groups. They provide historical evidence that Viking raids were primarily motivated by acquisition of 'portable wealth', citing an increase in social stratification that would have led to some men who could afford higher brideprices monopolizing mating opportunities. The raids they describe would have carried substantial risk, and in fact they invoke identity fusion in a previous paper (Raffield et al. 2016) as a possible social process that would have been central to formation and maintenance of socially heterogeneous Viking bands. Taken together, this research indicates how clustered, valuable resources can be linked with high levels of risk-taking and social cohesion in warfare.

Social segmentation and conflict patterns

The framework of social segmentation elaborated by Robert Kelly (2000) can also be applied to archaeological and anthropological evidence to explain differences in warfare patterns between nomadic and sedentary societies (Dye 2009; Marcus 2008; Mensforth 2007). Kelly writes that only segmented societies, which tend to be complex foraging or sedentary societies, have developed ideas of social identity and form definable communities above the family level with descent groups (matrilineal, patrilineal, or otherwise). According to his analysis of cross-cultural data, only segmented societies engage in frequent warfare due to conceptions of collective

responsibility and mobilization on behalf of other group members. Such societies have 'social substitutability', where any individual of a group is responsible for the crimes of one of its members against another group and is acceptable as a target for revenge. There is ethnographic evidence that segmentary societies, even those which are semi-nomadic or mobile, have more intense ritual practices than unsegmented ones. For instance, in a recent article on the evolution of ritual and belief in human social groups, Kim Sterelny (2019) notes the presence of extreme initiation rituals among Australian aboriginal foragers, which would be classified as segmented, in contrast with the unsegmented Hadza among whom such rituals are absent. The level of social cohesion required for the sacrificial attitudes described in the imagistic mode should only be present among segmented societies, particularly as only groups with strong social identity above the levels of the family (having social substitutability) could be expected to have individuals willing to take risks on behalf of non-kin.

Although Kelly stresses that segmentation is not a one-to-one relationship with sedentism, his framework could be extended to predict prevalence of sacrificial violence at certain levels of social complexity or stage of subsistence practices, such as segmented foragers or small farming societies. In particular, the advent of and dependence on food storage technologies among sedentary societies would have created a shared economic interest among community members, defense of which "necessarily raises warfare to the level of a residential or territorial group concern" (Kelly

2000: 68). In addition to facing much higher costs if they move to avoid conflict, settled societies with food storage are more attractive targets for resource-motivated attackers, and are most incentivized to stay and fight (Meyer et al. 2015; LeBlanc 2003). Other reviews of archaeological evidence associate segmentary organization with farming societies which would have required social 'glue' to successfully carry out cooperative endeavors such as building canals for irrigation (LeBlanc 2003) and may have had increased amounts of feuding and raiding (Dye 2013; Marcus 2008). The interactions between these subsistence strategies, conflict patterns, and social structure may therefore predict higher levels of voluntary self-sacrifice among these societies than among mobile foragers.

Parochial altruism in complex societies

Societies at higher levels of sociopolitical complexity generally have professional military formations, salaried recruitment, and warfare tactics centered more around large-scale attacks than guerilla-style endeavors (Kim et al. 2015; Whitehouse 2018). Archaeologists and anthropologists (Kim 2017; Kim et al. 2015) have highlighted the importance of coercion by authorities in the growth of centralized polities. Such coercion is likely to play a larger role in the formation of military units as societies become larger and more complex, decreasing the importance of voluntary participation and risk-taking (Wrangham & Glowacki 2012). However, small, imagistic groups may form within larger military organizations as tightly cohered combat units, where soldiers

are willing to sacrifice for their brothers-in-arms (Swann et al. 2012; Whitehouse 2018; Whitehouse & McQuinn 2012). Therefore, it is possible that sacrificial behaviors will not decrease with military scale, as effective group sizes and cohesion would be equivalent in small-scale and state-level military forces. For instance, Sterelny (2019) critiques Whitehouse's model - specifically the argument that highly emotional rituals and risk taking would be present among hunting societies- by citing Kelly's (2000) findings of greater warfare among complex foragers and farmers. He argues that ethnographic evidence does not indicate that large-game hunting among prehistoric hunter-gatherers would have been particularly dangerous, and that intense rituals should be more prevalent among sedentary agricultural societies dealing with the more serious collective action problems posed by frequent and intense war. Similarly, one theoretical synthesis of literature on parochial altruism across cultures argues that self-sacrificial, progroup behavior in war is more likely as society size and scale of fighting parties increases (Qirko 2013). It cites Gat's (1999) survey of war practices among small-scale societies, which concludes that "serious, deadly, face-to-face fighting was rare, not because of intraspecific benevolence but to avoid the risk to oneself and to one's close kin who were enlisted in support" (Qirko 2013: 573). As distance from immediate kin increases and individual or inclusive fitness incentives for risk-taking decrease, bonding with non-kin in small combat units and reinforcement of ideological motives and "induced altruism" becomes more important. This would be consistent with theories of

coevolution of social size, complexity, and possibly external warfare with more inclusive moral ideologies that emphasize within-group cooperation and loyalty (Atran & Ginges 2012; Mullins et al. 2017; Norenzayan et al. 2016; Turchin 2015). It is therefore possible that any evidence for resource ecology and self-sacrificial behavior in war would be in the opposite direction predicted by modes theory.

Sacrificial behavior and individual incentives for participation

The literature on ritual modes supports the argument that "highly fused 'bands of brothers' have always been a recurrent feature of small-scale societies engaged in high-risk pursuits such as raiding, warfare, and large game hunting" (Whitehouse 2018: 50). However, the degree of risk and voluntary sacrificial behavior predicted by the bonding mechanisms of imagistic rituals, and described as identity fusion among foraging societies in Whitehouse (2018), is not necessarily a feature of hunter-gatherer warfare in the ethnographic literature (Wrangham & Glowacki 2012) or the archaeological record (Sterelny 2018; Wiessner 2018). Specifically, Richard Wrangham and Luke Glowacki (2012) distinguish between the 'chimpanzee model' of warfare, which would entail low-risk raiding in situations of high power imbalance, from the 'parochial altruism model'. In contrast with predictions of group-selected tendencies for parochial altruism, they write that "acts of overt self-sacrifice are rare in simple warfare" (Glowacki & Wrangham 2013), particularly among what they describe as 'non-militarized' groups, while they were rare exceptions among 'militarized' groups. Rather, through practices such as

surprise ambush of enemies and only attacking when they have superior numbers, fighters are able to minimize their risk and suffer few if any casualties while maximizing their success.

The model put forward by Wrangham and Glowacki emphasizes individual incentives created by group structures in which participation in warfare could have a potentially positive benefit/cost ratio as the primary motive for fighting in small-scale societies. In cases where fighting is risky and warriors may die, this is driven by human-specific cultural reward systems (Glowacki 2013, 2019; Glowacki & Wrangham 2013; Singh et al. 2016). A cross-cultural analysis supports this argument that greater rewards such as social status in such societies predicted higher mortality rates (as a proxy for risk-taking) in simple warfare (Glowacki & Wrangham 2013). However, in a paper surveying reproductive success and participation in raids in Nyangatom (nomadic pastoralists), Glowacki and Wrangham found reproductive success correlated with low-risk 'stealth raids' but not high-risk 'battle raids' (2015). This is problematic for their cultural rewards hypothesis because, as argued in a response by Matthew Zefferman and Sarah Mathew (2015b), low-risk raids are easily explained by individual rewards, while participation in battles with significant mortality rates should be correlated with cultural rewards such as status and reproductive success if that is a primary motivating factor. It is unclear if, as concluded in their 2013 paper, that cultural rewards are still predicted to play a role in such high-risk fighting, but in any case that is not supported

by data from the Nyangatom (Zefferman & Mathew 2015b). Additionally, even if some societies primarily rely on low-risk ambush tactics, this is extremely variable cross-culturally (Zefferman & Mathew 2015a). Zefferman and Mathew (2015b) write that the "cultural rewards war-risk hypothesis" proposed by Glowacki and Wrangham is an important part of explanations for warfare, but that as cultural rewards, like punishment, are costly to provide, their presence needs further explanation. Similarly, Rusch (2014) describes this model as insufficient to explain self-sacrifice by humans during war. In a study of mortality rates among lowland South American societies the authors conclude that derived human features of warfare such as revenge, self-sacrifice, and honor cultures likely require models of parochial altruism and multilevel selection, at least for the groups they examine (Walker & Bailey 2013).

Although extensive, major cross-cultural studies of warfare (i.e. Gat 2004; Keeley 1996; Kelly 2000; Otterbein 2004) do not tend to focus on the sacrificial attitudes of fighters, mortality rates and ethnographic descriptions can indicate the expected risks taken by individuals who participated in raids or battles. Descriptions of hunter-gatherer warfare emphasize the risks involved for participants and high mortality rates (Keeley 1996; LeBlanc 2014; Pinker 2011) (though LeBlanc notes that there has not been 'systematic' examination of fighters' pre-combat assessment of risk and the potential consequences of participation or defection). For instance, in emphasizing the lethality of pre-state warfare, Keeley (1996) describes the great risks taken by Native American

Plains warriors to achieve symbolic feats such as touching a member of the enemy dead, which itself carried the risk of death. In particular, he argues that actions like killing an enemy at close range garnered more prestige than an equally useful but less dangerous action such as killing with a projectile weapon. Similarly, in a study of awards given to soldiers during 20th-century warfare, Rusch (2013) writes that high honors tend to be awarded to soldiers who undertook sacrificial action to save their comrades, rather than being dependent on harm done to the enemy. If social rewards of warfare were directly tied to military prowess as measured through successfully fighting enemies, this would not be the case. Instead, sacrificial actions appear to be valued intrinsically rather than by their military consequences, even in 'simple' warfare. This contrasts with the data presented by Glowacki and Wrangham in their 2013 article, in which warriors are primarily rewarded for success and number of kills.

It should be noted that the cultural war-risk model and the previous literature on which it draws (i.e. Gat 2000; Goldschmidt 1988) has not aimed to explain variation in warfare across all types of human groups including settled, agricultural, or industrialized societies. Rather, the focus has been on mobile foraging and some pastoralist societies to serve as analogues to prehistoric hunter-gatherers. For instance, Glowacki and Wrangham (2015) dismiss Zefferman, Baldini, and Mathew's (2015) citation of high mortality rates among eastern African pastoralists as a vagary of 21st-century war with highly lethal weapons, and they explicitly exclude cases which are not of 'simple' warfare

in their analyses of cultural rewards (Glowacki & Wrangham 2013; Wrangham & Glowacki 2012). In contrast, many works on identity fusion have focused on contemporary conflicts in which self-sacrificial behaviors (such as in the form of suicide attacks) are commonly observed (i.e. Atran 2016; Gómez et al. 2017; Sheikh et al. 2014; Whitehouse et al. 2014). The model of self-sacrifice for the group via identity fusion presented in Whitehouse's 2018 *Behavioral and Brain Sciences* article assumes relatively high levels of intergroup conflict in the Pleistocene which selected for psychological tendencies to parochial altruism (2018: 6, 39; see also Whitehouse et al. 2017). With the exception of the commentary by Polly Wiessner (Wiessner 2018), the responses to Whitehouse' target article largely do not discuss the cross-cultural, ethnographic, or archaeological data around which literature on the evolution of warfare is centered, although both she and other commenters (i.e. Dessales 2018; Cronk & Aktipis; Marie 2018; Palmer & Clark 2018) express skepticism about selection for psychological mechanisms for fusion. In particular, Wiessner cites ongoing scholarly debate about the antiquity of war, as well as evidence from the archaeological and ethnographic records for extensive social networks and mobility across territories among early human groups, rather than strict boundary maintenance. She argues that there is little reason to assume selection for the parochially altruistic tendencies on which mechanisms for fusion would rely. While the debate about cultural group selection and an evolved parochial altruism is outside the scope of this project, systematically reviewing the available sources and

coding instances of relevant wartime behaviors among a cross-cultural sample of societies could contribute evidence to help address such questions in future.

Variation in social norms

Sacrificial behavior during war may be also predicted by social norms of a 'militarized culture' that values bravery, skill, and heroism in battle (Glowacki et al. 2020). Such norms may emerge in groups that frequently experience external conflict, and if selected for, either at the individual level (through increased status and reproductive fitness) or the group level, would remain and spread. If there is a widespread perception that victory in war is required for a society's survival, it can develop more militaristic social attitudes, glorifying bravery, heroism, and participation in warfare (Arkush 2008; Keeley 1996; Snyder 2002). For instance, while Keeley (1996) devotes a section of his book to describing culturally widespread aversion- often including required cleansing rituals or isolation periods- to warriors who had killed in combat upon their return to ordinary society, he does not dispute the widespread ethnographic evidence for increased status and resources for successful fighters. He explains the presence of these rewards as a social adaptation to the potentially catastrophic consequences of defeat in social contexts of endemic and severe warfare (144). Similarly, in a comparative study of raiding societies in Southeast Asia, Thomas Gibson writes that "in political economies based on the coercive extraction of surplus value from neighboring societies, inter-group violence may even be fetishized as a product of mystical vitality in itself" (1990:

145). Societies in which military prowess is central to social status and where practices such as trophy-taking of enemies' body parts or captives are culturally valued may be motivated to engage and perpetuate cycles of conflict for this purpose (Flannery & Marcus 2012; Maschner and Reedy-Maschner 2007). This process can also occur in the other direction: decrease in warfare frequency may result in a decoupling between social prestige and military skill (Glowacki et al. 2020). For instance, diachronic study of the Mae Enga has illustrated how the introduction of highly lethal semiautomatic weapons led to fighting which spiraled beyond the function of balancing power between communities it originally served, following which there was a gradual but conscious de-emphasis on fighting as a source of prestige and efforts to focus on more mutually beneficial methods of conflict resolution (Wiessner & Pupu 2012; Wiessner 2019).

Several of the responses to Whitehouse's target article bring up the relevance of specific values and ideology- explicitly dismissed as contributing to sacrificial behavior in the target article- as an overlooked driving factor (Atran & Gómez 2018; Boudry 2018; Elnakouri, McGregor, & Grossman 2018; Swann & Jetten 2018). In particular, Elnakouri et al. argue that environmental threat can encourage attachment to moralistic ideologies and tighter social norms that might be more likely to encourage self-sacrificial behavior and can determine whether such behavior is violent. They cite work by Michele Gelfand and colleagues on the 'tightness' and 'looseness' of different societies, referring to the strength of social norms and level of tolerance for deviation (Gelfand et al. 2012, 2017).

Tightness-looseness theory argues that the strength of norm enforcement mechanisms in tight societies is adaptive in situations of ecological and/or societal threat, with cross-cultural studies indicating a positive relationship between measures of tightness and external threats including warfare (Jackson et al. 2019, 2020). In response to the target article, Virginia Choi, Joshua Jackson, and Gelfand also cite the potential role of entitativity (a perception of the social group as one entity) in driving sacrificial behavior, both as arising from and potentially driving generations of intergroup conflict, such as through cycles of revenge killings (Choi et al. 2018). These responses emphasize how, in addition to current forms of subsistence and social organization, group history of external conflict may shape social norms relevant to intergroup interactions and self-sacrificial behavior.

Possible effective proxies

As previously discussed, the use of historical and ethnographic descriptions of self-sacrificial behavior present several challenges. Apart from the more extreme examples such as Nizari suicide attacks (discussed below), self-sacrificial behavior or willingness regarding it is not systematically recorded or described. One potential proxy is a measure of dysphoric rituals, as suggested by ritual modes and identity fusion theories (Whitehouse 2018). A previous study on costly, difficult-to-endure male rites found costliness predictive of whether a society engaged in frequent war (Sosis et al. 2007). Another study by Atkinson and Whitehouse (2011) examined levels of dysphoric

and euphoric arousal in contrast with frequency of rituals across 74 cultures, finding support for disparate ritual modes but not a correlation between ritual arousal and warfare frequency. Within the small number of societies from the Atkinson and Whitehouse study that overlapped with the final dataset for which descriptions of self-sacrificial behavior were found (n=37), there was no significant difference in means between the levels of dysphoric arousal in groups with and without evidence for self-sacrificial behavior ($t = -0.54$, means = 1.69, 1.82). However, this is a small sample size and as will be discussed in the section on quantitative methods, there are several qualifications to the self-sacrifice codes, so dysphoric rituals may be a better proxy than they appear.

Previous studies have cited mortality rates in war when discussing the possibility of parochial altruism (i.e. Bowles 2009; Mathew & Boyd 2011; Walker & Bailey 2013). For the current study, I initially attempted to match data on male mortality in war from a previous study by Ember et al. (2007) to the societies for which sufficient descriptions of warfare to code the presence or absence of self-sacrificial behavior were found. However, only a small number of societies (14) overlapped and the mortality estimates did not appear to be linked with the codes for self-sacrifice. They also did not correlate well with mortality estimates made previously by Otterbein (1970) (see SCCS v.901 'Casualty Rate Poor Correlation with Ember 2005 Male Mortality in War [follows Otterbein 1970: 81, 146]' in D-Place). This could be due both to the inherent uncertainty

in the codes for the current study, differences in focal times between my study and theirs, or various other complications arising from cross-cultural coding. As reviewed in the introduction, other estimates of warfare mortality are contentious (e.g. criticisms in Fry et al. 2013 of data used by Bowles, Keeley, and Pinker, and criticism by Keenan-Jones & Hebblewhite 2017 of estimates in Oka et al. 2017). However, such estimates are likely necessary if attempting to investigate how parochially altruistic behavior in war could emerge and be sustained. While not necessarily indicating deliberate self-sacrifice, mortality data could be considered along with measures of social stratification, political coercion, and attitudes towards risk-taking and conduct in war. For instance, Turkana warriors face a 50% chance of dying on a large-scale battle raid (Zefferman & Mathew 2015). As the Turkana possess strong social norms but no official coercive mechanisms for participation in battle, going on a battle raid can be viewed as willingness for voluntary self-sacrifice. Mortality rates would not necessarily translate to state societies that use coercion and sanctions to recruit and command fighters. However, these aspects of coercion and sanctions among complex societies also provide a potential proxy for (un)willingness to fight and die. For instance, one study of the American Civil War used desertion, AWOL, and arrest rates among Union soldiers as negative proxies for group loyalty and heroism, finding that ideology and Union victories were important but less so than unit ethnic and geographic homogeneity (Costa & Kahn 2003), contradicting previous findings on the Confederate army (Bearman 1991). A recently

compiled dataset (Lyall 2016, 2020) contains rates of desertion for conventional wars fought between 1800 and 2011. Such data combined with information on punishments and enforcements (or lack thereof), mortality rates, and qualitative descriptions of morale, motivation, and cohesion could potentially be used to infer willingness for self-sacrifice and its correlates in past societies.

Such research would need to clarify the extent to which behavior is considered voluntary depending on the relevant overarching institutions and how coercion and freedom of choice might be distinguished, which was not addressed in the current study. For instance, one scholar of WWI cites the importance of confirmation bias in soldiers' justification of their continued struggle, emphasizing how a restrictive societal structure and lack of means to change their situation could drive what was ostensibly– and what could be arguably considered– voluntarily altruistic behavior. He writes that "more important in persuading soldiers that fighting was worthwhile, was that ultimately they had little choice and needed to justify both past sacrifices and future actions" (Watson 2014: 82). In the current study, punishments for refusal to fight or cowardice were not found for most of the societies in the dataset, possibly because these formal punishments were rare in small-scale societies (Glowacki et al. 2020) and informal ones were not often described. However, based on the ethnographies reviewed for this chapter, it seems likely that for many societies engaged in frequent or constant war social norms for fighting among adult males were sufficiently strong that

nonparticipation would be unthinkable. Future research may need to consider levels of analysis when trying to explain motives driving self-sacrificial behavior– apart from explicit sanctions from military leaders or governments, propensity to various wartime behaviors can be powerfully influenced by cultural norms even when violations are not directly or materially costly.

Case studies

Having considered these challenges, this and following chapters make use of brief case studies where the environment, social structure, military or fighting group characteristics, and evidence for self-sacrificial attitudes and behavior in war are examined in selected societies. The case studies here attempt to delineate the social structure, resource ecology, and warfare patterns of four different societies to contextualize and analyze processes leading to particular wartime behaviors, specifically levels of altruism and self-sacrifice. The societies examined are the Nizari Isma'ilis of Alamut in the 11th-13th centuries, a centralized Islamic polity with clear evidence for extreme self-sacrifice on behalf of the ingroup, the Shuar of the Amazon basin from the 16th-20th centuries, a small-scale society that engaged in frequent warfare but where the evidence for self-sacrificial behavior is less clear, the Andaman Islanders, sometimes used as an example of hunter-gatherers where risk-taking in war was minimized, and the Iñupiat, Artic hunter-gatherers that engaged in large-scale, sometimes exterminatory warfare. In particular, the case studies will explore the subsistence

practices of each society, how they gave rise to social structures and patterns of intergroup conflict, and whether risk-taking and self-sacrificial behaviors in war (if observed) can be explained as a result of these factors in a way consistent with the theories of behavioral ecology, identity fusion, and/or cultural rewards discussed above.

I attempted to choose societies with characteristics hypothesized here to be linked with proclivity for self-sacrificial behavior in war. This meant choosing at least one society that was sedentary, politically centralized and complex with formal military organization, and largely dependent on permanent agriculture; and one that was nomadic or semi-nomadic, politically decentralized with informal/community-based military mobilization, and not primarily dependent on agriculture. For the former, options in the current dataset included the Nizaris, the Ganda, the Rustamid Ibādis, the Qing Dynasty/Manchus, the Amhara, and Kamakura Japan. Two of these (the Rustamids and Kamakura Japan) are examined in the next chapter. Prior familiarity with sources was ultimately used to select the Nizaris. For many of the small-scale societies, there was limited data on warfare practices in the sources apart from those used to code self-sacrifice. The Shuar are cited by Glowacki and Wrangham (2013) as an example of a society with simple warfare in contrast to what they describe as 'militarized' native North American societies, and so seemed an appropriate case to focus on. Although they did engage in agriculture in the period under study, they were partially dependent on hunting and foraging, and were also not fully sedentary. As the Andaman Islanders have

been examined as representative of early foragers or hunter-gatherers in literature on the evolution of war (Fry 2007; Kelly 2000, 2005; LeBlanc 2016; Wrangham & Glowacki 2012), they are also examined. There is limited evidence to infer the presence or absence of self-sacrificial behavior, but this provides an opportunity to examine how the available descriptions of their culture have been used to make inferences about hunter-gatherer warfare broadly. The Iñupiat peoples of northwestern Alaska have been referenced in this literature as complex hunter-gatherers with warfare (Boyd & Richerson 2022; Glowacki et al. 2020; LeBlanc 2014; Wrangham & Glowacki 2012) and are examined as well.

Because it was only possible within the available timeframe to qualitatively examine a small number of societies in the dataset with appropriate depth, it is not possible to have a properly representative sample of different social structures and relations to warfare patterns in this section. After considerations of subsistence, settlement pattern, social complexity, world region, and evidence for self-sacrificial behavior, selection of cases was somewhat arbitrary and based on the available depth of literature on warfare patterns that allowed for a more thorough analysis of self-sacrificial attitudes and behavior. However, as an exercise in searching for evidence of self-sacrifice, identity fusion, and ritual modes in past societies, exploring these cases illustrates how ambiguous such evidence may be and difficulties with tracing behavior to aspects of the environment and social structures. Such challenges are also apparent

with the variables focused on in the following chapters, but in this particular case the behavior under study has fewer direct physical markers (i.e. skeletal evidence of violence). Including case studies alongside the quantitative analyses allows for a comparison between statistical generalizability and potential support for or contradictions of the hypotheses in specific cultural contexts. They also help to demonstrate the rationale for how variables, particularly the outcome variables, were defined and coded. Given the heterogeneity of the various wartime behaviors that are the focus of this thesis, focusing on how they might arise alongside the predictor ecological and social variables in different historical and cultural settings is intended to demonstrate nuances and complexity not captured by the statistical analyses. In the current study, there is a range of social institutions and attitudes towards life and death, group identity and loyalty, religious and moral ideologies, and aims of defensive or offensive violence that may result in behaviors categorized here as self-sacrificial. Therefore, while the subsequent section will attempt to quantify evidence for self-sacrificial behavior and look for possible relationships with data on resource ecology and social complexity, the results must be interpreted in light of these challenges and complexities and qualified accordingly. These issues will be discussed further in the conclusion.

Society name(s): Nizari Isma'ili Imamate, Isma'ili state, Alamut

Date range covered: 1090-1256 CE

Region, present-day country/ies: Alamut region (center), northern Iran; western Syria

Language, linguistic family: Persian, Indo-European; Arabic, Afro-Asiatic

Degree of political centralization: Unitary state, confederated state

Population estimates during this period: Unclear, perhaps in the hundreds of thousands. There are records for the conversion of '30000 persons' in Isfahan around 1100 CE (Daftary 2007); other references to massacres of Isma'ili communities name figures ranging from thousands to over ten thousand (the latter may be exaggerated, but indicates communities plausibly that size)

Degree of sedentism: Sedentary

Subsistence: Agriculture

Main sources and background/potential biases: Depiction of the Nizaris in popular imagination as drug-fuelled assassins is due in large part to hostility from their contemporary Sunni and European observers (Daftary 2006; Hodgson 1968). The 'hashish' terminology in these sources was used as a pejorative describing the lower classes and social outsiders forming the Nizari support base, and was later expanded due to fear and incomprehension of their suicidal methods of attack (Daftary 2006). Rigorous scholarly work on the Nizaris includes an initial comprehensive study by

Marshall Hodgson (1955), research on history, political organization, and theology by Farhad Daftary (1998, 2007), and archaeological studies on infrastructure and defense of Nizari castles in Iran and Syria by Peter Willey (1967, 2005).

Background:

The Nizaris are a sect of Isma'ili Shi'i Islam. They originated in the wake of a succession dispute for the leadership of the Fatimid dynasty in North Africa in 1094 CE. Fatimid Isma'ilism (a subsect of Shi'i Islam) was split into the Nizari and Musta'ili sects, the latter of which retained control of the Fatimid caliphate. Hasan-i Sabbah, the head of the Isma'ili da'wa (religious mission) in Persia who would become the first Nizari leader, had already seized the mountain fortress of Alamut in 1090 CE in open revolt of the Seljuk Empire's rule of Persia, and over the next several years the Nizaris established a state in parts of Persia and Syria that lasted until they were defeated by the Mongols in 1256 CE.

The eponymous Nizar whom Hasan and his followers had supported for Fatimid leadership was executed, though it is possible Hasan hid this information and instead allowed them to believe that Nizar, the true imam, was in a state of occultation so Hasan could serve as his *hujja* or divine representative. The state at Alamut was led by a series of *hujjas* until the declaration of the *qiyama* (resurrection) in 1164 CE when the current leader declared himself to be the imam. While there is little evidence of the specific ideas promulgated, it appears that Nizari doctrine drew on populist Persian and anti-

Sunni sentiment to gather support from not only Isma'ilis but other Shi'a and members of lower classes disenfranchised under Seljuk rule (Daftary 2007). Persian was adopted as the language of administration and academia for Nizari communities across Persia and Western and Central Asia (Velji 2017). In contrast to the unequal land distribution and taxation policies of the Seljuks that "led to the virtual subjugation of the Persian peasantry by the alien Turks" (Daftary 2007: 317), Nizaris lacked strict social classes and focused on public works provisions in keeping with the broader Isma'ili and Shi'a focus on social justice (Daftary 2007).

Resource ecology and effects on social structure and patterns of intergroup conflict:

The Nizaris are characterized as skilled agricultural engineers who built irrigation systems serving the valleys surrounding their castle fortresses for crops and domestic use (Willey 2005). Storerooms were also built within the castles to ensure self-sufficiency and endurance under prolonged sieges (Hodgson 1968; Willey 2007). The defensive position of Alamut and nearby castles in high, inaccessible mountainous areas along with small forts and towers linking the central fortresses in Iran and Syria formed a network of communication, coordination, and mutual provision of supplies, allowing them to defend against constant attacks from the Seljuks and other enemies (Willey 1967). Therefore, their territories were sedentary and agricultural but can be classified as dependent on a clustered rather than distributed resource base. The resulting social structure was relatively complex, more so because of the number of administrative levels

and sophistication of governance rather than size, although rough population estimates fall somewhere in the higher mid-range compared with other societies in the current dataset. Based on archaeological study of Nizari castles, Willey (2005) concludes that the construction and maintenance of these systems would have required sophisticated administrative and logistical organization. The Nizari leadership was also dependent on the support of local peasants to provide labor. However, these aspects of their subsistence and environment are likely better interpreted as a response to their intergroup relations rather than the other way around, as Nizari headquarters were purposefully built in defensible locations with extensive food storage as a buffer against extended sieges.

Despite numerous outside threats and relatively small numbers, Nizaris during this period are noted as maintaining a high level of cohesion, unity, and stability. This was apparently expressed through a somewhat authoritarian rule by the first *hujja* Hasan and his successors (Daftary 1990; Hodgson 1955). In contrast with Sunnis, who would accept knowledge and opinions from multiple teachers with equal authority, Nizari doctrine centered around *ta'lim* or authoritative teachings of the imam who alone possessed access to true knowledge (Hodgson 1968). Marshall Hodgson argues that the simplicity and unfalsifiability of this central doctrine helped foster a unified rebellious movement, as "it was precisely loyalty to the movement– expressed as loyalty to the imam as its head– that mattered; once they were committed to the revolt, there was no

leisure to consider questions which might divide or at least confuse them" (Hodgson 1968: 437). As the Nizaris expanded to more territories in Syria and other parts of Persia, they engaged in conflicts with Seljuks as well as Frankish crusaders and focused on taking control of numerous positions spread across Seljuk territory to coordinate uprisings (Daftary 2007). Overthrowing the oppressive Seljuks would prepare for the rule of the legitimate leader- the Isma'ili imam- who would establish a just society.

Group mode and cohesion:

The Nizaris can be considered imagistic based on their high level of cohesion and ideology of complete loyalty to the hujja/imam. However, they also contained doctrinal elements in the sense of a broadly prosocial ideology distributed over a relatively large area. While there is no evidence for any extreme dysphoric rituals, Bernard Lewis (1967) observes features common to other tightly-knit heterodox sects including hierarchical levels of belief into which members needed to be initiated. Even farmers, craftspeople, and other workers in the surrounding valleys not engaged in missionary or military service were "initiated into the Ismaili da'wa, sworn to secrecy and absolute loyalty to the Ismaili leadership at Alamut" (Willey 2005: 59). Willey further infers a military hierarchy mirroring the religious one, with the ruler of Alamut at the top, followed by his deputies, then commanders of individual castles and forts, and then local garrisons (*rafiqs* or comrades) from which those volunteering for assassination missions (*fida'is*) would be drawn. *Fida'is* appear to have formed a special corps nearer to the end of the

Alamut period but before that were probably drawn from any part of this community (Daftary 1998; Hodgson 1968).

Self-sacrificial behavior:

The Nizaris during the Alamut period, despite being an administratively complex and centralized sedentary polity, nevertheless contained several features theorized to contribute to strong ingroup cohesion and self-sacrificial behavior. These include control and defense over a local base of resources and constant existential threat from its larger neighbors. Nizaris in this period are not recorded as constantly engaging in highly violent raids and massacres like some other dissident Islamic sects. Instead, they relied on targeted assassinations of important figures, as well as secretive conversion of local populations and strategic alliances (Daftary 2007). Researchers have noted that assassination was used by many other groups contemporary to the Nizaris as well as by earlier Shi'a and Kharijite sects (Hodgson 1955)– such asymmetric tactics were effective in the face of overwhelming military strength, in this case from the Seljuks. Nizaris sometimes would use armies and frequently raided (and were raided by) the neighboring Qazvin province for livestock (Hodgson 1968), but were unique in relying on assassination as a primary means of military and political advancement (Daftary 1990). They appear to have primarily targeted military or political leaders who had previously attacked them or whom they viewed as a threat, and especially those seen as obstacles to their conversion aims in particular areas (Hodgson 1968). This generally

meant targeting Sunnis rather than other Shi'a or non-Muslims. Assassinations were dramatically carried out in public places to inspire fear and send messages to potential threats and enemies (Lewis 1967). Their small size and resulting lack of comparable military force meant their position was necessarily defensive and restricted their available forms of effective combat against larger enemies (Willey 2005). This reality, combined with the preexisting narratives and beliefs about religious martyrdom in Islam and specifically among Shi'a, could have encouraged the sacralization of death by suicidal assassinations. Assassination as a primary method appears to have merged utilitarian reasoning with the ideological values of Isma'ilism: Daftary and Hodgson theorize they may have viewed killing individual elites who posed a particular threat as more humane and morally preferable to open warfare that would result in the deaths of many ordinary people they saw themselves as championing (Willey 2005).

Assassins may have possessed elite status among other warriors (though this is difficult to properly judge) and would be honored as martyrs if they died during missions (Daftary 1990: 358). With regards to group-level benefits, assassinations were clearly an effective military strategy given the unlikely survival of the Nizari polity in the face of constant assault by larger powers. While assassinations would also provoke massacres of local Isma'ilis, the Nizaris were able to continue expanding their political influence and gain converts throughout Persia and Syria (Daftary 2007). It is plausible that such massacres would only heighten Nizaris' sense of existential threat and

encourage further cohesion and willingness to sacrifice; Daftary writes that massacres would often lead to further assassinations, creating cycles of violence between Nizaris and their neighbours (Daftary 1998). Although individual incentives for socially valued service and necessity of self-defense are plausible mechanisms for suicide attacks as a central strategy, the next section briefly looks at some ways in which the Nizaris' ideological and doctrinal stances may have shaped their use of violence.

The Isma'ilis held a cyclical view of history composed of alternating periods of *qiyāma* "when the veil of *taqiyya* [religious dissimulation] was lifted so as to make the unveiled truth available to all…when reality is manifest" (Daftary 2007: 380-1) and *satr* (concealment) when true knowledge is hidden. Daftary argues that these came to mean the status of the imam and his manifestation as 'unveiled truth' during the Alamut period. The final *qiyama* would be the messianic era preceding the end of the world when the true imām would emerge from concealment. In 1164 CE Hasan II, the current leader at Alamut, announced the *qiyama* and declared himself the hidden imam of the era. This amounted to the Nizaris having reached internal paradise while non-Nizaris were rendered spiritually non-existent. It has been interpreted as a coping mechanism in the face of what was effectively a stalemate with the Seljuks and broader failure in their attempts to exert control over the rest of Muslim society– although they had not defeated their enemies on the physical plane, spiritually they had achieved salvation and victory (Daftary 2007; Velji 2017). It also contrasted with the initially messianic Fatimid

dynasty, which, like other previously messianic revolutionary movements, eventually deemphasized its apocalyptic expectations in favor of regime stability after gaining political power, creating disillusionment amongst followers (Cook 2012; Willey 2005). These views are consistent with the large body of work on apocalyptic beliefs and the social contexts in which they emerge, which highlights their appeal to underprivileged classes and individuals desiring an upheaval of the current social system (Bromley & Wessinger 2012; Lincoln 1985). There are some caveats to this in the case of the Nizaris, as it is unclear to what extent these beliefs in the qiyāma were present among the population at large or what tangible effects it had on Nizari society and governance (Daftary 2007). However, Isma'ili doctrine as a whole and the Nizari version, based in eventual salvation with the reappearance of the hidden imam who would establish justice on earth and when believers would gain access to true knowledge, appears to have been an effective ideological driver. This demonstrates the potential influence of religious beliefs on the formation of ingroup identity and moral beliefs about violence towards the outgroup, consistent with work on religion and sacrificial violence (Atran 2010, 2016; Juergensmeyer 1991). In particular, studies on religion and participation in intergroup violence provide evidence that attachment to sacred values central to a group's identity may drive costly progroup acts (Atran et al. 2014; Graham & Haidt 2012). Adherence to certain values explains, for instance, why Nizaris engaged in assassinations rather than ultra-violent raids, which are also a frequent and effective

tactic of militant groups in asymmetric power structures and were used by some other small heterodox Islamic sects (Hodgson 1955). As discussed above, scholars have noted the consistency of assassination of important figures, in addition to the practical military reasons, with the Nizari egalitarian ideology and mission of overthrowing oppressive structures in preparation for the imam. While attachment to a threatened group can drive people to participate in costly pro-group actions, the Nizaris illustrate how ideology and sacred values resistant to rational cost-benefit calculations are capable of shaping the nature of those actions.

Society name(s): Shuar, Jivaro

Date range covered: 1540-1957 CE

Region, present-day country/ies: Andean lowlands/Amazonian Basin, Ecuador and Peru

Language, linguistic family: Shuar, Chicham

Degree of political centralization: Acephalous

Population estimates during this period: 30000 in 1599 CE, decreased to 8000 by mid-1900s but has increased since then.

Degree of sedentism: Semi-nomadic

Subsistence: Horticulture supplemented by hunting, gathering, and fishing

Main sources and background/potential biases: Ethnographies on the Shuar include Michael Harner's 'The Jívaro: people of the sacred waterfalls' from fieldwork in 1956-1957, Mathew Stirling's compilation of translated historical material from early contact

with the Spanish and ethnographic material, and Rafael Karsten's ethnography from fieldwork in 1917-1928. Harner in particular criticizes aspects of Karsten's and Stirling's work as conflating Achuar and Shuar materials and terms and misinterpreting beliefs about souls and shrunken trophy heads (*tsantsas)*. However, descriptions of warfare are generally consistent across the three sources. Harner's material has been validated by later ethnographies who read his work out to be confirmed or clarified by informants (Boster 2003; Rubenstein 2007). James Boster (2003) notes that some of the discrepancies may be due to changes in culture between the different periods of fieldwork.

Background:

The Shuar are part of a larger group of peoples inhabiting the Andean foothills who speak a related set of languages and dialects. This section will focus on the period dating from the Spanish attempts at colonization in the sixteenth century to the dates of most of the ethnographic fieldwork in the twentieth century. Shuar population is recorded as numbering in the tens of thousands before depletion due to disease and increased warfare after European contact. Traditional settlements are described as small, dispersed homesteads in loose communities with no centralized power structures or governing hierarchy (Beierle 2006). During this period, the Shuar's main mode of subsistence was shifting cultivation, mainly of manioc, supplemented by hunting, fishing, and foraging. They were semi-nomadic within a limited area, moving once they

had used a certain area of land for crops and it was no longer productive. As they are cited as demonstrating 'simple warfare' as defined by Glowacki and Wrangham (2012, 2013) that they argue is common to small-scale societies, in which war parties only attack when they have greater numbers and withdraw with as little risk as possible, they seemed appropriate as a representative small-scale society.

Shuar warfare with other groups mainly centered around revenge and consisted of headhunting raids against groups speaking different dialects or languages, often the Achuar. The main objective was to take as many heads as possible (Harner 1972). This was distinguished from feuding within a tribe in which only an individual guilty of some offense would be targeted. However, Harner notes that this could become fuzzy depending on the relative distance of the assassinated individual, with heads occasionally taken if they were technically Shuar but lived in a far enough area. Parties would be led by a respected warrior or *kakáram* who had killed several people and would use their influence and social ties to mobilize fighters from different villages (Harner 1972: 183). This generally resulted in a war party of about thirty to fifty, but could be fewer than ten or up to several hundred. Some individuals would be sent beforehand to the enemy settlement for reconnaissance (Karsten 1935). Attacks would take place at night or before dawn, when warriors would encircle houses and wait to ambush the person who first opened a door before penetrating and killing everyone inside, or houses would be set fire to and escaping inhabitants killed (Karsten 1935:

289). If the enemy was not caught unawares, they might try to escape out the doors, or would come out to fight in hand-to-hand combat. Men, women, and children would be killed indiscriminately (Karsten 1935: 291) and the heads of adults, both men and women, would be taken (Stirling 1938).

Resource ecology and patterns of intergroup conflict:

Their resource ecology, at least in relation to territory for their various forms of subsistence, did not appear to play a direct role in conflict: war did not result in expansion into new land, and while material goods would sometimes be taken from defeated groups this was not the primary driver of war. These characteristics are consistent with an explanation of participation in war motivated by individual rewards in the form of social prestige rather than resources, something relatively common in descriptions of war among nomadic hunter-gatherer societies (Glowacki & Wrangham 2013).

Hunting dangerous animals is also cited as a potentially high-risk, cooperative activity in which identity-fused individuals would engage (Whitehouse & Lanman 2014; Whitehouse 2018). Among the Shuar, it was not of primary importance relative to agriculture, but there would be occasions of cooperative hunting of large, potentially dangerous prey, usually peccaries. Stirling (1938) describes a stereotypical hunt, which involved both men and women and coordination of multiple individuals throughout the forest, who would remain in continuous communication due to the danger presented by

a herd of peccaries if a hunter encountered them alone. Afterwards, meat was divided among the participants by the group leader. Like participation in war, this illustrates a willingness to take on individual risk in a cooperative setting for personal benefits, but the extent to which this requires altruism or can be explained by individual gain is unclear.

Group mode and cohesion:

The Shuar have been classified in previous studies on modes of religiosity as imagistic (Atkinson & Whitehouse 2011; Gantley et al. 2018), as would be expected for an acephalous, semi-nomadic, small-scale society. Imagistic societies are thought to rely on intensely emotionally arousing rituals that bind participants together with a sense of shared identity and kinship, which can motivate them to behave in parochially altruistic ways including voluntary self-sacrifice on behalf of the group (Whitehouse 2018). Among the Shuar, the closest parallel would be what could be considered a rite of passage when they would first seek out an *arutam* soul. This involved journeying to their neighbourhood's sacred waterfall where they would walk under the cold waterfall before spending up to five nights there, fasting, and in some cases taking a psychoactive drug (*Datura sp.*) to aid in their quest to see an arutam. If this worked, it would be a very frightening experience as the arutam would often appear as a pair of giant, fighting animals (e.g. jaguars or anacondas), and successfully claiming it (which entailed going towards and touching it) would "require a good deal of courage" (Harner 1962: 138).

This arutam pilgrimage bears similarities to rituals of the imagistic mode, with a small group size of those individuals that might accompany the arutam seeker. As only one member would be seeking an arutam and would not be allowed to tell others if he were successful (Harner 1962), this could facilitate the idiosyncratic reflection and interpretation also described for imagistic rituals (Whitehouse & McQuinn 2013). However, there is no indication that the group which went to seek an arutam together would form any special bond or form cooperative units in battle.

Another potentially bonding ritual took place prior to large expeditions. This was a pre-war dance or ritualized dialogue called *Enéma*, in which the warriors would stand in rows facing one another in pairs and take turns performing a series of movements with their lances in tandem with a loud, exaggerated dialogue. This ritual was believed to ensure success for the approaching battle (Harner 1962). Though not mentioned specifically in the sources, it seems likely it helped foster cohesion, as a ritualized, commonly recognized synchronous set of movements with a partner. Karsten writes that the exhortations to fight bravely and not abandon their comrades would be given in part during Enéma, potentially emphasizing these expected norms during combat (1935).

Self-sacrificial behavior:

One description of a raid by an American adventurer states that Shuar tactics were "utterly distasteful to the white man—the true white man who is brought up to a

code of fair play. The attackers display no bravery, the attacked have no chance to defend themselves" (Up de Graff 1923: 269). Both the tactics and the judgement are fairly typical of small-scale warfare and Western descriptions respectively. However, Karsten (1935) expands on this, writing that "In all his feuds, however, the Indian, if possible, avoids open fights, having recourse to treachery, assassinations, and sudden, generally night attacks. But if a real combat and hand-to-hand fighting ensue, the Jibaro warrior often displays both valour and contempt of death, a fact that is fully proved by the history of the Indians. Not to take flight, not to abandon his comrades in such a situation, but gallantly to meet the enemy with lance and shield, is the ambition of every real Jibaro warrior, and, as we have seen, the education of the boys from the beginning aims at imparting to them the qualities necessary for such behavior" (Karsten 1935: 282). This sentiment is likewise common in observations of warriors in other small-scale societies and indicates a strong socialization towards individual bravery and loyalty in addition to general prudence and aversion to risk-taking if possible. The war chief leading a raid would give speeches beforehand urging them to be courageous and not to abandon their fellow warriors, consistent with Karsten's description of the values instilled in young boys (Karsten 1935: 283). Warriors would also sing songs to the effect that their enemy might kill them, and if so their kin would avenge them (284). In large expeditions with members of different neighbourhoods where some individuals might be enemies, pairs of relatives or friends would agree to protect one another from being

killed. Harner writes that this ability to set aside internal rivalries to ally against enemies would have helped them resist past attempts at invasion, as demonstrated by their ability to resist conquest by both the Inca and the Spanish. However, the extent of heroic, altruistic, and/or self-sacrificial behaviors were difficult to parse from the available ethnographic and historical material.

Like many other groups, the Shuar believed that warriors who had killed an enemy were polluted by their blood and so had to undergo ritual fasting and purification ceremonies. Despite this, Harner's (1962) ethnography describes how the most desired status by men was that of kakáram, which could be achieved through killing many enemies and gaining the soul power of arutam. This would protect them from being killed by others and also drove them to kill further. He writes that "The majority of young men interviewed expressed a strong desire to kill, not only to avenge the deaths of their fathers and other close relatives, but to acquire the arutam soul power and to become known, respected, and feared as kakáram. To be acknowledged as a kakáram, a man must have killed at least several persons" (1962: 112). This is consistent with Glowacki and Wrangham's explanation for participation in war being incentivized by increased social status. Similarly, the Shuar were polygynous and being a skilled warrior with many trophy heads would make men more attractive to potential wives (Stirling 1938: 110), which supports their argument about higher reproductive success for warriors. Harner also notes that their beliefs regarding the invulnerability of

kakárams may have had a practical basis as they would be less likely targets of assassination due to fear of their power (1973: 142). If a man went too long without acquiring a new arutam, he would become vulnerable and die in battle (Rubenstein 2007). Therefore, individual cultural benefits that may have increased warriors' fitness are a plausible explanation for Shuar participation in war.

Group-level benefits are unclear from the usual warfare with the Achuar and other neighbouring groups, as the Shuar did not gain territory and the taking of captives or goods was not the primary motive (Beierle 2006). Additionally, although the Shuar were usually the aggressors and this had a cumulatively negative effect on other groups, ethnographers also note a decline in Shuar population due to intensifying war (in combination with disease) in the late nineteenth/early twentieth century as they gained greater access to firearms, which they received from Europeans in exchange for *tsantsas*. Although accurate warfare mortality estimates for the Shuar specifically were not found, Boster (2003) infers from multiple sources that a violent death rate would have been about 50% for adult males among all Jivaro groups in the late 1800s/early 1900s, with the highest among the Achuara as they were most frequently raided by the Shuar. However, this would likely have been far lower for the Shuar and includes deaths attributed to witchcraft and poisoning in addition to combat. It should also be noted these estimates took place in context of an 'arms race' of exchange of trophy heads for guns at this period during contact with Europeans, so it was likely not this high for Shuar

men during other periods when considering deaths from warfare specifically (Boster 2003: 157).

Group-level benefits of cooperation are clearer when considering their responses to attempts at conquest or colonization by other groups. In particular, their ability to halt feuding and cooperate in the face of external threat has been noted as crucial in their resistance against the Incas in the fifteenth century and their rebellion against the Spanish in the 16th century (Harner 1984). After several decades of increasing demands for tribute, they rebelled against the Spanish and attacked their towns of Logroño and Sevilla del Oro, killing several thousand people in hand-to-hand combat after the Spanish had run out of gunpowder. Reports at the time that 20000 Shuar had allied, while almost certainly exaggerated, indicate the large number of disparate communities that had managed to cooperate in the uprising (Stirling 1938: 36). In the 17th century, armed missionary attempts by Spaniards were again met with resistance. In instances when they were taken captive, they ran or killed themselves and their children (Stirling 1938: 20). They continued violently resisting missionary and colonization efforts into the eighteenth century. Harner (1973) reports that based on his fieldwork in the twentieth century that there appears to be no memory of the rebellion against the Spanish, although both it and their defiance against the Inca were used to construct a group mythology of historical ethnic solidarity and resistance among contemporary Shuar, who in modern Ecuador successfully unified into a political federation with which they were

able to secure land rights (Hendricks 1988). Harner writes that they may have perceived themselves at risk of extermination during the initial encroachment of the Spanish, fearing that "the eventual goal of the whites is to wipe them out in order to seize their land" (1973: 213). This feeling was exacerbated by a common dynamic between expansionary settlers and indigenous inhabitants, specifically the Shuar use of land for hunting, fishing, and foraging in addition to agriculture and the Spanish perception that they were not sufficiently exploiting the land for agricultural production. It is therefore possible that along with a higher than usual level of cooperation, self-sacrificial behavior was more likely to occur during these times of extreme external threat than during standard intertribal war.

The Shuar during this time were a strongly militarized society that placed high social value on participation and success in war. One analysis of warfare among indigenous American societies argues that headhunting among the Shuar formed part of an inter- and intra-societal exchange system of life force, in which warfare and headhunting were a foundational part of society and well-being of the community (Santos-Granero 2009). Boys were trained to be warriors and indoctrinated into norms of blood revenge from a very young age, including learning their family history of feuds and which enemies it would be their duty to kill (Karsten 1935; Stirling 1938). Ethnographers note the importance of an 'eye for an eye' sense of justice in carrying out intra-tribal feuds (Dyott 1926), consistent with explanation of feuding and revenge

killings in other anthropological literature as social control mechanisms used to enforce standards of prosocial behavior (Boehm 1984) (although this sense of proportionality does not seem to have applied to the indiscriminate killing practiced in war with outside groups such as the Achuara). Despite their conformance to small-scale warfare patterns of surprise attacks, warriors were still willing to undergo considerable risk to engage in war for revenge and for trophy heads and their accompanying prestige and spiritual power.

Karsten's writings on post-death rituals state that war leaders were accorded special treatment and their souls were thought to transform into fierce animals such as jaguars, indicating their socially respected status. However, he also writes that if a warrior were killed with a lance or had their head taken, their spirit was believed to flee their body, which would be buried quickly on the spot without the usual death rituals. It is therefore unclear what attitudes towards dying in battle, and by extension sacrificial acts on behalf of others, were held. Warriors who were killed in battle were assumed to have lost their arutam, indicating this would be linked with weakness and loss of vitality in opposition to how fallen soldiers are viewed in societies where self-sacrifice is explicitly valued (Harner 1973). However, the source only mentions warriors killed in the attack in an unspecified manner and it is not described whether it would make any difference if this was a sacrificial act of some sort.

Society name(s): Andamanese, Andaman Islanders

Date range covered: 1859-1908

Region, present-day country/ies: Andaman Islands, union territory of India

Language, linguistic family: Andamanese

Degree of political centralization: Acephalous

Population estimates during this period: 3575 (1800 CE) - 1895 (1900 CE)

Degree of sedentism: Semi-nomadic (Kelly 2000)

Subsistence: Fishing, foraging, hunting

Main sources and background/potential biases:

Primary works on the Andamanese include "On the aboriginal inhabitants of the Andaman Islands" by Edward Horace Man (1885), "A history of our relations with the Andamanese" by Maurice Portman (1899), and Radcliffe-Brown's "The Andaman islanders: a study in social anthropology" (1922). These sources primarily concern the Aka-Bea or Bea tribe who inhabited the Rutland and South Andaman Islands, which were the group with whom most relations with Westerners were established. Man conducted research from 1869 to 1880 CE while he was an official for the Andaman Homes, which were established by the British government to pacify and ultimately establish friendlier relations by studying and providing shelter to "detained" Andamanese (van der Beek & Vellinga 2005). He was concerned with recording the indigenous culture of the Andamanese without foreign influences before their expected near extinction, notably through the collection of material artifacts sent to the Pitt Rivers

Museum. A review of his work notes that he sometimes instructed Andamanese to make certain objects and omitted what had become widely used objects that he considered foreign, but stresses that "his main objective was to preserve and to salvage what he considered to be the indigenous cultural traditions" (van der Beek & Vellinga 2005). Maurice Portman was a colonial administrator on the islands from 1879 to 1900. While he made extensive efforts to learn about and record detailed aspects of Andaman culture, his perspective and position of authority meant that he directly influenced the subjects of his study; for instance, he references burning Andamanese villages as punishment for various infractions (Portman 1899: 666). His work has therefore been criticized in light of his complicity in hastening the pacification and destruction of the Andamanese (Sen 2009). Radcliffe-Brown conducted fieldwork from 1906 to 1908, and his work tends to be the major anthropological work cited on their methods of warfare. Robert Kelly (2000, 2005) analyzes the Andamans within his framework of social segmentation as a non-segmented society which engaged in war, serving as a transitional case study of how these institutions could develop in early human societies.

The spread of disease severely depleted the Andamanese population throughout the period when Man, Radcliffe, and Portman conducted their works. Their endangered status heightened their interest in recording aspects of their culture that would soon be lost. Despite clear biases due to their respective identities and how they viewed non-Europeans (all three at various points refer to the Andamanese as "savages") and varying

degrees of complicity in pacification and population degradation, their works are the most direct accounts of Andamanese culture and warfare patterns prior to the extinction of the Aka-Bea.

Background:

The Andaman peoples inhabit islands in an archipelago in the Bay of Bengal. They are thought to have migrated there several thousand years before encounter with the British, possibly in the Late Pleistocene, although the actual date and origin is unknown (Blevins 2009; Pandya 1995). The British began to build a penal colony on South Andaman in 1858 (after an initial truncated attempt in the 1700s) and attempted to establish amicable relations with the Andamanese, who were attacking work parties clearing the forest and hindering construction (Kelly 2000). After their largest combined attacks in 1859 were unsuccessful against the penal colony administrators, haphazard smaller attacks continued but the Andamans largely submitted to the colonial administration.

Resource ecology and patterns of intergroup conflict:

Based on Radcliffe-Brown's interpretation of earlier sources, pre-colonial Andamanese were organized into small groups of about thirty to fifty individuals, who traded and occasionally feuded with neighboring groups. Sets of groups speaking the same language would make up a tribe, although this held no political significance and

could include both or either coastal- and forest-dwelling groups (Portman 1899:26; Radcliffe-Brown 1922: 23). Andamanese dwelling on the coast exploited marine sources of food as well as tubers, honey, fruit, and game from the forest (Kelly 2000: 93). Both men and women foraged, while boys and men over twelve would take part in pig-hunting expeditions into the island's interior. The Bea group were in a constant state of war with the Jarawa, who consistently resisted any contact with outsiders and spoke a mutually unintelligible language to the rest of the Andaman groups. In line with the patterns of hunter-gatherer or chimpanzee warfare outlined by Wrangham and Glowacki, whenever a group of one encountered the other while foraging or hunting, the larger group would attack (Radcliffe-Brown 1964:86). There is evidence that the Bea expanded into Jarawa territory between the initial British attempt at settlement in the 1700s and the 1800s. Kelly interprets the "shoot-on-sight policy" between the two as consistent with such an expansion and conflict over land and resources (Kelly 2000: 91). In contrast with the Iñupiaq and many other warring societies, revenge was not a primary driver of fighting; rather, attacks tended to be provoked by infringement on another group's territory (Kelly 2000). Kelly concludes in his analysis that based on pre-colonial population estimates and given the circumscribed nature of island resources, the Andamanese had a relatively high population density for a hunter-gatherer group and resource conflict would therefore have been the underlying cause of conflict between the Bea and Jarawa. He therefore infers that these patterns of external war

were “indigenous rather than an artifact of colonial intrusion, although the latter had an effect upon raiding and countering during the colonial era” (2000: 92).

Group mode and cohesion:

There seemed to be no official governance or hierarchy in groups. Radcliffe-Brown describes normative respect for and management of the group’s affairs by elder men and women (1922). Kelly views the Andamanese as “akin to a natural laboratory in which the analogue of an experiment concerning the origin of war has been conducted”, unsegmented but occasionally engaging in armed conflict with peacemaking strategies (Kelly 2000: 81). In support of this view, Wrangham and Glowacki (2012) point out that unlike many other warring foraging societies, the Andamanese were not bordered by settled farmers and the pattern of conflict was therefore more reflective of their “chimpanzee model” for nomadic hunter-gatherer warfare. As mentioned above, Kelly interprets external war between groups as primarily arising out of their function as joint possessors of ecological resources, rather than displaying the social substitution and collective responsibility for violence that would be present in a segmented society. His characterization of conflict between the Bea and Jarawa highlights that groups engaged in fighting were formed for the purposes of resource acquisition, not combat, and conflict would primarily occur in the area where their niches overlapped, as the Bea included both forest- and coast-dwellers while the Jarawa were exclusively forest. This is consistent with Radcliffe-Brown’s characterization of a given group as “a land-owning

group" (1922: 29), and relative fluidity regarding membership which could include moving due to marriage or an informal, temporary adoption of children between families in different groups (Radcliffe-Brown 1922: 78). Apart from noting they were supposed to make conflict less likely, there is unfortunately little detail in these sources as to how such relations would affect who was targeted in surprise attacks. Man (1885) does write that women and children could be killed incidentally but were not specifically targeted.

Andamanese would perform a ceremonial dance before going to war that could have functioned as a process of group-making. Radcliffe-Brown writes that "the chief function of the dance is to arouse in the mind of every individual a sense of the unity of the social group of which he is a member" and increase hostility and anger towards the enemy group to increase their effectiveness in combat (Radcliffe-Brown 1922: 252). Similarly, Kelly writes that this dance "served the purpose of welding the participants into an operational group and engendering a transitory military organization suited to the task at hand" (2000: 107). This is in keeping with widespread ethnographic and historical observations, as well as experimental evidence, of dancing and other forms of synchronous activity to instill cohesion and fictive kinship in groups (Hagen & Bryant 2003; Jackson et al. 2018; Savage et al. 2021). Kelly's interpretation also highlights the temporary nature of such social bonds, in contrast with the more permanent fusion that may have taken place among societies with a designated military class, such as the

Nizaris, or a more militarized society dependent on widespread mobilization, such as the Shuar. Consistent with a social context of impermanent, temporarily constructed conflicts, feuds and cycles of attacks between groups could last for years but would more often be resolved after one or two attacks (Radcliffe-Brown 1922).

Self-sacrificial behavior:

In response to an article on evolved capacities for intergroup offensive and defensive attacks (De Dreu & Gross 2018), William Buckner and Luke Glowacki write that "intergroup violence among the Andaman Island hunter-gatherers conformed to the general pattern found across many small-scale societies" where attackers would only proceed if they were sure of surprise and superior numbers and would flee if met with resistance (Buckner & Glowacki 2018). The only recorded exceptions to this pattern occurred in 1859 with a series of attacks on parties of convicts working to clear the forest for the British penal colony, seemingly with the aim of disrupting this and stealing tools and other materials. The largest attack was recorded as consisting of over one thousand Andamanese, who specifically attacked those visually distinguishable as guards while freeing some of those distinguished as convicts (e.g. wearing ankle irons) and then attempted to perform a version of their usual peacemaking ceremonial dance with the latter. Kelly writes that "the efforts of the Andamanese to dance with convicts is unintelligible except as an attempt to resolve past hostilities…this so-called attack on the convicts by the largest party of Andamanese ever to assemble was clearly not an attack

at all, but an attempt to transcend past acts of hostility and make common cause with the convicts against the British" (Kelly 2000: 86). This is supported by Portman's report that runaway convicts were no longer killed and in some cases were kept and fed for a short time, and by the fact that the Andamanese did not harm any convicts during the final such attack, later labeled the Battle of Aberdeen. Although the British Naval Guard were somewhat prepared due to a warning from an escaped convict who had briefly lived with the Bea, they were driven to boats on the shore by Andamanese attacking from the forest. They used their ship's guns to fire on the Andamanese, who "nevertheless held the convict station for more than half an hour "plundering everything worth carrying off" (Portman 1899:278-79)" (Kelly 2000: 86). Unfortunately, there are no clear records of Andamanese casualties from this battle. Portman quotes at length another administrator who writes that "most of the Andamanese that took part in it [the battle] are yet alive…none of them were wounded, nor did they fear fire-arms in those days, and they say the shots fell close to, and all around them" (312). Portman disputes this, writing that "they certainly feared fire-arms excessively at that and all other times" (313) and "none of the convicts were wounded, but several of the savages are supposed to have been" (279). It is therefore difficult to assess the level of risk the Andamanese perceived themselves to be and actually were taking on in these large-scale attacks against superior firepower. In any case, presumably because the convicts did not take this opportunity to unite with them, the Andamanese reverted to minor individual

attacks to steal tools and did not attempt any further widespread resistance (Kelly 2000).

According to the interviews Radcliffe-Brown conducted, this was the sole instance of a very large-scale attack "to meet what was to them an altogether unusual contingency, their territory having been invaded by a large force of foreigners" (1922: 86). Instead, Andaman warfare was usually between a handful of fighters from each group where one or two individuals would be killed. Unfortunately, given the context of the available primary sources, there is not sufficient evidence in the primary sources or secondary interpretations to assess a consistent level or mode of self-sacrificial behavior. Despite the absence of records from pre-colonial times, the available evidence suggests that, as with other societies, contexts of external threat would shape existing attitudes towards and practices of conflict. Contrasting their attacks on the penal colony leading to and during the Battle of Aberdeen, which required large-scale cooperation and withstanding attacks by gunfire, with accounts of feuding between groups and tribes in contested border areas that occurred between small parties and avoidance of prolonged combat highlights such behavioral flexibility. It is perhaps more useful to consider under what circumstances a group may transform from primary motivation by individual rewards to group sentiment and defense, and what paths that may take. Unlike the Shuar and various other indigenous groups which persisted in cooperative resistance against colonizers, the Andamanese appeared to have somewhat acquiesced after the

Battle of Aberdeen. While this may have been partly due to cultural differences in group cohesion and responses to outside threat, there was also rapid population decline from disease and the realization that they had little chance at forcing the British to leave "and that the settlement was to be a permanent feature in their lives" (Venkateswar 2004: 105).

Andaman warfare has frequently been cited by anthropologists as a model for war in the Pleistocene (Boehm 2013; Glowacki 2023; LeBlanc 2014; Wrangham & Glowacki 2012). As mentioned above, Kelly describes them as a transitional case with which to examine the origins of war. Similarly, Glowacki and Wrangham (2013) writes that they "perhaps best exemplify the fighting ethos of foraging warriors in simple societies". Their high degree of isolation, reliance on hunting and foraging without cultivation or significant livestock, and especially the lack of surrounding state or agricultural societies are emphasized in these sources. While it is true the Andamanese were a valuable representation of an ecological niche within which to examine patterns of lethal intergroup violence, it is difficult to ascertain the degree of cultural change from the populations encountered in the eighteenth and nineteenth centuries from those that initially settled the islands from the available sources. For instance, one historical linguistic analysis notes that there is "no question that many different travelers have visited the archipelago", including visitors from the surrounding lands who captured Andamanese slaves (Blevins 2009: 4). It is possible Andamanese and

specifically Bea culture and responses to outsiders interacted with and shifted in response to these contacts; for instance, the author of an historical-archaeological study argues that their extreme hostility to any outsiders was the result of slave raids (Cooper 2002 cited in Morrison 2004). This point is emphasized by Nicholas Thomas (1996) in a history of anthropological research, who writes that "for example, the indigenous ethnic distinctions are mostly spoken of as though they had deep roots in ancient linguistic and cultural differentiation, but the separateness of the Jarawa of south Andaman appears to have been magnified if not created through contrasting patterns of indigenous resistance" and pointing out the the name "Jarawa" was not a indigenous ethnonym but a word used for 'enemy' by groups interacted with by the British and took on its meaning from there (Thomas 1996: 22). He also critiques Radcliffe-Brown for largely ignoring the possibility that contact with foreigners prior to 1858 would have affected cultural and social structures. Many aspects of Andman warfare described by Portman, Man, and Radcliffe-Brown are consistent with other hunter-gatherer societies, and it is logical that the patterns of surprise attacks, kill-on-sight policies for trespassing, and dependence on larger group sizes for success would have characterized war for the ecological and social reasons Kelly outlines. However, this does not necessarily indicate that the impressions they recorded of the attitudes, fears, and beliefs about willingness to take risks and sacrifice for one another were accurate. It therefore makes sense to use caution when interpreting portrayals of the Andamanese by administrators of a

government responsible for the colonization and eventual extermination of their culture as a model for self-sacrificial behavior in early human warfare.

Society name(s): Iñupiaq, Iñupiat, North Alaskan Inuit

Date range covered: 1800-1848 CE

Region, present-day country/ies: northwestern Alaska, U.S.

Language, linguistic family: Iñupiat, Eskimo-Aleut

Degree of political centralization: Acephalous

Population estimates during this period: 300-500 per nation/society; about 5000 total for the region (Mason et al. 2012)

Degree of sedentism: Semi-sedentary

Subsistence: Fishing, hunting

Main sources and background/potential biases: The most extensive work on Iñupiat societal structure, intergroup relations, and warfare was carried out by Ernest Burch, an anthropologist of arctic indigenous peoples who conducted fieldwork over several periods between 1960 and 2003 (Krupnik 2012). The most relevant source for the current study is "Alliance and conflict: the world system of the Iñupiaq Eskimos" published in 2005, which focuses on the first half of the 19th century. Burch interviewed 120 elders, many considered by the Iñupiat as historians, and cross referenced the oral histories they provided with different interlocutors and other sources of evidence such as archival records and reports from other communities and European travelers (Burch

2005, 2006; Mason 2012). He compiled an appendix of 77 battles and raids with varying degrees of detail based on his interlocutors' oral histories, and archival and historical records (Mason et al. 2012). Later, some of Burch's colleagues examined archaeological evidence such as armor, weapons, and defensive structures to determine whether their corroborated the oral histories collected by Burch and found they were generally consistent, although probably referred to earlier time periods (prior to 1800 CE) which had greater archaeological evidence for warfare (Mason 2012). While there are caveats to relying heavily on a single source, his conclusions have generally been corroborated by other scholars' work, and he is widely recognized as an authority on intergroup relations among the Iñupiat who collaborated and debated with others and reflected critically on earlier work (Krupnik 2012; Mason 2012).

Background:

The Iñupiat are indigenous inhabitants of what is today northwestern Alaska, described by Burch as a hunter-gatherer society of "intermediate complexity" (2005: 5). Burch labeled the social groupings formed by Inupiaqs as nations, albeit small and without the bureaucracy or trappings of a state apparatus. 'Nation' instead refers to "politically autonomous social systems whose members exercised dominion over discrete territories that…regarded themselves and acted as separate peoples" (Burch 2006: 7). The Iñupiat's first significant contact with non-natives was with Russians in the early 19th century. Burch writes that Westerners who came to the region in the nineteenth century were

generally interested in trading and exploring rather than missionizing or colonizing and whose presence fortuitously did not result in significant disease spread. Therefore, the culture he recorded was not as profoundly altered as other hunter-gatherer societies in the ethnographic literature (Burch 2006).

Resource ecology and patterns of intergroup conflict:

While some Iñupiat groups harvested plants, this was not sufficient to support their populations and they were dependent on hunting and fishing (Burch 2005: 10). Resource patchiness also led to the highly dispersed nature of settlements and in turn shaped attack patterns– attacking an entire enemy nation's population was nearly impossible and if vengeance against them as a whole was sought, this might result in an hit-and-run attack on the larger or nearer settlement, or a challenge to an open battle if the attacker believed their forces large enough (Burch 2005: 69). Mason writes that "Burch's informants outlined societal boundaries in relation to topography…Burch (1998:310–312) distinguished between core-living space (i.e., where the best access to sea mammals or, especially, salmon occurred) and the outlying resource "voids" (which acted as the boundaries between groups)" (2012: 77). Although Burch identifies territorial gain as a major cause for war, consistent with the desire to displace if not exterminate the enemy group, Mason's analysis notes that "we may need to distinguish between proximal causes apparent to the actors, and ultimate causes that were not" (2012: 77). In particular, revenge was given as the primary, explicit motive for war by

Burch's informants (2005). Warfare could occur between different Iñupiat nations or with Athabaskans to the east or Chukchi to the west (Boyd & Richerson 2022). Burch also claims that he found no evidence during fieldwork that there was greater hostility or violence between Iñupiat and non-Iñupiat groups than there was between Iñupiat nations. Rather than any linguistic differences, generation-transcending grudges ensured cycles of retaliatory raids (Burch 2005).

Group mode and cohesion:

Burch estimated earlier population and community sizes by extrapolating from descriptions of two to three family communities to arrive at 300 to 500 people per nation, while noting that others were free to adjust these figures based on their own data and assumptions (Mason 2012). He also characterizes them as having a segmental social structure, citing Service (1975) and Sahlins (1963) (Burch 2006: 102). In his appraisal of Burch's work, Mason notes how social complexity and settlement patterns likely would have varied regionally and over time depending on fluctuations in subsistence availability and disease spread as well as level of contact with outsiders, which could include economic opportunities as well as threats. In general, however, settlements tended to be built defensively, in strategic locations with log palisades, trenches, and ports from which to fire arrows near building entrances (Mason 2012). Settlements centered around patchily distributed resource areas, such as places with

high marine productivity or along whale migration paths (Jensen & Sheehan 2016; Mason 2012), consistent with a resource ecology associated with the imagistic mode that required strong defense by group members to maintain their access.

A major Iñupiat activity besides warfare that required a high level of cooperation were traditional whale-hunting expeditions each summer. Participants, each with specialized roles according to their skill sets, needed to carefully coordinate. In contrast with warfare, there was an elaborate set of supernatural beliefs and rituals developed around whale hunting, including special roles for the umialik (captain) and his wife and the Nalukataq whale ceremony (Crowell 2009). Such reliance on cooperative hunting of a very large animal is also cited by Whitehouse (2018) as an "us vs. nature" contest that could have been a selective pressure for identity fusion in small groups (2018: 7). Burch writes that whaling was one of the few activities where skill took precedence over kinship (2006). By contrast, kinship and loyalty to family were the highest priority in other aspects of daily social life (Burch 2005, 2006). Because family is described as the basic unit of Iñupiat society, with kin relations providing the framework for most social activities including fighting group structure and leadership (Burch 2005), real as well as fictive kinship ties combined with the overbearing threat of attacks from other groups seem to have been sufficient to motivate the substantial effort and risk-taking of fighting.

Self-sacrificial behavior:

Wars were fought with bows and arrows, lances, and occasionally knives (Burch 2005: 82-4). Many features of warfare were typical for small-scale societies, including revenge rather than territorial conquest as the primary motive, a lack of distinction between ordinary men and soldiers and high proportion of mobilization (sometimes nearly all fighting-age males), and a minimal differentiation of combat roles (Burch 2005). Participation was technically voluntary; however, Burch writes that "in the macho world of Iñupiaq males, it would have been quite remarkable for a healthy young man to stay home when all of his contemporaries were setting out on a raid; the pressure to go along would have been enormous (Simpson 1852-54: entry for Aug. 2, 1853)" (Burch 2006: 70). Similarly, although there were no formal sanctions for disobedience during combat, "the conformity aspects of group membership were enormous…only a real misfit would have disobeyed orders or acted in such a manner as to undermine his countrymen's efforts" (Burch 2005: 135). In contrast with the individual material or social rewards or threat of punishment, it therefore seems that strong group norms necessitated fighting. According to Burch, supernatural beliefs did not play much of a role in war and rituals to prepare for or influence the outcome of battle were not used by shamans or warriors (2005). This contrasts with the extent of ceremonies, rituals, and spiritual beliefs built around the annual whale hunt. While Burch was not able to ascertain directly the frequency of wars and battles from his informants in the previous decades, he concludes based on his estimates that war or the possibility of war would

have been a constant, pervasive reality that was perhaps sufficient to engender a similar level of cohesion as imagistic rituals. Iñupiat males engaged in training for battle that included "activities devoted to developing strength, speed, agility, physical and mental toughness, and spiritual power" (Burch 2006: 122).

Apart from the few instances of open battle, the Iñupiat largely conformed to the pattern of surprise ambush and quick retreat tactics described for other small-scale societies. That said, it is apparent from Burch's descriptions that risks were still quite high. These ranged from the travel to an enemy nation itself due to the long distances and harsh landscape to possible discovery and counterattack: although attacks were made at night, Iñupiat maintained constant vigilance for anyone approaching their settlement (Burch 2005: 87-88). Burch writes that "international hostility in northwestern Alaska was expressed through a variety of activities, ranging from spying (*naipiqtuq-*) and harassment to open battle (*arjuyak-*). All were very dangerous, and none was undertaken lightly" (2005: 72). Apart from the physical risks, Burch emphasizes that war was hugely costly in terms of effort and time because of the high proportion of the population mobilized and the fact that while combat was relatively short (hours to a few days), the travel to enemy territory and back could take over one month and travel over potentially hundreds of kilometers. While rarely achieved, the ultimate objective would be to exterminate the entirety of the enemy group. In open battle or during a raid, the victors would massacre the defeated but leave a few alive to report to the rest of their

settlement what had transpired. Burch writes that "the justification for this was that the surviving members of the defeated nation would be intimidated and never challenge the victors again. The actual effect, however, was to eliminate any guesswork there might have been regarding where retaliatory raids should be directed", therefore perpetuating the bloodshed (Burch 2005: 65). In contrast with the example cited by Boyd and Richerson (2022) of Iñupiat raiders fleeing after encountering a trap and leaving behind their wounded comrades, Burch writes in the case of defeat during an open battle, "my informants stated emphatically that wounded never were left if it was humanly possible to take them along. If seriously injured, they had to be backpacked, which greatly hampered withdrawal efforts" (2005: 119). As the example cited by Boyd and Richerson was also taken from Burch's book, this could be a difference in practices between open battle and raids, divergence between the ideal and reality of behavior in combat, or because the raid in question was conducted by an alliance of several different nations (Burch 2005: 104) and there was lessened loyalty or attachment between these fighters, although that is speculative.

Due to the importance of a swift retreat, the victorious parties would only take small valuable goods that could be easily carried, and never took captives. Burch reports that "men who had distinguished themselves in battle" would be recognized with special facial tattoos during the celebration of victory in battle after returning (2005: 121), although unfortunately there are no further details as to how such distinction would be

acquired. Reedy-Maschner and Maschner's (1999) analysis of other Alaskan societies describes how their warriors would likewise receive tattoos signifying their participation and actions in a war party, such as the number of enemies they had killed, so it is possible the Iñupiat followed a similar system. In the initial stages of an open battle, agile warriors would advance and taunt the other side to provoke them into shooting and spending their arrows. Despite this practice being cited by Wrangham and Glowacki (2012) as not a "deliberately risky behavior leading to death" because these fighters would avoid being shot at and collect spent arrows, this is contradicted by Burch's account of the increasing danger as the lines drew closer together and the possibility that these fighters would be killed. Mutually negotiated withdrawals were rare, unilateral withdrawal was "extremely dangerous" because "the Iñupiat had no compunctions about shooting a man in the back" (Burch 2005: 108), and the most common outcome was hand-to-hand combat with clubs, spears, and knives ending in a massacre of the weaker side. Although he does not explicitly describe instances of self-sacrificial actions or whether this was socially praiseworthy, it is clear that the risk of death– either through raiding because of the near-certainty of retaliation, or during open battle– was significant (Burch 2005). For instance, he writes that "even a successful raid often resulted in casualties for the aggressors" (Burch 2005: 100) and that "early explorers also observed or experienced the courage of the Iñupiat in defense of their homes" even

when disadvantaged in numbers and weapons (2005: 101). There was also substantial social pressure for participation in battle (Burch 2006).

In general, the emphasis on surprise, indiscriminate violence against enemy settlements, and the primary motive of vengeance are in keeping with war among other hunter-gatherers. However, the Iñupiat are notable in the considerable effort put into traveling to enemy territory and the importance of taking revenge– Burch quotes an earlier source describing their "messianic zeal" (2005: 66)– combined with the lack of any significant material gains. As discussed in the introductory chapter, norms around wartime behaviors are variable within armed groups and the societies in which they are embedded, between individuals and over time. Based on the available records, the Iñupiat during this period existed in a system consisting of cycles of retaliatory violence where it would be nearly impossible to avoid risk and where participation in warfare was obligatory and necessary for the survival of the group.

Case studies discussion

There is some evidence from these case studies for predictions of modes theory. Nizaris fida'is are an example of identity-fused, imagistic groups with unambiguous evidence for extreme self-sacrificial behavior in service of the group. Among both the Nizaris and the Shuar, risk-taking conferred prestige and increased social status, though in very different ways. Cohesion among the Nizaris as a whole can be traced to ever-present and overwhelming outside threats, but caused by religious conflict and political

dynamics rather than naturally arising from their resource ecology. In particular, a universalizing religious ideology was central to the Nizaris as a sect and political entity, providing a moral framework for the use of political violence. They also had a far larger population size than a typical imagistic group, i.e. where all members could personally know one another. Since the Nizari polity can be considered socially complex compared with many small-scale societies, within the framework of modes theory the best fit is perhaps that of imagistic units of fida'is embedded in an overarching doctrinal group. Records of sometimes severe punishment, including death, for infractions (Daftary 2007) also support a mix of imagistic and doctrinal elements to promote cohesive actions. Although there is no available evidence of extreme dysphoric rituals or whether fida'is experienced other transformative events that fused them with other Nizaris, a process of fusion can be inferred from a shared perceived victimization stemming from real oppression and physical danger from prevailing power structures.

The resource ecology and aspects of Shuar social structure and settlement patterns are consistent with those described for imagistic groups, and the arutam seeking ritual is also ranked as having a relatively high level of average dysphoric arousal as coded by Atkinson and Whitehouse (2011). However, they do not necessarily display elements of fusion and self-sacrificial behavior the imagistic mode is hypothesized to facilitate. The Shuar case highlights the difficulty of interpreting attitudes and motivations for risk-taking and other behaviors in war from ethnohistorical

material. Available descriptions of Shuar warfare appear to better support a hypothesis centered on cultural rewards more so than that of identity fusion arising from a particular resource ecology. War did not result in the acquisition of new land for hunting, fishing, or farming, and there was no ownership or hereditary passage of properties within Shuar families, so patterns of conflict over resources as predicted by modes theory is not immediately apparent. However, there were notable instances of the Shuar allying to fight common enemies and present violent resistance that included instances of captives killing themselves and even their children, so some form of self-sacrifice could clearly arise in some circumstances. Harner writes that they "long have had a practical understanding of the need to unite against a common external enemy in war" (1984: viii), and this history of setting aside internal conflicts to form alliances and cooperate in large groups against outsiders has also been described as central to Shuar identity (Harner 1984; Stirling 1938). Karsten at least notes that loyalty to comrades and courage in battle were valued (1935: 283). Overall, these behaviors may best highlight cultural flexibility depending on the scope and urgency of external threats rather than intrinsic qualities of a group in levels of cooperation and willingness for collective risk. The Shuar history of resistance to subjugation and conquest highlights potential situations under which broader forms of cooperation and prosocial behavior could emerge and possibly be sustained.

While numerous rituals and ceremonies for various aspects of daily life are recorded for the Iñupiat, these tend not to concern warfare. Burch acknowledges gaps in the knowledge he obtained from informants during earlier fieldwork, writing that he had sometimes failed to ask what he later realized were important questions and by his later writings many of the original interlocutors had passed away (Burch 2005: 137). It is possible this was the case for the importance of some of the rituals or supernatural beliefs surrounding warfare that are well evidenced for whale hunting. However, accepting his statement that "magic and ritual seem to have played a relatively minor role in early-19th century Inupiaq warfare compared to the customs of many other peoples" (2005: 120), it seems that the constant, overbearing threat of warfare was sufficient to promote required cohesion during combat. This contrasts with the relatively brief nature of internal war or feuding cycles between Andamanese groups, who did have a preparatory dance for war. Although Kelly describes the conditions between the Bea and Jarawa as war that was "unremitting and constitutes a condition of existence that defines the boundaries of the niches exploited by two populations" (2000: 119), there were alternating states of war and peace between the Bea and other groups and while violence seems relatively indiscriminate, it was not aimed at extermination as with the Iñupiat. Andamanese conflict seemed to have been most directly related to resource defense and acquisition, although it could sometimes be sparked by desire for revenge. By contrast, the Iñupiat were solely motivated (at least immediately and primarily) by

revenge. While the mere fact of making an attack with the possibility of immediate or later counterattack meant that neither case was risk-free, both risk and necessity of engaging in conflict appear to have been higher for the Iñupiat. Resource ecology shaped social structure and settlement patterns, but revenge rather than resource defense was the primary driver with the underlying threat of one's group being exterminated.

Overall, these cases highlight how, in addition to factors of resource ecology and social structure, the nature of intergroup relations and levels of threat may provide greater explanatory power for variation in levels of pro-group and self-sacrificial behavior. They also illustrate the variety of paths and interacting factors that might promote self-sacrificial behavior. The following section examines whether links between subsistence practices, political complexity, and ethnohistorical records of self-sacrificial behavior can be identified in a quantitative analysis.

Quantitative analysis

As discussed in the introductory chapter, the purpose of this thesis is to use quantitative analyses of comparative data to identify patterns in the intensity and forms of wartime violence as it relates to social complexity and related variables. The case studies were intended to complement the quantitative analyses and illustrate the nuances not necessarily captured by the coded data, such as variation within societies in different situations and times. The current section details how I coded the prevalence of

self-sacrificial behavior in war in a cross-cultural sample of societies, the sources and definitions for this and other variables used to create the dataset for this chapter (social complexity, military organization, and reliance on agriculture), construction of the statistical models, and results of these analyses.

Data coding and variables

This chapter uses data on societies contained in eHRAF, as well as other ethnographic documents and secondary historical sources. Variables were coded from these sources into a dataset of 67 societies. This dataset was constructed by modifying the sample of 74 eHRAF societies analyzed by Atkinson and Whitehouse (2011) in their cross-cultural study on ritual forms. This was used as a starting point because the intention of their study was classifying cultures as imagistic or doctrinal and included data on subsistence practices and political complexity, and because their sampling process attempted to maximize geographic diversity. However, it was not possible to find detailed descriptions of warfare, specifically indications of the presence or absence of self-sacrificial behavior, for all societies in their sample (and a few did not engage in warfare). Societies which did not have sufficient data to code this outcome variable were excluded, and other societies for which such data were found through using keyword searches in eHRAF were added. I attempted to preserve the regional distribution of the original dataset when doing this. The final dataset for this chapter (Dataset 1.2 in Appendix 2) contains 37 of the societies used in the Atkinson and Whitehouse study,

with the remaining 30 largely consisting of societies also coded for either or both indiscriminate killing/trophy-taking in the next two chapters.

Variables are described below with accompanying visualizations or tables based on variable type to illustrate the distribution of self-sacrificial behavior across the predictors and the distribution of self-sacrifice scores across the dataset. Military organization is a binary variable and the distribution of self-sacrifice scores is shown in a table. Agriculture has many states that will ultimately be treated as continuous and so is shown as a violin plot. Plots for population size, community size, political centralization, and hierarchical levels are not shown as these are not directly used in the analyses; instead, a plot for the combined PC1 variable for political complexity that is used as a predictor in the analyses is shown after a description of the principal component analysis, also as a violin plot because it is a continuous variable.

Predictor variables:

Population size– Population estimates for the time period designated for each society. Coded according to whether estimates fell in the hundreds, thousands, tens of thousands, etc. ranges. The Nizari state was coded 5.5, or somewhere between hundreds of thousands to a million based on figures on communities converted and participating in fighting (Daftary 2007). The Shuar were coded 4 and the Andamanese were coded a 3 based on estimates provided in eHRAF

(Beierle 2006; Pandya 1995). The Iñupiat are coded 3 based on Burch's estimates for the region.

Community size– The average size of local communities, coded based on EA variable 031 'Mean size of local communities'. Coded as 0 (<50), 1 (50-59), 2 (100-199), 3 (200-399), 4 (400-1000), 5 (1000-5000), 6 (5000-50000), 7 (50000+). The Nizaris were coded 6 and the Shuar, Andamanese, and Iñupiat 0 based on the above sources.

Political centralization- The degree to which political power in the cultural unit is or was centralized to a single authority/place. The scale used was created from a combination of Seshat's degree of political centralization variable and EA variable 090 'Degree of political integration'. Coded from 1 to 5; full definition in codebook (Appendix 1.1). The Nizaris were coded as 5 (centralized) and the Shuar, Andamanese, and Iñupiat were coded as 1 (autonomous communities).

Hierarchical levels- The number of nested governance levels outside of the local level, adapted from the EA variable 033 'Jurisdictional hierarchy beyond local community'. Coded from 0 to 5. The Nizaris were coded as a 4, which was inferred from descriptions of their governing structures in the sources, and the Shuar, Andamanese, and Iñupiat a 1 from their EA033 codes in D-Place.

Military organization- Whether there is a formal standing army or military organization, or whether warriors are mobilized through social relations such as friends or kin. Coded as 0 or 1. The Nizaris were coded 1 and the Shuar, Andamanese, and Iñupiat 0. Distributions of scores by informal or formal military are shown in the table below.

sacrificial behavior	informal military	formal military
1 (evidence against)	8	2
2 (individual risk)	10	6
3 (tentative evidence)	9	3
4 (strong evidence)	19	10

Table 1. Distribution of self-sacrifice scores for societies with informal and formal military structures.

Agricultural intensity – The extent to which a society depends on agriculture. Coded based on EA variable 028 'Agriculture: intensity' from 0 (no agriculture), 1 (casual agriculture), 2 (shifting agriculture), 3 (horticulture), 4 (intensive permanent agriculture), 5 (irrigated agriculture). The Nizaris were coded 5, the Shuar 2, and the Andamanese and Iñupiat 0. A distribution of codes for self-sacrifice by each level of agricultural intensity is shown in the figure below.

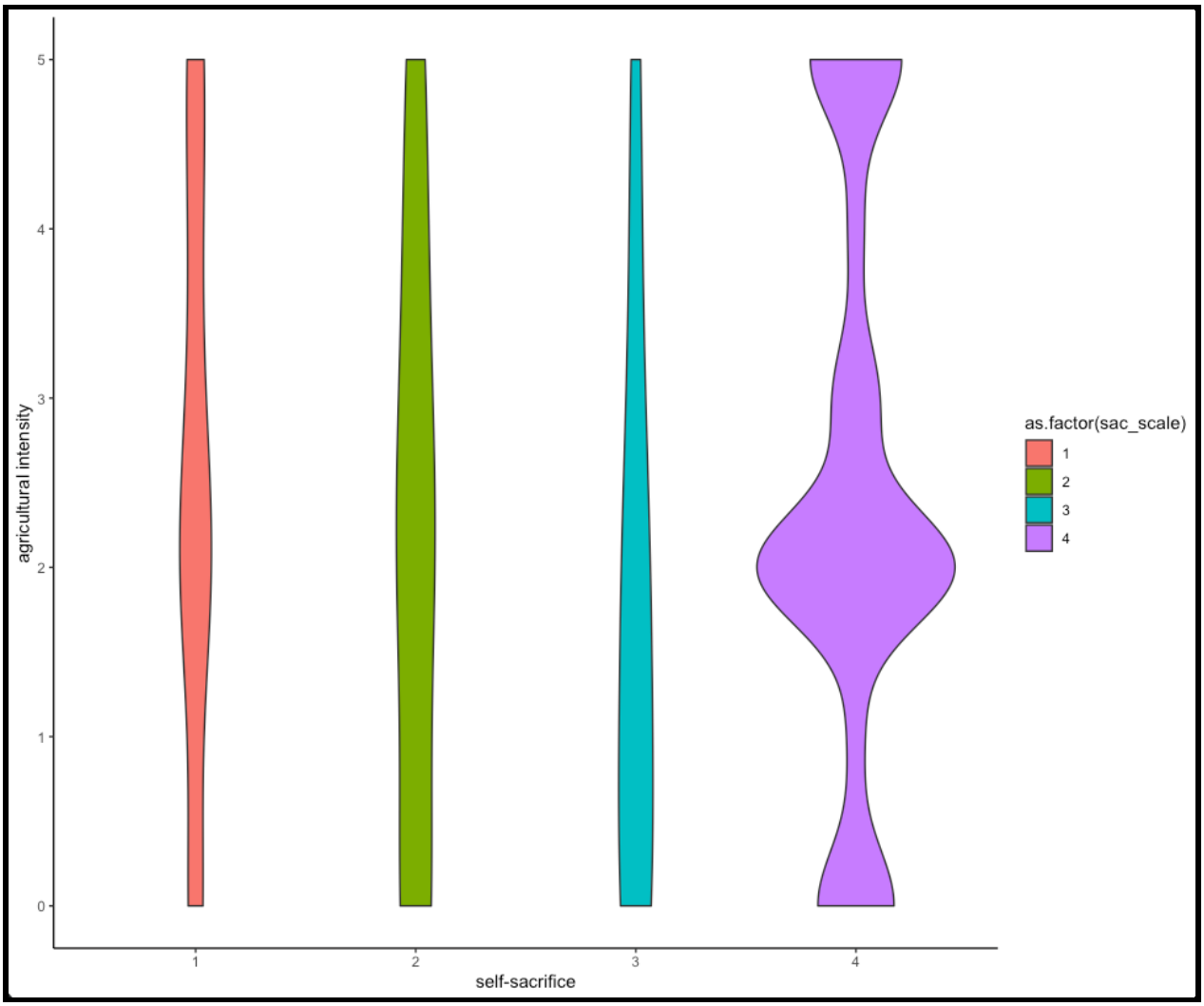


Figure 2. Distribution of self-sacrifice scores by degree of agriculture intensity.

Outcome:

Self-sacrificial behavior in war– Whether there is any evidence that fighters are commonly expected to risk or sacrifice their lives for their companions or the group as a whole. Coded from 1 (no indication that risking one's life or sacrifice on behalf of the group is devalued or discouraged), 2 (indication that risking one's life is valued but unclear about degree to which sacrifice on behalf of others is valued), 3 (indication that

loyalty to and sacrifice for the group is valued but no explicit mention or proof of sacrificial acts/deaths), 4 (explicit description of combat deaths on behalf of others in the group and that this is socially valued). For instance, the Nizaris were coded a 4, while the Shuar and Iñupiat were coded a 3 and the Andamanese 1. A distribution of codes is shown in Figure 3 below.

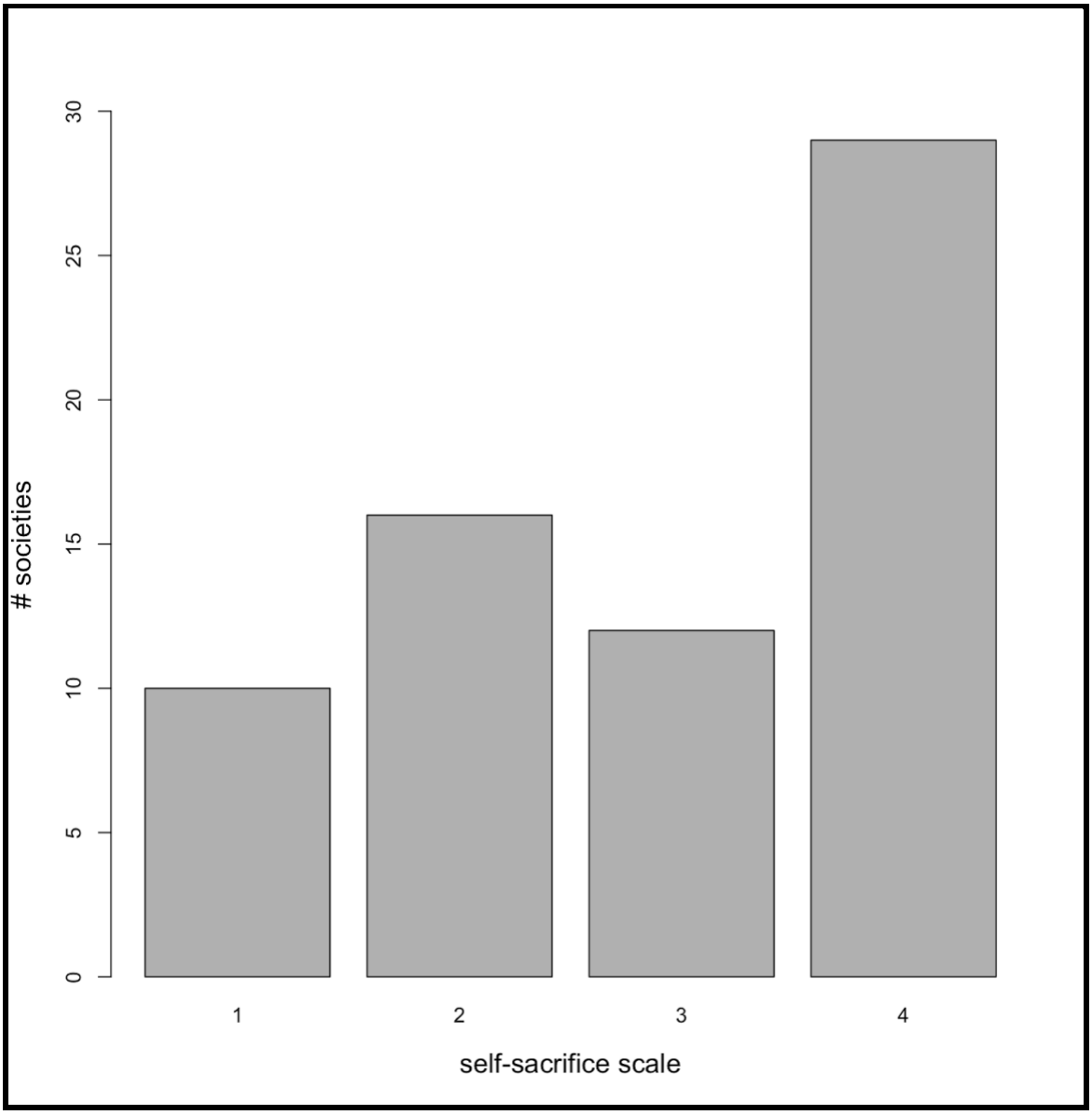


Figure 3. Number of societies coded for each level of self-sacrifice scores

Processing of data pre-analysis:

Political centralization, hierarchical levels, community size, and population were treated as continuous variables. The first factor from a principal components analysis (using the prcomp() function, *stats* package in R) on these variables was used as a measure of political complexity (cumulative proportion of variance explained = 0.77). Political centralization, hierarchical levels, community size, and population were standardized (mean centered at 0 with a standard deviation of 1) prior to the PCA. Distributions are shown in Figure 4 below, separated by presence or absence of evidence for self-sacrificial behavior.

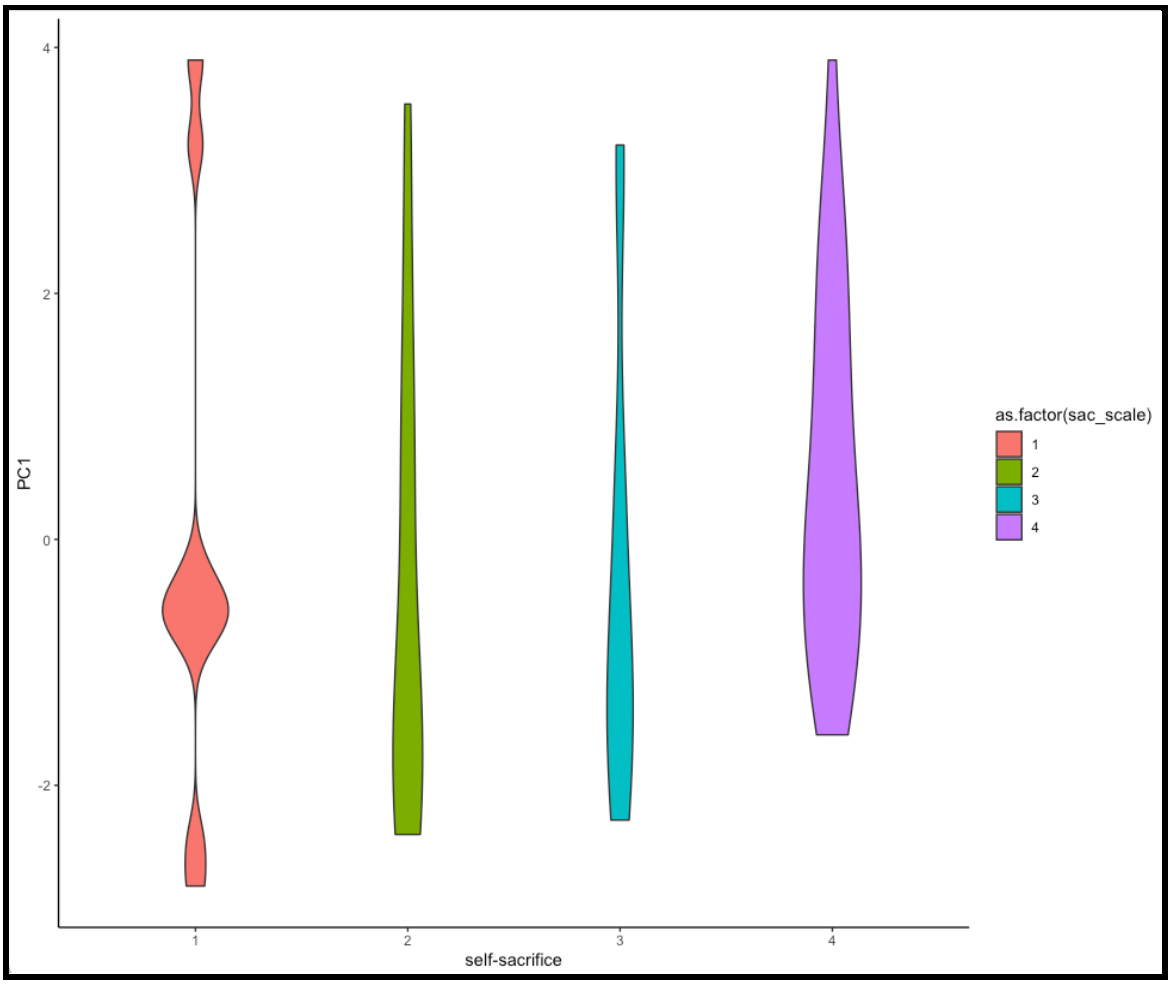


Figure 4. Number of societies coded at each level of self-sacrifice (x-axis) distributed by social complexity score (y-axis).

Missing data were imputed using the R package *mice* (van Buuren & Groothuis-Oudshoorn 2011) using the methods provided for continuous data (predictive mean matching). This was a total of seven datapoints prior to conducting the PCA: four for community size and three for regional hierarchy.

Statistical models

Analyses were conducted using the *brms* package (Bürkner 2021). They were designed to test the relationships implied by the graph in Figure 1. The models were constructed based on the adjustmentSets() function in the *dagitty* package (Textor et al. 2017) that, based on the provided causal graph, returns the necessary covariates for which to adjust when estimating an effect between two variables. The following covariates were returned: agriculture when estimating effects of complexity, complexity when estimating effects of military organization, and none when estimating effects of agriculture. However, overall the estimates for each variable were similar between models, so the estimates for the model with all three variables is shown in the results below.

The models were specified as follows, with self-sacrifice modeled as an ordered categorical outcome, represented by an ordered-logit distribution taking a vector of intercept parameters for each response and linear models for each predictor. Priors were chosen to be weakly regularizing.

sacrifice ~ categorical(p)
logit(p_k) = α_k - φ_i *[log-cumulative-odds of each response k]*
φ_i = β(PC1 + agr + mil)
β ~ normal(0, 0.5) *[slopes prior for complexity, agriculture, military]*
α_k ~ normal(0, 1.5) *[intercept prior for each response k]*

p_k = probability of each response *k*
φ_i = β*x* = linear model for each predictor *x*
α_k = intercept for each response *k*
log-cumulative-odds of each response k = logit(p_k) = α_k - φ_i

In R with brms:

```
ss_brms <- brm(data=ss_imp, family=cumulative,
        sac_scale ~ 1 + (1|region) + PC1 + agr + mil_org,
        prior = c(prior(normal(0, 1.5), class = Intercept),
                prior(normal(0, 0.5), class = b)))
```

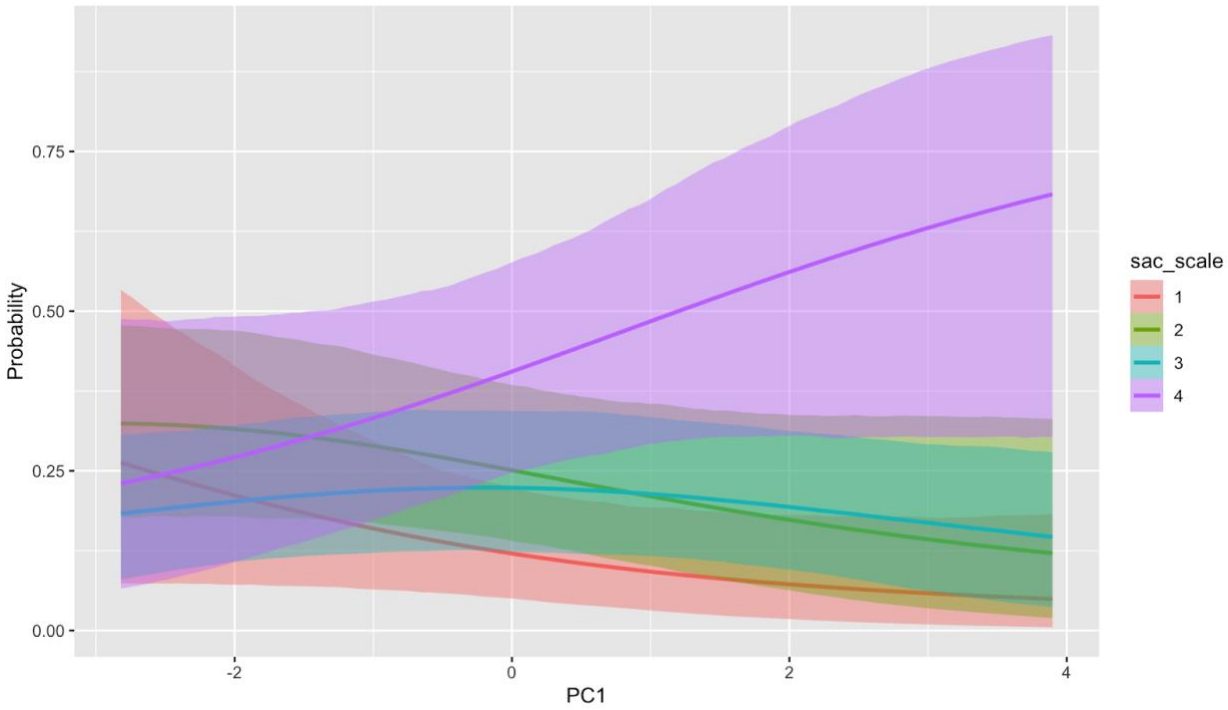
Given the possibilities for intra-societal variation based on context, it seems unlikely that self-sacrificial behavior would be influenced by cultural phylogeny/descent or diffusion from neighbouring cultures. In the case studies above, the Shuar displayed intragroup heterogeneity in willingness for self-sacrifice depending on levels of external threat. On the other hand, Shi'i history and doctrines were used in Nizari ideology which presumably influenced and at least partially motivated the fida'is. Although not a precise measure of cultural or spatial autocorrelation, each model was also run with world region added in as a varying intercept, which was assigned to each society based on its listed region in D-Place and/or eHRAF.

Results

Neither military formalization nor agricultural dependence was predictive of self-sacrifice. The estimate for PC1 was slightly positive across models but the 95% CIs included zero. The three best-fitting models as evaluated by the model_weights() function in brms are shown in the Table 2 below. Conditional effects of PC1, military formalization, and agriculture are shown in the plots in Figure 5 (as probabilities of each response on the scale for self-sacrificial behavior).

	m_PC1a		m_PC1am		m_PC1m	
Predictors	*Log-Odds*	*CI (95%)*	*Log-Odds*	*CI (95%)*	*Log-Odds*	*CI (95%)*
Intercept[1]	-2.02	-3.01 – -1.22	-2.09	-3.03 – -1.27	-2.06	-3.01 – -1.24
Intercept[2]	-0.53	-1.25 – 0.14	-0.58	-1.36 – 0.13	-0.60	-1.37 – 0.11
Intercept[3]	0.38	-0.29 – 1.09	0.35	-0.37 – 1.11	0.30	-0.38 – 1.04
PC1	0.31	-0.09 – 0.69	0.33	-0.07 – 0.73	0.22	-0.12 – 0.54
agr	-0.32	-0.94 – 0.25	-0.33	-0.91 – 0.28		
mil_org			-0.14	-0.93 – 0.62	-0.18	-0.96 – 0.61
ICC	0.10		0.09		0.09	
N	$23_{\text{reg.lev}}$		$23_{\text{reg.lev}}$		$23_{\text{reg.lev}}$	
Observations	67		67		67	
Marginal R^2 / Conditional R^2	0.049 / 0.219		0.055 / 0.228		0.034 / 0.205	

Table 2. Coefficient tables for three best-fitting models as evaluated by leave-one-out cross-validation with the model_weights() function in brms. From left to right, estimates and 95% CIs for m_PC1a (complexity and agriculture), m_PC1am (complexity, agriculture, and military), and m_PC1m (complexity and military).



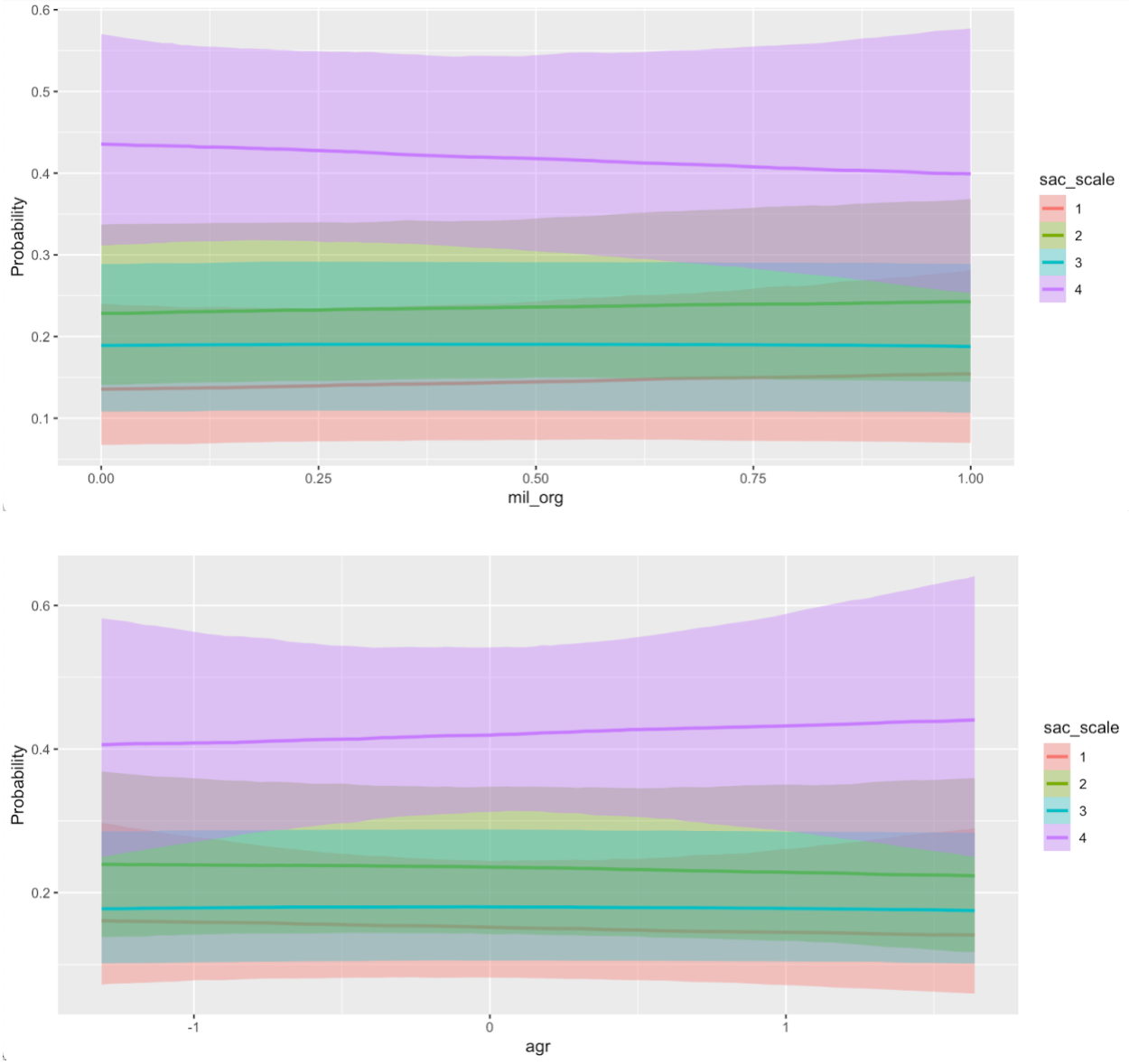


Figure 5. Discrete probabilities of each response on the self-sacrifice measure as predicted by PC1, military organization, and agriculture respectively using the conditional_effects() function in brms.

Discussion

The positive effect of social complexity as measured through PC1 on the outcome scale may indicate a true phenomenon of self-sacrificial behavior becoming more socially valued and likely in war with increasingly complex societies and military organizations. However, it also must be interpreted in light of difficulties with accurate

coding. I will therefore consider why the methods applied in this study might result in complex societies being more likely to be coded as having self-sacrificial behavior in war.

Ethnographic descriptions of warfare in small-scale societies

When surveying the ethnographic literature to create the current dataset, it was relatively difficult to find societies that did not to some degree value courage in battle, if only in the sense of individuals willing to take personal risks even if there was no reference to loyalty or altruism for the group. It should be noted that, as with the following two chapters, the research questions and therefore the datasets are focused on variation in behaviors between warring societies, so possession of such values would be at least somewhat expected relative to societies without war. It is likely, consistent with Wrangham and Glowacki's (and Ferguson/Fry's) arguments, that this would not be the case for nomadic, hunter-gatherer societies not engaging in war. However, there are also some possible examples that contradict Glowacki and Wrangham's reported findings of no self-sacrificial behavior during what they call simple warfare among "non-militarized societies" (2013) or "deliberately risky behavior leading to death" among hunter-gatherers (2012). Some instances of this are:

–Aranda, c. 1896 (hunter-gatherer): "When a man collapses on the spot, as from a mortal wound, a regular tussle ensues, in an endeavour to secure the body, between his friends and foes. The former run considerable risk while they expose their figures to the bombardment of spears; they are, however, covered by others, who come forth to specially shepherd them" (Basedow 1925).

–Blackfoot, c. 1780-1955 (hunter-gatherer): "One of the bravest deeds performed by warriors in the old days was to brave the enemy fire while riding back to rescue a companion who was left on foot" (Hungry Wolf 1980: 63).
–Koryak, c. 1900 (fishing): "During the time of the subjection of the Koryak, full-grown men in the villages or camps, unable to withstand longer the besieging Russians, often killed their dogs or reindeer, their women and children, and finally themselves, if they could not escape by flight. Such a state of things discouraged even the conquerors. Similar instances of wild self-destruction while battling for their freedom occurred later on as well, when the Russians were suppressing the Koryak rebellions" (Jochelson 1905-1908: 422)
–Tlingit, c. 1880 (fishing): "a man, especially if he were an aristocrat, would prefer death to capture, and a brave chief...would welcome death if all his people had been killed." (De Laguna 1972: 584b); "During the fighting if one of the attackers came on an unarmed person, say a woman or child, he challenged him, asking what clan the person belonged to. The threatened one would never deny his clan, even though to admit membership in the belligerent clan meant immediate death or capture." (Olson 1967: 70)

These examples range from willingness to take on personal risk to possible or likely death. As with the Shuar, it is plausible that more extreme behaviors such as the suicides among the Koryak would take place in response to attempted subjugation rather than in regular inter-tribal war. Distinguishing the military cultures of different societies by proclivities to engage in self-sacrifice is complicated by intrasocietal variation depending on the type of conflict, level of threat, the enemies faced, and multiple other factors filtered through the lens of an outside observer who was often not focused on such behavior or warfare generally. This is not to deny the existence of cross-cultural variation, but disentangling cultural tendencies towards behaviors in war from the individual events and contexts under which they were recorded to find a reliable society-level pattern was not necessarily possible, as indications of sacrificial

behavior could be inconsistent across or even within sources. For instance, one French missionary wrote on the Callinago people of the Lesser Antilles,"they are so cowardly that if they knew absolutely that one of them would die in combat, they would never go to war" (Du Tertre 1667: 35). He then somewhat confusingly states that "should they lose men in the fighting, they would never leave their dead and wounded at the disposal of their enemies, even if most of them should die trying to retrieve them" (1667: 36). This apparent contradiction in attitudes towards death and loyalty for their comrades may be resolved through Santos-Granero's observation that a common belief among Callinago and neighboring societies was the necessity of retrieving these bodies to prevent enemy societies from taking their own groups' life force. In this sense risk was still undertaken on behalf of the group, but in the more ephemeral sense of life-force rather than concrete political gains or attachment to their comrades (although it is difficult to imagine the latter would not play some role). However, this description illustrates some of the problems with ethnographic data referenced in the introductory chapter, namely reliance on information not gathered with the current research question in mind and not clear on the relevant aspects of a behavior.

The examples cited above aside, people in small-scale societies tended to be portrayed by ethnographers and other observers as unwilling to engage in pitched battles, instead preferring ambushes and relying on surprise and superior numbers to get away with as few casualties as possible, i.e. conforming to Wrangham and Glowacki's

imbalance-of-power/chimpanzee model. These sources often judge small-scale fighters as treacherous and lacking in courage compared with 'civilized' warriors (Du Tertre 1667, Carib/Callinago; Man 1932, Andamans; Paulme & Schütze 1940, Dogon; Schulze & Tepper 1891, Aranda; Smith 1920, Ba-Ila; Up de Graff 1927, Shuar). However, as many other researchers have noted, these tactics work well for societies without formal military structures, and not infrequently for societies which do: military history is filled with examples of fighters and military leaders relying on the element of surprise, waiting for superior numbers, etc. because these were the best avenues to victory and not to do so would be irrational and counterproductive (Clodfelter 2017). For instance, one ethnographer writes on the Ifugao methods of ambush and stealthy retreat that "there is nothing chivalrous in this, but we are hardly in a position to condemn. Surprise, ambush, and superior force are laudable strategies in modern warfare" (Barton 1930: 155). Burch, reporting on the attitude of one Russian towards the tactics of the Koyukon (also native Alaskans) as lacking courage because they were based on surprise attacks, comments "if [these] views were widely shared by his countrymen, one must conclude that Koyukon tactics were much more rational than those employed by the Russians" (2005: 125). Keeley likewise observes that European soldiers often had to adopt the guerilla tactics of nonstate peoples in order to successfully fight them (1996: 74-5).

Another common portrayal in ethnographies is that of people who would generally avoid open battle if possible but were nevertheless willing to fight and die if

the situation arose. For instance, one description of the Ojibwe states that "their ideal of a good warrior is to know how to attack an enemy unawares…Should they, however, be discovered and obliged to fight a regular battle, they generally behave with great bravery, seldom asking or giving quarter" (Grant 1890: 349). Another on the Tlingit states that "the idea of fighting in the open did not appeal to him. This implied no deficiency in personal courage, for when called upon to offer his life for the honor of his clan, for an act that another had committed, he unhesitatingly went forth without [apparent signs of] fear, unarmed, to die by the spears or guns of those awaiting him" (Emmons & de Laguna 1991: 584). There are similar descriptions of the Orokaiva (Williams 1930: 318), the Mataco (Pelleschi 1896: 93), and the Shuar, as cited above (Karsten 1935). The fact that many of these societies engaged in cycles of revenge despite knowing this would perpetuate further attacks and deaths arguably signals a willingness to risk their own lives, as fighters using the tactics based on imbalance of power as described by Glowacki and Wrangham were presumably aware that at some point the same tactics could be used on them. This is made clear, for instance, by the constant threat of raids and resulting hypervigilance among the Iñupiat. Such a possibility could be avoided through the widespread practice of killing all enemies present to prevent them from seeking revenge, but cycles of revenge raiding among many societies clearly illustrate this was not always successful. Reliance on these strategies does not necessarily mean that people in societies without formal military

structures would not have been willing to engage in parochially altruistic behavior under different circumstances. This is perhaps demonstrated by the unified resistance shown by the Shuar against the common enemy of the Spanish in the sixteenth and seventeenth centuries, which is described as very different from their usual warfare with neighboring groups and required temporary halting of feuds and the formation of broader alliances (Stirling 1938: 41). It is also consistent with descriptions of other societies such as the Mataco and Koryak in response to attempted subjugation, and with Whitehouse's proposal that "fusion and psychological kinship motivate violent self-sacrifice only when a plausible out-group threat of sufficient magnitude is present" (2018: 11).

Suggestions for future research

Self-sacrifice in war is a complex concept that links with broader theories of human biological and cultural evolution and can be examined at multiple levels of analysis. In the current study, it became apparent that the presence and extent of self-sacrificial behavior in a given society, even with detailed ethnographic sources, is difficult to accurately infer and quantify. Future research should make use of multiple methods and types of variables including but not limited to casualties; military organization, recruitment and composition; desertion rates; surrenders; potential motivating ideologies; qualitative descriptions of heroic acts; history of relations between enemies; and levels of perceived and actual material or physical threat. A

multilevel approach that incorporates data both on individual conflicts and the participating societies could help incorporate the factor of intrasocietal variation, which may exist to a greater extent in larger societies depending on method of military recruitment or incentives to join. As all of these measures come with serious caveats, the best approach would likely be a combination of such proxies considered in the context of detailed qualitative analysis when examining past societies.

Offensive vs defensive war:

It is possible altruism and self-sacrificial behavior may be more likely depending on whether a group's participation in a conflict is primarily offensive or defensive. Taking a game theoretical perspective, De Dreu and Gross (2019) argue that there would be easier coordination and stronger selection on defenders than attackers due in part to the higher cost of failed defense. In a response, William Buckner and Glowacki (2019) cite patterns of war in small-scale societies of 'striking first' as this minimizes risk and maximizes rates of success. They emphasize the likelihood of defection and flight in the event a surprise attack fails, which would indicate a lower likelihood of altruistic behavior as compared with defensive situations. This is consistent with research using data on Medal of Honor recipients in the United States Armed Forces on instances of defensive self-sacrifice– most commonly soldiers saving their comrades by blocking explosions with their own bodies– which found these were more common in situations of defense "in which the soldier is under the attack of enemy forces and his strategic goal is to

either hold his position or to safely retreat" (Rusch 2013). Given the known importance of perceived external threat in transforming ingroup attachment to outgroup hostility and aggression (Böhm et al. 2016; Brewer 1999), examining situations of perceived and actual attack or defense could provide further context to self-sacrificial acts. Records of war among small-scale societies often portray relatively equal sized forces, and there is generally not enough detail to distinguish between situations of attack or defense in the (rare) cases that risky or self-sacrificial behavior is documented. However, this can be inferred in some cases, such as the recurrence of unified resistance by the Shuar. Other ethnographic societies in the current dataset were recorded as engaging in similar behavior, such as the Mataco and Koryak against Spanish and Russian settlers respectively (Jochelson 1905; Pelleschi 1896). Similarly, historical work on morale and motivations of soldiers, such as during the First World War, demonstrates the importance of propaganda by leaders that war on each side was defensive so that soldiers would be driven to fight for the preservation of themselves, their families, and their communities (Watson & Porter 2010). Surveys of more detailed historical sources or present-day conflicts on situations of offensive and defensive war and instances of self-sacrifice/altruism to other group members or defection could help corroborate these arguments.

Past group experiences of conflict:

As mentioned in the literature review, a group's history of conflict may increase the likelihood of self-sacrificial behavior by amplifying perceived threats and encouraging militaristic values and attachment to the group. In the current study, it was not possible to gather data on the history and intensity of past conflicts for each society, but this could be an avenue for further research that would also connect with other works on how history of warfare, along with other external threats, influence present-day societies (Jackson et al. 2020). Research on intractable conflict has illustrated that cycles of violence and constant threat can lead to the development of institutions and social norms that center group identity and worldviews around the relevant conflict and incentivize preservation of the status-quo (Bar-Tal et al. 2007). Additionally, myth-making and construction of group identities around past conflict and trauma may lead to what one response to Whitehouse's target article called 'transgenerational entitativity' where both ingroups and outgroups are essentialized, facilitating cycles of revenge (Choi et al. 2018). Relatedly, cross-cultural research has also shown that a history of external threat to a society, including war, may result in harsher and more stringent enforcement of social norms or 'cultural tightness' that helps promote coordination of behaviors among group members and better resistance and/or resilience (Gelfand et al. 2011; Roos et al. 2015). On shorter timescales, actual participation in violence may increase group identification through a process of isolation from former communities and a psychological need for positive self-perception and

social belonging (Littman 2018; Littman & Paluck 2015), or through similar psychological mechanisms as intensely dysphoric rituals (Buhrmester et al. 2020; Whitehouse & Lanman 2014). The use of longitudinal data or otherwise examining a society's history of conflict, such as threats of or actual experiences of invasion, cycles of violence with other societies, or internal conflicts, could help clarify the stability of group behaviors consistent with fusion and how these vary with socioecological context.

Local ties, identity, and ideology:

While military organization in this study was only measured dichotomously as informal or formal, this is an oversimplification of the many forms into which social groups arrange and deploy violence against outsiders. Among the many factors that may influence the degree of attachment fighters have to one another and to their societies as a whole include the composition of military units, including degree of voluntary recruitment, methods of discipline, whether fighters are from higher or lower social classes, or if they are part of a society's dominant ethnic or religious group. The variable used in this study attempted to capture whether bonds among fighters might exist primarily through preexisting relationships in a local community (relational) or due to shared membership in a larger social group (categorical). Additional research could make use of a more nuanced measure of military composition and organization to explore under which circumstances identity fusion is likely to exist. In particular, governments and military leadership have often taken advantage of local social ties

when forming military units, in effect reproducing conditions that promote cohesion among combat units in small-scale societies (Kellett 1982; Showalter 1993). For instance, during the First World War, the British army emphasized the formation of units drawn from the same local communities, even reorganizing divisions and regiments to maximize regional homogeneity in the middle of the war (Watson 2014). However, research on military desertion has also found that ethnic or local cohesion may actually play a role in soldiers' defections (Bearman 1991; Lyall 2016). One study argues that "social network–based accounts are indeterminate: they explain why soldiers could cooperate with each other but not why they would cooperate in fighting the enemy rather than cooperating in deserting, surrendering, or mutinying" (Barber & Miller 2019: 461). An analysis of the notoriously high desertion rates of Confederate soldiers during the American Civil War found that it most frequently occurred in companies made up of men from the same county, while other factors such as class, age, or time in the army were not strongly predictive (Bearman 1991). In culturally homogeneous small-scale societies with broad mobilization of fighters defending their families, property, and communities, loyalty to one's own group is far more obvious. By contrast, the exploitation of these bonds in large, multicultural militaries may backfire. If fusion is the explanatory mechanism, it may need to apply to the larger cause or political entity and not just to other members of a military unit. One comparative study carried out by Jason Lyall (2016) on the Khanate of Khoqand in Central Asia during their war with Russia in

1864-5 and the Alaouite Sultanate of Morocco during their war with Spain in 1859-60 illustrates the potential importance of ideology or at least the construction of a broader group identity beyond immediate kinlike bonds. Lyall describes how both polities used Sunni Islam to attempt to bind together various ethnic groups against Christian enemies to very different degrees of effectiveness. In particular, the Khanate's history of repressing ethnic minorities and its use of ethnic and tribal hierarchies in its military structure undermined a common identity and resulted in high levels of desertion, particularly among the nomadic peoples forming most of the cavalry. While repression was not completely absent from the Moroccan Sultanate, it was far less common than in Khoqand. Instead, a sense of common Islamic identity and lack of ethnically-based inequality in the army structure resulted in greater cohesion and willingness to fight the Spanish even under difficult odds, which also made them more militarily effective. While ethnic and local group identity remained salient, it was co-opted in service of the broader Sunni Muslim identity and its representation in the Sultanate (Lyall 2016). These two cases would suggest the importance both of local fusion with one's immediate comrades, possibly driven or facilitated by shared cultural identities, as well as extended fusion with a broader national or religious ideology.

In their 2012 paper, Wrangham and Glowacki write that "a systematic review that searches for evidence of self-sacrificial behavior in societies practicing war but lacking a militarized culture would help to resolve whether parochial altruism is a characteristic

trait of warfare in general or results from cultural influences that encourage high-risk or suicidal behavior." Although it is unclear what a society "practicing war but lacking a militarized culture" would look like, the current study at least found instances of potentially parochial altruistic behavior among several small-scale societies. As noted above, it was also difficult to find societies for which some degree of risk-taking and personal bravery was not valued. Whether something is "a characteristic trait of warfare in general or results from cultural influences" is also difficult to parse. Without discounting evidence for possible biological predispositions to aggression and violence among humans (Majolo 2019; Wrangham 1999), human warfare in all its forms is a culturally shaped and generated phenomenon. Even advocates of a deep history of war acknowledge that it is only one option in the human behavioral repertoire (Gat 2013), and the forms of violence used when war is chosen are similarly variable. A clearer definition of "militarized cultures" as well as voluntary behavior, and to what extent cultural norms can be considered part of this, might therefore be helpful in future research.

This chapter attempted to quantify a highly subjective behavioral variable systematically across a global sample of societies, and test whether it was associated with social complexity and ecology in a way consistent with the predictions of Modes theory. The results indicated a possibly higher likelihood of self-sacrificial behavior in complex societies, which is more consistent with alternative explanations. However,

there are several qualifications to these findings due to the difficulties in accurately capturing the prevalence of self-sacrificial behavior in war in a given society. A cautious interpretation of the present results would be not as providing support for one hypothesis over another or as falsifying any of the proposed relationships, but as documenting how evidence for self-sacrificial behavior was recorded in the ethnographies and other sources used and how these might be biased depending on social complexity. Although beyond the available resources for the current study, a greater number of more reliable proxies for self-sacrificial behavior– taking into account the caveats discussed above when defining an individual's motives and intentions– is likely required, particularly if such research is to address questions of parochial altruism in small-scale and/or early human societies. Even more so than aspects of enemy treatment focused on in the following chapters, qualitative analysis can give context to these nuances and be used to critically assess results of quantitative models.

Chapter 2: Indiscriminate killing of enemies during war

Chapter overview

This chapter examines variation in levels of indiscriminate killing in war across a sample of ethnographically and historically recorded societies. Levels of indiscriminate killing in war is defined here as the extent to which members of a social group are targeted to be killed or are killed during war by members of a focal society. The key question to be addressed is whether such violence increased or decreased as societies grew larger and more complex. One major hypothesis suggested by the literature is that indiscriminate killing increased along with warfare intensity as societies grew larger and armed conflict between them was correspondingly scaled up. An alternative hypothesis is that indiscriminate killing decreased because the monopolization of violence by centralized states and development of professional militaries resulted in more limited, rule-bound combat, with casualties increasing in absolute terms but decreasing relative to societies' populations.

Warfare has been a historically contentious subject in anthropology, with researchers into the antiquity and causes of war broadly falling into positions colorfully described by anthropologist Keith Otterbein as 'hawks' and 'doves' (1999) depending on whether they argued for a deep history of war as part of the human 'state of nature' or a more recent emergence with agriculture and the

formation of states. These two positions, as well as more nuanced versions, can be used to supply evidence for increased or decreased indiscriminate killing with the development of human social complexity– assuming this is linked with the frequency and prevalence of war. The latter position that nonstate societies engaged in less frequent and lethal war than states can be viewed as consistent with greater restraint and less indiscriminate violence. In particular, it is argued that there is little evidence of war among contemporary small-scale societies, specifically nomadic foraging societies presented as the closest analogues to those of early humans (Fry 2007; Kelly 2000). Among more sedentary nonstate societies, war may occur but be less severe for various reasons: among neighboring groups engaged in repeated conflict, war may be part of broader, mutually understood sets of relations that also include trade, intermarriage, or other peaceful interactions incentivizing restraint. For instance, there are multiple ethnographic examples of societies concluding war after a certain number of casualties have accumulated on each side with established forms of peacemaking (Fry et al. 2013). Other restraints on lethality include less destructive weapons (at least prior to the introduction of firearms) and lack of incentives such as population pressure on resources or territoriality (Endicott 2013; Haas & Piscitelli 2013; Levy & Thompson 2011). On the archaeological record of prestate societies, some scholars have argued that rather than an incomplete record obscuring a war-filled prehistory,

extensive inquiry into hundreds of sites containing thousands of human remains before 8000 BCE has yielded little evidence for widespread war (Fry 2013; Haas & Piscitelli 2013). Complementing these arguments, scholarship on the formation of large, socially and politically complex states often highlights the importance of the frequency and severity of external war, which may serve as a selection pressure for internal cooperation and the more sophisticated military organization and technology developed by states, increasing both the effectiveness of and incentives for war (Kim et al. 2015; Stanish & Levine 2011; Turchin et al. 2013, 2022). Complex societies are also more likely to engage in processes of violent political expansion leading to intensified violence on frontiers during the conquest of new peoples and/or territories (Arkush 2008; Otterbein 1970, 1985; Tung 2007).

However, several lines of evidence may be used to argue for decreased indiscriminate killing in war with larger and more complex societies. In particular, some scholars have pointed out that the low levels of war observed among ethnographically-studied nonstate societies are due to (often violent) pacification by more powerful societies including colonial states (Ember & Ember 1992; Gat 2015; Keeley 1996). When war has been observed, ethnographies of nonstate societies often portray a reliance on raids and ambushes on settlements and living spaces with little separation between combatants and noncombatants. Such tactics facilitate greater levels of indiscriminate violence and in some cases extermination

of enemy groups (Gat 2015; Keeley 1996; LeBlanc 2003). This lack of separation is one expression of social substitution, in which any individual of a group is considered responsible for the crimes of one of its members against another group and is acceptable as a target for revenge (Kelly 2000). In contrast, the increased social and physical distance between combatants and noncombatants in complex societies with professional armies might result in lessened overall exposure of populations to external violence (Gat 2013; LeBlanc 2003). After outside populations had been incorporated into the state, this protection from violence would extend to them as well, with attempts at extermination less likely than political control (Pinker 2011). Some scholars have also argued for ideological shifts over human history, particularly the development of prosocial ideologies, increased rationality, and/or a 'civilizing process' which have decreased violence overall, including the prevalence and lethality of war (Gat 2013; Pinker 2011).

The positions as presented above are overly simplified to represent dichotomous extremes; even many purported 'hawks' or 'doves' hold more nuanced and heterogeneous positions regarding the prevalence and intensity of war with different forms of social complexity (Gat 2015; Kelly 2000; Sponsel 2000; Whitehead 2000). Recent research on the social structures of contemporary and archaeologically-known nonstate societies has pointed to problems with the use of a simple nomadic forager model for what was likely a highly variable

Pleistocene world with equally variable levels and forms of conflict (Boyd & Richerson 2022; Kim & Kissel 2019; Majolo 2019; Singh & Glowacki 2022). Multiple factors may promote or restrain intergroup violence, including a society's past experiences of conflict, its internal social structure, norms, and ideologies, and perceptions of threat from other groups or the environment (Chirot & McCauley 2010; Glowacki et al. 2020; Pisor & Surbeck 2019). This complexity also highlights the agency of humans under any sociopolitical structure to choose the degree of violence used during interactions with outsiders (Fuentes 2013; Glowacki 2022; Majolo 2019). Even if the evidence ultimately supports one position or another regarding the historical trajectory of war, attitudes towards outgroup members, norms of combat, and levels and discrimination in the use of violence may not necessarily correlate with the scale, frequency, or effectiveness of war as it has coevolved with social complexity over history. It is therefore possible that no linear relationship will appear between measures of social complexity and indiscriminate killing in war due to overwhelming variation across cultures (or, more pessimistically, a consistently high level of indiscriminate killing).

Using a global dataset of societies from archaeological, ethnographic, and historical sources, the likelihood of different individuals who were enemies of a focal society being targeted/killed during war was tested for relationships with

measures of political complexity and violent conquest of external populations/territories. The following hypotheses were tested:

Hypothesis 1a. Measures of increased sociopolitical complexity will be positively correlated with indiscriminate killing of enemies during war.

Hypothesis 1b. Indiscriminate killing of enemies will increase with the presence of formal military structure and with the presence of violent territorial or political expansion.

Rationale: Despite increased separation between fighting forces and the rest of the population, more indiscriminate killing may occur with increased social complexity due to an increased scale of warfare with political expansion and more effective military infrastructure.

Alternative 1. Measures of decreased sociopolitical complexity will be positively correlated with indiscriminate killing of enemies during war

Rationale: In contrast with larger complex societies with formal militaries, the combined presence of social substitution, where members of a society are viewed as representative and responsible for the actions of fellow group members, and lack of distinction between combatants and non-combatants among segmented non-state and small state societies will result in more indiscriminate killing.

Alternative 2. There will be no clear relationship between measures of social complexity and levels of indiscriminate killing during war.

Rationale: No linear or consistent relationship exists, due to the numerous factors separate from or inconsistently related with social complexity that also affect levels of violence and restraint during war.

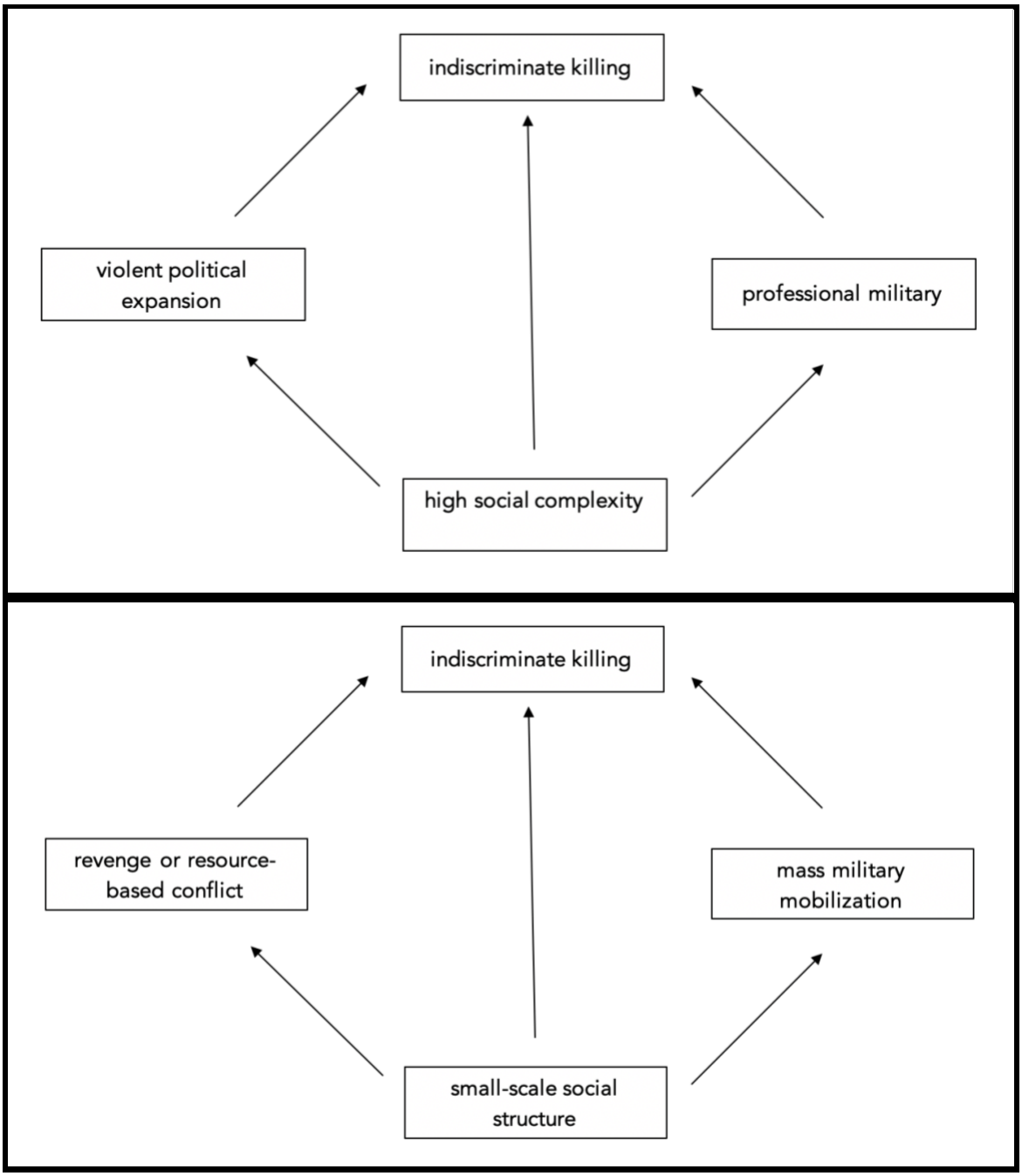


Figure 6. Diagram representing Hypotheses 1a and 1b (top) and the alternative hypothesis (bottom) on the posited relationships between social complexity, aims of war, form of military organization, and indiscriminate killing.

Theoretical background: warfare intensity and social complexity

There is an extensive literature debating the extent of warfare among human societies pre- or post-farming or sedentary living, and whether warfare intensity has increased, decreased, or taken some other pattern with predominant types of political and social organization from early human societies to the current day (i.e. Ferguson 2006, 2013; Fry 2013; Haas 2001; Keeley 1996, 2014; Kelly 2000, 2005; Kim & Kissel 2018; LeBlanc & Register 2003; Otterbein 2004). Arguments from this literature can be extended to the levels and forms of violence directed at enemy fighters and noncombatants during war: political centralization and complexity can affect these levels of violence through shaping military organization, the identity of and relationships with enemies (i.e. neighboring tribes frequently engaged with in battle or peoples to be conquered as part of territorial expansion), and the aims of war (Arkush & Tung 2013; Ember et al. 2013; Keeley 1996; Kim et al. 2015; Levy & Thompson 2011; Otterbein 2000). Archaeological, ethnographic, and historical evidence indicates how warfare tactics may differ according to levels of sociopolitical complexity, ranging from raids conducted by nomadic bands, battles and massacres between chiefdoms, months- or years- long sieges between state armies, and others forms in between (Kim et al. 2015), each with different consequences for the levels of violence directed at peoples on both

sides, including those not directly involved in combat (Gat 2013; Hatch 2017; Otterbein 2000).

It is possible that these different aims and tactics of warfare result in lessened intensity of violence at higher levels of political complexity. Keeley (1996) argues that small-scale societies "wage wars of revenge, raiding, attrition, and extermination but not conquest" (cited in Arkush & Tung 2013) proportionally more lethal than those in 'civilized' states, and that informal raids and ambushes common among nonstate societies are much likelier to result in unrestrained and indiscriminate violence than formal battles (Keeley 1996: 92). Archaeological studies of wartime mass grave sites frequently invoke Kelly's (2000) concept of social substitution when there is evidence for the killing of women, children, and elderly individuals who were likely to have been noncombatants (Andrushko et al. 2010; Hatch 2017; Mensforth 2007; Schulting 2013; Tung 2007). In particular, Mallorie Hatch (2017) argues based on her examination of bioarchaeological patterns of trauma in the 10th-15th century Central Illinois Valley that "consistent with Kelly's (2000) principle of social substitution in non-state societies...noncombatants, including women and children, could be attacked during conflict" (62), as they would have been viewed as appropriate targets representative of their social group as a whole. At increased levels of political complexity and hierarchy, such as that emerging with chiefdoms, Rick Schulting

(2013) argues that social identification would become centered around institutionalized social classes, decreasing levels of social substitution among societies as a whole and possibly lessening retaliatory collective violence on behalf of group members of a different class. Similarly, some scholars have argued that the professionalization of militaries in politically complex societies, with greater social distinction and physical distance between combatants and noncombatants, would result in lessened overall exposure of populations to external violence (Gat 2013; Keeley 1996; LeBlanc 2003; Pinker 2011). This contrasts with what is effectively total war among small-scale societies (Keeley 1996; Levy & Thompson 2011). For instance, in a review of literature on warfare over time, Gat (2013) cites LeBlanc's (2003) and Keeley's (1996) descriptions of warfare among hunter-gatherer societies as often involving the extermination of all adult males and sometimes women and children in support of Pinker (2011)'s argument that overall warfare and violence have decreased over human history. He writes that "large states actually meant lower mobilization rates and reduced exposure of the civilian population to war", because although the size of official fighting forces increased with polity size, the proportion of the population as a whole exposed to war would have decreased. In contrast, societies without formal militaries would rely on widespread mobilization (generally of adult males) with little or no separation between fighting forces and the remainder of the population with

attacks carried out against settlements as a whole (Howe & Brice 2016; Keeley 2014; Levy & Thompson 2011), consistent with the dynamics of social substitution.

These arguments seemingly contradict the range of archaeological and historical evidence for a coevolutionary relationship between warfare intensity and sociopolitical complexity (Haas 2001, 2004; Marcus 2008; Otterbein 1970; Stanish & Levine 2011; Turchin 2011, et al. 2013). Previous research in cultural evolution– often taking a cultural group selection or multilevel selection perspective– has indicated that existential threats to a society resulting from between-group conflict would select for norms promoting within-group cooperation necessary for the development and maintenance of large, complex human societies (Mathew & Zefferman 2015; Richerson et al. 2016; Turchin & Gavrilets 2009; Turchin 2015). In the archaeological and anthropological records, increased political control and centralization by large states can reduce violence in conquered areas, but the process of expansion itself may lead to intensified violence on frontiers, particularly with advanced technology and professional militaries (Keeley 2014; Otterbein 1970, 1985); for instance, Otterbein (1970, 2004) documents higher levels of casualties with battles and sieges among early states. Archaeologists have recorded evidence for intensified warfare corresponding with settlement

consolidation and population growth in multiple regions and time periods (Arkush & Tung 2013; Haas 1990; Kim & Kusimba 2008; Underhill 2006; Williamson 2007).

While it is possible this greater intensity and scale would not translate into harsher treatment of enemies due to the changing dynamics of military structure and tactics cited above, Oka et al. (2017) model war group size in addition to population size and find that lethality is not higher among small-scale than state societies, while among large societies infrastructure collapse and "targeted annihilation of enemy groups" may result in higher levels of noncombatant deaths. Previous quantitative works by anthropologists addressing differences in wartime behavior between state and non-state societies have indicated increased levels of violence towards noncombatants among the former. This includes Otterbein's 2000 study on killing of war captives, and Ember, Adem and Skoggard's 2013 study on warfare frequency and atrocities among societies in eastern Africa. Using the HRAF 60-society probability sample, Otterbein finds that noncombatants and captives are more likely to be killed by despotic states, which "in their struggle to establish themselves, use terror both externally and internally (Otterbein 1987:73–82), attacking other polities and killing men, women, and children" (Otterbein 2000: 442). Ember et al's results indicated that atrocities (which they define as behaviors considered war crimes under international law, although they acknowledge they would not be seen as such in many of the societies sampled)

were committed significantly more often by state than nonstate societies, which they interpret as consistent with Otterbein's findings (Ember et al. 2013). However, the specific material and political objectives of war can determine the expedient treatment of people residing in a territory desired for conquest by an invading polity. Based on their findings, Ember et al. note that state societies committing atrocities may result from the increased distance from and lower chance of needing to rely on populations against whom they are fighting. Research on the occurrence of contemporary (20th-21st century) episodes of mass killing, ethnic cleansing, and genocide during war has also indicated how efforts to acquire territory may result in different strategies - for instance, there may be a motivation to clear the territory or violently bring the current population under control to more fully exploit its resources (Valentino 2014), or to change the demographic structure of the land being taken (Balcells 2010; Downes 2007).

Perceptions of social distance

Works addressing the evolution of cooperation and/or warfare often portray the perception of outgroup members as not being fellow humans as a default among prehistoric or contemporary small-scale societies, facilitating killing during intergroup conflict (Atran 2010; Boehm 2013; Gat 2004; Moffet 2013; Turchin 2015).

This perception may vary according to different factors including the degree of interdependence between groups, such as marriage or exchange practices or mythologies of kinship and group origins (Glowacki et al. 2017; Wiessner 2019). Some anthropologists attribute rules of engagement such as the inviolability of women, children, or the elderly to the potential need to resume peaceful relations with enemy groups in the future (Whitehead 1990; Wiessner 2019). In cases where cultural differences are more pronounced and there are no mutually understood conventions, as well as lower degrees of interdependence between groups, war is expected to be less restrained (Keeley 1996: 131; Solometo 2008; Turchin & Gavrilets 2009). For instance, Turchin (2011) finds evidence for increased lethality and genocidal behavior during wars at higher degrees of 'cultural distance' (between agrarian and nomadic societies on the Eurasian steppe frontier) compared with internal war, and argues that large-scale massacres tend not to occur among groups with more cultural similarity because there is less of a tendency to dehumanize opponents. However, there are also accounts from ethnography which undermine assumptions about the consequences of commercial or social familiarity between groups; for instance, Boehm (2013) describes how warring Inuit groups in Northwest Alaska regularly pause hostilities each year to exchange goods before resuming otherwise continuous "intensive and genocidal warfare" (Boehm 2013: 329). Keeley (1996; 2014) argues that trading

and warfare are often intrinsically connected with the former providing no guaranteed avoidance of the latter, and presents ethnographic examples of societies that intermarried, traded, and occasionally massacred each other (1996: 122-3).

This range of evidence indicates the relation between political complexity and external violence is not necessarily linear. A multivariate analysis of the SCCS showed that while societies with moderate dependence on agriculture had more frequent war, both societies that relied very little and very heavily on agriculture did not (Eff & Routon 2012). Some researchers have argued that warfare increased before it decreased, and was particularly intense with pre-state agricultural societies (Dye 2013; Fry 2013; Turchin 2015). It is therefore possible that the extent of violence directed at enemy noncombatants would increase with sedentary living, segmentation, and social substitution, and with the formation of chiefdoms and coercive political expansion. However, a range of other factors can interact with forms of political complexity, including mutual perceptions of social or cultural distance between societies, resource stress, and social norms and ideologies around warfare. As noted by many of the researchers in the literature reviewed above, there also exists considerable variability in the social structures, cultural practices, and their interactions with patterns of warfare among societies at all sizes and degrees of political centralization (Arkush 2008; Fry 2007; Kim &

Kissel 2018). Given these different factors which may affect forms of violence towards enemies, including why noncombatants are exposed to or deliberately targeted, there may be no discernable patterns either through time or with relation to political complexity. However, collating and systematically examining the available historical and ethnographic data could help contribute to further research on how political institutions, beliefs about morality and identity, and wartime behavior interacted and evolved over time.

Case studies: treatment of enemies across different societies

The following section attempts to provide a qualitative perspective on patterns of warfare and how enemies are treated through brief case studies on six societies with varying forms of sociopolitical structure, subsistence strategies, settlement patterns, and military organization. They were chosen based on sufficient detail in the sources on at least one aspect of wartime treatment of enemies and to represent different regions, levels of social complexity, and patterns of war. To this end, the cases include settled and semi-nomadic societies that range from acephalous to politically centralized, with military structures including mobilization of all fighting-age males, lineage/segmentary groups, and professional armies, and which engaged in solely internal, both internal and external, and solely external war.

As with any form of qualitative analysis, there is a risk of cherry-picking of the chosen cases. The sources describing warfare available for each society also vary in quality and detail. For instance, it is difficult to assess ideological beliefs for the Qarmatians because their own writings were destroyed and available contemporary sources are largely hostile. Warfare among the Kapauku was only described by a single ethnographer, so the absence of corroboration from other sources and amplification of potential biases must be taken into account. That said, the qualitative exploration of a range of societies ideally helps provide context for the subsequent quantitative analyses.

Society name(s): Mee, Kapauku

Date range covered: 1935-1975; earliest and latest dates covered by primary ethnographer Leopold Pospisil's 1958 and 1993 works

Region, present-day country/ies: Central Highlands of western New Guinea, Indonesia

Language, linguistic family: Ekari, Nuclear Trans New Guinea

Degree of political centralization: Confederacies made up of one or more lineages, EA090 coded as 'peace groups among communities'

Population estimates during this period: 45000 (eHRAF)

Degree of sedentism: Sedentary

Subsistence: Subsistence farming (sweet potatoes), animal husbandry

Main sources and background/potential biases: The only ethnographic source on the Kapauku are Leopold Pospisil's works on Papuan law and warfare, carried out prior to and during Dutch colonization in the 1950s, as part of his comparative studies of legal systems. The style is relatively objective and non-judgemental in comparison with other ethnographies from this period. Some scholars have critiqued his approaches to cross-cultural study of legal systems (Goodale 1998) and numeric systems (Bowers 1977) but do not appear to dispute his portrayals of warfare.

Overview:

The Kapauku or Mee are people living in what is now Irian Jaya, Indonesia. During the time period covered by the cited ethnographic works, they lived in settled villages, with an economy based on horticulture, trade, and pig husbandry. There were confederacies made of two or more exogamous patrilineal lineages (Gratton 1998). Certain political confederacies would have traditionally hostile relations and regularly go to war with each other. War could be started by individuals with or without permission from the headman of their political confederacy, although they would risk execution in the latter case if the reason was not considered valid. Causes of war included divorce, accusations of witchcraft, homicide or manslaughter, and theft. Despite the importance of farming, war seems to have been primarily motivated by cycles of revenge rather than acquiring land or controlling defeated territory.

War groups ranged from about eighty to over a thousand but were generally in the hundreds. They were made up of adolescent through middle-aged males mobilized through friends and lineage ties from their own and allied confederacies. Lineage headmen along with other informal elites would develop strategies for attacks and defense, plan temporary fortifications, lead raids, and organize lineage forces. Warriors who disobeyed orders would be punished verbally afterwards, and deserters executed. According to Pospisil, leadership status was conditional on "wealth, generosity, eloquence and verbal courage", with shamanism and courage in war valued but not necessary. This status was informal and achieved rather than hereditary.

Conduct of war:

Fighting could range from a few days to months and result in only a few deaths or hundreds. It would stop each day at sunset, at which point both sides would retreat to their villages carrying the dead and wounded. War would be concluded once each side had incurred proportional losses, one side was entirely defeated, or, rarely, if the difference in casualties was made up with blood payments (Pospisil 1993). The victors would destroy villages and crops and kill many (and sometimes all) male adults and children. Despite the formality of declarations, planning, and time delimitation, Pospisil writes that war entailed "the planned killing of as many opponents as possible" (1993: 11) and cites an instance

where nearly all adult males of the losing side were exterminated. However, this appears to have been exceptional: in the 14 wars for which he records participants and casualties, the average was 26 deaths out of 288 fighters. All warfare appears to have been internal (among Kapauku confederacies) (Ross 1983) although people from enemy confederacies often intermarried. This resulted in attempts to avoid killing in-laws, friends, and other relatives from the rival confederacy. However, apart from this any male, except for infants and very old men, could be killed (Pospisil 1958). No female could be killed or injured and any man who did so, even by accident, would be shamed and ridiculed. The women would take advantage of this by collecting arrows and giving information about enemy movements for the men. However, any unmarried women or girls were "invariably raped if caught by the advancing enemy" (Pospisil 1958: 91).

The ethnographies give no indication of war or violence being linked to specific spiritual beliefs, or any practices relating to mutilating, sacrificing, or consuming enemy bodies. Any limitations on freedom were considered abhorrent and antithetical to life, meaning they did "not have in their cultural inventory a place for institutions such as slavery, serfdom, war captivity, imprisonment, or compulsory behavior" (Pospisil 1978: 87). Despite the frequency of war, interlocutors expressed ambivalence and awareness of its socially and economically destructive nature. However, they felt obligated to participate due to

personal ties of friendship or kinship. In particular, individuals from the same patrilineal lineage were "obligated to avenge the death of their kin" (Gratton 1998). Additionally, courage was still central to the Kapauku concept of individualism, and boys were expected to learn fighting from their fathers and train to become skilled warriors (Pospisil 1958).

The presence of mass mobilization of fighting forces and relatively total war, at least between confederacies, seem to support the idea that war in smaller-scale societies is less restrained. However, cultural beliefs about the status of women and masculinity of warriors resulted in stronger protection (from death, if not sexual violence) for women and girls than was the case in many socially complex polities. Additionally, the ties of kinship and marriage between confederacies and the fact that all recorded wars were among the Kapauku themselves meant that some efforts were made to avoid killing relatives and in-laws, and that despite destruction of their village and crops the defeated side was allowed to recover and continue living on their land. As the data on the Kapauku come from a single ethnographer during the colonial period these conclusions are tentative. However, the available evidence provides an illustration of the extent and limits of shared culture and interdependence in alleviating wartime violence.

Society name(s): Nuer, Naath

Date range covered: 1890-1980

Region, present-day country/ies: northeastern Africa, South Sudan

Language, linguistic family: Nuer, Nilotic

Degree of political centralization: Acephalous, clans

Population estimates during this period: 200000-430000 (eHRAF, EA)

Degree of sedentism: Seminomadic

Subsistence: Pastoralism, agriculture

Main sources and background/potential biases: The period covered by available sources is from the early to mid 1900s. This includes sources on pre-colonial military practices cited by Raymond Kelly (1985) from the early 1900s, E. E. Evans-Pritchard's records from the colonial period in the 1930s, Douglas Johnson's critiques of his work (discussed further below), and Sharon Hutchinson's work during the colonial and postcolonial periods (1930s through the 1950s).

Overview:

During the period covered by these ethnographies, the Nuer followed a seasonal migratory system based on drought and rainy seasons, moving to short-term cattle camps during the dry season and staying long-term in elevated, dryer areas to farm millet in the wet season (Hutchinson 1996). They are coded in the Ethnographic Atlas as acephalous and described in eHRAF as organized into lineages making up clans. These had headmen and various sub-chiefs; however,

these could break up and/or re-form into smaller or larger groups depending on defensive or other needs. Cattle are central culturally and ideologically, and shaped patterns of interaction with external groups: raiding for cattle and expansion into grazing lands were major causes of violent conflict with the Dinka and other groups (Jok 2003). War occurred internally (with certain limits) among Nuer themselves with shifting alliances between clans, as well as externally with the Dinka, the Egyptians, and the British. Conflict with the Dinka, who speak a closely related Nilotic language (Jok 2003), is generally given the most attention in ethnographies during this period, due in part to the implementation of British colonial policies and their methods of co-opting both the Nuer and the Dinka (Johnson 1981).

Military organization and practices:

Twentieth-century sources describe the Nuer fighting in multiple columns or divisions of hundreds of fighters, which would engage in surprise raids on multiple Dinka communities simultaneously and regroup to prepare for counterattacks (Kelly 1985; Otterbein 2004). The fighting parties were organized by districts/tribes, and informally age-sets within these tribes would fight together (Evans-Pritchard 1940). They were able to mobilize in much larger and more organized fighting parties than the Dinka, which has been attributed variously to ecological differences in livestock maintenance, migration, and their segmentary social structure (Kelly 1985). Men of high

social standing initiated raids and were informal leaders in battle. Leadership in war did not necessarily translate to political authority or control, although skill as a warrior might contribute to a man's status.

Although they fought in comparatively organized formations and expanded territorially, the limited hierarchical structure and mass mobilization of fighters (most adolescent and adult males) were consistent with a lack of distinction between combatants and noncombatants and what were essentially raids on Dinka settlements (Kelly 1985). In this sense, it conformed to Keeley's portrayal of total war among pre-industrial societies that resulted in relatively indiscriminate slaughter (Keeley 1996). In these raids, the Nuer fighters would capture livestock as well as Dinka children and some young women, but kill infants and adults (Evans-Pritchard 1933; Kelly 1985).

Relations with the Dinka:

Johnson (1981, 1982) argues that the predominant image of the Nuer as warlike and engaged in constant aggression against the Dinka was distorted and a combined result of the time period in which Evans-Pritchard visited the Nuer and the policies of the Sudanese administration. In particular, he points out that Evans-Pritchard's fieldwork took place in the aftermath of forcible separation and pacification of Nuer and Dinka as part of British colonial policy. He portrays a more complex and interlinked relationship involving adoption, marriage, and shifting boundaries, with some Nuer groups having closer relations with some Dinka than they did with more distant Nuer segments

(Johnson 1982). According to Johnson, British government policies of cattle payments from the Nuer and drawing a boundary between the Gaawar and Lou Nuer groups and Dinka neighbours led to punishment and fines for 'trespassers' between intermarried or mixed settlements and caused increased Nuer raiding for cattle (Johnson 1981). However, these criticisms do not contain any indication that Evans-Pritchard's description of Nuer practices during war (killing all men, infants, and elderly women and taking children and young women captive) were inaccurate, and these practices are consistent with Kelly's (1985) account of demographic dynamics during their expansion. If these portrayals are relatively accurate, there appears to have been no moral restraints based on gender, age, or ability for personal defense; rather violence was used instrumentally to obtain captives and cattle.

Ingroup and outgroup moral norms:

Ethnographies from this period also portray a strong delineation of norms around within-group violence in contrast with between-group violence, manifested through beliefs in supernatural forces that regulated behavior only within the Nuer (Hutchinson 1996). Homicide- usually over cattle- in a Nuer tribe would be resolved with blood-wealth, while homicide between tribes could lead to feuds, as paternal kin were obliged to avenge the death of their relative. Segmented tribes, which tended to have their own pastures, formed the central unit of identity in intra-Nuer conflict with fighting between neighbouring

segments. The closer the social ties between those in conflict, the more urgent the need for resolution due to the danger of escalating acts of revenge. Homicide might also result in spiritual danger and uncleanliness for the killer and his kin, even if the killing was considered justified and a demonstration of courage (Evans-Pritchard 1956). Specifically, the idea of *nueer*- "spiritual contamination" (Johnson 1986: 59) resulting from violations of spiritual/moral intragroup norms- helped facilitate resolution of conflicts. Fear of nueer would encourage persons guilty of such violations, which included manslaughter, homicide or hiding of such, adultery, and violations involving cattle, to confess and submit to the appropriate sanctions and reparations (Johnson 1986). Evans-Pritchard emphasizes how nueer created a "shared risk" within the group and its role in strengthening intragroup obligations for attack and defense (Hutchinson 1996). Hutchinson also links it with the conventions of intra-Nuer fighting, which forbade the use of spears, capture or killing of women and children, and property destruction and theft. In contrast, when fighting non-Nuer, "it was generally assumed that these people could be slain without incurring the blood curse of the deceased and without provoking lethal states of nueer" (Hutchinson 1996: 124). This is consistent with the Nuer seeing the Dinka as "natural prey" (Evans-Pritchard 1940: 121) and highlights the importance of social distance, and possibly dehumanization, in this context. Despite the existence of trade and marriage relations, it is significant that captured

and adopted Dinka were effectively given new group identities as Nuer and that treating or referring to them as *Jaang* (Dinka) would be considered highly offensive (Evans-Pritchard 1933). Taking as caveats the complexity of relationships between the Nuer and other groups, the impact of colonial policies, and biases by the various ethnographers, these dynamics provide an example of explicit differences in permissible behavior within and outside a moral circle premised on ingroup identity.

Society name(s): Kamakura shogunate

Date range covered: 1185-1333, time span of Japanese shogunate with political center of authority at Kamakura

Region, present-day country/ies: East Asia, Japan

Language, linguistic family: Middle Japanese, Japonic

Degree of political centralization: Confederated state

Population estimates during this period: Between 5,500,000-6,300,000 at various periods (Seshat)

Degree of sedentism: Sedentary

Subsistence: Rice farming, fishing

Main sources and background/potential biases: Historians of the Japanese medieval period have analysed warfare practices and the moral ideologies and social norms underpinning them using a range of primary materials including the *Azuma kagami*, the

Kamakura shogunate's own official chronicle, as well as battle reports, illustrations, and literary accounts (Conlan 1998, 2000; Friday 2003, 2005). This section primarily draws on Karl Friday's work (2003, 2005) analyzing conduct in war and moral considerations around the use of violence.

Overview:

The Kamakura shogunate was established in the wake of the internal Genpei War. During this period Japan was unified under a feudal system and the warrior class became officially codified (Shinoda 1960). Military power was primarily wielded from Kamakura, although there seems to have been a degree of cooperative power between the imperial court, religious institutions, and the military government (Adolphson 2000; Lamers 2005). Warfare was mostly internal with the exception of failed Mongol invasions in 1274 and 1281 CE (Friday 2003). Victory against the Mongols and the successful military mobilization during the Jōkyū War (1221 CE) against the imperial court's attempt to retake control led to an expansion in the shogunate's administrative and internal policing roles, with control over the state military apparatus and the ability to administer shogunal law to criminals (Conlan 1998). A "formal gokenin corps" with thirty to forty leaders from each province was created, mobilizing geographically distant warriors and sanctioning some gokenin who did not serve (Friday 2003). Despite this consolidation of military authority, the medieval period was characterized by

"socio-political factionalism" (Adolphson 2016: 76) with overall decentralization of power and an increase in private wars and feuds (Friday 2003; Gay 2006). Patrilineal descent groups and warrior houses shaped patterns of conflict, for instance with the rivalry between the Taira and Minamoto clans. However, the emerging warrior class and sometimes violent disagreements within families meant that dynamics were more complex than military alliances bound by kinship ties, with the nuclear family as the only guaranteed unit of cohesion (Friday 2003; Haruko & Phillips 1993). Inherited class and wealth and membership in warrior families could both strengthen or be irrelevant or even detrimental to alliances during internal conflict of this period (Friday 2003).

Conduct of war:

While some older literature described medieval Japanese warfare as primarily rule-bound and ritualized with strict codes of honor, later scholarship argues instead that honor was primarily about victory, regardless of the means by which it was obtained (Yasushi & Friday 2017). These works describe rationality and realism predominating over chivalry and allowing soldiers to justify most actions including indiscriminate violence (Friday 2003, 2005). Friday writes that noncombatants "were usually slaughtered indiscriminately along with the warriors" during raids and sieges (Friday 2003: 158). In the cases where, for instance, military commanders forbade the molestation of women, this tended to be for strategic

purposes such as to avoid antagonizing a more powerful enemy or potential ally; in other cases they might be raped or killed. Captured prisoners were treated de facto by the winning side as criminals. They might be pardoned and released by the victorious side- this was more likely to occur through the early 13th century- or executed, as warfare intensified in the 13th and 14th centuries (Friday 2003).

Headtaking:

Heads were commonly taken from the wounded or dead after fighting as proof of victory and indication of prowess in battle (Conlan 1998; Friday 2003). The *Azuma Kagami* describes multiple instances of heads being publicly displayed after battles or at warriors' residences for intimidation purposes (Shinoda 1960). There are also accounts of 12th-century warriors, including Yoritomo, presenting heads of enemies as offerings to war deities (Friday 2003). These offerings of heads at shrines to appeal for or to celebrate victory may also have been a predominant motive for head-taking rather than proof of killing enemies (Hideo 1986 cited in Friday 2003), with such presentations becoming more ritualized towards the end of and after the Kamakura period (Friday 2003). Social distance does not seem to have been a factor, as heads were taken from other Japanese as well as external enemies such as the Mongols (Conlan 1999). Nor was there any discrimination based on combatant status, as heads might be taken from defeated soldiers or

civilians and many prisoners were killed because of "the insatiable demand for heads" (Conlan 1998: 44).

Ideological frameworks of violence:

There is no evidence that internal enemies (other Japanese) were treated with less violence than external ones like the Mongols during this period. Instead, the ideological importance placed on state monopolization of force meant that anyone who opposed this authority and lost was seen and punished as a criminal. Although prisoners might be ransomed or released if it was politically expedient, there is no indication of leniency due to cultural kinship or moral considerations. Friday (2003, 2005) argues that the lack of consideration for collateral damage and use of indiscriminate violence stemmed from warriors' disregard for death and focus on military victory rather than cruelty or sadism. Despite this instrumental use of violence, it was still framed in moral, specifically religious, terms. Japanese at this time, including warriors, are described as viewing the supernatural and the real world as one, with deities controlling their successes and failures (Conlan 2000). Thomas Conlan (1998) emphasizes the inseparability of religion and warfare during this period and cites the use of prayers as weapons and belief in divine justice of victory. Temples served in part as places of weapons manufacturing and trade, and sometimes places of battle (Conlan 1998; Zöllner 2006). The *Azuma Kagami* also records Yoritomo's use of religious language to justify the fight to overthrow the previous rulers by characterizing them as "enemies of the Gods and Buddhas" (Collcutt

1994: 58) as well as the importance of gaining support from monasteries (Conlan 1998; Collcutt 1994). However, these religious beliefs did not conflict with the relatively indiscriminate use of force– one scholar cites Buddhism's "ambiguous stance" on violence as facilitating its use for resolving conflicts during this period (Adolphson 2016). Based on Conlan's description, victory in battle was sufficient proof of divine morality and the right to rule (1998), regardless of the methods used to achieve that victory.

Society name(s): Tlingit

Date range covered: 1741-1972 (this is the coverage range of Frederica De Laguna's 1972 monograph 'Under Mount Saint Elias: the history and culture of the Yakutat Tlingit', in which all the sources fall)

Region: Pacific northwest coast, southern Alaska

Language, linguistic family: Tlingit, Athabaskan-Eyak-Tlingit

Degree of political centralization: Politically autonomous clans

Population estimates during this period: 200000-430000 (eHRAF, EA)

Degree of sedentism: Semisedentary

Subsistence: Fishing, trade

Main sources and background/potential biases: There are various primary sources and secondary compilations by anthropologists and other researchers from the late 1800s through the late 1900s. The following section relies largely on George Emmons and Frederica De Laguna's 1991 document based on Emmons' work in the late 1800s that

includes descriptions of warfare and the taking and treatment of heads and scalps, and De Laguna's monograph based on her fieldwork in the 1950s, which contains thorough descriptions on all aspects of society, culture, political and economic systems. Other relevant sources include Leland Donald's analysis of slavery practices among Northwest Coast groups (Donald 1988, 1997) and descriptions on life prior to contact based on interviews with elderly Tlingit (Olson 1967).

Overview:

During the period covered by the cited ethnographies, the Tlingit lived in semisedentary, matrilineal clans in southern Alaska. Their subsistence was based around fishing, along with hunting, foraging, and specialized trade (Littlefield 1987; Thornton 2002; Tollefson 1997). The matrilineal clans had autonomous villages and intermarried with certain allied clans to form districts (Tollefson 1997). However, clans remained the central unit of identity and possessed independent political and military authority, and warfare appears to have primarily been between clans (Emmons & de Laguna 1991; Olson 1967; Tollefson 1995). Clan chiefs were responsible for leading the clan in war but did not have substantial political authority; instead, "the people constituted the governing body" (Emmons and De Laguna 1991: 39) and the will of the majority tended to be respected. They are also described as having two or three social classes: a hereditary aristocracy headed by the clan chief and their family, and a general population that could be

"subdivided into a middle and lower class" (Emmons & De Laguna 1991: 38). People could move to higher classes through accumulating wealth, marriage, or success as a warrior and wealth could be passed through generations of families within clans (Emmons & De Laguna 1991; Tollefson 1997). Social norms emphasized the avoidance of interpersonal conflict, but family and clan pride and avenging insults to honor would override this (Emmons & De Laguna 1991).

Relations with other groups:

War took place frequently between Tlingit clans, and somewhat less often with the Haida and Tsmishian to the south (Emmons & De Laguna 1991). Among the Tlingit, these were generally clans from different moieties, and in some cases multiple clans might be involved. Donald (2002) writes that "virtually every account of inter-group fighting on the Northwest Coast contains the motif of revenge", citing the presence of social substitution where any member of the enemy could be killed in place of another to avenge the death(s) of ingroup members. Similarly, Emmons writes that "their social system could never permit the shame of leaving a member of one's own family [lineage or clan] to be held captive by another family [without attempting ransom or revenge]" (Emmons & De Laguna 1991: 41). Relations between the Tlingit and other groups were not exclusively hostile: tradition held that Tlingit and Haida were historically related, and there was intermarriage between the Tlingit, Haida, Tsimshian, and Athabaskan peoples.

Potlatches modeled on peace ceremonies between intermarried groups were considered preferable to war (Emmons & De Laguna 1991). However, Keeley (1996) includes the Tlingit among "very aggressive societies" who "raided not only their immediate neighbors, but also much more distant tribes", although this is implied to be a feature of all Northwest Coast groups in this and other sources (Cox 1988; Lovisek 2007). The importance of militarism is also demonstrated by accounts of Tlingit courage in war and willingness to sacrifice themselves for their clan (Emmons & De Laguna 1991) and the belief in a special afterlife for warriors who had distinguished themselves by dying in battle (Kan 1989).

Conduct of war:

If peace negotiations failed, warfare would be formally declared, and some months would then pass by mutual agreement while both sides prepared and built forts to which their whole villages would move. Consistent with the relatively decentralized political authority, there was mass mobilization with no specialized class of warriors. War parties would travel in fleets of around 8 to 10 canoes, headed by an 'admiral' (separate from the war party leader) and accompanied by a shaman. Surprise attacks were conducted at dawn, although if the element of surprise was lost there could be a siege on the enemy fort (De Laguna 1972). There was a clear delineation between peacetime and wartime, with shamans regulating social rules between the sides during attempts at negotiation. However, once war

began, these rules were abandoned and any member of the opposing side could be killed (Olson 1967). Peace ceremonies afterwards "reestablished the social ties that had been severed during the conflict" (Jonaitis 1986: 56).

In addition to revenge, obtaining material wealth and slaves was also a primary driver of war (De Laguna 1972; Donald 2002). Slavery was a "well-established institution" among Northwest Coast groups including the Tlingit (Emmons & De Laguna 1991). They frequently captured slaves in war from non-Tlingit groups and more rarely from other Tlingit (Donald 1997). Slaves were used for hunting, fishing, and other labor. Slave raiding became more intense after European contact and the establishment of the fur trade, in which slaves were traded indirectly, and became an alternate way for Tlingit elites to demonstrate and maintain status through accumulating wealth (Donald 1988). There may have also been a practice of sacrificing them for occasions like building a new house or the death of a master (Emmons & De Laguna 1991). Accounts of these sacrifices are consistent with social control explanations for human sacrifice (Watts et al. 2016), particularly given the recorded importance of social class in Tlingit society and the killing of slaves at the death of their master. However, De Laguna (1972) writes that "taking into account reticences as well as what was reported, it is my impression that slave sacrifice was not very common at Yakutat, and may even have been introduced and practiced only by lineages from southeastern Alaska"

(471a). It is possible rituals changed over time from killing slaves at funeral feasts for clan chiefs to freeing slaves under pressure from European colonizers to end the former practice, as well as their increased value as a trade 'item' (Donald 1988; 1997).

Heads and scalps were usually taken as trophies during combat. Having one's head or scalp taken was considered an honor and were primarily taken from high-status men and never from women or children (Emmons & De Laguna 1991). The scalps were usually saved and hung outside houses, and the manner in which they swung from the canoe or house beams was perceived as indicating their happiness or bravery (De Laguna 1972). De Laguna notes the spiritual importance of the head and face- they were the focus of most symbolic care and ornamentation, and anyone who injured this area on another individual would be subject to especially harsh sanctions (1972: 761b). Because dying in battle and having one's head taken was considered honorable, dehumanization and cultural distance did not seem relevant in this context. This is consistent with the practice of taking heads from other Tlingit as well as groups considered related and linked by marriage, and highlights the diverse cultural drivers of trophy-taking practices.

Similarly, Donald (1988) notes that slaves could be taken from groups who spoke the same or a different language. He links it to the cultural institution of the potlatch and the seeking and maintenance of high status by the Tlingit elite. The

cultural significance of trophy-taking here also contrasts with the putative context of slave sacrifice, although both have been put forward as linked with the initial stages of political centralization and hierarchical systems (e.g. Trigger 2003; Winkelman 2014). Consistent with the degree of social stratification in Tlingit society and the absence of territorial conquest or political centralization as aims of war, both practices appear not to have been about terrorizing or exerting power over outsiders but part of the process of seeking and maintaining internal social status.

Society Name(s): Qarmatians, Qarāmiṭa

Date range covered: 899-1077 CE

Region, present-day country/ies: Bahrain and Saudi Arabia

Language, linguistic family: Arabic, Afro-Asiatic; Persian, Indo-European

Degree of political centralization: Centralized state

Population estimates during this period: none found

Degree of sedentism: Sedentary (some of the political leadership) and nomadic (bedouins)

Subsistence: Agriculture, trade levies, tribute, raids

Main sources and background/potential biases: The original writings of the Qarmatians were lost after the collapse of their state in the eleventh century, so the secondary

sources drawn on in the following section rely on contemporaneous, generally hostile, non-Qarmatian Muslim records, as well as those by independent scholars who traveled to the Qarmatian state (Ahmed 1992; Daftary 2007). These biases are acknowledged and discussed by the secondary sources, which mostly dismiss claims about atheism, various sexual practices, and alcohol consumption as exaggerations or falsehoods while evaluating the evidence for certain political relations and military practices (Ahmed 1993; Daftary 2007; Tucker 2008).

Overview:

The Qarmatians were a millenarian Shiʿi sect which formed in the ninth century after the death of the seventh Ismaʿili imam Muḥammad b. Ismāʿīl. They formed the majority of Ismaʿili Shiʿa at the time, although the minority Fatimids would later be the only surviving branch (Daftary 2007). They believed in the impending return of Muḥammad b. Ismāʿīl as the Qāʾim (the Shiʿi messianic figure) and the end of the era of Islam instead of accepting the new Ismaʿili imam and authority of the Fatimid Caliphate (Daftary 2012). With support from the Banu Kalb and the Banu Uqayl bedouin clans, as well as settled farmers and merchants, they established a state in present-day Bahrain and parts of Saudi Arabia in 899 CE (Madelung 2012; Kennedy 2015). Based on an account from the writer and geographer Ibn Hawqal in the tenth century CE/fourth century AH, their governing system consisted of a ruler and advisory council, internal police chief, and military

commander (Kennedy 2015). There was a regular army of "Ḳarmaṭī sectarians" in the capital of Al-Ahsa and auxiliary bedouin troops (Madelung 2012). Military leadership was mainly held by members of the Banu Kilabi (Kennedy 2015).

The Qarmatians are known for rejecting many mainstream social tenets in the region at the time (Daftary 2012). One analysis of millenarian movements in early Shiʿi history cites the Qarmatian doctrine as an example of an apocalyptic ideology forged during a time of instability and high inequality, here brought about by the Abbasids' poor governance and mismanagement of agricultural production as well as natural disasters (Waines 1974 cited in Tucker 2008). The Qarmatians responded to these crises through belief in the Qaʾim and perceived themselves as "representing the true realization of the Islamic message, as against the corruptions practiced by the dominant society" (Ahmed 1992: 98). This is generally consistent with much of the literature on both Islamic eschatology and contemporary millenarian groups, which emphasizes anti-establishment sentiment and dissatisfaction with the current social or political order as corrupt or morally decayed (Bromley & Wessinger 2011; Cook 2012; Gallagher 2011; Kenney 2011; Lawson 2013). Descriptions of their adherents as "rooted in the underclass" (Ahmed 1992: 55), peasants, and those suffering from "misery and distress" (Waines 1974: 55) are also in keeping with this perspective. The Qarmatian state is often described in somewhat idealised terms as a community that emphasised

egalitarianism, welfare services and public goods provisioning, and relative equality for women (i.e. lack of veils, monogamy for both genders, mixing between men and women) (Ahmed 1992; Kennedy 2015). For instance, Kennedy writes of "a marked contrast between the peace and prosperity of the Qarmatian state and the tyranny and chaos which prevailed elsewhere in the Fertile Crescent" (2015: 278). Somewhat in contradiction of their ideals of equality (though in keeping with contemporaneous polities in the region), their economy relied not only on revenue from crops and customs on ships passing through the Persian Gulf but also labor from thousands of slaves purchased from Africa (Madelung 2012).

Relations with other groups:

The Qarmatians rebelled against both the Ismaʿili Fatimids and Sunni Abbasids and frequently raided pilgrimage caravans traveling to Mecca and cities in Iraq. In their most infamous episode, they attacked Mecca in 930 CE, stole the Black Stone of the Kaʿba, and brought it to their capital, an action that they apparently believed represented the end of the era of Islam (Daftary 2012). They alternated between periods of violent raiding and relatively peaceful relations with the Abbasids until their eventual decline and collapse at the end of the eleventh century due to internal rebellion from local tribes combined with defeats by Abbasid and Fatimid forces (Daftary 1990; Kennedy 2015). Despite their doctrinal hostility to both the Abbasids and the Fatimids, whose religious authority they

considered illegitimate, they displayed pragmatism in their occasional truces with the Fatimids and their return of the Black Stone in exchange for a large payment by the Abbasids (Daftary 2012).

Conduct of war:

Sympathetic depictions of Qarmatian society as stable, egalitarian, and concerned with justice contrast with the exorbitant violence they demonstrated in their revolts and raids and the murderous infighting among the ruling family. They are recorded as massacring inhabitants and pillaging cities in the Levant during revolts in 289/902-294/907 CE/AH and attacking and slaughtering pilgrims to Mecca. Scholars writing on this period acknowledge the biases of polemical, mainly Sunni sources, but generally do not dispute the Qarmatians' perpetration of widespread massacres during their attacks (Daftary 2007; Kennedy 2015; Madelung 2012). Given the lack of first-hand historical accounts, it is difficult to gain a sense of their beliefs about the justification and meaning of the violence they committed. Although they had a centralized state and regular army, they are described as relying primarily on guerilla tactics, which Keeley (1996) treats as equivalent to his depiction of 'primitive' warfare among small-scale societies. Rather than territorial conquest, the main drivers of violence seem to have been weakening the Abbasids and Fatimids, tribute or economic rewards from raids, and perhaps the symbolism of attacking non-Qarmati Islamic institutions. In particular,

the preaching of Qarmatian doctrine by the settled leadership in southern Iraq may have provided ideological purpose to the raids of their nomadic Bedouin supporters (Kennedy 2015).

Apocalyptic beliefs and use of violence:

Under traditional Imami Shiʿi thinking on conduct in war, any groups or individuals who used terroristic violence were classified as 'bandits'. This distinguished those who called themselves rebels but used excessive violence from the legal category of *bughāh*/rebels to whom more lenient moral judgement applied (Abou El Fadl 2001). Qarmatians may have thought themselves exempt from these codes of conduct due to their belief in the impending return of the Qaʾim and themselves as the true Muslim community. Khaled Abou El Fadl (1999, 2001) cites some Shiʿi jurists who argue that Ali's conduct during war, which established a precedent for not slaughtering defeated enemies, resulted from foreknowledge that Shiʿa would one day be the defeated and oppressed and behaving mercifully would then shame Sunnis into the same restraint. Once the Qaʾim arrived he "may dispose of his opponents in whichever way he deems fit at the time" (Abou El Fadl 1999: 345). Their belief in the imminent appearance of the Qaʾim may therefore have been used as justification for ignoring any conventional restraints when fighting. However, these were non-Ismaʿili Shiʿi scholars writing far

after the period of the Qarmatian state, and given the lack of primary sources, inferences about their ideology remain speculative.

It is also possible to link the Qarmatians' ideology with scholarship on apocalyptic beliefs and movements in general, specifically those aspects of religious beliefs recognized as especially effective in encouraging violence against outgroup members: a dichotomous moral worldview, perceiving outgroup members as cosmic threats, and divine sanctioning of extreme actions (Brubaker 2015; Gorski & Türkmen-Dervişoğlu 2013; Juergensmeyer 2003). These factors have also been identified in the context of other Islamic apocalyptic groups that engaged in violent revolts against established authorities (Cook 2002; Tucker 2008; Velji 2013). For instance, multiple eighth-century Shiʿi movements rebelled against the Umayyads and Abbasids while expecting a recently deceased imam to return as the Mahdi. A few of these groups engaged in what has been described as institutionalized terrorism and the murder of religious outsiders (Tucker 2008). Unlike the Qarmatians, these groups were relatively short-lived and did not establish stable polities, but similarly used violence in a way suggesting a strong distinction in moral concern between their own community and other Muslims. Scholars of millennialism have analyzed how groups expecting imminent, collective salvation may hold a dichotomous view of their own saved community and a morally degenerate society, in some cases justifying or enjoining violence

against the latter to prepare for or bring about the new cosmic order (Gallagher 2012; Wessinger 2012). Such groups vary widely in size and political structure from the original adherents of major religions, self-contained communities with members in common residence, various insurgent groups, and founders of centralized states (Cook 2012; Lawson 2012; Lincoln 1985; Wessinger 2014). Placing the Qarmatians in this framework is a tentative assessment based only on non-primary sources and commonalities with other, better-known movements. It is almost certainly an oversimplification to view all those who participated in the formation and defense of the Qarmatian state as having the same or even similar motives and beliefs. However, these similarities with other Islamic and non-Islamic movements can illustrate connections between apocalyptic ideologies and certain types of intergroup violence relatively independent of sociopolitical organization or scale.

Society Name(s): Rustamid Imamate, Kingdom of Tahert

Date range covered: 761-909 CE

Region and present-day country/ies: Northern Africa, Algeria

Language and linguistic family: Arabic, Afroasiatic; Berber, Afroasiatic

Degree of political centralization: Unitary or confederated state

Population estimates during this period: none found

Degree of sedentism: Settled central rulers, nomadic provincial leaders and population

Subsistence: Pastoralism, agriculture, trade

Main sources and background/potential biases: This section mainly relies on analyses by Islamic Studies scholars who have attempted to place the Ibadi sect and the Kharijites more generally in context of early Islamic history and political institutions. Although Elizabeth Savage notes that scholarship on the Ibadis "tends to draw heavily and often uncritically from Ibadi sources, which represent as much a sectarian tradition as a historical account" (1992: 351), there have been later source-critical studies that analyze the biases and motives of both Ibadi accounts and Sunni or other non-Ibadi polemicists (Gaiser 2010; Hoffman 2012; Wilkinson 2015).

Overview:

Ibadis can be described as a moderate Kharijite sect that rejected some other Kharijite groups' doctrines of separation from or violence against those not considered 'proper' Muslims. The Rustamid Imamate was an Ibadi state established by the missionary 'Abd al-Rahman ibn Rustam in present-day Algeria, with its capital in Tahert. The imamate's degree of centralization is somewhat debated; drawing on Robert Montagne's work on the Berbers (1973), Savage (1992) argues authority was willingly drawn from the Berber tribal communities rather than imposed. There was a governor who represented and was confirmed by the imam who collected taxes and organized troops, but he was subordinate to the tribal sheikhs (Merrills 2004; Savage 1992). Although a main Kharijite tenet is

the importance of an individual's moral/religious worth in deciding leadership rather than membership in a particular family lineage, leadership of the Rustamid Imamate was inherited by the original elected imam Abd al-Rahman's sons (Wilkinson 2015). There was a system of elected imams who answered to or were given a measure of authority by Berber tribal councils. However, the 'divide and rule' strategy by the ruling family with regards to the Berber tribes resulted in instability and internal warfare (Talbi 2012). Although the capital was a major commerce center (Savage 1992), the state is described as largely non-urbanized, made up of "Berber tribes, predominantly nomadic and having divergent interests, Persians who had got rich in the shadow of Rustamid power, and fractions of the Arab djund [soldiers] - through their profession, bellicose in nature—who had fled from Ifrīḳiya [eastern Morocco]" (Talbi 2012). Like other Muslim polities at this time, they were dependent on slave trade and labor.

As it was Ibadi-Berber rebels who drove the Umayyads out of the Maghreb, the governors appointed by the imam were reliant on the soldiers from these Berber tribes (Bierschenk 1988; Kennedy 2015). There was a mercenary "small permanent army" of Tahert locals in addition to Berber tribal forces which they depended upon outside Tahert (Bierschenk 1988: 114). Islamic political authority in this period emphasized both religious rectitude and military prowess in an ideal leader: Adam Gaiser, in the appropriately titled *Muslims, Scholars, Soldiers,*

describes the Ibadi emphasis on *shirā'* or "pious militancy", which encompassed violence and martyrdom in service of establishing an Ibadi state or defense of such a state once it existed (Gaiser 2010).

Conduct of war:

The Rustamid state vacillated between conflict and strategic diplomatic relations with the neighboring Abbasids, Aghlabids, and other Kharijite polities (Talbi 2012). The relative moderation that distinguished the Ibadis from other Kharijite groups included a willingness to marry non-Ibadis and maintenance, at times, of peaceful political relationships with neighbouring non-Ibadi Islamic polities. In contrast with the Qarmatians, there are extensive primary and secondary sources on Ibadi (and other Kharijite) views on the proper treatment of different sets of outsiders, but little historical description of the Rustamid Imamate's conduct in war. Like other Islamic legal schools and sects, Ibadi scholars had moral, legal, and theological debates about the proper treatment of enemies in war and set limits on violence depending on enemies' behavior, religion, and motivations. Although indiscriminate violence might be militarily expedient, it was considered an absolute last resort, and excessive cruelty such as torture, rape, and mutilation was never permissible (Abou El Fadl 2001). This view contrasted with that of other Kharijite sects that considered it permissible to kill

noncombatants/families of those seen as non-Muslim and seize their property (Lewicki 2012).

It could be argued that since no exorbitant violence was documented in contrast with some other Kharijites groups, and given the persistent portrayal of Kharijites as a whole as the "villains of early Islam" (Spannaus 2007), the fact that Ibadis maintained their reputation as 'moderate' Kharijites is evidence of relative restraint. For instance, Wilferd Madelung writes in a review of John Wilkinson's work, "it is generally acknowledged that the Ibadiyya were the only branch of the Muhakkima [the movement encompassing early Kharijites] to survive until the present because of their moderation and nonviolence…Ibadi Islam has survived and is thriving without an imam not because of its *shārīs* but rather because most Ibadis were opposed to *shirā'* except in self-defense" (2012: 382). For his part, Wilkinson (2015) argues that early Ibadis ostensibly rejected the indiscriminate slaughter of religious outsiders (*istiʿrāḍ*) of more extreme Kharijite sects "while turning a blind eye, or perhaps even condoning such extremism in the wide interest of establishing the true Ibāḍī state" (2015: 48). Given the lack of sources depicting actual combat, it is difficult to gain a sense of the practical significance of the Ibadi's theological ideals on the proper conduct of war, but a reasonable though tentative inference might be that they were relatively unexceptional, or

perhaps slightly more restrained, in their use of violence relative to neighbouring Islamic polities.

Patterns across societies

Role of social/cultural distance:

Scholarship on levels of violence during war and the effectiveness of various codes of conduct often invokes the importance of mutual recognition of shared humanity, cultural values, or religious beliefs (Bryant 2016; Syse 2005; Turchin 2011). It is easy to find counter-examples and instances of the ineffectiveness of such ties; for instance, Neff (2005) cites laws of war in ancient India that forbade violence against noncombatants as an example of such rules between sides sharing religious or cultural values, but the source he references (Armour 1922) states that while codes of war instructed fighters to distinguish between combatants and civilians, "actual Indian evidence is rather to the contrary." This is under circumstances that such codes even exist- in two of the cases above (the Kamakura Shogunate and the Kapauku), intra-ethnic warfare seemed to have involved fairly indiscriminate violence without any special restrictions.

In the cases examined above, violence did not necessarily increase with degrees of cultural differences like language or decrease due to ties of intermarriage or ethnic identity. Instead, variation in the extent of wartime violence could arise from an interaction between a society's internal norms about violence and war, and the character

of its external relations, the degree of cultural/social difference in these relations, and the degree of conflict, threat, or interdependence. For instance, what Friday portrays as relative indifference by medieval Japanese warriors towards violence and death can be linked with the apparent absence of leniency shown to culturally same (Japanese) or distant (Mongol) enemies. As only internal war is recorded for the Kapauku it cannot directly be compared with societies with both internal and external war, but killing other Kapauku was clearly permissible. However, the practice of allowing enemies to recuperate after battle and rebuild their villages and crops is perhaps an example of leniency that would not be extended to non-Kapauku. It is possible that in the presence of an external threat more formalized rules would have developed for internal war, but given the absence of recorded external war this is purely speculative. Among the Nuer, intra-Nuer fighting had regulations limiting violence and harm to noncombatants, but despite being linguistically close to the Dinka as well as intermarrying and sometimes living alongside them did not seem to have any restraints when fighting them. Nuer beliefs linking interpersonal violence with spiritual contamination of ingroup morality, their seeming dehumanization of outsiders/wartime enemies, and a malleable perception of group identity could be seen as combining to result in very different levels of permissible violence during internal and external war that could be applied variably to other groups depending on captive/adoptee status. These different factors highlight how culturally subjective delineations of identity that are not necessarily captured by

measures such as language similarity, kinship ties, or physical distance may shape levels of wartime violence.

Role of sociopolitical complexity:

Large, socially complex polities that interacted with other such societies sometimes developed norms regulating war, such as those developed by Muslim theologians and legal scholars. The Qurʾan and hadith contain an assortment of sometimes contradictory guidelines on behavior during war, which were consequently open to a vast spectrum of interpretations by later Muslim societies and political leaders depending on the political and social context (Bonner 2008; Firestone 1999; Kelsay 2003). The expansionist nature of early Islamic polities necessitated the development of detailed rules of behavior towards outsiders, including during inevitable violent conflict (Kelsay 2003). The 8th-century Hanafi scholar al-Shaybani's work on limits on warfare (*Kitāb al-Siyar,* translated into English by Majid Khadduri as *The Islamic law of nations*, 1966) (Kelsay 2003) is an early example of such thinking. Each of Sunni legal schools as well as the various Kharijite and Shiʿi sects developed their own set of discourses on just war and limits to violence (Abou El Fadl 2001). Despite these splits and separate developments, many views remained broadly similar across these different traditions; for instance, distinctions made by jurists between brigandage/banditry for private or economic gain using excessive violence and cruelty (*ḥirāba*), sincerely

motivated if misguided rebellion against other Muslims (*bughā*), and jihad (Abou El Fadl 2001; Syed 2013). That the levels of violence demonstrated by the Qarmatians, extremist Kharijites, and similar groups were considered immoral by their contemporaries and a reason for them to be treated as non-Muslims and criminals in the juristic discourse on war (Abou El Fadl 2001) indicates the theoretical (if not always practical) significance of these rules in the broader Islamic community at this time. Acts like executing prisoners and destroying homes, which were generally considered morally debatable or impermissible, were justified as punishing criminals when fighting groups like the Qarmatians that used indiscriminate violence and terror. This parallels the framing of violence against rebels in Kamakura Japan. However, a notable difference is that for Islamic jurists this justification resulted from the tactics used by these enemies that violated what they considered proper conduct during war, not the mere fact of their rebellion; in fact, rebels who were sincerely motivated by moral beliefs and did not violate such codes should likewise be protected by them (Abou El Fadl 2001; Hashmi 2013). There was a degree of instrumentalism to such restraints– popular support for such rebellious groups would make harsh punishments such as display of executed leaders or indiscriminate harm against civilians politically risky for leaders (Abou El Fadl 1999). Work analyzing juristic discourse on proper conduct during war similarly points out how in some cases use of weapons or tactics that would

result in inhabitants of a city, including noncombatants, being killed was sometimes allowable in pursuit of victory or as instances of collateral damage (Abou El Fadl 1999; Kelsay 1990). Nevertheless, the presence of such debates, and consideration of not only the enemy's morality but the enemy's belief about their own morality, reflects a philosophy and formalized perspective-taking distinct from the warrior ethos in Kamakura Japan, and even the relatively complete codes of conduct of some small-scale societies (e.g. the Mae Enga, Wiessner 2019) that tended to have repeated interactions with the same one or two cultural groups during conflict. This to some extent supports the idea that social complexity- not necessarily through the creation of a military/non-military distinction but through development of broadly cooperative ideologies needed for socially and economically necessary interactions with many different types of people- could serve to restrain violence during war. It is possible that smaller, non-expansionist societies which tended to interact with the same one or two cultural groups during conflict were comparatively isolated in their thinking and rules around the moral treatment of others. However, these cases represent only a minuscule portion of human behavior in war across time and space, and it is clearly possible for socially complex, relatively egalitarian, and 'enlightened' societies to engage in indiscriminate violence and extermination of enemy combatants and

noncombatants alike (Bellamy 2012; Kim 2012; Harrison 2008; Malešević 2014; Mann 2005).

Quantitative analysis

Quantitative analyses were carried out on a final sample consisting of 73 societies, including societies documented in eHRAF, related cross-cultural databases (Ethnographic Atlas, D-Place), and historical polities described in Seshat. As with the qualitative cases, an attempt was made to balance the number of societies for different geographic regions, as well as across the primary predictor variable of political complexity.

Data coding and variables

Data were coded from ethnographic documents accessible in eHRAF, other ethnographic sources, and secondary historical sources, as well as data stored in Seshat.

Predictor variables:

Population size- Population estimates for the time period designated for each society. Coded according to whether estimates fell in the hundreds, thousands, tens of thousands, etc. ranges.

Political centralization- The degree to which political power in the cultural unit is or was centralized to a single authority/place. The scale used was created from a combination of Seshat's degree of political centralization variable and EA variable 090 'Degree of political integration'. Coded as 1. acephalous (absence of any political organization, even locally; equivalent to EA090); 2. autonomous communities (local political integration transcending kin groups, includes societies coded under EA090 autonomous local communities and peace groups); 3. minimal states (a central government with some control or authority over relatively autonomous regional rulers, equivalent to EA090 minimal states and Seshat nominal, loose polities); 4. confederated states (the central government has more control over regional rulers but not complete authority); 5. unitary states (as defined by the Seshat variable- a central government appoints regional governors and collects taxes). In the case studies above, the Kapauku, Tlingit, and Nuer are coded as autonomous communities, the Qarmatians as a minimal state, and the Kamakura and Rustamids as confederated states.

Hierarchical levels- The number of nested governance levels outside of the local level. This was adapted from the EA variable 33: Jurisdictional hierarchy beyond local community, which is generally used in cross-cultural studies as a measure of political complexity. Coded as 0 (none/autonomous communities) through 5 (5 or

more levels). The cases are coded as follows: Kapauku 1, Nuer 0, Kamakura 4, Tlingit 2, Qarmatian 3, Rustamid 3.

Political expansion- Whether warfare conducted by the society increased the territory or population under its political control. This should be roughly equivalent to the SCCS variable 909 'subjugation of territory or people' and the Seshat warfare variable annexation. It indicates deliberate attempts to expand political control but not decentralized expansion into land (e.g. for hunting, grazing, or farming that involves fighting). Coded as inferred/yes, inferred/no, unclear. Case studies- Kapauku, Tlingit, and Kamaukura no; Qarmatians and Rustamids yes.

Military organization- Whether there is a formal standing army or military organization, or whether warriors are mobilized through social relations such as friends or kin. This was coded according to the SCCS variable 894: Form of military mobilization (originally coded in Otterbein 1970). Coded as 0 (Friends, Family, Lineage, Clan) or 1 (Age-Grades, Military Societies, Standing Armies)
Case studies- Kapuaku, Nuer, and Tlingit are 0; Kamakura, Qarmatians, and Rustamids 1

Outcome:

Levels of indiscriminate killing in external war- Whether enemy individuals in the following age/gender categories tended to be targeted or killed during war: male or female infants/toddlers; children; younger adults; older adults. Coded as 1-8. 1 point is added for each age/gender category, with the minimum being 1, and the maximum being 8 (everyone). For instance, the Nuer would be scored a 5 (male and female infants/toddlers + male young adults + male and female older adults). Ranges are used for some societies when there is ambiguity or overlap across categories.

kill_ext	female	male
infants/toddlers	0-1	0-1
children	0-1	0-1
younger adults	0-1	0-1
older adults	0-1	0-1
total	0-4	0-4

hypothetical minimum = 1
hypothetical maximum = 8

Age and gender are not necessarily the most salient reason for whether enemies would be killed in a conflict, but scoring in this manner ideally captures variation in scales of violence less arbitrarily than a more undescriptive categorical or numerical scale. There was a lack of evidence for any sort of codes regulating the extent of violence or protection for enemy individuals in most of the societies

surveyed. However, it cannot be assumed that for all societies where no limits of war are found in the sources that indiscriminate violence was normal or desirable- the presence or absence of such evidence may result from the vagaries of historical records or the interests of specific researchers, such as the translation of the Pashtun code of honor compiled by Louis Dupree and the attention paid to restraints on war by Polly Wiessner in her fieldwork among the Mae Enga. With these caveats, this variable is intended as a proxy for the regular and presumably accepted means of conducting war in these societies. This concept is described by Meyer Kestnbaum in an article on the sociology of war:

"Who may be targeted and attacked is captured in the prevailing laws of war and, more accurately, in the jus in bello—those rules and conventions governing the actual conduct of war. This is not primarily an issue of formal agreements or treaties, although the jus in bello may be codified at various moments in precisely such ways. Rather, it is an issue of the conventionally and customarily accepted understandings that regulate military operations on the ground and are expressed in actual war-making practice (see Walzer 1977, Best 1980)" (2009: 242).

Generally, societies coded 1-3 are those that tended to target adolescent to adult males participating in combat, while those with higher scores, at least based on available descriptions, tended to direct violence more broadly against enemy populations.

In the case studies described above, the Kapauku are coded 3-4 (male toddlers, children, younger men, and some older men), the Nuer 5 (infants, older women, young men, older men), Kamakura 7-8 (nearly everyone), Tlingit 5-6 (most

enemies are killed unless captured, but women and children are not specifically targeted), Qarmatians 7-8 (nearly everyone), and the Rustamids 2-4 (younger and older males, possibly other adults depending on how much the stated rules of war were followed during combat). A plot of the outcome variable for each society, ordered by PC1 (descending) and with the case studies marked in blue, is shown in Figure 7.

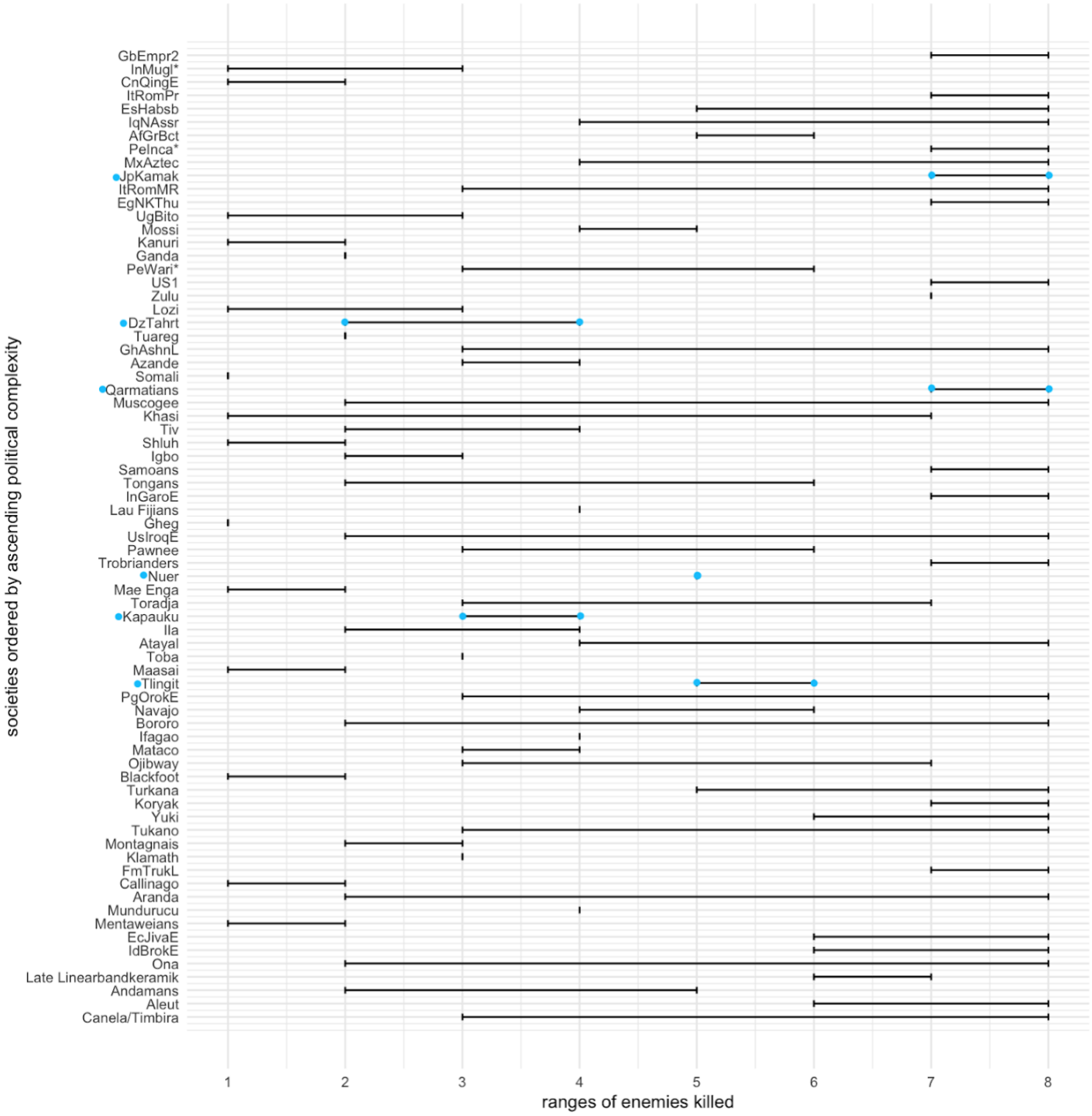


Figure 7. Plot of outcome variable (ranges of enemies killed) for each society ordered by ascending value of PC1, the proxy for social complexity. Case studies marked with blue dots.

Processing of data pre-analysis:

Political centralization, hierarchical levels, and population were treated as continuous variables; military organization and political expansion were treated as binary. The first factor from a principal components analysis (using the prcomp() function, *stats* package in R) on the population, centralization, and hierarchical levels variables was used as a measure of political complexity (cumulative proportion of variance explained = 0.88). Political centralization, hierarchical levels, and population were standardized (mean centered at 0 with a standard deviation of 1) prior to the PCA. Distributions are shown in Figure 8 below, with approximate placements for each of the case studies. There appeared to be an over-representation of societies in the sample with PC1 scores between 0 and -2

(represented in the case studies by the Nuer, Tlingit, and Kapauku).

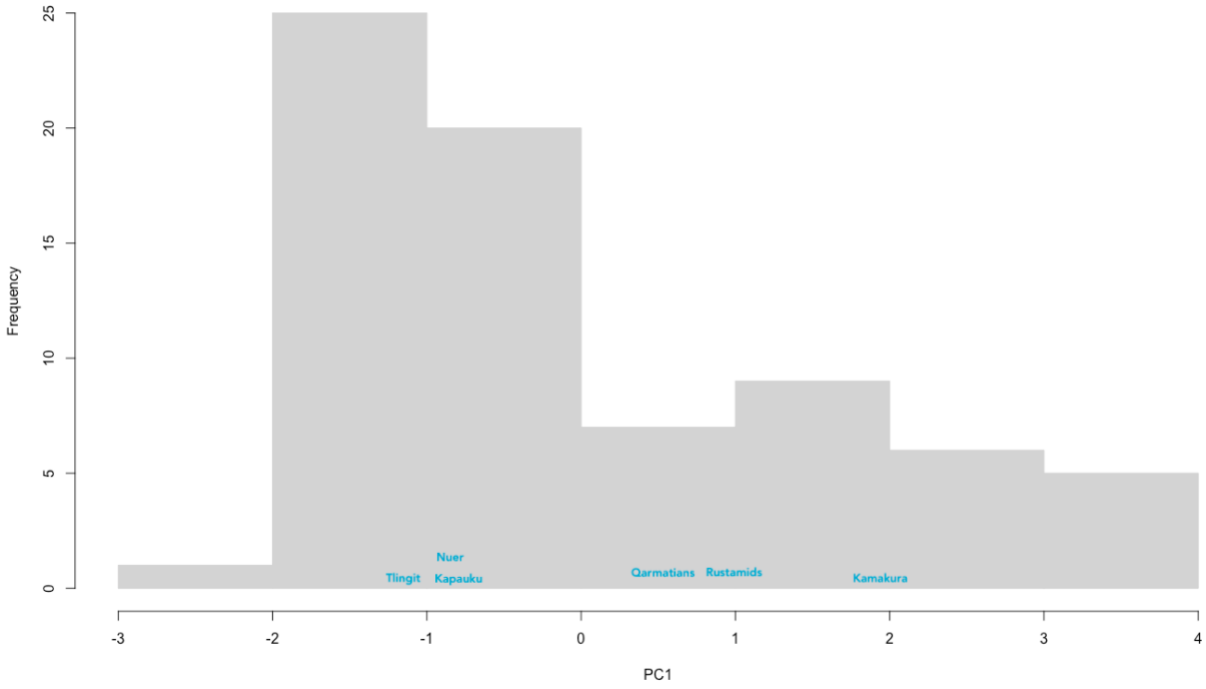


Figure 8. Histogram of social complexity (PC1 values), case studies labeled in blue.

Missing data were imputed using the R package *mice* (van Buuren & Groothuis-Oudshoorn 2011) using the methods provided for continuous data (predictive mean matching). This was a total of four datapoints prior to conducting the PCA: two societies missing data for population and two for hierarchical complexity.

To ensure basic assumptions of the hypotheses were met, logistic regression models on political expansion and military organization as predicted by the political complexity measure (henceforth PC1) were run. Both variables were predicted by PC1

(log-odds = 1.85, p < 0.001 and log-odds= 1.41, p < 0.001 for expansion and military respectively).

Statistical models

Analyses were conducted using the *brms* package (Bürkner 2021). They were designed to test the relationships implied by the graph in Figure 9. A set of multiple regression models were used to test relative effects of military organization, political complexity, and expansion on the outcome variable.

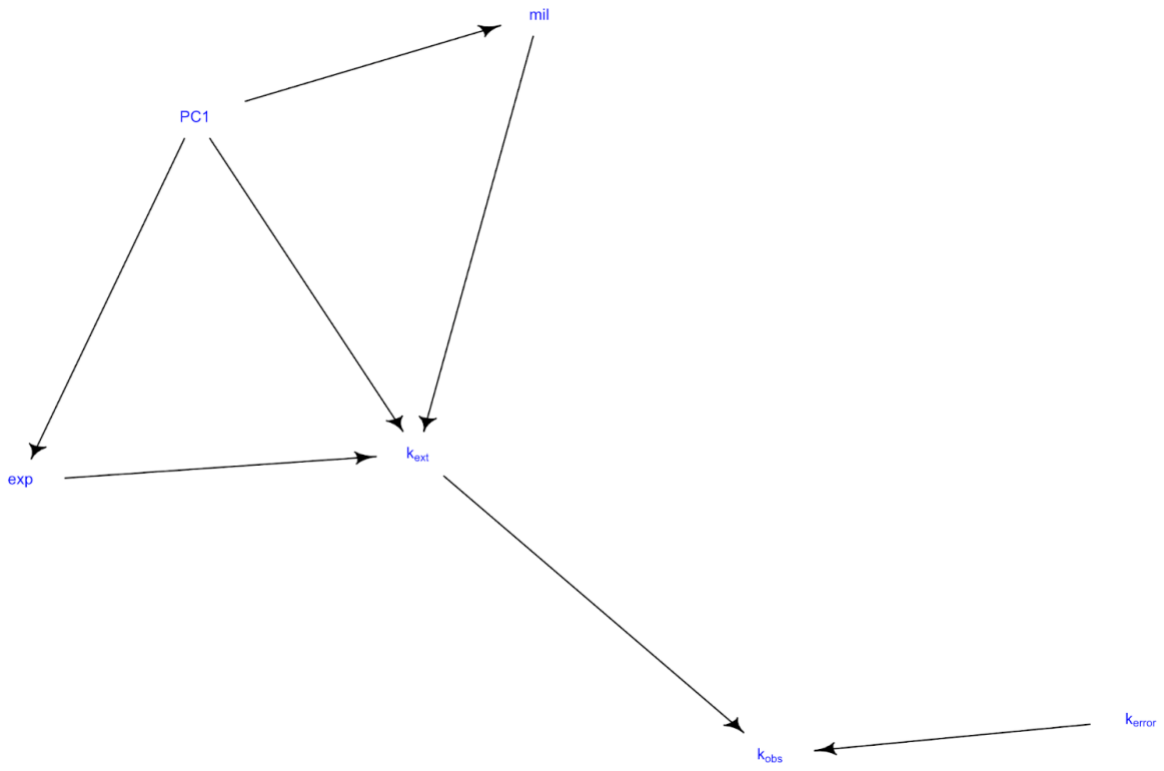


Figure 9. Directed acyclic graph showing hypothesized relationships between the described variables, with measurement error on the outcome. exp = political expansion, mil = military organization, kext= enemies killed (true value), kobs = enemies killed (observed value), k_{error} = measurement error.

Models were specified as follows, with one model with all three predictors and then dropping one term each. Priors were chosen to be weakly regularizing. To incorporate uncertainty in the outcome variable of enemies killed, it was modeled as an unobserved true value distributed normally with a mean of the observed value (equal to the mean of the range for each society) and standard deviation calculated from the difference from the maximums/minimums and means (based on the model incorporating measurement error in McElreath 2019, chapter 15 as implemented in brms by Kurz 2019a):

K_{obs} ~ normal(K_{true}, K_{sd}) *[distribution for observed values of enemies killed]*
K_{true} ~ normal(μ , **σ**) *[distribution of unobserved true values]*
μ = **α** + **β**(exp + mil + pol)
α ~ normal(4, 1.3) *[intercept prior]*
β ~ normal(0, 0.7) *[slopes prior for expansion, military, PC1]*
σ ~ exponential(1)

In R using brms:

```
m2_pem <- brm(data = klist1, family = gaussian,
          k_obs | se(k_sd, sigma=TRUE) ~ pol + exp + mil,
          prior = c(prior(normal(4,1.3), class = Intercept),
                  prior(normal(0,0.7), class=b),
                  prior(cauchy(0,5), class = sigma)),
          iter = 2000, warmup = 1000, cores = 3, chains = 3,
          control = list(adapt_delta = 0.99,
                     max_treedepth = 13),
          backend="cmdstanr")
```

As with the previous chapter, given the ways in which the outcome variable might vary depending on context, it seems unlikely to be influenced significantly by cultural phylogeny or spatial proximity (perhaps excluding cases where two

societies fought one another). However, a simplified model, using the score 'kill_mean' without the error term, was run using world region as a varying intercept and compared to a model without it. Additionally, I calculated the intraclass correlation coefficient for the minimum, maximum, and mean indiscriminate killing scores using the function ICCbare() in the R package *ICC* (Wolak 2022).

Preregistration and data availability:

The analyses for this chapter were preregistered prior to conducting the main analyses (after the PCA and imputation) on the Open Science Framework site (https://osf.io/nskct). The dataset, sources, and codebook will be available on OSF.

Results

There was not strong evidence for relationships in either direction between the scale of enemy individuals targeted and measures of political complexity, military organization, or political expansion. The distribution of values for enemies killed across levels of political complexity is shown in Figure 10, and the coefficient tables for the regression models are shown in Table 3. Although the estimates for the effects of political complexity were slightly negative and the estimates for effects of political expansion were positive, in all cases the 95% CI crossed zero. When adding region as a varying intercept in the simplified model with kill_mean

as the outcome, the estimates were nearly identical (95% CI = -0.42, 0.48 when including region as a varying intercept; 95% CI = -0.41, 0.46 for the model without it) and included 0 in both cases. The ICC was very close to 0 for the mean, maximum, and minimum indiscriminate killing scores (0.01, 0.06, -0.02 respectively), indicating the scores were not strongly predicted by world region. Therefore, it does not appear that the current data provide evidence for an effect of political complexity on indiscriminate killing, either on its own or through military organization or political expansion, and that the third hypothesis of no clear relationship between these variables is best supported by the analyses.

	m_complexity_whole		**m_expansion**		**m_complexity_only**	
Predictors	*Estimates*	*CI (95%)*	*Estimates*	*CI (95%)*	*Estimates*	*CI (95%)*
Intercept	4.39	3.63 – 5.12	4.25	3.59 – 4.93	4.57	4.05 – 5.07
pol	-0.06	-0.71 – 0.58	-0.13	-0.72 – 0.45	0.10	-0.34 – 0.53
exp	0.81	-0.21 – 1.92	0.74	-0.34 – 1.76		
mil	-0.37	-1.41 – 0.65				
Observations	73		73		73	
R^2 Bayes	0.040		0.029		0.006	

Table 3. Coefficient tables for three best-fitting models as evaluated by leave-one-out cross-validation with the model_weights() function in brms. From left to right, estimates and 95% CIs for m2_pem (predicted by complexity, controlling for effects through expansion and military), m2_e (expansion, controlling for complexity), and m2_p (complexity, including any effects through expansion and military).

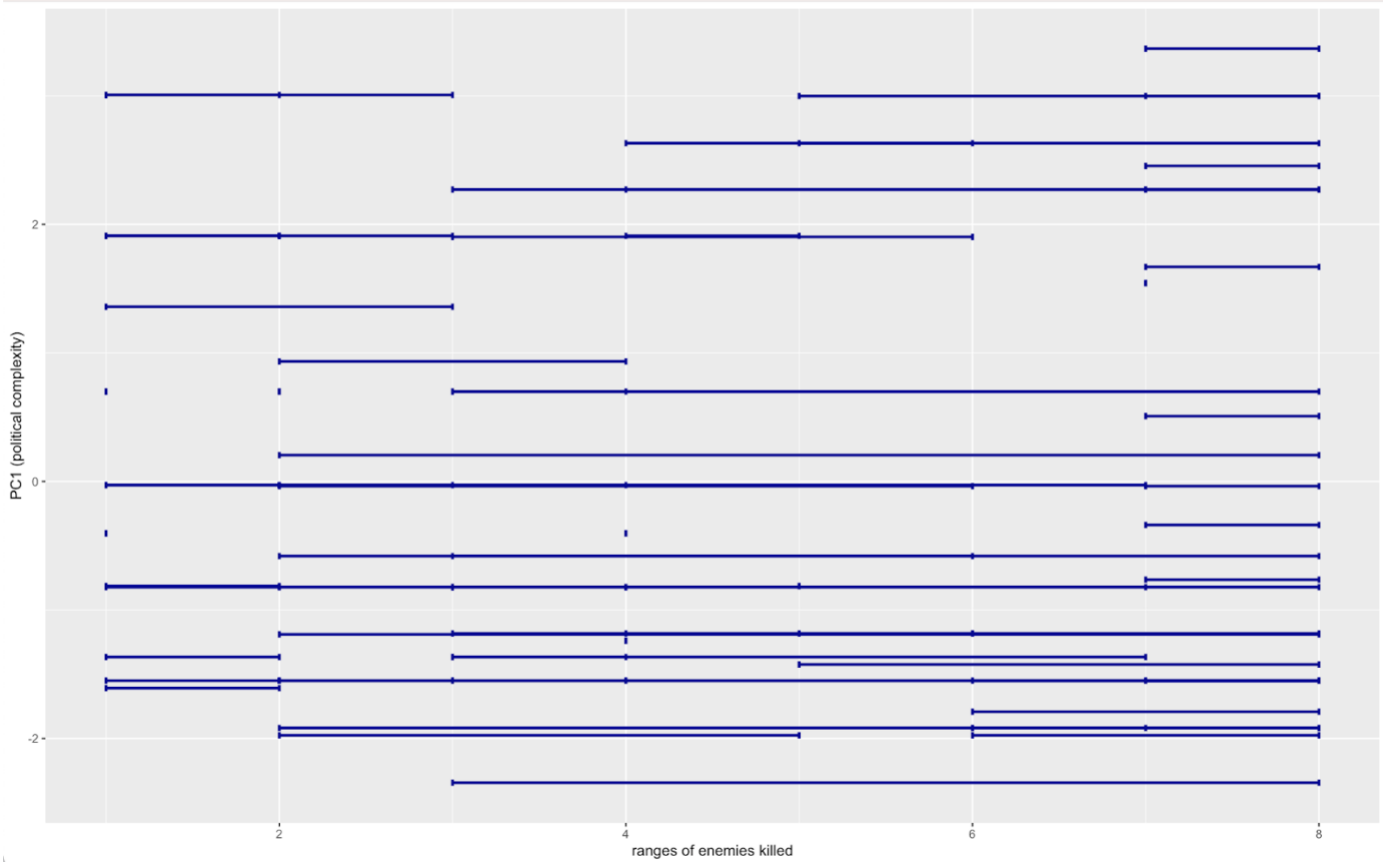


Figure 10. Distribution of enemies killed plotted by PC1. Lines are ranges for each society on the 1-8 scale.

Discussion

It is very possible there is no consistent relationship between the degree of violence towards enemies and aspects of social complexity given the number of potential influences in both directions, with the research covered in the literature review illustrating factors that could lead to both lessened and heightened levels of violence. There are contexts in which opposing influences could be simultaneously present; for instance, an expanding polity might use displays of terrorizing violence while also avoiding extermination of populations it is

attempting to subjugate. Numerous relevant factors may be related tangentially or inconsistently with aspects of social complexity. For instance, some scholars have described a sense of contempt felt by military classes for common people in medieval Europe that contrasted with a level of mutual respect between opposing sides as soldiers (Foote & Williams 2017; Hanley 2003)– professional militaries' distance from civilians facilitated a lack of empathy rather than protection. The lack of difference in the scale of enemies targeted in societies with and without formal military structures appears consistent with this more complex relationship. A diagram including some additional potentially relevant variables is shown below.

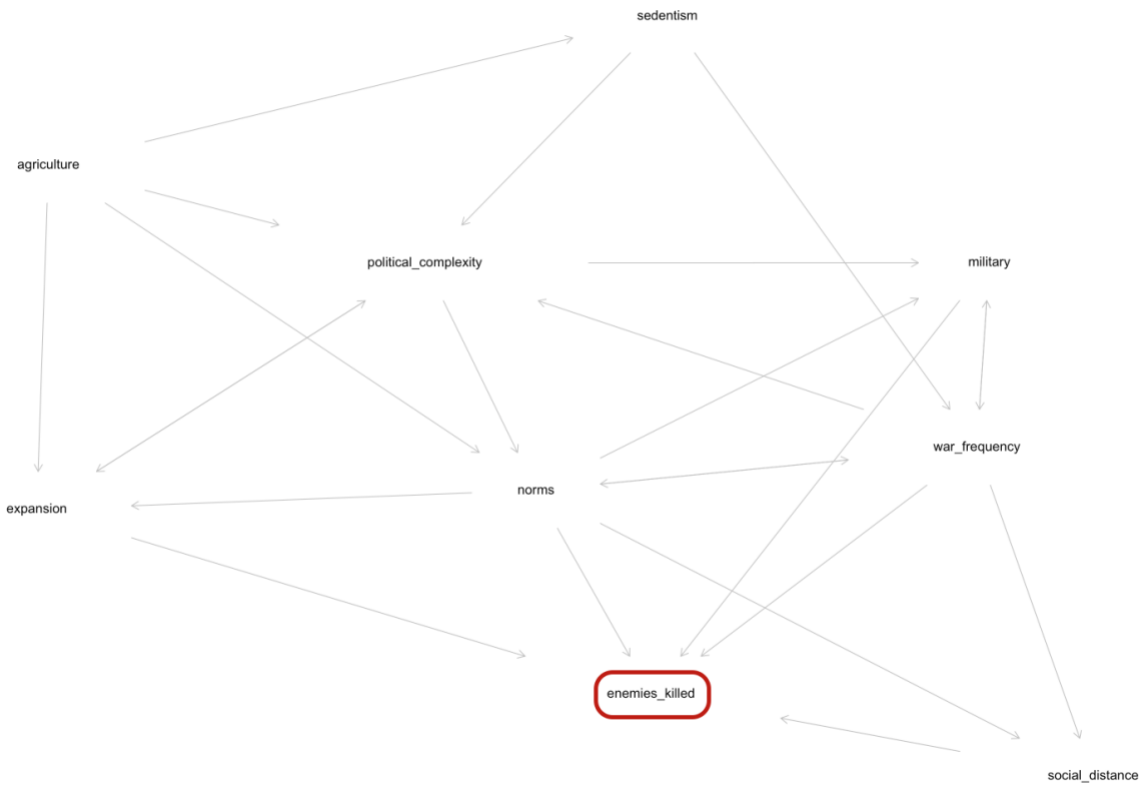


Figure 11. Hypothetical realistic DAG for indiscriminate killing of enemies.

The data and methodology may also have been inadequate to properly test the hypotheses. In particular, there was uncertainty in the codes used for targeting/killing of enemies, and the scale used may not have been effective at capturing meaningful aspects of how enemies were treated in each society. As summarized above, some of these societies had restraints on violence against certain classes of enemy individuals, either in practice or in religious/moral codes. These principles or practices were often linked to the levels of agency attributed to different types of people in these societies and the perceived relevance of that agency. For instance, although Islamic scholars generally stipulated that violence against women, children, the elderly, and other individuals thought lacking "the general competence to fight" should be avoided, it became permissible in the event these individuals took up arms or engaged in other actions equivalent to fighting (Syed 2013: 148; Kelsay 2003). In contrast, among the Kapauku, very small male children could still be killed despite posing no physical threat, while men were forbidden to injure women and girls even if they were actively attacking and successfully causing harm (Pospisil 1958). This distinction between protection based on actions versus identity is one instance of variation between societies treated equivalently in the coding system used (and which also would not have a clear relationship with degree of political complexity).

The depth and accuracy of available sources also posed some limitations, and while an attempt was made to rely on multiple sources for each society when coding levels of violence, this was not always possible. In many cases, the available descriptive evidence resulted in uninformatively wide ranges for the outcome codes. The time ranges for each society in the dataset could also be very different resulting in arguably incomparable units of analysis– for some of the historical societies the codes refer to periods of hundreds of years while for some ethnographic societies it is a few decades. Even within the time ranges specified, cultural units could still engage in varying levels of indiscriminate violence during different conflicts.

Another potential approach is using individual conflicts or violent events as units of analysis. This approach is used in many databases of more recent and contemporary wars (Eck & Hultman 2007; Sarkees & Wayman 2010). It was not used in the current study because one of the aims was to determine the possibility of observing consistent within-societies and distinct between-society patterns of behavior in war– in this respect, characterizing the average behavior of a society in war is different from sampling individual conflicts. A more effective method could be to examine available data on the individual conflicts in which a particular society engaged to characterize both between- and within-societal variation. Details about individual conflicts, particularly the identities of enemies, and

possibly other factors such as the extent to which they were offensive/defensive (i.e. de Dreu & Carsten 2019), could also aid with quantifying within-society variation or consistency in wartime behaviors.

Military organization in this study was coded dichotomously, based on Otterbein's previous cross-cultural codes on whether societies had military professionals (SCCS v.894, Otterbein 1970). While the current results indicate no difference in levels of indiscriminate killing between societies with and without professional military structures, this variable is an oversimplification of a variety of ways in which military forces can be organized and mobilized as well as their relationships and levels of integration with other governing institutions. A more detailed measure that captures different forms of military recruitment and organization, as well as a specific measure for military technology, could be used to examine how these affect enemy treatment. Such behavior may also interact with some of the factors discussed in the first chapter on self-sacrifice, such as overall attachment to the ingroup, perceived threat from the enemy, degree of choice in fighting, and self-interested versus altruistic motives for engaging in combat.

Research on weapons and other military technology through history (Gabriel & Metz 1991; Hacker 1994; van Creveld 1989) was largely unaddressed in the current study due to limited time and resources, although some of their effects

were hopefully captured through measures of social complexity and military organization. Further work could build on recent efforts to quantify and determine causal factors in the historical evolution of military technology (Turchin et al. 2021, 2022) and examine the relationship between those developments and measures of enemy treatment. In addition to the direct effects of overall lethality and precision of predominant weapons used in different times and regions, the psychological impacts of certain weapons on consideration for enemies could also be explored indirectly with historical data; in particular, innovations that increased distance and reduced risk for attackers. In the instances where objective data on casualties are available, these could be used to validate or supplement measures of norms about indiscriminate violence.

Available data on attitudes towards killing in battle among small-scale societies could also be more closely examined, particularly the purification rituals for warriors observed in many ethnographies. Several scholars writing on the history and evolution of warfare, particularly those arguing for a later origin point, state that humans naturally tend to find killing extremely difficult (Ferguson 2011; Fry 2013; Straight 2017; Wrangham & Glowacki 2012; Zefferman & Mathew 2020). They tend to cite work by David Grossman, whose claims that humans in the police and military need to be intensively trained to kill relies on largely discredited data on rates of soldiers firing weapons in the American Civil War and World War II

(Engen 2011; Jordan 2002; Mann 2019) and should perhaps not be cited uncritically in anthropological research on war. Nevertheless, ideas of killing as contamination and purification rituals following battle are common in the ethnographic literature, but also may occur alongside increased social status for warriors who have killed. Zefferman and Mathew's novel study on post-traumatic stress disorder among Turkana warriors demonstrated a wide range of attitudes towards the permissibility of killing members of enemy societies in raids depending on their age and gender. Turkana have very strong norms against killing other Turkana and gain status from killing non-Turkana in battle but reported the possibility of haunting by enemies– something also reported in other cultures– and commonly undergo purification rituals after killing enemies. However, Zefferman and Mathew conclude overall that "given their moral landscape we expect that Turkana warriors are less likely to develop moral injury from acts of killing in the warzone" than were soldiers in Western militaries, citing the possible effect of more universalist moralizing ideologies in complex societies and norms against killing noncombatants. This can be contrasted with Straight's previous (2017) work among the Samburu, also a pastoralist group in eastern Africa. The Samburu reported cultural norms against killing children, pregnant women, and elderly and mentally impaired persons. When asked about their actual actions during combat, several warriors reported sparing small children, injured

warriors, and elderly individuals. In contrast with Napoleon Chagnon's findings of fitness benefits for Yanomami men who killed in war (1988) and indirectly with those of Glowacki and Wrangham of higher reproductive success for frequent raiders among the Nyangatom (2014), Samburu interlocutors reported beliefs that warriors who were more merciful and avoided killing enemies became more prosperous with larger families (though this was not tested empirically). This was linked with the conception of *n'goki*, a "metaphysical contagion" that arose from killing and required ritual cleansing (Straight 2017). However, many other groups for whom these rituals are recorded also award greater social status and reproductive benefits proportional to enemies killed (Mendoza 2007; Parry 1932; Straight 2017). The cause for this contrast between attitudes towards killing and resulting moral injury or perceived uncleanliness could be examined in relation to multiple other variables like warfare intensity, relative risk, and cultural or social distance, and how these are connected with rituals of cleansing, prestige, or initiation.

For historical societies, examining and quantifying patterns in recorded codes of war could be used to track variation and changes in moral attitudes cross-culturally and historically. This could follow recent suggestions on ways in which ethnographic and historical data can be used to conduct historical psychology, including the construction of structured cross-cultural databases

(Muthukrishna et al. 2021). While there has been extensive research into the psychological processes and quantitative measures of violence in war among contemporary and recent societies, this represents only a fraction of the diversity of human societies and cultures which have existed. The extensive work on legal and philosophical thinking on war across different historical societies and religions could provide a starting point for any such effort. Measures of political organization that include degrees of hierarchy, internal coercion, and predominant moral ideologies such as religion, in a manner similar to analyses of contemporary civilian victimization, could also be a way of differentiating the societies at similar levels of social complexity in the current dataset and perhaps reveal more consistent patterns.

Modern nation-states were not included in this study in part because there are already extensive examinations into the causes of civilian victimization and mass killing during contemporary war, and this thesis is attempting a broader view of how this behavior has been present across human societies. However, an integration with the findings from quantitative studies on violence against civilians and the causes on genocide and other mass atrocities (e.g. Downes 2007; Eck & Hultman 2007; Harff 2003; Valentino et al. 2004) could be used to gain a more complete picture of the relationship between enemy treatment and human sociopolitical organization. For instance, this research has indicated the often

politically rational nature of such atrocities and the importance of the institutional and logistical capacity of perpetrating governments or nonstate organizations in determining the types, targets, and intensity of violence (Gutiérrez-Sanín & Wood; Valentino 2014), as well as exclusionary ideologies that dehumanize or promote excessive fear of certain groups (Straus 2012). These factors are applicable to historical societies as well as modern-day states, and such an integration would also fit into larger efforts to quantify patterns of violence and warfare, namely its increase or decrease through history and to the present day (Levy & Thompson 2011; Malešević 2017; Pinker 2011).

While there are numerous theoretical reasons why there would be no clear relationships between political complexity and degree of indiscriminate violence, given these methodological challenges, the results of this set of analyses do not provide conclusive evidence against both hypotheses. However, one aim of this study was the construction of a scale that would capture cross-cultural variation in normal, socially acceptable levels of lethal violence towards enemies during war. Social complexity is a variable with a relatively consistent directional trend throughout human history. While the extensive literature on social complexity and warfare tends not to focus on norms about how enemies in war are treated, it provided a starting point from which to make predictions even if they were of unrealistically simple linear relationships. Collating available descriptions from the

ethnographic and historical records was partly an exercise in determining the nature of this data and the extent to which it could be quantified as variables of interest, and can ideally be built on or inform other approaches.

Chapter 3: Trophy-taking of enemy body parts

Chapter overview

This chapter uses a dataset of past ethnographically, historically, and archaeologically recorded societies to examine relationships between institutionalized trophy-taking practices during war and levels of social complexity, as well as political expansion and agricultural practices. I focus on trophy-taking because I argue it can serve as a general proxy for attitudes towards enemies and moral thinking about violence in warfare, which will be further explored in the paragraphs below. Trophy-taking is defined here as institutionalized in a society when the taking of body parts from enemies was a widespread, socially accepted and expected practice. The existing literature on trophy-taking suggests that it was likely to be prevalent in warfare among small-scale societies where warriors used trophies to demonstrate military skill and increase their social standing, as well as chiefdoms and early states where leaders needed to publicly display their monopolization of violence to maintain control of internal populations and intimidate external ones. Somewhat separately, ethnographic, historical, and archaeological evidence indicates that the taking and display of body parts, particularly heads, were often embedded in cosmologies of agricultural production and fertility in multiple regions, and therefore might have been more prevalent among past societies dependent on agriculture. However, trophy-taking appears in conflicts across different cultures and time periods, encompassing a diverse

range of actions that may be linked with degrees of social complexity depending on their cultural meanings and social functions, complicating any such patterns.

Along with a range of other treatments to which enemy bodies may be subjected, the taking and processing of body parts may indicate or symbolize intergroup relations and the perceived norms of combat when engaged with a particular enemy. Put more simply, how a society treated enemy dead conceivably demonstrates what a society thought of those enemies. Formal or informal codes between frequently warring historical societies often stipulated a certain treatment of defeated enemies, such as returning the dead for burial as was the case with ancient Greek city-states (Lanni 2008), or nonmolestation and ransoming of high-status captives among medieval European societies (Johnson 1981). These norms did not encompass enemies perceived as uncivilized or outside the sphere of moral concern, such as non-Hellenic societies or European commoners respectively (Bryant 2016; Lanni 2008; Raymond 2010). In some cases, actions such mutilating enemies and displaying their body parts were used to convey hatred for, express dominance over, or humiliate defeated enemies (Chacon & Dye 2007). During encounters between people from unfamiliar cultural groups, the taking of body parts from the dead by one side could corroborate beliefs about their savagery or barbarism by the other, particularly when such practices were widespread and ritualized (Hoskins 1996; Roque 2008). The current study documents evidence of institutionalized trophy-taking among past societies, ranging from approximately 3000

BCE to 1900 CE, to explore if and how such practices varied with social complexity and resource ecologies within this time span.

Trophy-taking can encompass the removal and collection of enemy body parts, which may be displayed for a short time and discarded, carefully and ritually prepared, or treated in some other manner. Such practices have been recorded in multiple regions across different periods of history and have been hypothesized to be a near-ubiquitous feature of human cultural systems (Walker 2000). Bioarchaeological studies of Mesolithic and Neolithic sites have found skeletal remains from violent confrontations with indications of peri- and post-mortem processing including scalping and head-taking (Kim & Kissel 2019; Price et al. 2006). Archaeological evidence for trophy-taking and other signs of conflict tend to occur with the formation of farming and early centralized societies (Andrushko et al. 2010; Arkush & Tung 2013; Dye 2016). Ethnographic and historical descriptions of trophy-taking practices provide information from which to infer possible social contexts of such sites. For instance, among small-scale societies, they were sometimes embedded as part of an understood set of relations between repeatedly warring groups (Boehm 1987; Downs 1956). They may also have served as "leveling mechanisms" (Boehm 1993) in partially stratified societies where the acquisition of status through trophies– often as part of rites of adulthood for young men– were part of a negotiation for political and military power that might otherwise be consolidated by older men and/or religious authorities (Boehm 1987; Simon 2012).

Anthropological work specifically on the taking of heads and skulls has also linked them with beliefs about the fertility of livestock, crops, and people; e.g. as a process of "capturing agricultural fertility from enemy peoples and removing the pollution of murder by transforming death into new life" (Hoskins 1996: 224). In the context of larger kingdoms and empires, archaeological and written records indicate how the taking of body parts may have formed parts of ideologies of superior morality and attempted civilizing processes of external populations during periods of conquest or colonization, in addition to symbolizing military prowess and conferring status for individual soldiers (Campbell 2014; Cox 2017).

Trophy-taking has also been recorded in more recent history (and contemporary times) among colonial powers and modern nation-states (Harrison 2012). However, in these instances they tend not to be institutionalized in the same manner and linked with membership in warrior groups or explicit spiritual beliefs. While the informal taking of body parts by individuals has occurred many times through history as evidenced by archaeological, historical, and ethnographic records (Chacon & Dye 2007), this study focuses on forms of trophy-taking that were normatively acceptable and in some cases formally institutionalized in military or social systems (Harrison 2012). Trophy-taking as widespread social practices became gradually less acceptable and common in many regions in the course of colonization by state powers (Hoskins 1996; Roque 2010; Simon 2012), influences of various religions (Armit 2012: 29; Maxwell 1996), independent

political and social developments (Milburn 2018), and more recently the development and spread of international norms limiting forms of violence in war (Harrison 2006). This means that while the trophy-taking still occurs informally or surreptitiously, it is generally considered beyond the pale of contemporary lawful military actions, reflecting widespread changes (or homogenization) in attitudes about the proper treatment of enemy bodies (Harrison 2006; Keeley 1996). This study attempts to survey cultures and times when such practices were socially prevalent to the point of being expected or even rewarded, taking institutionalized trophy-taking as one indication of where in the "universe of moral obligations" (Fein 1993: 101; Leader Maynard 2022: 203) enemy peoples were placed by a warring society. The degree to which trophy-taking practices occur during conflict and their cultural meanings depend on and interact with political structures and enemy relations, and thus serve as a behavior with which to comparatively examine the historical interaction between social complexity and the intensity of war.

Drawing on archaeological and anthropological literature on trophy-taking, this chapter tests the following hypotheses:

Hypothesis 1. Institutionalized and/or widespread practices of human trophy-taking were more likely to occur in societies at intermediate levels of sociopolitical complexity, such as sedentary and semi-sedentary small-scale societies and small

states, than with other forms of political organization, and decrease at higher levels of political complexity.

Hypothesis 2. Institutionalized and/or widespread practices of human trophy-taking were more likely in societies engaging in violent expansion of political power over territories or peoples.

Rationale: While occurring in other types of societies, taking of human body parts as trophies may have become more prevalent and institutionalized among societies that experienced frequent warfare such as farming societies with achieved inequality to symbolize military skill and increase social status, and to project military and political power among states that relied on violent coercion of internal and external populations.

Hypothesis 3. Dependence on agriculture will increase the likelihood of practices of taking human heads as trophies.

Rationale: There is anthropological and archaeological evidence from many societies, particularly in Europe and Southeast Asia, for cosmological beliefs linking fertility and agricultural productivity with ritual processing of human bodies/body parts, often relating specifically to human heads.

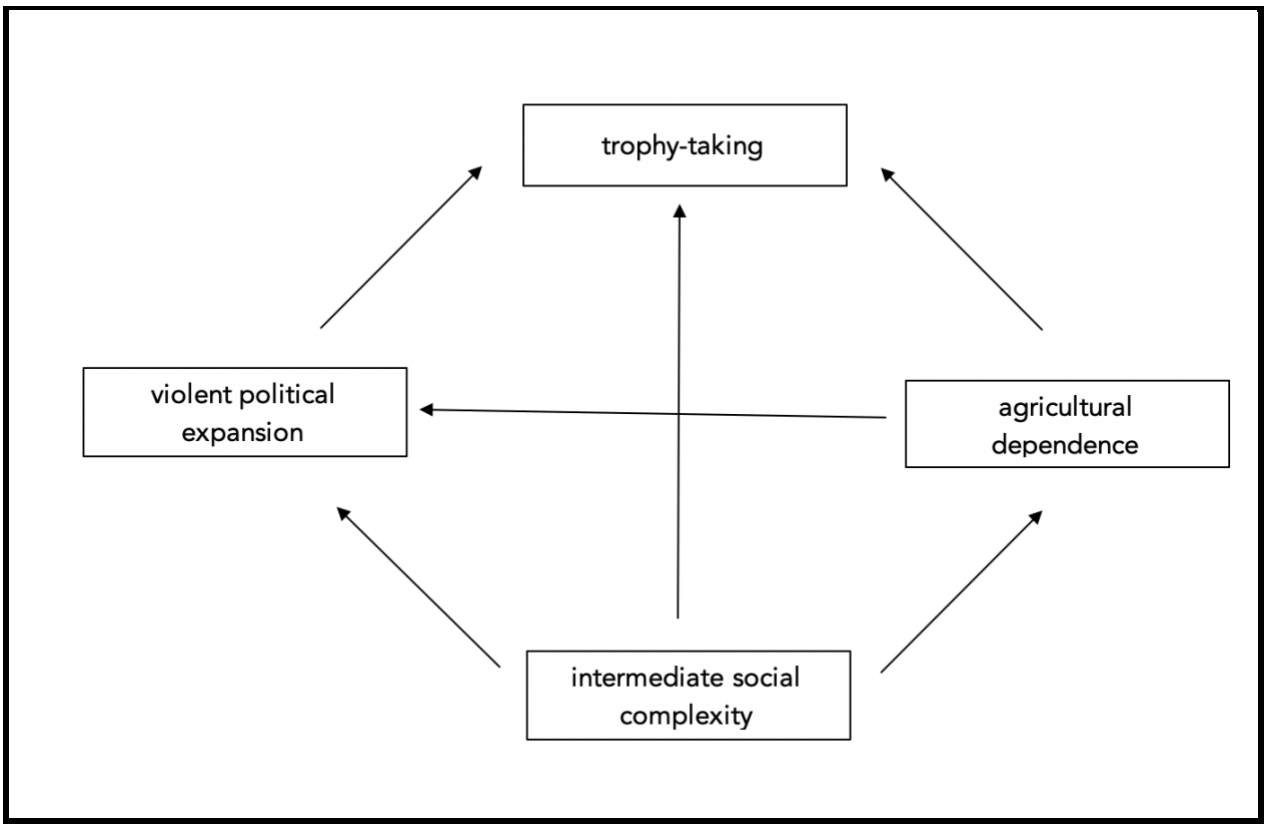


Figure 12. Diagram representing Hypotheses 1-3 on the posited relationships between intermediate social complexity, dependence on agriculture, violent political expansion, and trophy-taking practices.

Theoretical background

The following section provides a theoretical background to the variables that will be explored in relation to trophy-taking practices, specifically those measuring social complexity, violent political expansion, and dependence on agriculture. As briefly covered above, trophy-taking practices may have shared common meanings across groups at similar levels of social complexity, and taken on different forms as groups changed in size, complexity, and predominant modes of conflict. In particular, violent political expansion was often a feature of complex societies that was absent in smaller-scale ones and entailed a different political and ideological relationship with the use of

violence, specifically its consolidation and legitimation by a recognized political authority and its application to outside groups. The literature reviewed covers some of the anthropological and archaeological evidence for these themes and cross-cultural similarities and discusses why the prevalence of trophy-taking might be expected to follow a quadratic pattern in relation to social complexity. Dependence on agriculture commonly occurred alongside and was often (though not always) necessary for the growth of social complexity (Turchin et al. 2022). Somewhat separately, it was also linked with the religious meanings and social functions of body parts taken from the dead, either within or outside the cultural group (though this study focuses on the latter). These meanings were often linked with beliefs about a society's reproductive power and vitality in the form of agricultural productivity (Hoskins 1996). I will attempt to review some of the thinking on this somewhat puzzling but culturally and historically recurrent motif and how it might be connected with trophy-taking practices.

Potential links between social complexity and trophy-taking

Studies focusing on practices of trophy-taking, corpse mutilation, and related practices have given a range of interpretations for the possible social significance of such acts, including dehumanization of the members of rival groups (Andrushko et al. 2010; Armit 2012; Valdez 2009), to gain or display social status (Bartelink et al. 2013; Chacon & Dye 2007; Flannery & Marcus 2012), to humiliate the victims (Kantner 1998; McMahon et al. 2013), as a form of revenge (Kantner

1998; Lambert 2007), ritual practices around violence (Dye 2016; Tung 2008), and as indicating perceptions of group responsibility and social substitution (Hatch 2017; Mensforth 2007; Schulting 2013; Tung & Knudson 2008). While these studies indicate a range of causes that vary across cultural and ecological contexts, they also highlight potential common interactions with social and political structure (Chacon & Dye 2007; Hoskins 1996). Research on the growth of political complexity often highlights the centrality of military ideology to social power and authority. Among non-state societies with achievement-based rather than hereditary inequality, culturally institutionalized trophy-taking in war could serve as the primary means for young men to increase social status and gain prestige (Flannery & Marcus 2012; Maschner & Reedy-Maschner 2007; Mendoza 2007). For instance, dozens of cases of dismemberment and trophy-taking have been documented in central Californian communities spanning from 3000-200 BCE, with an intensification of such practices during the formation of hierarchical societies in the Early/Middle Transition Period (Andrushko et al. 2010). Similarly, David Dye (2016) contextualizes Mississippian dismemberment and trophy-taking practices in regional belief systems about spiritual power and mythologies of war that became important with the development of non-egalitarian societies and new political elites, in addition to symbolizing military prowess and status as in other cultures and time periods.

The ideological importance of military power to political authority in early states could have affected how war was conducted during political expansions for agricultural land, slave labor, or tribute from conquered populations (Haas 2001; Kim et al. 2015; Trigger 2003; Underhill 2008). Works which survey early states have described the use of captives for sacrifice or headhunting practices as part of displays and threats of violence to control internal populations and project military power to external populations (Armit 2012; Chacon & Dye 2007; Trigger 2003; Turchin 2015). For instance, there is archaeological evidence that the expansions of the Wari, Chimu, and Inka states were associated with headhunting practices and massacres of resistant populations (Arkush & Tung 2013; Tung & Knudson 2008). It is possible that state societies which expanded beyond a certain size would have needed to rely on more broadly egalitarian and (internally) cooperative rather than coercive ideologies to survive (Turchin 2015). Changes in the political organization and ideologies in such societies may also have been associated with a decrease in institutionalized, display-oriented violence such as captive- or trophy-taking. Data on human sacrifice and social complexity from the Pulotu and Seshat databases appear consistent with this pattern (Hoyer et al. 2019; Watts et al. 2016). For instance, Hoyer et al. (2019: 3) find that human sacrifice increased from around 10% to more than 80% from small-scale to mid-scale societies before decreasing again with large-scale societies. Although this is a distinct practice from trophy-

taking, they are often discussed together in archaeological literature on chiefdoms and early states as displays of violence that reinforce spiritual ideologies of power and authority (Arkush & Tung 2013; Underhill 2008; Verano 2008). In the context of early expansionist societies, trophy-taking could construct and reinforce perceived social boundaries between the civilizing power and resistant peoples in the same manner as human sacrifice. For instance, during various periods in ancient Egypt, body parts were taken and used to count the number of enemy dead, presented to military commanders for rewards, and depicted in artwork and stele as affirming the divine political and moral authority of the pharaoh (Cox 2017). In a similar vein, linguistic and archaeological evidence for captive-taking, sacrifice, and headhunting of neighboring peoples as practiced in the Chinese Shang Dynasty (Milburn 2018) have been interpreted as exercising and reproducing "Shang civilizational order" (Campbell 2014).

Trophy-taking was also adopted to imitate what were perceived as 'uncivilized' practices of foreign populations and used as intimidation by state militaries during conquest and colonization efforts. For instance, troops of the Roman Republic used hand amputations, along with widespread massacres, enslavement, and sacking, during their conquest of Hispania, as part of "a policy based on intimidation and terror towards a barbarian enemy" (Simón 2012: 225). In the sixteenth and seventeenth centuries, English forces publicly displayed the

severed heads of Irish rebels for the explicit purpose of demoralization and terror (Canny 1973). Patricia Palmer (2007) argues that this method inverted Irish practices of decapitating enemy dead, where the English created a worldview in which Irish and English beheadings were respectively "confirmation of savagery" and a "legitimate instrument of justice" (Palmer 2007: 30). This reasoning paralleled and possibly drew inspiration from contemporaneous beliefs about civilizing missions used by the Spanish in their conquest of the Americas– in both cases, not fully settled lifestyles and wartime practices of mutilation marked the conquered peoples as uncivilized (Canny 1973) and "licensed a mirroring (but not morally equivalent)" practice of mutilation and display (Palmer 2013: 14). Such uses also highlight how perceptions of social distance may interact in different ways with culturally specific practices around the treatment of enemy bodies, and how they might be used to situate enemy peoples within a framework of perceived humanity and civilization. In more recent history, the collection of skulls and other body parts by Europeans in colonized areas has been analyzed in studies that problematize distinctions between practices of ethnographically-studied peoples and supposedly non-ideological trophy-taking by colonial powers (Roque 2010). This can be illustrated with the language of hunting that nineteenth-century British colonial officers applied to military actions against the Xhosa, with some scholars interpreting the collection of skulls and other body

parts from high-status Africans as an extension of traditions of collecting 'exotic' animal trophies (Harrison 2008; Webb 2015). The use of such trophies for supposedly scientific phrenological studies allowed them to maintain a distinction between their own actions and those of colonized peoples (Harrison 2008; Roque 2010). The presence of such practices among larger states and colonial powers also indicate how, rather than declining, they might be maintained in complex societies with different ideological purposes.

Agriculture and spiritual beliefs about human body parts

Anthropological research has also addressed how agriculture, outside of its more obvious relationship with social complexity, could be a possible driver of trophy-taking. This research often emphasizes the culturally recurrent link between human bodies, particularly human heads, with religious and spiritual beliefs about life-force, power, and fertility among agricultural societies (Chacon & Dye 2007; Dye 2016; Santos-Granero 2009). This has been documented in regions including Southeast Asia (Andaya 2004; Hoskins 1996), Europe (Armit 2012; Hasluck 1954), and the Americas (Arnold & Hastorf 2008). Ian Armit analyzes evidence for headhunting practices in the European Iron Age and notes the frequent association of deposited skulls with artifacts of "fertility and renewal" rituals, tools for grinding grain, and imagery of corn (2012: 71). He interprets these findings as consistent with a "metaphoric relationship between the action of the sickle,

harvesting crops, and that of the sword, swiping off heads" in ancient Mediterranean, Asian, and Middle Eastern literary sources where severed heads are likened to the seeds or products of harvests (Armit 2012: 102). Agricultural metaphors could also accompany the use of corpse mutilation and trophy-taking for humiliating and terrorizing enemies in ancient states; for instance, the Ur king Šu-Sin claimed to have beheaded his enemies and "sowed the heads of the just and the iniquitous like seeds" (Altman 2005 cited in Richardson 2015: 36). Art from the Moche and Nasca peoples in South America around the first millennium CE depicts severed heads associated with agricultural deities or with plants growing from them (Armit 2012). In North America, the taking of heads and other body parts as trophies has been situated within 14th century Iroquoian religious beliefs, where there is evidence for it becoming institutionalized during the advent of agricultural practices and increased political complexity as villages were consolidated into larger units (Williamson 2007). Similarly, militaristic iconography in Pueblo IV rock art in the American southwest has been interpreted in the context of ethnographic data on scalping and head-taking in Pueblo warrior societies as indicating the emergence of an "ideology of conflict" where "warfare and fertility comprised a dual process" during the development of maize horticulture and social integration of villages (Schaafsma 2007: 106). These sites

highlight additional links with political centralization and the growth of social complexity that may occur alongside the development of agriculture.

With regards to relations between warring groups, taking enemy body parts could be interpreted as a symbolic act to spiritually weaken them. Ethnographic descriptions of headhunting practices highlight beliefs that the acquisition of heads was necessary to ensure the livestock and crop productivity and security of the community (Maxwell 1996; Needham 1976). One analysis of warfare and slavery systems among indigenous Americans describes how warriors in some societies would undergo considerable risks to retrieve fallen comrades' bodies because if their heads were taken by enemy groups this would deplete their own group's spiritual power and add to their enemies (2009: 216). This was not limited to indigenous American societies– one ethnography of the Toradja people of Indonesia describes how heads were taken from enemy groups to deprive them of life force, in addition to ensuring their own health and those of their crops (Downs 1956: 64). Similarly, the Wa people of present-day Myanmar conducted seasonal headhunting raids against neighboring communities alternating with the sowing and harvesting of rice, their primary means of subsistence, in what is described by Fiskesjo (2008) as a religious defense of their agricultural productivity.

Anthropologist Janet Hoskins (1996: 18) writes that "the connection between the taking of heads and both human and plant fertility has provided a

classic problem for anthropological interpretation". The specific beliefs that link headhunting practices with the outcomes of harvests and other consequences, and the assessment and interpretation of these beliefs by ethnographers, have been debated in the anthropological literature: an influential critique by Rodney Needham (1976) argued that the anthropologists' attribution of beliefs about fertility-promoting life force to studied societies was largely unjustified by those people's actual statements on reasons for head- and skull-taking. According to Needham, these differed from Western ideas of causality and instead ascribed well-being and fertility directly to captured heads with no mediating intangible power. It is also logical that beliefs linking trophy heads to fertility might change with a society's predominant mode of subsistence, whether hunting, fishing, herding, or farming. However, evidence for the widespread nature of such beliefs provides a starting point to quantitatively test for a possible cross-cultural relationship.

Analysis

Quantitative analyses (Bayesian logistic regressions) were carried out on a final sample consisting of 107 societies, including societies documented in eHRAF and historical polities described in Seshat. As the following chapter focuses on trophy-taking practices in a particular world region and ethnolinguistic category (Austronesian societies) and the dataset analyzed in this chapter includes ethnographically-recorded

societies along with historically- and archaeologically-recorded ones, case studies are not included for this chapter. Instead, the analysis and discussion of headhunting practices among Austronesian cultures in the next chapter provides a more in-depth exploration of trophy-taking practices in a culturally specific setting.

For the present dataset, I attempted to balance the number of societies for different geographic regions, subsistence strategies, and across the variables used to measure social complexity (size, centralization, and number of hierarchical levels). Societies for which no convincing evidence for either the presence or absence of institutionalized trophy-taking were excluded. This section covers the variables coded and how they were transformed for the analyses, issues of regional and temporal autocorrelation, the statistical models and implementation in R, and results.

Data coding and variables

As with previous chapters, data were coded from ethnographies and secondary historical work on eHRAF/EA cultures and Seshat polities. The presence or absence of trophy-taking practices was coded for a total of 107 societies. However, there were differences in the data available for coding political complexity between ethnographic and historical societies. Because of this, the dataset was split for the analyses using the available social complexity measures for the different sets of societies (discussed further in the following section). A distribution of societies for which trophy-taking was coded present is shown on a map of the world in Figure 13.

Figure 13. Global distribution of societies for which trophy-taking was coded present in the dataset. Cases span many historical periods, represent only a small number of cases of violent conflict, and are intended only to show the cross-cultural nature of such practices and geographical distributions of the sample, not comprehensive estimates for any region.

Predictor variables:

Population size- Population estimates for the time period designated for each society, coded according to whether estimates fell in the tens, hundreds, thousands, etc. ranges

Political centralization- The degree to which political power in the cultural unit is or was centralized to a single authority/place. The scale used was created from a combination of Seshat's degree of political centralization variable and EA variable 090 'Degree of political integration'. Coded as acephalous (absence of any political organization, even locally; equivalent to EA090); autonomous communities (local political integration transcending kin groups, includes societies coded under EA090 autonomous local communities and peace groups); loose/nominal/minimal states (a central government with some control or authority over relatively autonomous regional rulers, equivalent to

EA090 minimal states and Seshat nominal, loose polities); confederated/feudal states (the central government has more control over regional rulers but not complete authority); unitary states (as defined by the Seshat variable- regional governors are appointed and removed by the central authorities, taxes are imposed by, and transmitted to the center).

Hierarchical levels- The number of nested governance levels outside of the local level. This was adapted from the EA variable 33: Jurisdictional hierarchy beyond local community, which is generally used in cross-cultural studies as a measure of political complexity. Coded as 0 (none/autonomous communities) through 5 (5 or more levels).

Political expansion- Whether warfare conducted by the society increased the territory or population under its political control. This should be roughly equivalent to the SCCS variable 909: Subjugation of territory or people and the Seshat warfare variable of Annexation. It indicates deliberate attempts to expand political control but not decentralized expansion into land e.g. for hunting, grazing, or farming that involves fighting. Coded as inferred/yes, inferred/no, unclear.

Dependence on agriculture- A society's degree of agricultural intensity, equivalent to EA variable 28 Agriculture: intensity. Coded as 1 (no agriculture), 2 (casual), 3 (extensive), 4 (horticulture), 5 (intensive-permanent), 6 (intensive-irrigated).

Social complexity- This variable is taken from the paper 'Quantitative historical analysis uncovers a single dimension of complexity that structures global variation in human social organization' by Turchin et al. (2018). It is the first component from a PCA of nine 'complexity characteristics' created from 51 Seshat variables on aspects of polity size, governance, settlement, and information systems, and accounted for 77.2% of variance. It is used as a predictor variable for the historically recorded societies that overlap with the Turchin et al. dataset.

Outcome:

Trophy-taking- Whether the taking of human body parts as trophies is described as a common or institutionalized practice in war by the focal society. Coded as yes (described in sources), no (described in sources as taboo or explicitly not practiced), inferred no (no evidence in context of otherwise detailed descriptions of combat so can be inferred absent), unclear (not mentioned but descriptions of combat are not extensive enough to infer absence, or conflicting evidence). Societies coded unclear were not included in the final analysis.

Headtaking– Presence of trophy-taking practices specifically of heads (which might later be processed and displayed/retained as skulls).

Processing of data pre-analysis:

Due in part to the nature of trophy-taking as a variable, the dataset for this chapter contains more historically- and archaeologically-recorded societies than those in the other chapters. Because of the number of historical societies included, it is also the only chapter to use a measure of social complexity derived from a previous analysis of Seshat data. In the previous chapter, where the dataset contained relatively few societies primarily coded from secondary historical and archaeological studies, I was able to independently find and code the variables used in the PCA to create the measure of social complexity. Due to the much larger number of such societies in the current dataset, I used the social complexity variable (SPC1) calculated for 51 Seshat polities by Turchin et al. (2018) that overlapped with those societies in my dataset. The data in that publication is structured with temporal series with multiple rows for each NGA sampled at 100-year intervals, so that some polities are coded for more than one period; for example, the middle La Tène period in France (FrTeneB) is coded for 300 and 200 BCE. For the current analysis, the social complexity codes were averaged for societies recorded for multiple dates (in all such cases the first and last dates were within the time range referred to by the sources on trophy-taking). In general, the difference in social complexity codes from different dates in a polity was small or nonexistent.

As stated above, the dataset was split for the analyses due to differing measures for social complexity depending on the time period and sources for different societies. Data on hierarchical levels from the Ethnographic Atlas were available for 68 out of 107 societies in this dataset (mainly missing for the Seshat polities). One set of analyses was run using this portion of the dataset with the first component of a PCA on population, centralization, and hierarchy as with the previous chapter, another using the social complexity variable from the Turchin et al. paper, and another using population as a proxy for social complexity on the entire dataset. For simplicity, these portions of the dataset are referred to respectively as the ethnographic societies and historical societies, although the 'ethnographic' does include some historical and archaeological societies for which the Turchin et al. complexity measure was not calculated. The dataset was separated for the analysis primarily to use the entirety of the sample of societies for which data on trophy-taking was available but ensure that any patterns found would not primarily be due to the way social complexity was measured. A consistent pattern of the likelihood of trophy-taking as predicted by the simple PCA measure in the ethnographic dataset, the more well-validated PCA used in the Turchin et al. dataset, and population size would provide stronger evidence of a true relationship. In contrast, a pattern found only in one of these analyses could

indicate biases in that particular sample of societies or with the way social complexity was measured.

In contrast with the behaviors examined in the previous two chapters, there is qualitative and quantitative evidence for cultural diffusion (e.g. from contact during warfare) and vertical-historical transmission of trophy-taking practices (Lambert 2007; Watts et al. 2015b). This chapter also incorporates more societies from Seshat than the other chapters, potentially exacerbating autocorrelation due to some societies occurring in a sequence in a particular region (delineated in Seshat as natural geographic areas or NGAs). Therefore, in addition to including world region as a varying intercept as with the analyses in the other chapters, I recorded locations (latitude/longitude) for each society and used geographical distances as a proxy for regional/cultural similarity in a set of phylogenetic logistic regressions which were then compared with the other models. Longitude and latitude data were obtained from D-Place for the ethnographic societies, from the world.cities() database in the R *maps* package (Deckmyn 2018) for the capital cities (or nearest contemporary equivalent) for polities recorded in Seshat, or the archaeological sites of trophy-taking evidence for archaeological societies. I then used the geodist() function in R to make a matrix of geodesic distances and the upgma() function in the package *phangorn* to make this into an ultrametric tree using hierarchical clustering (Schliep 2011). The tree was assessed visually to

ensure societies were placed as expected depending on region (e.g. societies in the same Seshat NGA were grouped together) (tree figure in Appendix 2 for Chapter 3). Trophy-taking was then modeled as predicted by population and agriculture (using the combined dataset) with the function phyloglm() in the *phylolm* package (Ho et al. 2016) for estimating phylogenetic logistic regressions with this tree serving as the 'phylogeny'. While this did not directly account for temporal autocorrelation, in general the placement of societies based on regional proximity also represented their distance in time; for example, the Longshan, Shang, Tang, and Mien/Hmong polities in China formed a clade, with the Shang and Longshan polities (3000-1900 BCE and 1250-1045 BCE respectively) as sister taxa, the Tang (617-760 CE) as an outgroup to them, and the Hmong (1701-1895 CE) as an outgroup to these three. This was not uniformly the case and placement of some societies can be disputed; additionally, measuring cultural similarity in this way does not account for cultural transmission over very long distances, e.g. from colonization. However, it seemed an appropriate way to balance available resources with the amount of autocorrelation in the data that might affect results. I also checked the dataset prior to the analyses to ensure there were no instances of societies that were originally Seshat polities directly preceding/succeeding one another in the same NGA.

Political centralization, agriculture, hierarchical levels, and population were treated as continuous variables; trophy-taking, head-taking, and political expansion were treated as binary. The first factor from a principal components analysis (using the prcomp() function, *stats* package in R) on the population, centralization, and hierarchical levels variables was used as a measure of political complexity for societies not in the Turchin et al. dataset (cumulative proportion of variance explained =0.84). Social complexity measures, population, and agriculture were standardized for all analyses (mean centered at 0 with a standard deviation of 1).

To test basic assumptions of positive relationships between agriculture, population/complexity, and political expansion, logistic/linear regressions using the glm() and lm() functions in the *stats* package were run on the following pairs of variables across the datasets: agriculture and expansion, agriculture and population/complexity, and expansion and population/complexity. Estimates were positive, ranging from 0.21 (expansion~PC1 in non-Seshat societies) to 1.9 (expansion~population for the whole dataset), $p<0.0001$ for all models.

Statistical models

Logistic regressions were conducted using the *brms* package (Bürkner 2021). They were designed to test the relationships implied by the graph in Figure 12. The models were constructed based on the adjustmentSets() function in the *dagitty* package

(Textor et al. 2017) that, based on the provided graph, returns the necessary covariates for which to adjust when estimating an effect between two variables. This was done to prevent various types of causal confounding such as omitted variable and collider biases (Bulbulia et al. 2021; McElreath 2020). For this graph, the following covariates were returned (for predicting the total effect of the given exposure): agriculture when trophy-taking is predicted from complexity, complexity and agriculture when predicted from expansion, and no adjustment when predicted from agriculture.

Models were specified as follows with trophy-taking/headtaking as a binary variable using a Bernoulli distribution, with expansion, agriculture, complexity, and complexity squared included or dropped depending on the effect to be estimated. Priors were chosen to be weakly regularizing.

trophies ~ bernoulli(p)
logit(p) ~ α + β*exp + β*agr + β*pol + β*pol^2
    α ~ normal(0, 1.5) *[intercept prior]*
    β ~ normal(0, 1.5) *[slopes prior for expansion, agriculture, complexity measure]*

Effect of complexity, including any effects through expansion, quadratic relationship
trophies ~ (1| Region) + complexity + complexity^2 + agriculture

Effect of complexity, including any effects through expansion, linear relationship
trophies ~ (1| Region) + complexity + agriculture

Effect of complexity, accounting for expansion, quadratic relationship
trophies ~ (1| Region) + complexity + complexity^2 + agriculture + expansion

Effect of expansion, accounting for complexity and agriculture/Effect of complexity, accounting for expansion, linear relationship

trophies ~ (1| Region) + complexity + agriculture + expansion

Effect of agriculture on headtaking
headtaking ~ (1| Region) + agriculture

Preregistration and data availability:

The analyses for this chapter were preregistered on the Open Science Framework site (https://osf.io/dwb8p) prior to conducting the analyses. The dataset, sources, and codebook will be available on OSF.

Results

Overall, results across the datasets were consistent, although there were differences in the strength of effects and which models were a better fit as calculated by the model_weights() function. Political expansion did not show an effect in either direction across models and datasets. Estimates for social complexity, population, and agriculture were somewhat negative overall but the 95% CIs for most models included zero. There were similar estimates for the social complexity PCA measures in the Seshat and non-Seshat data analyses and population in the combined data, indicating that these measures were capturing a similar set of attributes positively associated with population size.

Ethnographic data

There was no evidence from the analyses of ethnographic/non-Seshat societies for a quadratic relationship between likelihood of trophy-taking practices and measures

of social complexity, or for a positive effect of expansion. Model fits were compared using leave-one-out cross-validation. None of the models with the squared term for PC1 were among the better-fitting models (returned weights ≤ 0.05). Estimates for complexity, expansion, and agriculture were slightly negative, although the 95% CIs included zero in all models.

	m_PC1		m_PC1.agr		m_PC1.exp	
Predictors	*Log-Odds*	*CI (95%)*	*Log-Odds*	*CI (95%)*	*Log-Odds*	*CI (95%)*
Intercept	0.58	-0.29 – 1.70	0.57	-0.48 – 1.75	0.69	-0.48 – 2.01
complexity	-0.48	-1.24 – 0.22	-0.40	-1.29 – 0.40	-0.42	-1.38 – 0.53
agriculture			-0.23	-1.11 – 0.61		
expansion					-0.25	-1.90 – 1.42
Random Effects						
σ^2	3.29		3.29		3.29	
τ_{00}	3.12 $_{\text{Region}}$		3.38 $_{\text{Region}}$		3.28 $_{\text{Region}}$	
ICC	0.49		0.51		0.50	
N	22 $_{\text{Region}}$		22 $_{\text{Region}}$		22 $_{\text{Region}}$	
Observations	67		67		67	
Marginal R^2 / Conditional R^2	0.045 / 0.340		0.072 / 0.352		0.064 / 0.347	

Table 4. Coefficient tables for three best-fitting models as evaluated by leave-one-out cross-validation with the model_weights() function in brms. From left to right, estimates and 95% CIs for m_PC1 (complexity), m_PC1.agr, (complexity and agriculture), m_PC1.exp (complexity and expansion).

Historical data

As with the ethnographic societies, there was no evidence for a quadratic relationship between trophy-taking and complexity using the data from historical societies. Estimates for complexity were slightly negative but again included 0 in the 95% CIs for all models. There was no evidence for a relationship with agriculture or expansion (95% CI estimates for agriculture and expansion included zero in all models.

	m_PC1^2		m_PC1		m_PC1.exp	
Predictors	*Log-Odds*	*CI (95%)*	*Log-Odds*	*CI (95%)*	*Log-Odds*	*CI (95%)*
Intercept	1.60	0.11 – 3.43	1.49	0.07 – 3.10	1.72	-0.15 – 3.96
complexity	-0.69	-3.21 – 1.73	-1.31	-3.41 – 0.65	-1.24	-3.32 – 0.85
complexity^2	-1.02	-3.41 – 1.24				
expansion					-0.32	-2.49 – 1.60
Random Effects						
σ^2	3.29		3.29		3.29	
τ_{00}	0.30 $_{\text{Region}}$		0.29 $_{\text{Region}}$		0.30 $_{\text{Region}}$	
ICC	0.08		0.08		0.08	
N	14 $_{\text{Region}}$		14 $_{\text{Region}}$		14 $_{\text{Region}}$	
Observations	40		40		40	
Marginal R^2 / Conditional R^2	0.047 / 0.084		0.024 / 0.063		0.035 / 0.071	

Table 5. Coefficient tables for three best-fitting models as evaluated by leave-one-out cross-validation with the model_weights() function in brms. From left to right, estimates and 95% CIs for m_PC1^2 (complexity^2), m_PC1 (complexity), m_PC1.exp (complexity and expansion).

Whole dataset

Results from the whole dataset were similar to those of the other sets of analyses, with the 95% CIs including 0 for all three variables across models.

	m_pop		m_pop.exp		m_pop.agr	
Predictors	*Log-Odds*	*CI (95%)*	*Log-Odds*	*CI (95%)*	*Log-Odds*	*CI (95%)*
Intercept	0.60	-0.11 – 1.48	0.90	-0.11 – 2.05	0.60	-0.14 – 1.51
population	-0.25	-0.78 – 0.23	-0.12	-0.74 – 0.53	-0.19	-0.78 – 0.40
expansion			-0.49	-1.72 – 0.65		
agriculture					-0.13	-0.80 – 0.51
Random Effects						
σ^2	3.29		3.29		3.29	
τ_{00}	1.70 $_{\text{Region}}$		1.89 $_{\text{Region}}$		1.89 $_{\text{Region}}$	
ICC	0.34		0.36		0.36	
N	23 $_{\text{Region}}$		23 $_{\text{Region}}$		23 $_{\text{Region}}$	
Observations	107		107		107	
Marginal R^2 / Conditional R^2	0.013 / 0.208		0.033 / 0.222		0.028 / 0.218	

Table 6. Coefficient tables for three best-fitting models as evaluated by leave-one-out cross-validation with the model_weights() function in brms. From left to right, estimates and 95% CIs for m_pop (population accounting for all other variables), m_pop.exp, (population and expansion), m_pop.agr (population and agriculture).

The analysis predicting headtaking specifically from agricultural dependence was slightly negative but the 95% CI included 0 (0.37, 95% CI = -0.14 to 0.89).

Phylogenetic logistic regressions

In the analyses incorporating the regional clustering tree, the estimate for population was similar to those in the first analysis with the whole dataset (-0.19 in the phyloglm model and -0.16 in the brms/full dataset model predicting trophies from population), and less negative than the estimates for social complexity in the analyses with Seshat and non-Seshat data.The estimate for the effect of agriculture on headtaking no longer negative but the lower bound for the 95% CI was barely above 0

(0.002). A table comparing the 95% CIs for population/complexity and agriculture across datasets in shown below. (For simplicity, the estimates are shown only from the linear models estimating the total effects of complexity/population accounting for agriculture.)

	non-Seshat	Seshat	whole	phyloglm
trophies~complexity/population + agriculture	-1.29 - 0.40	-3.59 - 0.68	-0.78 - 0.40	-0.64 - 0.18
headtaking~agriculture	–	–	-0.14 - 0.89	0.00 - 0.86

Table 7. 95% CIs for estimated total effects of complexity/population on trophy-taking (first row) and agriculture on headtaking (second row) across datasets.95% CIs for estimated total effects of complexity/population on trophy-taking (first row) and agriculture on headtaking (second row) across datasets.

Discussion

There was not evidence in this data for the first hypothesis of a quadratic relationship between complexity and the presence of trophy-taking practices. Instead, estimates for complexity and population were negative, although the 95% CIs included zero in all models. Although this hypothesis predicted decreased display-oriented violence among larger societies and/or the replacements of beliefs around trophy-taking (e.g. life-force) with other belief systems such as monotheistic religions, a decreased likelihood of trophy-taking among complex societies is not strongly supported in these analyses. This could be due both to conflation of ancient and more recent societies coded as having similar levels of social complexity, as noted in the previous chapter, as well as continuation of such practices with different ideological justifications in complex societies with moralizing religions. For instance, members of

societies with monotheistic religions such as European colonists in North America and both incentivized and promoted trophy-taking practices (scalping) through trade with indigenous Americans and participated in such practices themselves in the Americas, Africa, and other colonized regions (Axtell & Sturtevant 1980; Harrison 2014). In the current dataset, this was not limited to primarily Christian societies; a major study on Islamic laws of war and rebellion states that "it became common practice for the Umayyads and early 'Abbāsids to execute rebels and mutilate their bodies. Frequently, limbs from opposite ends would be severed…It was also common practice to sever the head and send it to the ruler as a trophy" (Abou El Fadl 2000: 53). Despite the decreased acceptability of trophy-taking practices in more recent history, the reasons behind this do not appear to be present among the larger/more complex societies in the current dataset.

The hypothesis of increased likelihood of trophy-taking with political expansion was also unsupported across models. There was also not strong evidence for a positive effect of agriculture on headtaking, although the estimate was slightly positive in the model accounting for geographic distance. While there is extensive qualitative documentation of cross-cultural beliefs linking the taking of heads and beliefs about crop fertility, these form only a portion of spiritual systems in which such practices may be embedded. Similarly, trophy-taking practices could be only one of many methods for violent coercion of external populations. As noted in a critique of Vayda's (1976)

ecological explanation for Iban headhunting, "if it is the case that Iban headhunting and territorial expansion frequently operated together…then equally they were found independently of each other; that is to say, headhunting without territorial conquest, and territorial expansion without headhunting" (Davison & Sutlive 1991: 172). This objection could likewise apply to most other proposed explanations or correlates of trophy-taking practices. The results of this chapter would seem to support Hoskins's statement that "there is no convenient list of 'characteristic' beliefs and practices that are always associated with the taking of heads and their ritual consecration" (1996: 41), applied more broadly to the taking of body parts.

The results may also indicate familiar issues with translating dynamic cultural data into quantitative variables. Even as a comparatively straightforward variable where an argument can be made for binary coding, "trophy-taking" as defined here may still be too broad a phenomenon to be consistently associated with any of the hypothesized drivers. The taking of heads and skulls specifically is a form of trophy-taking that appears frequently across cultures and can be defined more narrowly as "an organized, coherent form of violence in which the severed head is given a specific ritual meaning and the act of headtaking is consecrated and commemorated in some form" (Hoskins 1996: 2). Such ritual meanings and consecrations may still take many different forms across and sometimes within societies. For instance, headhunting cross-culturally appears to have been exclusively carried out by men, although women could be

intimately involved in rituals surrounding their reception and curation (Andaya 2004). The hunting and collection of body parts containing the power to ensure social wellbeing and longevity were sometimes interpreted as men's efforts to control and harness reproductive forces otherwise reserved by women (Hoskins 1996; Smedal 2000), indicating that the presence and meaning of such practices could also be influenced by a society's gender relations and change with centralization, social hierarchies, and gendered production roles. Heads could also be used as symbols for individual status, as displays of militaristic power by a central authority (possibly in association with practices of captive-taking and human sacrifice), be 'adopted' from now vanquished former enemies as resolutions to cycles of revenge killings, or various combinations of these and other systems. The taking and display of Irish heads by the Elizabethan English (Palmer 2007) and the amputation of hands by the Romans in Hispania (Simón 2012) cited earlier are examples of trophy-taking that were widespread and even institutionalized, but linked to displays of state power and terrorizing of resistant populations more so that any spiritual beliefs.

Rather than increased or decreased prevalence, a more plausible assessment could be that of similar practices taking on different ideological meanings and social functions with different forms of social complexity. Since the results of the current study indicate that trophy-taking as a whole does not have a clearly consistent relationship with measures of social complexity, next steps could include a more detailed coding

system that captures these different categories of meaning and motives, as well as the scale (e.g. one enemy head considered sufficient for ritual purposes, or widespread mutilation to obtain individual trophies). As with the previous chapter on killing enemies, recording trophy-taking practices during individual conflicts as well as across societies could provide further insight into how their different forms may interact with other forms of violence and represent relations between warring groups. Examining these practices in the context of other measures of violence– not only levels of enemies killed but behaviors such as human sacrifice, enslavement, sexual violence, or torture, could also indicate between-society differences and overall shifts in norms of violence across societies.

More nuanced coding could also help delineate the ways in which trophy-taking represented different forms of relationships between enemy groups and the different meanings these trophies could take. This could include whether body parts were used as symbols of military prowess to gain status, vessels of reproductive or vital forces, as a means to humiliate, degrade, or terrorize, to demarcate criminals, as objects of scientific interest, and a multitude of other meanings. Similarly, the perception of enemy groups these practices defined could range from known, high-status individuals in continually feuding groups, subhuman prey, malevolent spirits inhabiting liminal spaces, criminals who needed to be disciplined, or savages who were the object of civilizing missions. In some cases such meanings could overlap, e.g. the process and rituals of trophy-taking

served to incorporate the former nonhuman enemy into the human ingroup (McKinley 1979). In other cases the killing and taking of body parts were part of a process of estrangement and dehumanization of previously known social relations, as Harrison argues occurred with headhunting among the Melanesian Avatip (2012: 17). As discussed above, collecting and/or displaying heads and scalps was a form of colonial violence practiced in numerous contexts including Europe and the Americas in which trophy-taking by the colonized and colonizing peoples took on very different meanings (Axtell & Sturtevant 1980; Harrison 2008). Harrison describes similar dynamics around headtaking by English and Welsh warriors in the eleventh through thirteenth centuries, where the Welsh took the heads of opponents whose status they respected as a "perverse compliment" (2012: 22). By contrast, the English used decapitation primarily as a tool of criminal punishment and debasement, and Welsh understanding of this perception meant they found it insulting when the English took the heads of defeated Welsh fighters (Harrison 2012). Some of these meanings and perceptions are arguably tied to some levels of social complexity more so than others; for instance, heads as means of adding spiritual power to a community were likely more present in small-scale societies while those displayed to terrorize enemies might be more common in larger states; others could overlap and be present across many kinds of social groupings. Given these complexities, such a taxonomy for the creation of quantitative variables may or may not be possible, and would need to be supplemented with the existing, extensive

qualitative research on these practices in different cultures and times. However, a coding system that captures, however roughly, such intentions and categorizations could help provide a better understanding of the ways in which societies engaging in trophy-taking used it to construct their moral universe and their own and others' places in it, and how this might be linked to social complexity.

Another possible avenue would be systematically examining when trophy-taking stopped becoming socially acceptable in different regions or cultures. Documenting how the permissibility of trophy-taking changed over time within societies, including the development of informal or formal rules of combat, could be used to explore how publicly acceptable forms of enemy treatment were linked with levels of social complexity. Among many societies this occurred with pacification by colonial powers (although such powers also often contributed to these practices by creating demand for trophies through trade) (Roque 2010). Changes in social acceptance could also occur with the introduction of religious traditions that trophy-taking was seen as incongruous with; for instance, there is evidence for the rejection of traditional headhunting practices by Muslim rulers who took power in the early Brunei state (Andaya 2004; Maxwell 1996) (although, as mentioned above, this did not appear to deter mutilating and taking body parts from rebels in earlier Islamic states). In some cases, the halting of institutionalized trophy-taking reflected a changing relationship between group identity, social values of violence, and beliefs of what constituted a civilized society. One study examines

archaeological and textual evidence from ancient China to trace how terms referring to headhunting became redefined during the Eastern Han and later dynasties, obscuring its historical roots as it came to be viewed as something only practiced by barbaric and uncivilized societies (Milburn 2018). Among European societies, Harrison argues that the development of codes of conduct and a common identity for professional soldiers with the emergence of standing armies limited some forms of violence, including trophy-taking, which came to be seen as primitive and uncivilized. However, this process sometimes occurred in conjunction with the use of these practices against colonial subjects (Harrison 2012: 25). In many cultures where indigenous patterns of war and trophy-taking practices ended under the auspices of modern nation-states, they became replaced by rituals in which trophy heads were represented by coconuts, wooden carvings, or other inoffensive substitutes, adapting the social functions of such rituals and maintaining cultural identity in a manner acceptable to modern postcolonial contexts (Andaya 2004; McKinley 1979). Documenting when these shifts in official or widespread acceptability of trophy-taking practices occurred across different cultures– particularly those instances where they occurred without forceful imposition by outside state powers– and the accompanying political and social changes could be of potential interest for further quantitative historical research on the development of complex societies. Relatedly, patterns of increased and decreased trophy-taking can be visible in a particular region over time with the rise and decline of different cultural complexes.

The significance of cultural transmission, both through related societies and from one society to enemy societies during violent conflict, is widely recorded in qualitative ethnographic and historical sources. More fine-grained regional studies, and/or larger cross-cultural studies incorporating data on geography and cultural relatedness, might also be useful in this regard. For instance, a previous study by Lambert (2007) traced the practice of head- and scalp-taking among different indigenous linguistic groups in California to determine the extent to which they had been present among the earliest inhabitants or brought by later immigrant groups, finding that it was likely a combination of independent origination, cultural diffusion from new groups, and vertical transmissions between related societies. In the current chapter, regional data was incorporated to account for autocorrelation in the analyses rather than being examined directly as a source of cultural transmission. The next chapter on headtaking practices in Austronesian societies is a preliminary attempt to examine a narrower subset of trophy-taking practices among a group of culturally related societies, drawing on both cross-cultural and Austronesian-specific observations of their possible social functions.

Chapter 4: Headhunting and social complexity in Austronesian societies

Chapter overview

Whereas the last chapter examined the relationship between trophy taking, agriculture, social complexity, and warfare using a global dataset, the current chapter explores relationships between similar variables among a much narrower set of cultures with phylogenetic methods. It uses coded ethnographic data and a phylogeny of Austronesian languages to test for a relationship between trophy-taking practices during war– specifically the taking of enemy heads– and levels of agricultural intensity and political complexity among Austronesian societies. The analyses in the previous chapter underscored the highly variable nature of trophy-taking practices and their associated cultural and social meanings, which may have accounted for the lack of a clear relationship with social complexity. This chapter attempts to build on the global analyses by examining a particular type of trophy-taking among Austronesian societies, which are culturally related but encompass a wide range of social and political systems. Focusing on the Austronesian language phylogeny allows for a more fine-grained perspective than the global dataset while accounting for historical relatedness in features of social complexity, subsistence, and warfare practices. Austronesian societies have a detailed ethnographic record and a distinctive form of trophy-taking, the social functions of which have been extensively discussed in the anthropological literature.

Ideally, this approach will provide a complementary perspective to the global analysis on the relationship between social complexity and trophy-taking practices.

Theoretical background

The Austronesian language family includes cultures spanning from East and Southeast Asia, the Pacific Islands, and Madagascar and has been used in several comparative studies examining the cultural evolution of social complexity and associated cultural traits (Currie et al. 2010; Moravec et al. 2018; Sheehan et al. 2018; Watts et al. 2015). Headhunting here refers to a widespread, heavily studied subset of trophy-taking practices that tend to be intimately associated with perceptions of enemy victims and between-group relations when carried out in the context of intergroup violence.

The putative social functions of headhunting described here are generally consistent with those discussed in the previous chapter for trophy-taking, especially given its overall prevalence. Heads are thought to have been a culturally widespread form of trophies because, as Patricia Lambert writes, "the head conveys the social identity and position of the victim and therefore is an obvious body part to retain for purposes of revenge and display" (2007: 67). They could also symbolize the capture of spiritual power from enemies (Hoskins 1996). Headhunting societies often had culturally circumscribed limits on whose head could be taken, such as a specific group of enemy people or only those of a certain social status (Keeley 1996; McKinley 1979). Like trophy-

taking more generally, the taking of head or skull trophies was often a way for young men to gain prestige and sometimes institutionalized as part of transitions to adulthood (Hoskins 1996; Kim & Kissel 2018). Rites of headtaking might also form part of cultural complexes including human sacrifice or captive-taking used to signal and consolidate political authority in chiefdoms and early states (Arkush & Tung 2013). Anthropologists have also written extensively about a culturally recurrent link between headhunting practices and ideas about fertility, reproductive power, and agricultural production. Ethnographic descriptions of headhunting highlight beliefs that the acquisition of such trophies was necessary to ensure the success of crops and well-being of the community (Armit 2012; Hoskins 1996; Needham 1976). The results of the previous chapter on trophy-taking practices globally did not indicate that they were associated with intermediate political complexity or dependence on agriculture, although part of the dataset (of the primarily historically recorded societies) indicated a possible negative relationship with social complexity. One possible interpretation is that highly complex societies relied on other means for consolidating and maintaining political power and social cohesion than display-oriented violence such as trophy-taking; however, this may have also been an artefact of the dataset and not a well-supported relationship. This chapter examines a narrower subset of trophy-taking practices among a sample of related cultures, where it is possible there may be greater similarity in social functions and a more consistent pattern.

Austronesian warfare and headhunting

The emergence of the Austronesian language family has been dated by Gray et al. (2009) to about 5,230 years ago in Taiwan and is now spread over a large area including the Pacific Islands and Madagascar. Austronesian societies have been described as a 'natural laboratory' for studying social evolutionary processes due to their relative isolation and cultural diversity (Sahlins 1963). Patterns of warfare have been discussed in the extensive work on social and political organization among Austronesian societies, particularly how they contributed to the development of social complexity and changed with chiefdoms and early states (Earle 1977; Gibson 1990; Kirch 1990; Knauft 1990). In a synthesis of ethnographic materials, Knauft (1990) describes precolonial Melanesian warfare as encompassing both ritualized combat with few casualties and wholesale extermination, often carried out for revenge. The overall tactics of war appear similar to those discussed by Keeley as typical of small-scale societies, reliant on surprise attacks and superior numbers, although this varied across societies and was not static or homogeneous. Studies of Polynesian societies describe warfare ranging from ritualized battles, raids for captives, conquests of new islands, and intra-island wars to achieve control over means of agricultural production (Aswani & Graves 1998; Kirch 2010; Molle & Marroleau 2022). In addition to headhunting, competitive feasting, cannibalism, slave- and captive-taking, and ritual sacrifice were often cultural practices linked with war and

interacted with geography, population size, subsistence strategies, and political systems (Aswani 2000; Kirch 2010).

Societies considered complex by the measures used in this thesis include the Hawaiian chiefdom in the eighteenth century (Kirch 2010), the sixteenth-century Brunei state (Maxwell 1996), and the Majapahit Kingdom in Java from the thirteenth through fifteenth centuries (Jákl 2016). A previous analysis by Watts et al. (2016) indicated that ritual human sacrifice promoted and maintained social stratification among Austronesian societies, with their results indicating stronger support for a dependent model where the rates at which cultures gained or lost practices of human sacrifice were dependent on the rates of gaining or losing stratification. They also found that cultures with human sacrifice were less likely to lose social stratification if it was already present. As noted in the previous chapter, there are similarities in the theorizing on social functions on human sacrifice and trophy-taking, with trophy-taking in some culturally-specific cases considered a subset of human sacrifice (Metcalf 1987; Winkelman 2014). As headhunting is a well-recorded form of trophy-taking linked with war among Austronesian societies, and studies of headhunting indicate that it may have played a similar role in the development of hierarchical social structures and political centralization among Austronesian cultures, its relationship with social complexity is examined here to determine whether similar results are obtained to the findings on human sacrifice.

Although the history of headhunting among Austronesian societies is not well known from available archaeological or historical data, a phylogenetic analysis by Watts et al. (2015) indicated that headhunting was present in the Proto-Malayo-Polynesian culture and possibly the ancestral culture of the Austronesian tree, providing support for an earlier hypothesis based on linguistic reconstruction of terms relating to the taking of heads (Blust 1976). It was then lost multiple times as these cultures diversified and spread geographically. It may also have been gained at some points, either through independent origin or diffusion between neighbouring groups engaged in trade or warfare (Watts et al. 2015). Their analysis also indicated a strong phylogenetic signal (its distribution across Austronesian societies is predicted by historical relationships and clusters in more closely related groups). Among the 120 groups in the current study for which data are available, 46 practiced headhunting in the time periods for which data are coded (generally in the pre-colonial period prior to major European contact). Theories on the social and political functions of headhunting practices include representations of social status and/or chiefly power (Aswani 2000; McWilliam 1996), constructions of social hierarchies within a community and with the outside world (McKinley 1979; Wagner 1972), part of relations between set of groups engaged in cycles of feuding and revenge violence (Boehm 1897; Downs 1956), and beliefs that trophy heads promoted health and wellness for the ingroup (Davison & Sutlive 1991; Yang 2011).

In particular, these works often situate the taking of heads within cosmological worldviews as actions that represented and constructed internal and external structures of power (Aswani 2000; Davison 1991; Dureau 2000). These could be part of conflict patterns that contributed to the development of larger, more hierarchical societies. For example, Aswani (2000) details the ethnographic and historical evidence for the evolution of predatory headhunting among the Roviana, arguing that it formed part of a cyclical process of chiefly consolidation of spiritual and political power, internal hierarchies, and ritualized warfare that continued for generations prior to European contact. Similarly, Scott Simon argues that "headhunting led indeed to indigenous state formation, as control of ritual violence served as the basis for political power" of the Nabuasa clan in Southwest Timor (2012: 170). Headhunting is also described as part of expansion and conquest by the Brunei state during its rise prior to the sixteenth century, with captured heads from conquered peoples symbolizing their submission to the ruler (Maxwell 1996).

It should be noted that these states and others in the Austronesian sample are comparatively smaller than complex societies in the global dataset used in the previous chapters. For instance, the eighteenth-century Hawaiians are among the most complex societies in the Pulotu dataset (described as a "large, politically complex state" by Watts et al. 2015), but are coded as a 3 (two external jurisdictional levels) for the EA033 variable external jurisdictional hierarchy, equivalent to a "larger chiefdom" (whereas a

code of 4 or 5 would be considered states) with an estimated population of 350,000. This is in comparison with small states in the global dataset with populations in the millions or higher. However, this characteristic of the Austonesian dataset also allows for a test for association between headhunting and more intermediate social complexity with which trophy-taking is thought to be associated.

As discussed in the previous chapter, trophies of human body parts, especially crania, are also linked with ideas of fertility and agriculture in multiple regions and cultures (Needham 1976; Smedal 2000). This connection is also apparent among Austronesian societies (Hoskins 1996). It is possible that the initial Austronesian expansion was composed of societies engaged in rice farming, which further diversified as they inhabited new islands, and archaeological and linguistic evidence indicates a variety of subsistence practices including foraging and maritime trade (Bellwood 2006a; Sather 2006). However, based on Pulotu data on the 'traditional' conditions for each society prior to major contact with Europeans and colonization, the majority were mostly dependent on agriculture or horticulture. Sentiments that heads were necessary to ensure the success of the crops upon which their communities were dependent were common among headhunting societies such as the Sumbanese (Hoskins 1996), the Timorese (McWilliams 1996), the Ifugao (Barton 1930), and the Toradja (Adriani & Kruyt 1950).

These interactions of headhunting with sociopolitical organization and dependence on agriculture can be illustrated through an examination of the Iban people of Borneo, in what is present-day Malaysia. Their form of swidden rice farming that benefited from the use of new land, along with their settlement along river systems and development of maritime technology, facilitated the travel of large numbers of warriors and population expansion to new regions of Borneo (Gibson 1990). Their agricultural practices required labor from younger men for only a short season each year, leaving a large amount of time available to engage in external trade or warfare. Iban men would voluntarily join war parties mobilized by leaders who had gained prestige through previous success in farming, trade, and warfare (Freeman 1981). Such leaders could mobilize hundreds of fighters in headhunting expeditions against enemy peoples who lived along other river systems some days or weeks travel away (Gibson 1990). These people inhabited what were seen as liminal spaces of evil spirits or *antu*. When heads were taken they were themselves seen as *antu* (Sutlive & Davison 1991). Killing enemies and taking heads were therefore framed in cosmological terms, as well as serving the instrumental purpose of frightening or conquering inhabitants of an area desirable for cultivation (Wagner 1972).

Anthropologists have debated the extent to which Iban society can be defined as egalitarian (Sather 2006), but it can be broadly described as lacking formal classes and "intensely competitive" (Freeman 1981: 38) with informal inequality constructed through

individual achievements and merit rather than inheritance (Sather 2006). Success in war and acquisition of enemy heads allowed warriors to receive the hand tattoos of a headhunter, and were a means for young men to gain prestige and desirable partners for marriage (Wagner 1972). Despite the lack of formal governing positions, men could attain ascending military titles that reflected their ability to fight and take heads, build alliances, and eventually lead war parties of hundreds or even thousands of fighters (Sather 2006). The belief in "equality of potential" (Sather 2006: 77) of all adult members of a longhouse community, with status and wealth gained through skill and accomplishments, is consistent with explanations for trophy-taking centered around incipient, non-hereditary systems of social hierarchy and status-seeking.

The Iban headhunting complex also provides an example of the connection between heads and agricultural production, specifically rice farming. Trophy heads were portrayed as containing sacred rice seed which was symbolically accessed and sown into crops when they were split open during ritual preparation (Davison & Sutlive 1991). The steps to be followed in planting this seed are told through an allegory in which "a symbolic parallel is drawn between the taking of heads and the reaping of rice". These included the forging of farm equipment and weapons, cutting down trees and destroying the enemies' longhouses, taking their heads, "planting the eyeballs", and harvesting and storing the rice crop before receiving new trophy heads (Davison & Sutlive 1991: 190). These metaphors around the meaning of headhunting, while

containing elements unique to the Iban, share themes with belief systems described for other societies in the region in which heads are described as the products of harvest or fruit from trees (Hoskins 1996).

However, similarities in spiritual beliefs centered around agricultural production, importance of military success to social status, and a combination of inherited and achieved status were present in other Austronesian societies that did not engage in headhunting. For instance, a comparative study by Kirch (2010) analyses three historically related Polynesian societies- the Marquesans, the Mangaians, and the Hawaiians- to explain how different geographical and environmental conditions influenced possible means of subsistence and the development of different political systems and patterns of warfare (Kirch 2010). Prior to colonization, the people of the Marquesas Islands engaged in smaller and larger raids to capture victims for sacrifice or destroy enemy crops, ritualized, largely performative 'skirmishes', and far more violent wars aimed at conquering neighboring chiefdoms which could lead to the expulsion, subjugation, or (rarely) extermination of the defeated group (Molle & Marroleau 2022). Kirch argues that this pattern of warfare was due in part to the geography and climate of the islands, resulting in an unpredictable food supply and the need for chiefdoms to control access to stores of preserved breadfruit, the most important edible crop, to weather famines. This is contrasted with people on Mangaia, where taro farming dependent on a small area of the island's only irrigable land led to continual warfare for

control of irrigation systems, and developed a highly militaristic, warrior-led society in which each new chief gained power through military force rather than heredity. However, he attributes the continual power struggles in both sets of societies to limited agricultural production and high population densities (Kirch 2010). In comparison, the Hawaiian archipelago could support much higher levels of agricultural production and developed the largest and most centralized political system. Human sacrifice is described in the pre-colonial period for all three populations- consistent with the study by Watts et al. 2016 and previous theoretical work on the social functions of ritual sacrifice, in each it appeared to form part of displays of power by rulers asserting their military and political control. However, some form of headtaking is only recorded for the Marquesans. There is archaeological evidence for trophy skulls, although the style, preparation, and likely cultural meaning of these changed over time. Ethnohistorical sources contain descriptions of the ritual preparation of enemy skulls, which would be kept by warriors "as symbols of their power and efficacy, promoting their personhood and status" and might form part of warrior burials (Rolland & Valentin 2012: 115). Based on descriptions of removal of heads and other body parts from war captives and subsequent ritual preparation, they may have formed part of a system of cyclical raiding and warfare between chiefdoms similar to that of the Roviana, which included ritualized systems of competitive feasting and human sacrifice, although this is difficult to discern from either the archaeological or written records (Rolland & Valentin 2012). Taking of

heads may have occurred in the context of larger battles rather than specifically targeted raids (Molle & Marroleau 2022). Based on these limited records, they would seem to have served as status symbols and held spiritual power in at least some contexts, but it is difficult to discern their broader social or ritual meaning in how enemies were viewed or treated, and what significance the taking of heads held apart from the sacrifice of captives or taking of other body parts. These uncertainties highlight the occasionally ambiguous nature of these practices, which can also occur in cases where much better records exist. This will be discussed further in the coding details in the methods section and the conclusion.

Cultural phylogenetics

The previous chapters in this thesis use global samples of societies to draw cross-cultural comparisons, relying on societies with different forms of social complexity to represent variation across space and time. In this chapter, phylogenetic methods applied to cultural groups are used to provide an evolutionary perspective on headhunting practices as they relate to social complexity and subsistence strategies. Analogous to the way in which genetic and fossil evidence can be used to infer the evolutionary history of biological species, detailed phylogenies representing the evolution history of language families can be inferred from linguistic and archaeological evidence (Gray, Greenhill, & Ross 2007; Holden & Mace 2003; Mace & Pagel 1994). These phylogenies can then be used to reconstruct and analyze the evolutionary patterns of cultural traits, including

correlation between traits and the order in which transitions occurred (Mace & Holden 2005). The Austronesian tree matches well to linguistic, archaeological, and historical models of human populations (Mace & Jordan 2011) and has previously been used in comparative analyses relating to features of social structure, subsistence practices, and political complexity. For instance, Watts et al. (2016) use phylogenetic analyses to test the hypothesis that belief in morally-concerned high gods preceded the evolution of political complexity in Austronesian cultures, finding that they coevolved but that such beliefs emerged after, rather than before, political complexity. Such comparative phylogenetic analyses can be used to test hypotheses on how often traits of interest have independently coevolved rather than being present together for historical reasons: if one trait emerges alongside another in societies multiple times independent of population history, this can provide evidence of their coevolution (Mace & Holden 2005). In this chapter, the use of the Austronesian phylogeny makes it possible to examine trophy-taking practices as they relate to changes in political complexity and subsistence practices in a set of related cultures within an explicitly evolutionary framework.

There are challenges and potential problems with the use of phylogenetic methods to study cultural evolutionary processes. Even more so than with biological organisms, cultural groups and traits can undergo hybridization, ambiguity in taxonomic separation, and overall reticulate evolution. These issues have been discussed

extensively elsewhere (Boyd et al. 1997; Bromham 2022; Gray et al. 2007; Mace & Holden 2005). Shared cultural traits between groups can often be explained by ecological similarity or horizontal diffusion in addition to historical relatedness and transmission, further complicating inferences of correlated evolution between traits. Phylogenies are models or hypotheses of evolution, not necessarily accurate depictions. Therefore, one must consider the appropriateness of the data for phylogenetic modeling and interpret the results in combination with other lines of evidence (Evans et al. 2021; Gray & Watts 2017).

As with any study applying quantitative methods to study social and cultural traits, there are potential ambiguities in measurement and coding. For instance, there are some differences in the current dataset in coding for the presence or absence for headhunting in various Austronesian societies from the data used by Watts et al., which will be discussed further below. Additionally, the analysis is conducted using traits coded for the tips of a phylogeny– that is, a static snapshot of an extant culture based on ethnographies– to infer past historical states with statistical methods. Previous analyses with the Austronesian tree (Currie et al. 2010; Sheehan et al. 2018; Watts et al. 2016) corroborate results with historical and archaeological evidence for variables like settlement size, land cultivation, and religious practices (Evans et al. 2021). As noted above, the ancestral state reconstruction of headhunting by Watts et al. (2015) was consistent with earlier linguistic evidence. However, headhunting, like other forms of

trophy-taking and wartime treatment of killed enemies, is a complex set of practices that can be variable within cultural groups and over time. This is not necessarily captured by binary coding of cultures at single points in time or support from the model of presence or absence in a hypothetical past culture. Considering these caveats, this analysis further explores possible social functions of trophy-taking practices within a specific cultural context.

The hypotheses in the previous chapter posited a quadratic relationship between trophy-taking and social complexity and a positive relationship with agriculture. There was no evidence from the analyses for a quadratic relationship and no evidence for a positive relationship with agricultural intensity. As discussed above, headhunting represents a subset of trophy-taking practices that may more clearly serve the proposed social functions. The hypotheses in this chapter were restructured for phylogenetic methods: a positive relationship between two binary variables is modeled through a dependent coevolutionary relationship, here intermediate political complexity or agriculture dependence and headhunting. Phylogenetic methods can also be used to test whether a trait is more likely to be lost in the presence of another. Here, they are used to test whether headhunting is more likely to be lost when societies have gained high social complexity, which would be consistent with the negative relationship between trophy-taking and social complexity from the global historical data. Greater support for the independent model, in which headhunting and social

complexity/agriculture are gained or lost by societies unaffected by the presence or absence of the other, or equal support for the independent and dependent models, would again indicate a lack of clear relationships even with this specific type of trophy-taking. Some changes needed to be made to the variables due to available data for Austronesian societies. In particular, these analyses use levels of external jurisdictional hierarchy as a proxy for social complexity, which in the previous chapter formed one part of the social complexity measure from a principal component analysis along with centralization and population. Although this is a less complete measure than those used in the previous chapter, it is still a commonly used proxy for political complexity in cross-cultural studies and maintains consistency with previous studies with the Austronesian phylogeny (Sheehan et al. 2018; Watts et al. 2015). Additionally, agriculture is treated as a binary variable rather than an ordered or continuous variable due to the type of phylogenetic analysis and data available for subsistence strategies in Austronesian societies. The two binary measures ideally capture the existing differences between societies in this dataset while making use of the available data on agricultural dependence and allowing for the use of the test for correlated evolution. These variables will be discussed in more detail below.

The hypotheses tested in this chapter are as follows:

Hypothesis 1. Headhunting and intermediate political complexity will coevolve on the phylogeny of Austronesian cultures; that is, a dependent model of trait evolution between the two will be better supported than an independent model.

Hypothesis 2. High political complexity will be negatively associated with headhunting, with societies gaining high complexity more likely to lose headhunting practices

Hypothesis 3. Headhunting and intensive agricultural practices will coevolve on the phylogeny of Austronesian cultures.

Analysis

Data coding and variables

This analysis uses data from Pulotu (Watts et al. 2015b, with permission obtained from Joseph Watts), D-Place (Kirby et al. 2016), and from previously published data (Sheehan et al. 2018, with permission obtained from Oliver Sheehan). The dataset has 120 societies, which consists of the societies for which data on both headhunting (mostly from Pulotu, with some additional societies independently coded) are available. This sample size falls in the range used by previous coevolutionary analyses with the Austronesian phylogeny (Watts et al. 2016a, 93 societies and Sheehan et al. 2018, 155 societies). Three societies, Bali, Brunei, and Java, which are not in Pulotu, were independently coded and added to the dataset. They were excluded from Pulotu due to substantial influence from world religions, which runs counter to the database's focus on indigenous supernatural beliefs (Watts et al. 2015b). As this is not a concern of the

current study, they were added as societies with relatively high political complexity. A distribution of political complexity as measured by external levels of jurisdictional hierarchy in this dataset is shown in Figure 14 below.

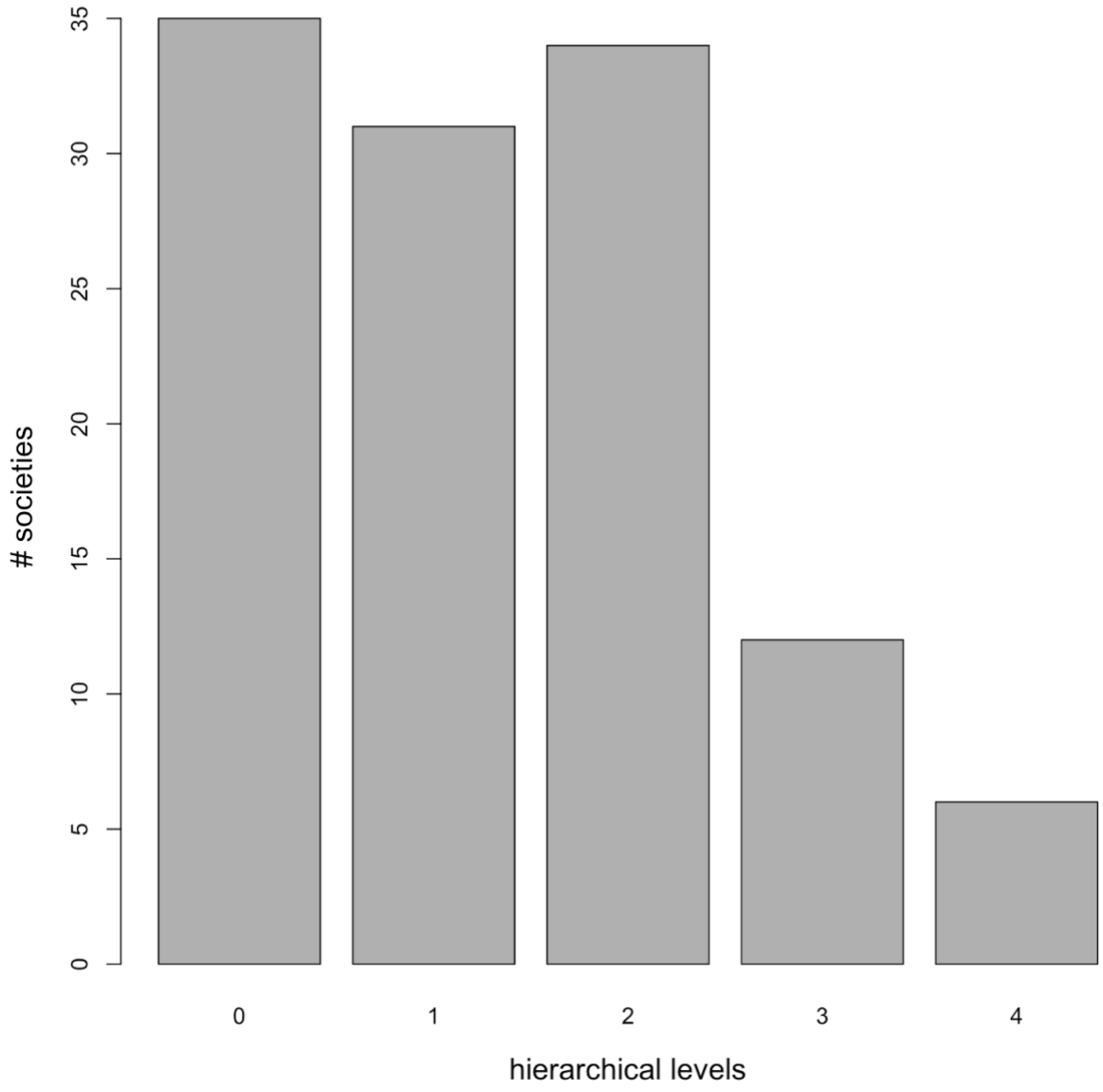


Figure 14. Frequency of societies at each level of political complexity, as measured through the number of external jurisdictional hierarchical levels. Levels 2, 3 and 4 were binarized as present for intermediate complexity and levels 3 and 4 for high complexity.

Political complexity- was originally coded as a categorical variable from 0 to 4 in the data used by Sheehan et al. 2018. Following previous studies (Sheehan et al. 2018, Watts et al. 2016), this was subsequently transformed into a binary variable of presence/absence of intermediate and high political complexity for the phylogenetic analyses as 0, 1 → 0; 2, 3, 4 → 1 for intermediate and 0, 1, 2 → 0; 3, 4 → 1 for high complexity.

Dependence on agriculture- variable 59 in Pulotu (version as of June 11, 2022), originally coded from 0 to 4 based on whether cultivation of plants was absent, minor, medium, major, or principal source of food. For the purposes of the analysis, it was binarized as 1 for principal source and 0 for all others.

Headhunting- coded as either present or absent for each society in Pulotu, defined as whether trophy heads were commonly taken during warfare with other societies. Most societies are coded based on the data from Pulotu as of May 15, 2022; however, some societies codes were changed based on information in other sources. The codes for some societies conflict with those in the ancestral state reconstruction by Watts et al. (2015b). This is likely due to the slightly different definition used; rather than 'killing people to obtain their heads' rather than the broader 'taking the heads of enemies killed in war'. To ensure any results from the phylogenetic analysis are consistent with both sets of definitions, or determine whether the differing definitions cause different results,

the tests for correlated evolution were run with alternative codes for three of the differing groups (based on the sources the Maori engage in headhunting under both definitions; the absent coding in Pulotu may be due to a difference in dates). Justification for changed or inconsistent codes are given with corresponding sources in the dataset (Appendix 2, Dataset 4).

Phylogenies:

The analyses were run using a sample from the posterior distribution of 1000 possible trees from Gray et al.'s study, previously used as a sample in cultural phylogenetic studies by Rácz et al. (2020) and Bentley et al. (2021) among others. Societies for which data on headhunting were available and which could be placed onto the phylogeny were retained while the remainder were pruned from the tree, resulting in 120 societies. Some of these were missing data for agriculture and/or political complexity, in which case the function used to analyze the data in BayesTraits (described below) would treat them as taking either state with equal probability (Meade & Pagel 2022). Distributions of headhunting, political complexity, and intensive agriculture on a phylogeny of Austronesian societies are shown in Figure 15 below.

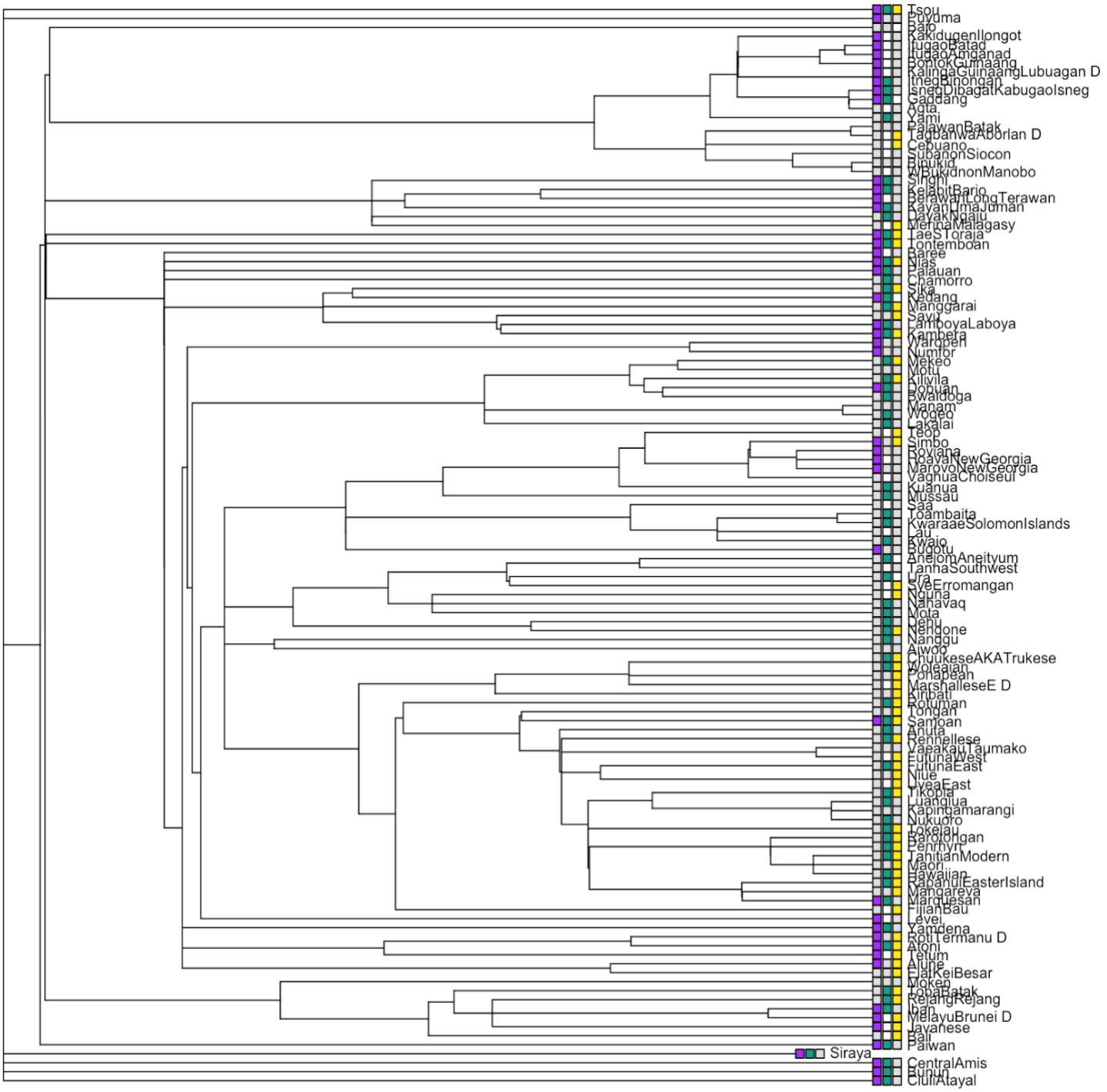


Figure 15. Distribution of headhunting (purple), agriculture (green), and political complexity (yellow) on Austronesian consensus tree.

A test using the phylo.d function in R (package *caper*, Orme et al. 2018) which estimates the *D* statistic (Fritz & Purvis 2010) was run for headhunting with a consensus tree of Austronesian societies from the Gray et al. study (summary.trees in Appendix 2 for Chapter 4). This test is used to assess whether the distribution of a discrete trait is predicted by its evolutionary history, in which case phylogenetic methods are necessary to account for the effects of shared history when looking for a functional relationship with other traits. Headhunting had previously been tested for signal by Watts et al. (2015b) but as some new societies were added and the data in Pulotu has been updated since then the test was run again. The results indicated headhunting was significantly more conserved than would be expected under a Brownian model of evolution (D = -0.239, p = 0), though with slightly less signal than in the previous test from Watts et al. (D= -0.98), so it is appropriate to use phylogenetic comparative methods to test for correlation with other traits.

Preregistration and data availability:

The analyses for this chapter were preregistered prior to conducting the main analyses (after testing for phylogenetic signal) on the Open Science Framework site (https://osf.io/7r9wq). The dataset, sources, and codebook will be available on OSF.

Statistical models

Pagel's test for correlated evolution between discrete traits (1994) was used to compare between dependent and independent models of evolution; specifically, whether the gains and losses of one trait are dependent on the state of the other. For the purposes of this study, it was used to test a) whether societies at intermediate and high levels of political complexity and b) societies which were primarily dependent on agriculture were more likely to have headhunting practices during war. In the dependent model, there are four possible states: (0,0), (0,1), (1,0) and (1,1) and eight transitions or parameters. The independent model has four parameters with each trait moving from 0 to 1 or vice versa independent of the other. Conventionally, a likelihood ratio test is used to determine whether the dependent model fits the data significantly better than the independent model, which provides evidence for correlated evolution.

The analysis was conducted with the software BayesTraits V4 (Meade & Pagel 2022) using a Reversible-Jump Markov Chain Monte Carlo as implemented with the function Discrete, which compares the fit of an independent and dependent model as described above. Following previous studies (Watts et al. 2016, 2016; Sheehan et al. 2018), exponential priors for the MCMC analyses were seeded from a uniform hyperprior distribution set ranging from 0 to 0.5. Each RJMCMC analysis was run for 10,100,000 iterations, with the first 100,000 discarded as burn-in and with sampling every 1000th iteration. The marginal likelihood for each model was computed with a

stepping-stone sampler with 100 stones for 10000 iterations and used to compare model fit.

To check for consistency with the previous results by Watts et al., an analysis using the function Multistate was also run on a dataset with only the codes for headhunting to determine average transition rates and estimated ancestral state for presence/absence of headhunting at the root of the phylogeny (most recent common ancestor for all cultures on the tree). In contrast with their results, which indicated a higher likelihood of societies losing headhunting (0.0092) than gaining it (0.0035), average gain and loss rates were similar (0.038 and 0.034 and higher in both cases. The root node was reconstructed with a lower probability of headhunting (0.72 compared with 0.99), possibly due to the additional taxa and slightly different codes, although still relatively high.

Results

Ancestral state reconstruction

The ancestral states for the root (the common ancestor of all Austronesian languages) were largely consistent with estimates from the ancestral state reconstruction of headhunting (Watts et al. 2015b), political complexity (Watts et al. 2016), and agriculture (Sheehan et al. 2018), with the highest probability estimates for the presence of headhunting and absence of agricultural dependence and political complexity for the ancestral culture across models.

Correlation analyses

Models were compared based on Bayes Factor, calculated as twice the difference between the log marginal likelihoods of each model (Meade & Pagel 2022). Complete tables of log marginal likelihoods are in Appendix 2 (BayesTraitsV4 results in appendix for Chapter 4). The tests for correlated evolution did not indicate dependent relationships between headhunting and political complexity, although there was some support for a dependent relationship with agriculture. For intermediate political complexity with both definitions of headhunting, the Bayes Factors indicated stronger support for the independent models at 3.15 and 3.05. The rates of gaining and losing headhunting, and gaining and losing intermediate complexity, were roughly equal (0.16 and 0.12 for headhunting; 0.12 and 0.16 for complexity). For high political complexity, the Bayes Factors were 1.28 and -0.30, indicating that the dependent model was slightly but not meaningfully more supported in the analysis with the 'broad' definition of headhunting and neither the independent or dependent models were more strongly supported in the second 'narrow' definition. The rates of losing headhunting among societies with and without high complexity were similar (0.12 and 0.10 respectively). The rate of gaining high complexity among headhunting societies (0.01) was lower than the rate for non-headhunting societies (0.14). For agricultural dependence, the Bayes Factors were 3.26 and 6.83, indicating positive support for the dependent models, more

strongly in the latter case with the narrower definition of headhunting. A transition rate matrix with estimates for the gains and losses of each trait is shown in Figure 16.

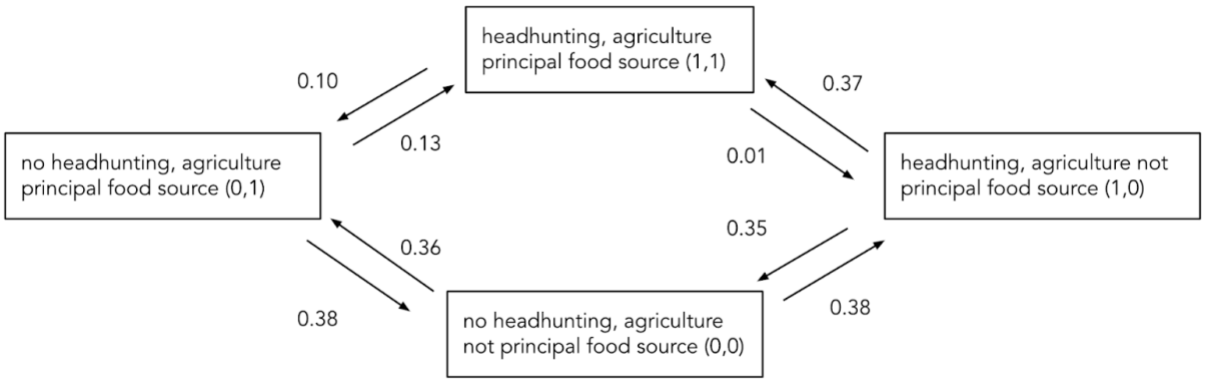


Figure 16. Transition rates for the dependent model of correlated evolution between headhunting and reliance on agriculture as principal food source. Based on these estimates, agricultural societies were both less likely to lose and gain headhunting (0.10 and 0.13 respectively) than non-agricultural societies (0.35 and 0.38). Societies with and without headhunting were approximately equally likely to gain agriculture (0.37 and 0.36 respectively). Societies without headhunting were more likely to lose agriculture (0.38) than societies with headhunting (0.01).

Discussion

These results are somewhat consistent with those of the previous chapter on trophy-taking cross-culturally and historically, with no clear relationship between reliance on agriculture and trophy taking and no evidence for a positive relationship with intermediate levels of political complexity. Mean rates for q42 (losing headhunting with high political complexity) and q24 (gaining headhunting with high complexity) were both around 0.13 in the dependent model for high political complexity. The mean rate for q34 (gaining high complexity with headhunting) was 0.01, lower than that of 0.14 for q12 (gaining high complexity without headhunting). This seems to indicate that headhunting societies were less likely to transition to high political complexity, but given

the limited support for the dependent over independent model as well as the small number of societies with high political complexity in the dataset, this is difficult to conclude. For dependence on agriculture, a dependent model of evolution is more strongly supported, but a specific directional relationship was not hypothesized and not clear from the transition rates. Therefore, it seems the null hypotheses are best supported with regards to a relationship between headhunting and political complexity.

As with the previous chapter, defining a cultural behavior such as headhunting is not necessarily straightforward. In their volume on Southeast Asia, Hoskins and the other contributors explicitly exclude the taking of heads as trophies from headhunting if the head was not "the focus of ritual attention" (Hoskins 1996: 12). A possible borderline case are the Samoans, who are coded as negative for headhunting in the Pulotu data, although based on 19th-century records (which are also cited in Pulotu), they did cut off heads of enemies in combat that seemed to be part of post-battle rituals (Stair 1897; Thomas Pritchard 1866). It is possible this would fall under Hoskins' definition of headhunting due to ritual treatment; however, there are no clear descriptions of them raiding or engaging in battle specifically for the purpose of obtaining heads, and the lack of extensive descriptions on how enemy heads were treated and the significance accorded to this practice makes it difficult to code with certainty. This fuzziness is also noted in an ethnographic discussion of Visayan raiding culture, which notes how their practice of headtaking during sea raids have been excluded from definitions of

headhunting although Ilongot headtaking where heads were discarded afterwards has been included (Gowey 2018). This ambiguity highlights the need to consider results in the context of qualitative historical and ethnographic descriptions, as well as data quality and feasible inferences from available sources.

Due to the measure of political complexity used, it was treated as a dichotomous variable for the analysis, but this may have obscured other aspects of social complexity not captured by the number of hierarchical levels such as population, territory size, or degree of centralization. Anthropologists have written extensively about the various types of sociopolitical organization exemplified by Austronesian societies in different regions, and how they have been influenced by island size and geography (Aswani & Graves 1998; Kirch 2010; Sahlins 1963). However, at least based on the data and methods used in this study, headhunting would not appear to be consistently or functionally connected with political complexity. As noted by Bellwood (2006b: 41), Iban society in the ethnographic period remained largely egalitarian, undermining the idea that headhunting, even when undertaken for prestige purposes, led to any codified systems of social hierarchy or complexity. However, in instances where centralized polities did form, there is evidence from this sample that it could form part of the exercises of external power and violence (e.g. in Brunei, Maxwell 1996). Future research would ideally include variables including population and degree of centralization as well as hierarchical levels to create a more complete social complexity measure. Additionally,

although it was not possible during this study to add data on political expansion, the Iban and other societies which combined headhunting with expansion indicate this would also be useful to examine and compare with the null results of the global analysis.

Although the results indicated a correlation between headhunting and dependence on agriculture, the individual transition rates did not provide clear evidence for the nature or direction of this relationship. This may be due to relatively low variation in reliance on agriculture or horticulture in the Pulotu sample– as with the global sample, agriculture may be too widespread across societies for there to be a consistent or distinct connection with headhunting. In addition to frequently reported links with beliefs about success of crops, concepts of fertility may also apply to livestock or human reproduction. Other groups which engaged in headhunting did not report any such beliefs, with the taking of heads or skulls linked instead to revenge, mourning, and/or conflict resolution (Metcalfe 1996). Again, while there may be relatively widespread and possibly horizontally transmitted systems of cultural complexes involving headhunting, such practices could take diverse forms depending on a society's political and military structures, environmental conditions, and relations with external peoples. For instance, another aspect of Iban society was the relatively short season during which young men's labor was required during the cultivation process, leaving more time for other bonding and prestige-seeking activities like trading, war, and headhunting. Dependence on

women's labor, along with other features including settlement along lowland riverine environments, have been hypothesized to be associated with the development of headhunting practices (Buckner 2018). In particular, the clustered nature of resources, as noted in Chapter 1, may encourage coalitionary behavior to defend from external threats. Knauft (1990) notes how the ability to travel along rivers facilitated headhunting expeditions to otherwise very distant groups, and links this to the degree of perceived ethnic differentiation between groups and social segmentation and social substitution. In an analysis of the cosmological significance of headhunting in Southeast Asia and Oceania, Robert McKinley writes that unlike groups not settled in riverine areas, headhunting societies tended not to intermarry with enemies, who were "in all respects more remote" (1979: 463). How geography and ecology shape relations with and perceptions of enemies are a possible avenue for additional quantitative research.

The effects of military technology could also be examined. In their analysis of headhunting Watts et al. (2015) cite Robert Blust's (2013) proposal that iron tools were known to proto-Austronesians, although they were later lost in many cultures, and would have been necessary or helpful for headhunting. There is evidence from Mesolithic and Neolithic sites containing processed skulls that flint axes and other stone weapons were used to sever heads (Kanjoue et al. 2015; Orschiedt 2005; Talalay 2004). However, as Watts. et al. note, it is possible that more effective weapons would have facilitated the systematic taking of heads. The case of New Georgian headhunting, in

which the introduction of steel axes facilitated the transition from headhunting as an initiation rite to a deadlier, larger-scale practice that built and reinforced the power of political leaders (Zelenietz 1979 cited in Simon 2012), indicates how technology might interact with local cultural meanings of headhunting in the development of social complexity. A systematic investigation of the types of weapons used in headhunting in Austronesian and other cultures could be used to further explore these dynamics.

As discussed in the previous chapter, more nuanced codes that include information about the contexts for headtaking, the presence of and extent of ritual preparation, and the perceived individual and social benefits could help determine whether there are persistent themes in these practices that are identifiable. This could include whether there are differences in social functions between the collateral taking of heads during combat, as described for the Samoans, and the specialized raids for heads conducted by other groups. In comparison with findings by Watts et al. on the relationship between social stratification and human sacrifice, the current results indicate that despite cultural inheritance and diffusion among regularly interacting societies, trophy-taking/headhunting practices could take on a much broader set of social functions. This is reflected in the different perceptions and relations between societies that practiced or were victimized by headhunting. The practice as described by ethnographers among the Iban is of fighting against or hunting largely unknown, malevolent entities (Davison & Sutlive 1991; McKinley 1979). Among other societies

such as those on Sumba, heads taken in combat formed part of complex social interactions with other groups who might on some occasions be allies, trading partners, or marriage partners rather than enemies, and could actually serve to limit violence (Hoskins 1996). With states such as the Brunei Kingdom, they similarly helped construct a relationship with an outgroup, but served as a display of power over conquered or nominally subservient populations (Maxwell 1996). Like the taking of enemy body parts more broadly, headhunting could take on a wide range of shifting meanings in relations between warring societies.

There were fourteen Austronesian societies in the global trophy-taking dataset, eight of which engaged in trophy-taking (all headhunting) and six which did not. They included societies ranging from acephalous to centralized, although all were (as is representative of Austronesian societies as a whole) largely or completely dependent on agriculture/horticulture with the exception of the Brunei state. While this was too few societies to detect any effects on the global analysis, the level of phylogenetic signal in headhunting underscores the importance of cultural relatedness and diffusion discussed in ethnographic sources. Although the global analysis in the previous chapter attempted to incorporate societies from a range of regions and times, the dataset was not large or representative enough to analyze the effects of geographic proximity or cultural transmission on trophy-taking. However, a future analysis with a more systematic recording and sampling of regions, languages, and other measures of phylogenetic

relatedness between societies could be used to explore these effects in comparison with the results of the current and previous chapters. Detailed cross-cultural data and resolved phylogenies are not currently available for some regions and language families, but further work on these phylogenies and consolidation of cultural data into open repositories will ideally make such a study possible in the future.

Conclusion

General conclusions

An overall trend in human history is increased scales of cooperation in larger and more complex societies. However, there is continuing scholarly disagreement about how this has affected the intensity and forms of violence in war, including people's willingness to risk or sacrifice their lives on behalf of unrelated group members and the manner in which enemies are treated. In other words, it is unclear whether and how the idea of an expanding moral circle can be applied to the conduct of war. This thesis collated data on social and political structures, subsistence practices, and behaviors in war on a global sample of past societies and tested for the existence of positive or negative relationships. This included data on attitudes towards and evidence for self-sacrifice on behalf of other group members (Chapter 1), the degree to which enemies were targeted and/or killed during war (Chapter 2), the presence of institutionalized trophy-taking practices (Chapter 3), and headhunting practices among Austronesian societies (Chapter 4). This section reviews the overarching research questions, how the studies in each chapter attempted to address them, and evidence for and against the proposed hypotheses. I then summarize the theoretical and methodological approaches of this thesis and how they fit with larger research efforts in cultural evolution and the quantitative study of history, limitations of these approaches and their implementation

in this thesis more specifically, and possibilities for improving and expanding on this work in future research.

RQ1. Can levels of self-sacrifice in war be predicted from features of group ecology and social complexity among past societies?

Previous research on self-sacrificial behavior in the context of intergroup violence has raised questions about whether it is common among small-scale groups analogous to early human societies. The aims of Chapter 1 were to survey attitudes about and occurrences of risk-taking and self-sacrificial behavior in war among societies at different levels of social complexity, corresponding to measures of imagistic and doctrinal societies as defined by Modes theory. I analyzed this data to evaluate support of different hypotheses, namely whether self-sacrificial behavior would be equally or more likely to occur among small-scale groups with mass mobilization of fighters (Whitehouse 2018), or among complex societies with professional militaries (Glowacki & Wrangham 2013). The phrasing of the first hypothesis was intended to capture the possibility that self-sacrificial behavior would occur to a similar extent among small-scale and large-scale groups but be driven by different mechanisms, which would still be consistent with predictions of identity fusion theory (Whitehouse 2018). In contrast, risk-taking premised on individual cultural rewards would be more consistent with a lower likelihood of such behavior in small-scale groups as expressed in the alternative hypothesis.

Overall, the measure of self-sacrificial behavior did not display clear relationships with resource ecology as measured through agricultural dependence, military formalization (although this was a simplified binary measure), or the measure of social complexity. There was weak evidence that overt descriptions of self-sacrificial behavior were more common for socially complex societies. One contribution of this study was the collation of available ethnographic descriptions of self-sacrificial behavior in war, something suggested in previous works to help address whether such attitudes and behaviors were present in societies relying on traditionally small-scale warfare tactics (Wrangham & Glowacki 2012). This provided some evidence for the widespread valuation of personal courage and loyalty even among small-scale societies among which self-sacrificial behavior in war has been argued to be largely absent. I also attempted to highlight some possible biases in the ethnographic literature regarding this particular aspect of wartime behavior which may have led to these behaviors being underemphasized among small-scale societies. The short case studies on the Nizari Isma'ilis and the Shuar people also highlighted the importance of context, particularly external threat to the group, in determining the prevalence of self-sacrificial behavior.

RQ2. Can forms and intensity of violence towards enemies in war be predicted from features of group ecology and social complexity among past societies?

Chapters 2 through 4 focused on forms and levels of violence directed at enemies. Although there has been previous research on the treatment of enemies in war

cross-culturally, these have had mixed conclusions regarding its relationship with social complexity (Ember et al. 2013; Otterbein 2000). Other cross-cultural studies have focused on the frequency of war but not its conduct (Eff & Routon 2013; Ember & Ember 1992). There have also been major theoretical syntheses on the trajectories of violence and war in association with the growth of complex human societies, but these did not focus specifically on intensity and forms of violence towards enemies. However, they provided an overarching framework within which to explore possible relationships between wartime violence and social complexity. The second chapter tested associations between a scale of indiscriminate killing of enemies during war with social complexity, formal military structures, and violent political expansion. One contribution of this chapter was the development of a measure for norms around enemies killed in war that incorporates uncertainty in records from ethnographic and historical sources. Rather than a purely numerical measure of casualties, it attempted to capture cross-societal variation in expected, normatively accepted targeting and killing of enemies. The results of this chapter did not indicate that the degree to which enemies were indiscriminately killed in war increased or decreased with social complexity or with the presence of formal military structures or political expansion. There were several limitations and potential biases to the measure of enemies killed: as described, it was intended to measure a somewhat subjective concept about expected and normative behavior, and was dependent (for ethnographically recorded societies) on what a given observer chose

to record based their individual experiences and interactions during their field dates, which may not have been representative of a society's usual practices. The codes based on age and gender of victims seemed the most appropriate given the details most often found in the sources but are not necessarily the best way to measure the (in)discriminateness of lethal violence. The incorporation of uncertainty through lower and upper bounds for each society may have mitigated some of these biases, but often the range of scores was too wide to be sufficiently informative. However, I argue this process was of scholarly value, as it also involved the consideration and attempted operationalization of various other measures, including levels of restraint (in the current dataset there was too little variation for this to work as an outcome measure) and a combined scale of different types of enemy treatment (which would have required more intensive and extensive data collection and creation of detailed codes outside the scope of the current project). These other possible measures and/or the final measure tallying age and gender categories can perhaps be modified and improved upon by other researchers with additional time and resources to collect and code data on these behaviors, and thus more accurately characterize the nature of enemy treatment in past societies.

Previous research on warfare and social complexity has also focused on the contexts in which other forms of violence such as torture of captives, human sacrifice, trophy-taking, and other forms of mutilation may occur and what these indicate about

the political and ideological roles of violence in a society. Chapters 3 and 4 respectively focused on trophy-taking practices in war globally and headhunting practices among Austronesian societies. Chapter 3 addressed whether the presence of trophy-taking could be predicted by levels of social complexity; specifically, whether it was more likely to occur in societies at intermediate levels of complexity, and whether it was predicted by the presence of violent political expansion and dependence on agriculture. The analysis in the fourth chapter tested for associations between social complexity and agriculture with headhunting practices more specifically. Although there had been previous theoretical syntheses and surveys of trophy-taking practices which discussed their social meanings as military status symbols and/or repositories of spiritual power and agricultural fertility (e.g. Chacon & Dye 2008; Hoskins 1996), to my knowledge these practices had not been the focus of quantitative analyses that attempted to explain their cross-cultural variation. Overall, the hypothesized connections with aspects of social complexity and dependence on agriculture were not supported by the results of the quantitative analyses, either in the global analysis or among Austronesian cultures.

Project approach and limitations

Two aspects of this project which underlie the methodology and shape how the results could be interpreted are reviewed here in light of the completed studies. These are the combination of quantitative and qualitative methods, and the use of social complexity as a conceptual, if not statistically explicit, proxy for historical change.

Comparative databases and quantitative methods

As discussed in the introduction, this project is situated within larger efforts to build comparative databases and apply quantitative methods in the investigation of questions about cultural evolution. Reviews and critiques of such efforts have emphasized both the difficulties of properly quantifying complex cultural behaviors and the importance of seeking relevant expertise from humanities scholars when doing so (Slingerland et al. 2020; Watts et al. 2021). Being an individual researcher in the current project meant it was not possible to incorporate multiple coders and check for inter-coder reliability, or apply expertise on every (or any) of the societies coded. However, when possible I attempted to follow suggestions to facilitate transparency and reproducibility (Slingerland et al. 2020), including recording the dates to which codes referred based on the cited sources, the evidence justifying the codes, and levels of uncertainty.

Comparing the results of the quantitative analyses with the qualitative material from which the hypotheses were drawn highlights both the utility of quantitative methods in testing whether observed patterns generalize and their limitations in exploring some research questions. In the third chapter, qualitative descriptions provide empirical, if not quantitative, support for the existence of some connections not apparent from statistical analyses. As discussed in the third and fourth chapters, there are various archaeological and ethnographic examples

of belief systems containing "a conceptual link between the harvest of the fields and the collection of human trophies" (Armit 2012: 102). However, this connection was not supported statistically, likely because of the wide range of motives for trophy-taking across societies with many different resource ecologies and possibly the pervasiveness of agriculture past a certain point in history. The application of quantitative methods helped illustrate the overall heterogeneity of trophy-taking practices and their possible causes, such that these observed connections were not necessarily generalizable.

Some limitations with using quantitative methods to answer the current research questions are apparent with the outcome variable in the second chapter. While it was intended to capture the somewhat subjective concept of what would be considered the normal and expected targeting and killing of enemies for a given society, it does not incorporate attitudes or intentions behind what might be similar levels of wartime violence. In particular, considering qualitative data is important to investigate shifts in moral thinking and accompanying changes in forms and intensities of violence with the growth of social complexity, something which partially motivated the current research questions. While the quantitative analyses in the second chapter did not show clear differences in proportional levels of violence, contrasting the literature on contemporary nation-state war with that on ancient states and nonstate societies highlights the focus on elaborate

ideological justifications for extermination campaigns in the former. In their book on mass killing, Daniel Chirot and Clark McCauley express this as a possible improvement, writing that "it might be seen as a sign of hope that, of all the reasons for massacring people, the first, simple convenience, is somewhat less acceptable today than in the past" (2010: 47). It is possible such changes would be quantifiable with more extensive data on norms of war, instances of mass violence and casualty numbers, and records of codified restraints, but this was not within the capacities of the current project.

Although the Chapter 2 variable is named 'indiscriminate killing', it does not distinguish between truly indiscriminate violence or intentional destruction of another group as an end in itself. For instance, Scott Straus points out the distinction between indiscriminate mass killing and genocide, writing that "genocide is thus distinctive for being group-selective…The conceptualization differs from "mass killing" or "indiscriminate" violence, both of which imply large-scale violence but violence that is not group-selective or oriented toward group destruction" (2012: 553). Francisco Gutiérrez-Sanín and Elisabeth Wood (2017) raise a similar critique about the use of the term 'indiscriminate', writing that scholars conflate the frequency, intensity, and targets of violence. In the second chapter, "killing" was specified to determine intensity (lethal violence) and "indiscriminate" referred to the set of targets as denoted by individuals' ages and

genders. However, Gutiérrez-Sanín and Wood also highlight the degree of variation that may exist within a group's "repertoire of violence", which may include reliance on particular forms of violence, sometimes directed specifically at certain groups, and different behaviors. Although their focus is on contemporary armed groups, their proposed methodology, which defines and accounts for the type, frequency, target, and method of violence by an armed group, demonstrates a systematic approach to characterizing group-level patterns of behavior that could perhaps be modified and applied to the study of historical warfare. Even with this particular focus, Gutiérrez-Sanín and Wood acknowledge the difficulty of finding sufficient data to properly characterize such repertoires. As previously discussed, this is a difficulty often exacerbated when working with data on past societies. Such an approach applied to historical warfare patterns would require additional intensive study and quantification of details of combat found in the ethnographic, historical, and archaeological literatures. However, when this is not sufficient for the purposes of quantitative analysis– or, indeed, when generalizable causal explanations are unlikely to exist for a seemingly unified phenomenon (Leader Maynard 2022: 321), qualitative comparisons may be necessary to fully understand the dynamics behind a given behavior, warfare-related or otherwise.

These issues highlight the relative difficulty of retaining all relevant information from qualitative data with quantitative codes. Due in part to these

limitations, some short case studies were included to help clarify the reasoning behind how variables were defined and coded, illustrate the hypothesized links between variables, and situate the results of the quantitative analyses in the relevant historical and cultural backgrounds. For instance, the case studies in the first chapter illustrated how self-sacrificial norms and behaviors could vary within societies based on context, especially the presence of external threat to the group. This is a well-established claim (Bauer et al. 2016; Böhm et al. 2016; Rusch 2014; Schaub 2017), but focusing on self-sacrifice explicitly in the context of a single cultural group helped emphasize how it is not a static quality, or necessarily typical of either small- or large-scale societies or those dependent on a particular resource ecology. The discussion of the Iban in the fourth chapter highlighted how headhunting practices could be embedded in a group's religious mythologies linking the taking of heads and prosperity of crops. In contrast, the examination of the Kamakura Shogunate in the second chapter illustrated how the regular taking of heads in another rice agriculturally-dependent society could be unrelated to such beliefs while holding similar social meanings to the Iban practice regarding warrior status and as religious offerings.

While some of the challenges encountered in this project represent real issues with quantitative historical and cross-cultural research, it would be somewhat presumptuous to claim that because my current efforts did not result in

satisfactory or clearly interpretable results that others not similarly limited (e.g. in time, resources, or ability to collaborate with others) would not be able to find more informative answers to the same questions. Potential further avenues for research were discussed at the conclusion of each chapter; a few of these include considering the offensive or defensive nature of conflicts, the lethality and psychological impacts of weapons and other military technology, class differences and internal social stratification, gender roles and the involvement of women in conflict and/or peacemaking, and societies' recent histories of conflict. These chapters also highlighted areas of possible methodological improvements, particularly the construction of better-validated, more nuanced coding systems using additional lines of evidence. For instance, the current results provided evidence that the behaviors examined did not clearly correlate with reliance on or presence/absence of agriculture. However, as subsistence practices were simplified into variables of dependence on or presence/absence of agriculture due to the limited sample sizes, this should not necessarily be taken as evidence that resource ecology as a whole is unimportant to variation in wartime violence. Recent research has found support for associations between rates of interpersonal violence and environmental productivity mediated by subsistence practices (McCool 2022). Next steps for the current research questions could involve larger samples with more detailed distinctions between subsistence strategies and reveal

whether similar patterns exist with particular forms of wartime violence. Similarly, while the current research indicated a lack of clear relationships between particular wartime behaviors and a binary measure of formal military structures, more detailed measures of military mobilization, composition, and organization could help clarify the factors involved in norms promoting self-sacrificial behavior and the scale of violence directed at enemies.

As noted in the conclusions to each chapter, different units of analysis– specifically individual conflicts– might be a better level at which to examine variation in the wartime treatment of enemies. However, this approach would arguably be answering a somewhat different set of questions, as one aim of the current project was to look at the norms of particular cultural units to see if there were detectable consistencies in behaviors in war. Tentatively, the compiled data can be argued to show less variation in the prevalence of self-sacrificial behavior than might be expected from previous writing on small-scale societies, although it does appear to be less ambiguously present in complex societies. The data also indicated some variation in killing enemies, although many societies did not appear to have any restraints. Between-society variation was generally clearest with regards to trophy-taking/headhunting as might be predicted for a fairly culturally distinct practice (especially headhunting), although the taking and display of body parts appeared in more than half of the societies sampled for the

third chapter. That said, even trophy-taking and headhunting practices displayed intracultural variation in frequency, intensity, and social meanings. This variation was even more apparent with killing enemies and self-sacrificial behavior depending on the focal date, type of conflict, and numerous other factors.

Previous reviews of cross-cultural databases have highlighted the challenges of incorporating within-society variation and change over time and cited possible ways to address this. These include averaging measures across a unit, quantifying observed variation, or choosing a representative smaller subunit to describe (Slingerland et al. 2020; Watts et al. 2021). For the current research questions, combining society-level data with variables on individual conflict events could further reveal inter- versus intra-societal variation and the extent to which self-sacrificial behaviors or violence towards enemies can be meaningfully characterized for particular cultural groups. As the current project largely did not find clear relationships at the global level on a broad historical timescale, coding data on particular regions within delimited time periods could also help identify patterns of wartime violence in relation to environmental features and/or subsistence practices and how these might have changed over time.

Small-scale societies and representing the human past

Because societies have on average become larger and more complex over time, social complexity in the current project is used as a rough proxy for historical

change. However, most of the small-scale and non-state societies in my datasets are those observed and described within the past century or so. Contemporary small-scale societies do provide an invaluable source of information on characteristics likely present in early, prestate human societies, including reliance on non-industrial and/or non-agricultural production, smaller communities, decentralized political structures, and sometimes nomadic or not fully sedentary living. However, there are widely recognized problems with what Clark Barrett (2022) has termed "the ancestral gambit" or treating these groups as proxies for early human societies (Barrett 2022; Broesch et al. 2020; Marlowe 2005). Like communities that have undergone industrialization and become part of nation-states, contemporary small-scale societies have been influenced by forces of globalization and technological, political, and economic changes which differentiate them in important ways from 'ancestral' human societies (Barrett 2022; Broesch et al. 2020; Glowacki & Singh 2022). These include the suppression of violence by state societies, or in other cases exacerbation or reshaping of preexisting conflicts due to introduced weapons and new political and economic institutions (Ember 1978; Ferguson & Whitehead 2000). There is also extensive variation in demographic characteristics, subsistence strategies, social structures, and forms and intensities of warfare among contemporary small-scale societies

that may or may not be representative of past populations (Kelly 2013; Glowacki & Singh 2022; Page & French 2020).

That said, studies combining archaeological and ethnographic data have indicated that patterns of war in some small-scale groups are consistent with those in the historical and archaeological records (although these studies may not agree on what the nature of these patterns are) (Boyd & Richerson 2022; Ferguson & Whitehead 2000; Fry 2013; Keeley 1996; Milner 1999). Previous studies have combined archaeological, historical, and ethnographic data on war for statistical analyses (Bowles 2009; Oka et al. 2017; Pinker 2011) but these had not focused on violence towards enemies. Although the majority of small-scale societies in the datasets for this thesis are still nineteenth- and twentieth-century, ideally, the inclusion of archaeological and historical societies ameliorates issues of comparability. The results of the studies in each chapter are still more carefully interpreted as pertaining to variation in political centralization and social scale rather than human history.

A related issue is the risk of treating such societies as more representative or truer encapsulations of human nature than industrialized large-scale societies. The inclusion of small-scale societies in the analyses was important for encompassing cultural variation in political organization, social scale, and resource ecology, not because they are more valid datapoints on how humans behave in

war. As Barrett writes, "all humans are good representatives of humanity" (2022: 479). In arguing against proposed cultural group selection mechanisms for large-scale warfare, Glowacki and Wrangham (2015) point out that the high-mortality raids such as those engaged in by 21st-century Turkana pastoralists are "of limited utility for making inferences about warfare in small-scale societies generally" as they involve automatic weapons and are not the primary mode of warfare in such societies. However, models of warfare such as theirs based on individual rewards cannot necessarily account for the high-mortality, large-scale warfare seen throughout history and in the present day. The fact that such warfare does not take place among contemporary small-scale societies and likely did not take place among early human societies does not mean it can be considered exempt from processes of biological and cultural evolution or excluded from an evolutionarily-informed study of human nature. As discussed in the first chapter, levels of risk-taking and sacrifice on behalf of other group members in small-scale societies could vary (in recorded descriptions and likely in actuality) depending on numerous internal and external social factors. Future efforts could more thoroughly use the archaeological and historical records and explicitly model temporal and causal relationships to draw conclusions about change in wartime violence across a less incomplete spectrum of past and present cultural diversity.

Summary

This thesis attempted to determine whether variation in forms of violence in war could be linked in consistent ways with measures of social complexity and related variables across a global sample of past societies. While it did not find any such patterns, by providing evidence that straightforward relationships with social complexity, agriculture, and formal military structures are not present, the current research highlights opportunities for the creation of more detailed variables and datasets and the application of alternative lines of evidence. It also resulted in new cross-cultural datasets and the development of measures for specific wartime behaviors in past societies, which can be built on and used in further quantitative research on how warfare has varied across cultures over time.

Thesis Bibliography

Abou El Fadl, Khaled. *Rebellion and Violence in Islamic Law*. Cambridge University Press, 2001.

———. "The Islamic Law of Rebellion: The Rise and Development of the Juristic Discourses on Insurrection, Insurgency and Brigandage." Princeton University, 1999. https://www.proquest.com/docview/304519955.

Achi, Bala. "Arms and Armour in the Warfare of Pre-Colonial Hausaland." *African Study Monographs* 8, no. 3 (1988): 145–57. https://jambo.africa.kyoto-u.ac.jp/kiroku/asm_normal/abstracts/pdf/ASM%20%20Vol.8%20No.3%201988/Bala%20ACHI.pdf.

Adolphson, Mikael S. *The Gates of Power: Monks, Courtiers, and Warriors in Premodern Japan*. University of Hawaii Press, 2000. https://doi.org/10.1515/9780824864743.

———. "Violence, Warfare and Buddhism in Early Medieval Japan." *Quaestiones Medii Aevi Novae*, Cultures of War, Liturgy, 21 (2016): 65–89.

Ahmed, Leila. "Chapter 5: Elaboration of the Founding Discourses." In *Women and Gender in Islam*. Yale University Press, 2021. https://www.degruyter.com/document/doi/10.12987/9780300258172-008/html.

Alasow, Omar Abdulle. *Violations of the Rules Applicable in Non-International Armed Conflicts and Their Possible Causes: The Case of Somalia*. Brill | Nijhoff, 2010. https://doi.org/10.1163/ej.9789004164758.i-364.

Allen, Mark W., and Terry L. Jones, eds. *Violence and Warfare among Hunter-Gatherers*. Walnut Creek, California: Left Coast Press, 2014.

Andaya, Barbara Watson. "History, Headhunting and Gender in Monsoon Asia: Comparative and Longitudinal Views." *South East Asia Research* 12, no. 1 (2004): 13–52. https://doi.org/10.5367/000000004773487938.

Andrushko, Valerie A., Al W. Schwitalla, and Phillip L. Walker. "Trophy-Taking and Dismemberment as Warfare Strategies in Prehistoric Central California." *American Journal of Physical Anthropology*, 2009, NA-NA. https://doi.org/10.1002/ajpa.21117.

Arkush, Elizabeth. "War, Chronology, and Causality in the Titicaca Basin." *Latin American Antiquity* 19, no. 4 (2008): 339–73. https://doi.org/10.1017/S1045663500004338.

Arkush, Elizabeth, and Tiffiny A. Tung. "Patterns of War in the Andes from the Archaic to the Late Horizon: Insights from Settlement Patterns and Cranial Trauma." *Journal of Archaeological Research* 21, no. 4 (December 1, 2013): 307–69. https://doi.org/10.1007/s10814-013-9065-1.

Armit, Ian. *Headhunting and the Body in Iron Age Europe*. Cambridge: Cambridge University Press, 2012. https://doi.org/10.1017/CBO9781139016971.

Armour, W.S. "Customs of Warfare in Ancient India." *Cambridge University Press on Behalf of the British Institute of International and Comparative Law*, Problems of

Peace and War, Papers Read before the Society in the Year 1922, 8 (1922). https://www.jstor.org/stable/742713.

Arnold, Denise Y, and Christine A. Hastorf. *Heads of State Icons, Power, and Politics in the Ancient and Modern Andes*, 2016.

Aswani, Shankar. "Changing Identities: The Ethnohistory Of Roviana Predatory Head-Hunting." *The Journal of the Polynesian Society* 109, no. 1 (2000): 39–70. https://www.jstor.org/stable/20706907.

Aswani, Shankar, And Michael W. Graves. "The Tongan Maritime Expansion: A Case in the Evolutionary Ecology of Social Complexity." *Asian Perspectives* 37, no. 2 (1998): 135–64. https://www.jstor.org/stable/42928433.

Atkinson, Quentin D., and Harvey Whitehouse. "The Cultural Morphospace of Ritual Form: Examining Modes of Religiosity Cross-Culturally." *Evolution and Human Behavior* 32, no. 1 (January 1, 2011): 50–62. https://doi.org/10.1016/j.evolhumbehav.2010.09.002.

Atran, Scott. *Talking to the Enemy: Faith, Brotherhood, and the (Un)Making of Terrorists*. New York: HarperCollins, 2010.

———. "The Devoted Actor: Unconditional Commitment and Intractable Conflict across Cultures." *Current Anthropology* 57, no. 13 (2016): 192–203. https://doi.org/10.1086/685495.

Atran, Scott, and Jeremy Ginges. "Religious and Sacred Imperatives in Human Conflict." *Science* 336, no. 6083 (May 18, 2012): 855–57. https://doi.org/10.1126/science.1216902.

Axtell, James, and William C. Sturtevant. "The Unkindest Cut, or Who Invented Scalping." *The William and Mary Quarterly* 37, no. 3 (1980): 451. https://doi.org/10.2307/1923812.

Balcells, Laia. "Rivalry and Revenge: Violence against Civilians in Conventional Civil Wars." *International Studies Quarterly* 54, no. 2 (2010): 291–313. https://www.jstor.org/stable/40664168.

Barber, Benjamin, and Charles Miller. "Propaganda and Combat Motivation: Radio Broadcasts and German Soldiers' Performance in World War II." *World Politics* 71, no. 3 (2019): 457–502. https://doi.org/10.1017/S0043887118000345.

Barrett, H. Clark. "Psychology Within and Without the State." *Annual Review of Psychology* 73, no. 1 (January 4, 2022): 461–87. https://doi.org/10.1146/annurev-psych-020821-110248.

Bar-Tal, Daniel. "Sociopsychological Foundations of Intractable Conflicts." *American Behavioral Scientist* 50, no. 11 (2007): 1430–53. https://doi.org/10.1177/0002764207302462.

Bartelink, Eric J., Valerie A. Andrushko, Viviana I. Bellifemine, Irina Nechayev, and Robert Jurmain. "Violence and Warfare in the Prehistoric San Francisco Bay Area:

Regional and Temporal Variations in Conflict." In *The Routledge Handbook of the Bioarchaeology of Human Conflict*, edited by Christopher Knüsel and Martin Smith, 2014. http://site.ebrary.com/id/10822603.

Barton, Roy Franklin. *The Half-Way Sun: Life among the Headhunters of the Philippines*. Brewer & Warren, Inc., 1930. https://ehrafworldcultures.yale.edu/document?id=oa19-012.

Basedow, Herbert. *The Australian Aboriginal*. F. W. Preece and sons, 1925. https://ehrafworldcultures.yale.edu/document?id=oi08-007.

Bauer, Michal, Christopher Blattman, Julie Chytilová, Joseph Henrich, Edward Miguel, and Tamar Mitts. "Can War Foster Cooperation?" *Journal of Economic Perspectives* 30, no. 3 (September 2016): 249–74. https://doi.org/10.1257/jep.30.3.249.

Bearman, Peter S. "Desertion as Localism: Army Unit Solidarity and Group Norms in the U.S. Civil War." *Social Forces* 70, no. 2 (1991): 321. https://doi.org/10.2307/2580242.

Beierle, John. *Culture Summary: Jivaro*. HRAF, 2006. https://ehrafworldcultures.yale.edu/document?id=sd09-000.

Bellamy, Alex J. "Mass Killing and the Politics of Legitimacy: Empire and the Ideology of Selective Extermination." *Australian Journal of Politics & History* 58, no. 2 (2012): 159–80. https://doi.org/10.1111/j.1467-8497.2012.01630.x.

Bellwood, Peter. "Chapter 2. Hierarchy, Founder Ideology and Austronesian Expansion." In *Origins, Ancestry and Alliance: Explorations in Austronesian Ethnography*, by Clifford Sather and James J. Fox. Canberra: ANU E Press, 2006.

———. "Chapter 5. Austronesian Prehistory in Southeast Asia: Homeland, Expansion and Transformation." In *The Austronesians: Historical and Comparative Perspectives*, by Peter Bellwood, James J. Fox, and Darrell Tryon. ANU Press, 2006. https://www.jstor.org/stable/j.ctt2jbjx1.

Bellwood, Peter, James J. Fox, and Darrell Tryon. *The Austronesians: Historical and Comparative Perspectives*. ANU Press, 2006. https://www.jstor.org/stable/j.ctt2jbjx1.

Bennett, James S. "Retrodicting the Rise, Spread, and Fall of Large-Scale States in the Old World." *PLOS ONE* 17, no. 1 (January 12, 2022): e0261816. https://doi.org/10.1371/journal.pone.0261816.

Bentley, R Alexander, William R Moritz, Damian J Ruck, and Michael J O'Brien. "Evolution of Initiation Rites during the Austronesian Dispersal." *Science Progress* 104, no. 3 (2021): 003685042110313. https://doi.org/10.1177/00368504211031364.

Bierschenk, Thomas. "Religion and Political Structure: Remarks on Ibadism in Oman and the Mzab (Algeria)." *Studia Islamica*, no. 68 (1988): 107–27. https://doi.org/10.2307/1595760.

Bliege Bird, Rebecca, and Brian F. Codding. "Promise and Peril of Ecological and Evolutionary Modelling Using Cross-Cultural Datasets." *Nature Ecology & Evolution*, October 25, 2021, 1–3. https://doi.org/10.1038/s41559-021-01579-w.

Blust, Robert. "Austronesian Culture History: Some Linguistic Inferences and Their Relations to the Archaeological Record." *World Archaeology* 8, no. 1 (1976): 19–43. https://doi.org/10.1080/00438243.1976.9979650.

Boehm, Christopher. "The Biocultural Evolution of Conflict Resolution Between Groups." In *War, Peace, and Human Nature*, edited by Douglas P. Fry. Oxford University Press, 2013. https://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199858996.001.0001/acprof-9780199858996-chapter-16.

Boehm, Christopher, Harold B. Barclay, Robert Knox Dentan, Marie-Claude Dupre, Jonathan D. Hill, Susan Kent, Bruce M. Knauft, Keith F. Otterbein, and Steve Rayner. "Egalitarian Behavior and Reverse Dominance Hierarchy [and Comments and Reply]." *Current Anthropology* 34, no. 3 (1993): 227–54.

Bohannan, Laura. "POLITICAL ASPECTS OF TIV SOCIAL ORGANIZATION." In *Tribes without Rulers: Studies in African Segmentary Systems*, edited by John Middleton, David Tait, and E. E. Evans-Pritchard, Reprinted. Africa, in 26 volumes; 18. London: Routledge, 2004.

Bohannan, Laura, and Paul Bohannan. "The Tiv of Central Nigeria," Ethnographic survey of Africa: Western Africa, 1953. https://ehrafworldcultures.yale.edu/cultures/ff57/documents/019.

Böhm, Robert, Hannes Rusch, and Özgür Gürerk. "What Makes People Go to War? Defensive Intentions Motivate Retaliatory and Preemptive Intergroup Aggression." *Evolution and Human Behavior* 37, no. 1 (January 1, 2016): 29–34. https://doi.org/10.1016/j.evolhumbehav.2015.06.005.

Bonner, Michael David. *Jihad in Islamic History: Doctrines and Practice.*, 2008. https://doi.org/10.1515/9781400827381.

Boster, James S. "ARUTAM and Culture Change." *Antropológica* 99–100 (2003): 165–85. https://ehrafworldcultures.yale.edu/document?id=sd09-040.

Bowles, Samuel. "Did Warfare Among Ancestral Hunter-Gatherers Affect the Evolution of Human Social Behaviors?" *Science* 324, no. 5932 (June 5, 2009): 1293–98. https://doi.org/10.1126/science.1168112.

Boyd, Robert, Monique Borgerhoff-Mulder, W.H Durham, and Peter Richerson. "Are Cultural Phylogenies Possible." In Human by Nature: Between Biology and the Social Sciences, 1997. http://www.des.ucdavis.edu/faculty/richerson/areculturalphylogeniespossible.pdf.

Boyd, Robert, and Peter J. Richerson. "Large-scale Cooperation in Small-scale Foraging Societies." *Evolutionary Anthropology: Issues, News, and Reviews* 31, no. 4 (2022): 175–98. https://doi.org/10.1002/evan.21944.

Brandt, Erik. "Images of War and Savagery: Thinking Anthropologically about Warfare and Civilisation, 1871–1930." *History and Anthropology* 12, no. 1 (2000): 1–36. https://doi.org/10.1080/02757206.2000.9960926.

Brekke, Torkel. *The Ethics of War in Asian Civilizations: A Comparative Perspective*. London: Routledge, 2005.

Brewer, Marilynn B. "The Psychology of Prejudice: Ingroup Love and Outgroup Hate?" *Journal of Social Issues* 55, no. 3 (1999): 429–44. https://doi.org/10.1111/0022-4537.00126.

Broesch, Tanya, Alyssa N. Crittenden, Bret A. Beheim, Aaron D. Blackwell, John A. Bunce, Heidi Colleran, Kristin Hagel, et al. "Navigating Cross-Cultural Research: Methodological and Ethical Considerations." *Proceedings of the Royal Society B: Biological Sciences* 287, no. 1935 (September 30, 2020): 20201245. https://doi.org/10.1098/rspb.2020.1245.

Bromham, Lindell. "Meaning and Purpose: Using Phylogenies to Investigate Human History and Cultural Evolution." *Biological Theory*, April 29, 2022. https://doi.org/10.1007/s13752-022-00401-5.

Bromley, David G., and Catherine Wessinger. *Millennial Visions and Conflict with Society*. Oxford University Press, 2011. https://doi.org/10.1093/oxfordhb/9780195301052.003.0010.

Brubaker, Rogers. "Religious Dimensions of Political Conflict and Violence." *Sociological Theory* 33, no. 1 (2015): 1–19. https://doi.org/10.1177/0735275115572153.

Bryant, Michael S. *A World History of War Crimes from Antiquity to the Present*. London, UK ; New York, NY: Bloomsbury Academic, 2016.

Buchanan, Allen, and Russell Powell. *The Evolution of Moral Progress: A Biocultural Theory*. Oxford University Press, 2018. https://ezproxy-prd.bodleian.ox.ac.uk:10137/view/10.1093/oso/9780190868413.001.0001/oso-9780190868413.

Buckner, William. "Why Headhunting Men's Cults Develop in Lowland Riverine Rainforest Areas." *Traditions of Conflict* (blog), 2018. https://traditionsofconflict.com/blog/2018/12/15/why-headhunting-mens-cults-develop-in-lowland-riverine-rainforest-areas.

Buhrmester, Michael D., David Zeitlyn, and Harvey Whitehouse. "Ritual, Fusion, and Conflict: The Roots of Agro-Pastoral Violence in Rural Cameroon." *Group Processes & Intergroup Relations* 25, no. 1 (2020): 298–311. https://doi.org/10.1177/1368430220959705.

Bulbulia, Joseph, Uffe Schjoedt, John H. Shaver, Richard Sosis, and Wesley J. Wildman. "Causal Inference in Regression: Advice to Authors." *Religion, Brain & Behavior* 11, no. 4 (October 2, 2021): 353–60. https://doi.org/10.1080/2153599X.2021.2001259.

Burch, Ernest S. Alliance and Conflict: The World System of the Iñupiaq Eskimos. University of Calgary Press, 2005. https://doi.org/10.2307/j.ctv6gqqgg.

———. Social Life in Northwest Alaska: The Structure of Iñupiaq Eskimo Nations. University of Alaska Press, 2006.

Bürkner, Paul-Christian. "Brms: An R Package for Bayesian Multilevel Models Using Stan." *Journal of Statistical Software* 80, no. 1 (2017). https://doi.org/10.18637/jss.v080.i01.

Butler, Sara M. "Getting Medieval on Steven Pinker." *Historical Reflections/Réflexions Historiques* 44, no. 1 (March 1, 2018): 29–40. https://doi.org/10.3167/hrrh.2018.440105.

Byrnes, Jarrett. "Bayesian SEM with BRMS." *RPubs by RStudio* (blog), December 20, 2017. http://rstudio-pubs-static.s3.amazonaws.com/343408_6b686a70f03f4b748dc464d5a39d2a11.html.

Cammett, Melani, and Sukriti Issar. "Bricks and Mortar Clientelism: Sectarianism and the Logics of Welfare Allocation in Lebanon." *World Politics* 62, no. 3 (2010): 381–421. https://doi.org/10.1017/S0043887110000080.

Canny, Nicholas P. "The Ideology of English Colonization: From Ireland to America." *The William and Mary Quarterly* 30, no. 4 (1973): 575. https://doi.org/10.2307/1918596.

Cashdan, Elizabeth, Alan Barnard, M. C. Bicchieri, Charles A. Bishop, Valda Blundell, Jeffrey Ehrenreich, Mathias Guenther, et al. "Territoriality Among Human Foragers: Ecological Models and an Application to Four Bushman Groups [and Comments and Reply]." *Current Anthropology* 24, no. 1 (February 1, 1983): 47–66. https://doi.org/10.1086/202934.

Chacon, Richard, and David Dye. "Introduction to Human Trophy Taking." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by Richard Chacon and David H. Dye, 5–31. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_2.

———. *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*. Boston, MA: Springer, 2007. http://dx.doi.org/10.1007/978-0-387-48303-0.

Choi, Jung-Kyoo, and Samuel Bowles. "The Coevolution of Parochial Altruism and War." *Science* 318, no. 5850 (October 26, 2007): 636–40. https://doi.org/10.1126/science.1144237.

Chrisomalis, Stephen. "Comparing Cultures and Comparing Processes: Diachronic Methods in Cross-Cultural Anthropology." *Cross-Cultural Research* 40, no. 4 (2006): 377–404. https://doi.org/10.1177/1069397106287926.

Chudek, Maciej, and Joseph Henrich. "Culture–Gene Coevolution, Norm-Psychology and the Emergence of Human Prosociality." *Trends in Cognitive Sciences* 15, no. 5 (May 1, 2011): 218–26. https://doi.org/10.1016/j.tics.2011.03.003.

Clodfelter, Micheal. *Warfare and Armed Conflicts: A Statistical Encyclopedia of Casualty and Other Figures, 1492-2015*. Fourth edition. Jefferson, North Carolina: McFarland & Company, Inc., Publishers, 2017.

Cohen, Ronald. *Incorporation in Bornu*. Chandler Publications in Anthropology. Chandler Pub. Co., 1970. https://ehrafworldcultures.yale.edu/document?id=ms14-011.

Colbacchini, Antonio, Cesar Albisetti, and Ivana Lillios. "The Eastern Bororo Orarimogodogue of the Eastern Plateau of Mato Grosso," Brasiliana (Grande Formato), 4 (1942). https://ehrafworldcultures.yale.edu/document?id=sp08-009.

Collcutt, Martin. "Religion in the Formation of the Kamakura Bakufu: As Seen through the 'Azuma Kagami.'" *Japan Review*, no. 5 (1994): 55–86. https://www.jstor.org/stable/25790938.

Conlan, Thomas. *The Culture of Force and Farce: Fourteenth-Century Japanese Warfare*. Occasional Papers in Japanese Studies. Cambridge, Mass.: Harvard University, Edwin O. Reischauer Institute of Japanese Studies, 2000. https://catalog.hathitrust.org/Record/007583757.

———. "State of War: The Violent Order of Fourteenth Century Japan." Stanford University, 1998. https://www.proquest.com/docview/304453463.

Cook, David. *Early Islamic and Classical Sunni and Shi'ite Apocalyptic Movements*. Oxford University Press, 2011. https://doi.org/10.1093/oxfordhb/9780195301052.003.0014.

———. *Studies in Muslim Apocalyptic*. Darwin Press, 2002.

Costa, D. L., and M. E. Kahn. "Cowards and Heroes: Group Loyalty in the American Civil War." *The Quarterly Journal of Economics* 118, no. 2 (May 1, 2003): 519–48. https://doi.org/10.1162/003355303321675446.

Cox, Bruce. "Changing Perceptions of Industrial Development in the North." In *Native People, Native Lands: Canadian Indians, Inuit and Metis*, edited by Bruce Cox. Montreal: MQUP, 2014.

Cox, Rory. "Expanding the History of the Just War: The Ethics of War in Ancient Egypt." *International Studies Quarterly* 61, no. 2 (2017): 371–84. https://doi.org/10.1093/isq/sqx009.

Crevecoeur, Isabelle, Marie-Hélène Dias-Meirinho, Antoine Zazzo, Daniel Antoine, and François Bon. "New Insights on Interpersonal Violence in the Late Pleistocene Based on the Nile Valley Cemetery of Jebel Sahaba." *Scientific Reports* 11, no. 1 (May 27, 2021): 9991. https://doi.org/10.1038/s41598-021-89386-y.

Creveld, Martin Van. *Technology and War: From 2000 b.c. to the Present*. New York: Touchstone, 2014. https://www.overdrive.com/search?q=A216E635-F424-4689-833C-5B6CB71AA4DB.

Crocker, William H. (William Henry). "The Canela (Eastern Timbira), I: An Ethnographic Introduction," Smithsonian contributions to anthropology, no. 33 (1990). https://ehrafworldcultures.yale.edu/document?id=so08-005.

Crowe, David. *War Crimes, Genocide, and Justice: A Global History*. First edition. New York, NY: Palgrave Macmillan, 2014.

Crowell, Aron L. "The Art of Iñupiaq Whaling: Elders' Interpretations of International Polar Ethnological Collections." In Smithsonian at the Poles: Contributions to International Polar Year Science, edited by Igor Krupnik, Michael A. Lang, Scott E. Miller, International Council for Science, World Meteorological Organization, and Smithsonian Institution. Smithsonian Contribution to Knowledge. Washington, D.C: Smithsonian Institution Scholarly Press, 2009.

Currie, Thomas E., Simon J. Greenhill, Russell D. Gray, Toshikazu Hasegawa, and Ruth Mace. "Rise and Fall of Political Complexity in Island South-East Asia and the Pacific." *Nature* 467, no. 7317 (October 2010): 801–4. https://doi.org/10.1038/nature09461.

Currie, Thomas E., and Ruth Mace. "Political Complexity Predicts the Spread of Ethnolinguistic Groups." *Proceedings of the National Academy of Sciences* 106, no. 18 (May 5, 2009): 7339–44. https://doi.org/10.1073/pnas.0804698106.

Daftary, Farhad, ed. "Nizārī Ismāʿīlī History during the Alamūt Period." In *The Isma'ilis: Their History and Doctrines*, 2nd ed., 301–402. Cambridge: Cambridge University Press, 2007. https://doi.org/10.1017/CBO9780511497551.009.

———. "The Alamūt Period in Nizārī Ismaili History," June 1, 1998. https://doi.org/10.3366/edinburgh/9780748609048.003.0004.

———. "The 'Order of the Assassins:' J. von Hammer and the Orientalist Misrepresentations of the Nizari Ismailis." *Iranian Studies* 39, no. 1 (2006): 71–81. https://www.jstor.org/stable/4311783.

Darwent, John Darwent, Christyann M. "Scales of Violence across the North American Arctic." In Violence and Warfare among Hunter-Gatherers. Routledge, 2014.

Davie, Maurice R. *The Evolution of War: A Study of Its Role in Early Societies.* Newburyport: Dover Publications, 1968. http://www.myilibrary.com?id=568166.

Davis, J. (John). *Libyan Politics: Tribe and Revolution : An Account of the Zuwaya and Their Government*. Comparative Studies on Muslim Societies. University of California Press, 1988. https://ehrafworldcultures.yale.edu/document?id=mt09-015.

Davison, Julian, and Vinson H. Sutlive. "The Children of NISING: Images of Headhunting and Male Sexuality in Iban Ritual and Oral Literature." In *Female and Male in Borneo : Contributions and Challenges to Gender Studies*, 1:153–230. Monograph Series. The Borneo Research Council, Inc., Department of Anthropology, College

of William and Mary, 1991. https://ehrafworldcultures.yale.edu/document?id=oc06-035.

De Dreu, Carsten K. W., D. Berno Dussel, and Femke S. Ten Velden. "In Intergroup Conflict, Self-Sacrifice Is Stronger among pro-Social Individuals, and Parochial Altruism Emerges Especially among Cognitively Taxed Individuals." *Frontiers in Psychology* 6 (2015). https://www.frontiersin.org/articles/10.3389/fpsyg.2015.00572.

De Dreu, Carsten K. W., and Jörg Gross. "Revisiting the Form and Function of Conflict: Neurobiological, Psychological, and Cultural Mechanisms for Attack and Defense within and between Groups." *Behavioral and Brain Sciences* 42 (2018): e116. https://doi.org/10.1017/S0140525X18002170.

De Laguna, Frederica. "Under Mount Saint Elias: The History and Culture of the Yakutat Tlingit," Smithsonian contributions to anthropology, 7 (1972). https://ehrafworldcultures.yale.edu/document?id=na12-020.

de Raedt, Jules, and Janet Hoskins, eds. *Headhunting and the Social Imagination in Southeast Asia*. Stanford, Calif: Stanford University Press, 1996.

Deckmyn, Alex. *Maps: Draw Geographical Maps* (version 3.4.1), 2022. https://CRAN.R-project.org/package=maps.

Donald, Leland. *Aboriginal Slavery on the Northwest Coast of North America*. University of California Press, 1997. https://doi.org/10.1525/california/9780520206168.001.0001.

———. "Slave Raiding on the North Pacific Coast." In *Native People, Native Lands: Canadian Indians, Inuit and Metis*, edited by Bruce Alden Cox. Carleton Library Series, no. 142. Montreal; Ithaca, NY: McGill-Queen's University Press, 1988. https://ebookcentral.proquest.com/lib/oxford/reader.action?docID=3332407.

Downes, Alexander B. "Desperate Times, Desperate Measures: The Causes of Civilian Victimization in War." *International Security* 30, no. 4 (April 1, 2006): 152–95. https://doi.org/10.1162/isec.2006.30.4.152.

Downs, R. E. "Head-Hunting In Indonesia." *Bijdragen Tot de Taal-, Land- En Volkenkunde* 111, no. 1 (1955): 40–70. https://www.jstor.org/stable/27859908.

Du Tertre, Jean Baptiste, Marshall Bassford McKusick, and Pierre Verin. "Concerning the Natives of the Antilles." *General History of the Antilles Occupied by the French …* 2 (1667). https://ehrafworldcultures.yale.edu/cultures/st13/documents/004.

Dupree, Louis. *Afghanistan*. 2014. http://muse.jhu.edu/books/9781400858910/.

Dureau, Christine. "SKULLS, MANA AND CAUSALITY." *The Journal of the Polynesian Society* 109, no. 1 (2000): 71–97. https://www.jstor.org/stable/20706908.

Durham, Helen. "The Laws of War and Traditional Cultures: A Case Study of the Pacific Region∗." *Commonwealth Law Bulletin* 34, no. 4 (2008): 833–41. https://doi.org/10.1080/03050710802521614.

Dwyer, Philip, and Mark Micale. "Chapter 1. Steven Pinker and the Nature of Violence in History." In *The Darker Angels of Our Nature: Refuting the Pinker Theory of History & Violence*, edited by Philip Dwyer and Mark Micale. Bloomsbury Academic, 2021. https://doi.org/10.5040/9781350148437.

Dye, David H. *Ancient Mississippian Trophy-Taking*. Vol. 1. Oxford University Press, 2016. https://doi.org/10.1093/oxfordhb/9780199935420.013.30.

———. "Trends in Cooperation and Conflict in Native Eastern North America." In *War, Peace, and Human Nature*, edited by Douglas Fry. Oxford University Press, 2013. https://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199858996.001.0001/acprof-9780199858996-chapter-8.

———. *War Paths, Peace Paths: An Archaeology of Cooperation and Conflict in Native Eastern North America*. Issues in Eastern Woodlands Archaeology. Lanham: AltaMira Press, 2009.

Dyott, George Miller. *On the Trail of the Unknown in the Wilds of Ecuador and the Amazon*. T. Butterworth, ltd., 1926. https://ehrafworldcultures.yale.edu/document?id=sd09-020.

Dyson-Hudson, Rada, and Eric Alden Smith. "Human Territoriality: An Ecological Reassessment." *American Anthropologist* 80, no. 1 (1978): 21–41. https://doi.org/10.1525/aa.1978.80.1.02a00020.

Earle, Timothy K. "Chapter 12 - A Reappraisal of Redistribution: Complex Hawaiian Chiefdoms." In *Exchange Systems in Prehistory*, edited by Timothy K. Earle And Jonathon E. Ericson, 213–29. San Diego: Academic Press, 1977. https://doi.org/10.1016/B978-0-12-227650-7.50018-3.

Eck, Kristine, and Lisa Hultman. "One-Sided Violence Against Civilians in War: Insights from New Fatality Data." *Journal of Peace Research* 44, no. 2 (2007): 233–46. https://doi.org/10.1177/0022343307075124.

Eck, Kristine, Uppsala universitet, and Institutionen f??r freds- och konfliktforskning. *A Beginner's Guide to Conflict Data: Finding and Using the Right Dataset*. Uppsala: Dept. of Peace and Conflict Research, Uppsala University, 2005.

Eff, E. Anthon, and Philip W. Routon. "Farming and Fighting: An Empirical Analysis of the Ecological-Evolutionary Theory of the Incidence of Warfare." *Structure and Dynamics* 5, no. 2 (2012). https://escholarship.org/uc/item/3cw9w2gh.

Ember, Carol R. "Hunter-Gatherers (Foragers)," June 1, 2020. https://hraf.yale.edu/ehc/summaries/hunter-gatherers.

———. "Myths about Hunter-Gatherers." *Ethnology* 17, no. 4 (1978): 439. https://doi.org/10.2307/3773193.

———. "Using the HRAF Collection of Ethnography in Conjunction With the Standard Cross-Cultural Sample and the Ethnographic Atlas." *Cross-Cultural Research* 41, no. 4 (2007): 396–427. https://doi.org/10.1177/1069397107306593.

Ember, Carol R., Teferi Abate Adem, and Ian Skoggard. "Risk, Uncertainty, and Violence in Eastern Africa." *Human Nature* 24, no. 1 (March 1, 2013): 33–58. https://doi.org/10.1007/s12110-012-9157-5.

Ember, Carol, and Melvin Ember. "Basic Guide to Cross-Cultural Research." *Human Relations Area Files - Cultural Information for Education and Research* (blog), December 3, 2013. https://hraf.yale.edu/cross-cultural-research/basic-guide-to-cross-cultural-research/.

———. "Resource Unpredictability, Mistrust, and War: A Cross-Cultural Study." *Journal of Conflict Resolution* 36, no. 2 (1992): 242–62. https://doi.org/10.1177/0022002792036002002.

Ember, Carol R., Eric C. Jones, Ian Skoggard, and Teferi Abate Adem. "Warfare, Atrocities, and Political Participation: Eastern Africa." *Journal of Aggression, Conflict and Peace Research* 11, no. 1 (January 1, 2018): 11–23. https://doi.org/10.1108/JACPR-05-2017-0290.

Emmons, George Thornton, and Frederica De Laguna. *The Tlingit Indians*. Anthropological Papers of the American Museum of Natural History. University of

Washington Press ; American Museum of Natural History, 1991. https://ehrafworldcultures.yale.edu/document?id=na12-031.

Engen, Robert. "SLA Marshall and the Ratio of Fire: History, Interpretation, and the Canadian Experience." *Canadian Military History* 20, no. 4 (2011). https://scholars.wlu.ca/cgi/viewcontent.cgi?article=1571&context=cmh.

Evans-Pritchard, E. E. (Edward Evan). *The Azande: History and Political Institutions*. Clarendon Press, 1971. https://ehrafworldcultures.yale.edu/document?id=fo07-068.

———. *The Sanusi of Cyrenaica*. At the Clarendon Press, 1949. https://ehrafworldcultures.yale.edu/document?id=mt09-003.

Falk, Dean, and Charles Hildebolt. "Annual War Deaths in Small-Scale versus State Societies Scale with Population Size Rather than Violence." *Current Anthropology* 58, no. 6 (December 2, 2017): 805–13. https://doi.org/10.1086/694568.

Fein, Helen. "Accounting for Genocide after 1945: Theories and Some Findings." *International Journal on Minority and Group Rights* 1, no. 2 (January 1, 1993): 79–106. https://doi.org/10.1163/157181193X00013.

Feinman, Gary M. "The Emergence of Social Complexity." In *Cooperation and Collective Action Archaeological Perspectives*, edited by David M. Carballo. Boulder, Colo: Univ. Press of Colorado, 2013.

Ferguson, R. Brian. "Archaeology, Cultural Anthropology, and the Origins and Intensifications of War." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, edited by Elizabeth Arkush and Mark Allen. University Press of Florida, 2006.

———. "Born to Live: Challenging Killer Myths." In *Origins of Altruism and Cooperation*, edited by Robert W. Sussman and C. Robert Cloninger, 249–70. Developments in Primatology: Progress and Prospects. New York, NY: Springer, 2011. https://doi.org/10.1007/978-1-4419-9520-9_14.

———. "Explaining War." In *The Anthropology of War*, edited by Jonathan Haas. Cambridge University Press, 1990.

———. "Pinker's List: Exaggerating Prehistoric War Mortality." In *War, Peace, and Human Nature*, edited by Douglas P. Fry, 1st ed., 112–31. Oxford University PressNew York, 2013. https://doi.org/10.1093/acprof:oso/9780199858996.003.0007.

Fibiger, Linda. "The Past as a Foreign Country." *Historical Reflections/Réflexions Historiques* 44, no. 1 (March 1, 2018): 6–16. https://doi.org/10.3167/hrrh.2018.440103.

Field, Julie S. "Environmental and Climatic Considerations: A Hypothesis for Conflict and the Emergence of Social Complexity in Fijian Prehistory." *Journal of Anthropological Archaeology* 23, no. 1 (March 1, 2004): 79–99. https://doi.org/10.1016/j.jaa.2003.12.004.

Firestone, Reuven. *Jihad : The Origin of Holy War in Islam*. Oxford University Press, 1999.

Fischer, John L. "Native Land Tenure in the Truk District," Handbook series, 1958, 161–215. https://ehrafworldcultures.yale.edu/cultures/or19/documents/036.

Fischer, Michael D., and Carol R. Ember. "Big Data and Research Opportunities Using HRAF Databases." In *Big Data in Computational Social Science and Humanities*, edited by Shu-Heng Chen, 323–36. Computational Social Sciences. Cham: Springer International Publishing, 2018. https://doi.org/10.1007/978-3-319-95465-3_17.

Fiskesjo, Magnus. "[THE EMERGENCE OF THE EARLY HISTORIC STATES OF SOUTHEAST ASIA] The Question of the Farmer Fortress: On the Ethnoarchaeology of Fortified Settlements in the Northern Part of Mainland Southeast Asia." *Bulletin of the Indo-Pacific Prehistory Association* 21, no. 0 (January 24, 2008): 124–31. https://doi.org/10.7152/bippa.v21i0.11771.

Flannery, Kent V, and Joyce Marcus. *The Creation of Inequality: How Our Prehistoric Ancestors Set the Stage for Monarchy, Slavery, and Empire*. Cambridge, Mass.: Harvard University Press, 2012. http://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=3301069.

Foote, Nicola, and Nadya Williams, eds. *Civilians and Warfare in World History*. London: Routledge, 2017.

Friday, Karl. "Just War and Just Warfare in Early Medieval Japan." In *The Ethics of War in Asian Civilizations a Comparative Perspective*, edited by Torkel Brekke. London; New York: Routledge, 2006.

———. *Samurai, Warfare and the State in Early Medieval Japan.*., 2003. https://ebookcentral.proquest.com/lib/uqac-ebooks/detail.action?docID=5292574.

Fry, Douglas P. *Beyond War the Human Potential for Peace*. New York; Oxford: Oxford University Press, 2007.

———. *War, Peace, and Human Nature: The Convergence of Evolutionary and Cultural Views*. Oxford University Press, 2013.

Fry, Douglas P., and Patrik Söderberg. "Lethal Aggression in Mobile Forager Bands and Implications for the Origins of War." *Science* 341, no. 6143 (July 19, 2013): 270–73. https://doi.org/10.1126/science.1235675.

Fry, Douglas P., and Anna Szala. "The Evolution of Agonism." In *War, Peace, and Human Nature*, edited by Douglas P. Fry, 451–74. Oxford University Press, 2013. https://doi.org/10.1093/acprof:oso/9780199858996.003.0023.

Gabriel, Richard A., and Karen S. Metz. *From Sumer to Rome: The Military Capabilities of Ancient Armies*. Contributions in Military Studies, no. 108. New York: Greenwood Press, 1991.

Gaiser, Adam. *Muslims, Scholars, Soldiers: The Origin and Elaboration of the Ibadi Imamate Traditions*. Oxford University Press, 2010.

———. "Source-Critical Methodologies in Recent Scholarship on the Khārijites." *History Compass* 7, no. 5 (2009): 1376–90. https://doi.org/10.1111/j.1478-0542.2009.00630.x.

Gallagher, Eugene V. "Catastrophic Millennialism." *The Oxford Handbook of Millennialism*, 2011. https://doi.org/10.1093/oxfordhb/9780195301052.003.0002.

Gat, Azar. "Is War Declining – and Why?" *Journal of Peace Research* 50, no. 2 (2013): 149–57. https://doi.org/10.1177/0022343312461023.

———. "Proving Communal Warfare among Hunter-Gatherers: The Quasi-Rousseauan Error." *Evolutionary Anthropology: Issues, News, and Reviews* 24, no. 3 (May 6, 2015): 111–26. https://doi.org/10.1002/evan.21446.

———. "The Human Motivational Complex: Evolutionary Theory and the Causes of Hunter-Gatherer Fighting. Part I. Primary Somatic and Reproductive Causes." *Anthropological Quarterly* 73, no. 1 (2000): 20–34. https://www.jstor.org/stable/3317472.

———. "The Pattern of Fighting in Simple, Small-Scale, Prestate Societies." *Journal of Anthropological Research* 55, no. 4 (December 1999): 563–83. https://doi.org/10.1086/jar.55.4.3631615.

———. *War in Human Civilization*. Oxford University Press, 2008. https://ebookcentral.proquest.com/lib/oxford/reader.action?docID=430870.

Gay, Suzanne. "Review of State of War: The Violent Order of Fourteenth-Century Japan; Samurai, Warfare, and the State in Early Medieval Japan." *Harvard Journal of Asiatic Studies* 66, no. 2 (2005): 560–66. https://doi.org/10.2307/25066827.

Gelfand, Michele J., J. L. Raver, L. Nishii, L. M. Leslie, J. Lun, B. C. Lim, L. Duan, et al. "Differences Between Tight and Loose Cultures: A 33-Nation Study." *Science* 332, no. 6033 (May 27, 2011): 1100–1104. https://doi.org/10.1126/science.1197754.

Gelfand, Michele J., Gary LaFree, Susan Fahey, and Emily Feinberg. "Culture and Extremism." *Journal of Social Issues* 69, no. 3 (2013): 495–517. https://doi.org/10.1111/josi.12026.

Ghosh, G. K. Tourism Perspective in Andaman and Nicobar Islands. APH Publishing, 1998.

Gibson, Thomas. "Raiding, Trading and Tribal Autonomy in Insular Southeast Asia." In *The Anthropology of War*, edited by Jonathan Haas. A School of American Research Book. Cambridge: Cambridge Univ. Press, 1990.

Ginges, Jeremy, Ian Hansen, and Ara Norenzayan. "Religion and Support for Suicide Attacks." *Psychological Science* 20, no. 2 (2009): 224–30. https://doi.org/10.1111/j.1467-9280.2009.02270.x.

Glowacki, Luke, Alexander Isakov, Richard W. Wrangham, Rose McDermott, James H. Fowler, and Nicholas A. Christakis. "Formation of Raiding Parties for Intergroup Violence Is Mediated by Social Network Structure." *Proceedings of the National Academy of Sciences* 113, no. 43 (October 25, 2016): 12114–19. https://doi.org/10.1073/pnas.1610961113.

Glowacki, Luke, Michael L. Wilson, and Richard W. Wrangham. "The Evolutionary Anthropology of War." *Journal of Economic Behavior & Organization* 178 (2020): 963–82. https://doi.org/10.1016/j.jebo.2017.09.014.

Glowacki, Luke, and Richard W. Wrangham. "The Role of Rewards in Motivating Participation in Simple Warfare." *Human Nature* 24, no. 4 (2013): 444–60. https://doi.org/10.1007/s12110-013-9178-8.

———. "Reply to Zefferman et al.: Cultural Institutions Can Provide Adaptive Benefits for Costly Cooperation." *Proceedings of the National Academy of Sciences* 112, no. 20 (May 19, 2015): E2558–E2558. https://doi.org/10.1073/pnas.1505288112.

———. "Warfare and Reproductive Success in a Tribal Population." *Proceedings of the National Academy of Sciences* 112, no. 2 (January 13, 2015): 348–53. https://doi.org/10.1073/pnas.1412287112.

Gneezy, Ayelet, and Daniel M. T. Fessler. "Conflict, Sticks and Carrots: War Increases Prosocial Punishments and Rewards." *Proceedings of the Royal Society B:*

Biological Sciences 279, no. 1727 (January 22, 2012): 219–23. https://doi.org/10.1098/rspb.2011.0805.

Goldschmidt, Walter. "Inducement to Military Participation in Tribal Societies." In *The Social Dynamics Of Peace And Conflict: Culture In International Security.*, by Robert A. Rubinstein and Mary LeCron Foster. London: Routledge, 1988. https://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=2199072.

Golitko, Mark, and Lawrence H. Keeley. "Beating Ploughshares Back into Swords: Warfare in the Linearbandkeramik." *Antiquity* 81, no. 312 (June 1, 2007): 332–42. https://doi.org/10.1017/S0003598X00095211.

Gómez, Ángel, Lucía López-Rodríguez, Hammad Sheikh, Jeremy Ginges, Lydia Wilson, Hoshang Waziri, Alexandra Vázquez, Richard Davis, and Scott Atran. "The Devoted Actor's Will to Fight and the Spiritual Dimension of Human Conflict." *Nature Human Behavior* 1, no. 9 (September 2017): 673–79. https://doi.org/10.1038/s41562-017-0193-3.

Gorski, Philip S., and Gülay Türkmen-Dervişoğlu. "Religion, Nationalism, and Violence: An Integrated Approach." *Annual Review of Sociology* 39, no. 1 (July 30, 2013): 193–210. https://doi.org/10.1146/annurev-soc-071312-145641.

Gowey, David. "Headhunting, Slave-Raiding, and Shape-Shifting: Modes of Prowess in an Early Modern Visayan Society." *Association of Asian Studies Annual Conference*, 2018.

Graeber, David, and David Wengrow. The Dawn of Everything A New History of Humanity. Place of publication not identified: Penguin, 2022.

Graff, David A. "The Chinese Concept of Righteous War." In *The Prism of Just War: Asian and Western Perspectives on the Legitimate Use of Military Force*, by Howard M. Hensel. Florence: Taylor and Francis, 2010.

Graham, Jesse, and Jonathan Haidt. "Sacred Values and Evil Adversaries: A Moral Foundations Approach." In *The Social Psychology of Morality: Exploring the Causes of Good and Evil.*, edited by Mario Mikulincer and Phillip R. Shaver, 11–31. Washington: American Psychological Association, 2012. https://doi.org/10.1037/13091-001.

Grant, Peter. "The Saulteux Indians about 1804." In *Les Bourgeois de La Compagnie Du Nord-Quest*, 303–66. De L'Imprimerie Generale A. Cote et cie, 1890. https://ehrafworldcultures.yale.edu/document?id=ng06-019.

Gray, J. Patrick. "A Corrected Ethnographic Atlas." *World Cultures* 10, no. 1 (1999): 24–85.

Gray, R. D., A. J. Drummond, and S. J. Greenhill. "Language Phylogenies Reveal Expansion Pulses and Pauses in Pacific Settlement." *Science* 323, no. 5913 (January 23, 2009): 479–83. https://doi.org/10.1126/science.1166858.

Grenier, John. "Introduction." In *The First Way of War: American War Making on the Frontier, 1607–1814*, 1st ed. Cambridge University Press, 2005. https://doi.org/10.1017/CBO9780511817847.

———. *The First Way of War: American War Making on the Frontier, 1607–1814*. Cambridge: Cambridge University Press, 2005. https://doi.org/10.1017/CBO9780511817847.

Haas, Jonathan. "Warfare and the Evolution of Culture." In *Archaeology at the Millennium*, edited by Gary M. Feinman and T. Douglas Price, 329–50. Boston, MA: Springer US, 2001. https://doi.org/10.1007/978-0-387-72611-3_9.

———, ed. "Warfare and the Evolution of Tribal Polities in the Prehistoric Southwest." In *The Anthropology of War*. A School of American Research Book. Cambridge: Cambridge Univ. Press, 1990.

Haas, Jonathan, and Matthew Piscitelli. "The Prehistory of Warfare: Misled by Ethnography." In *War, Peace, and Human Nature*, edited by Douglas P. Fry, 1st ed., 168–90. Oxford University PressNew York, 2013. https://doi.org/10.1093/acprof:oso/9780199858996.003.0010.

Hacker, Barton C. "Military Institutions, Weapons, and Social Change: Toward a New History of Military Technology." *Technology and Culture* 35, no. 4 (1994): 768. https://doi.org/10.2307/3106506.

Haddad, Fanar. "'Sectarianism' and Its Discontents in the Study of the Middle East." *The Middle East Journal* 71, no. 3 (August 1, 2017): 363–82. https://doi.org/10.3751/71.3.12.

Hagen, Edward H., and Gregory A. Bryant. "Music and Dance as a Coalition Signaling System." Human Nature 14, no. 1 (March 1, 2003): 21–51. https://doi.org/10.1007/s12110-003-1015-z.

Hamilton, Marcus J., and Miikka Tallavaara. "Statistical Inference, Scale and Noise in Comparative Anthropology." *Nature Ecology & Evolution* 6, no. 2 (February 2022): 122–122. https://doi.org/10.1038/s41559-021-01637-3.

Hanley, Catherine. *War and Combat, 1150-1270: The Evidence from Old French Literature*. Rochester, NY: D.S. Brewer, 2003.

Harff, Barbara. "No Lessons Learned from the Holocaust? Assessing Risks of Genocide and Political Mass Murder since 1955." *American Political Science Review*, 2003. https://www.cambridge.org/core/journals/american-political-science-review/article/no-lessons-learned-from-the-holocaust-assessing-risks-of-genocide-and-political-mass-murder-since-1955/FBA37FA563AC35E1CB6F7B57F8140F2C.

Harner, Michael J. "Jivaro Souls." *American Anthropologist* 64, no. 2 (1962): 258–72. https://ehrafworldcultures.yale.edu/document?id=sd09-032.

———. *Preface to the 1984 Edition*. University of California Press, 1984. https://ehrafworldcultures.yale.edu/document?id=sd09-037.

———. *The Jívaro: People of the Sacred Waterfalls*. Anchor Press / Doubleday, 1973. https://ehrafworldcultures.yale.edu/document?id=sd09-034.

Harrison, Simon. *Dark Trophies: Hunting and the Enemy Body in Modern War*. 1st ed. Berghahn Books, 2014. https://doi.org/10.2307/j.ctt9qchnf.

———. "Hunting and War: The European History of a Metaphor." In *Dark Trophies: Hunting and the Enemy Body in Modern War*, 1st ed. Berghahn Books, 2012. https://doi.org/10.2307/j.ctt9qchnf.

———. "Skull Trophies of the Pacific War: Transgressive Objects of Remembrance." *Journal of the Royal Anthropological Institute* 12, no. 4 (2006): 817–36. https://doi.org/10.1111/j.1467-9655.2006.00365.x.

———. "Skulls and Scientific Collecting in the Victorian Military: Keeping the Enemy Dead in British Frontier Warfare." *Comparative Studies in Society and History* 50, no. 1 (2008): 285–303. https://www.jstor.org/stable/27563663.

Hashmi, Sohail H. "Rebellion." In *The Princeton Encyclopedia of Islamic Political Thought*, edited by Gerhard Böwering, Patricia Crone, Wadad al-Qadi, Mahan Mirza, Devin J Stewart, and Muhammad Qasim Zaman, 2013. https://doi.org/10.1515/9781400838554.

Hasluck, Margaret Masson Hardie, and J. H. (John Henry) Hutton. *The Unwritten Law in Albania*. University Press, 1954. https://ehrafworldcultures.yale.edu/document?id=eg01-010.

Hatch, Mallorie A. "Politics and Social Substitution in Total War: Exploring the Treatment of Combatants and Noncombatants During the Mississippian Period of the Central Illinois Valley." In *Bioarchaeology of Women and Children in Times of War*, edited by Debra L. Martin and Caryn Tegtmeyer, 49–69. Cham: Springer International Publishing, 2017. https://doi.org/10.1007/978-3-319-48396-2_4.

Henrich, Joseph, Steven J. Heine, and Ara Norenzayan. "The Weirdest People in the World?" *Behavioral and Brain Sciences* 33, no. 2–3 (2010): 61–83. https://doi.org/10.1017/S0140525X0999152X.

Hensel, Howard M. "Christian Belief and Western Just War Thought." In *The Prism of Just War: Asian and Western Perspectives on the Legitimate Use of Military Force*, edited by Howard M. Hensel. London: Routledge, 2010.

Hill, W. W. (Willard Williams). "Navaho Warfare," Yale University publications in anthropology, no. 5 (1936): 3–19. https://ehrafworldcultures.yale.edu/cultures/nt13/documents/018.

Ho, Lam. *Lamho86/Phylolm*, 2022. https://github.com/lamho86/phylolm.

Hodgson, Marshall G. S. "THE ISMĀʿĪLĪ STATE." In *The Cambridge History of Iran*, edited by J. A. Boyle, 1st ed., 422–82. Cambridge University Press, 1968. https://doi.org/10.1017/CHOL9780521069366.006.

———. *The Order of Assassins*. New York: AMS Press, 1955.

Hoffman, Valerie J. *The Essentials of Ibadi Islam*. Modern Intellectual and Political History of the Middle East. Syracuse, N.Y: Syracuse University Press, 2012. https://ebookcentral.proquest.com/lib/oxford/detail.action?docID=4649186.

Holden, Clare Janaki, and Ruth Mace. "Spread of Cattle Led to the Loss of Matrilineal Descent in Africa: A Coevolutionary Analysis." *Proceedings of the Royal Society of London. Series B: Biological Sciences* 270, no. 1532 (December 7, 2003): 2425–33. https://doi.org/10.1098/rspb.2003.2535.

Hoskins, Janet. "Introduction: Headhunting as Practice and as Trope." In *Headhunting and the Social Imagination in Southeast Asia*, edited by Janet Hoskins. Stanford, Calif: Stanford University Press, 1996.

Howe, Timothy, and Lee L. Brice, eds. *Brill's Companion to Insurgency and Terrorism in the Ancient Mediterranean*. Brill's Companions in Classical Studies: Warfare in the Ancient Mediterranean World, Volume 1. Leiden ; Boston: Brill, 2016.

Hoyer, Daniel, Jenny Reddish, and Ian Morris. *Seshat History of the Axial Age*, 2019.

Hungry Wolf, Beverly. *The Ways of My Grandmothers*. Morrow, 1980. https://ehrafworldcultures.yale.edu/cultures/nf06/documents/020.

Hutchinson, Sharon Elaine. *Nuer Dilemmas: Coping with Money, War, and the State*. University of California Press, 1996. https://ehrafworldcultures.yale.edu/document?id=fj22-018.

Hutton, J. H. "The Significance of Head-Hunting in Assam." *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 58 (1928): 399–408. https://doi.org/10.2307/2843630.

Innokentii, Saint, Rossiisko-amerikanskaia Kompaniia, B. Keen, and Assya Kardinelowska. *Notes on the Islands of the Unalaska District*. Russian-American Company, 1840. https://ehrafworldcultures.yale.edu/document?id=na06-001.

Jackson, Joshua Conrad, Michele Gelfand, and Carol R. Ember. "A Global Analysis of Cultural Tightness in Non-Industrial Societies." *Proceedings of the Royal Society B: Biological Sciences* 287, no. 1930 (July 8, 2020): 20201036. https://doi.org/10.1098/rspb.2020.1036.

Jackson, Joshua Conrad, Jonathan Jong, David Bilkey, Harvey Whitehouse, Stefanie Zollmann, Craig McNaughton, and Jamin Halberstadt. "Synchrony and Physiological Arousal Increase Cohesion and Cooperation in Large Naturalistic Groups." Scientific Reports 8, no. 1 (January 9, 2018): 127. https://doi.org/10.1038/s41598-017-18023-4.

Jákl, Jiří. "The literary Motif of Head-Taking in Old Javanese Court Poems (*Kakavin*): Cěṅěl and Varagaṅ Terms Revisited." *Indonesia and the Malay World* 44, no. 129 (May 3, 2016): 165–87. https://doi.org/10.1080/13639811.2015.1133140.

Jochelson, Waldemar. "The Koryak." *Publications of the Jesup North Pacific Expedition*, Memoir of the American Museum of Natural History, x (1908 1905). https://ehrafworldcultures.yale.edu/document?id=ry04-001.

Johannes, Ben. "Organizational Modes of Non-State Armed Groups." Doctoral, University of Oxford, 2017. https://ora.ox.ac.uk/objects/uuid:4c99d9ff-3b7f-4c6b-969f-978138197a78/download_file?file_format=pdf&safe_filename=Organizational%2BModes%2Bof%2BNon-state%2Barmed%2Bgroups.pdf&type_of_work=Thesis.

Johnson, James Turner. *Just War Tradition and the Restraint of War: A Moral and Historical Inquiry*. Princeton: Princeton University Press, 1981.

Jong, Jonathan, Harvey Whitehouse, Christopher Kavanagh, and Justin Lane. "Shared Negative Experiences Lead to Identity Fusion via Personal Reflection." *PLOS ONE* 10, no. 12 (December 23, 2015): e0145611. https://doi.org/10.1371/journal.pone.0145611.

Jordan, Kelly C. "Right for the Wrong Reasons: SLA Marshall and the Ratio of Fire in Korea." *Journal of Military History* 66, no. 1 (2002): 135–62.

https://anoncafe.co/.media/cbfdca1f847769c3dd32e2220601cc155958cecd8f5815721c872a09e5077bd8.pdf.

Juergensmeyer, Mark. "Sacrifice and Cosmic War." *Terrorism and Political Violence* 3, no. 3 (1991): 101–17. https://doi.org/10.1080/09546559108427118.

———. *Terror in the Mind of God: The Global Rise of Religious Violence*. University of California Press, 2003.

Junker, Laura Lee. "WARRIOR BURIALS AND THE NATURE OF WARFARE IN PREHISPANIC PHILIPPINE." *Philippine Quarterly of Culture and Society*, no. Special Issue: New Excavation, Analysis And Prehistorical Interpretation in Southeast Asian Archaeology (1999). https://www.jstor.org/stable/pdf/29792432.pdf.

Kalyvas, Stathis N. *The Logic of Violence in Civil War*. 1st ed. Cambridge University Press, 2006. https://doi.org/10.1017/CBO9780511818462.

Kan, Sergei. *Symbolic Immortality: The Tlingit Potlatch of the Nineteenth Century*. Smithsonian Series in Ethnographic Inquiry. Smithsonian Institution Press, 1989. https://ehrafworldcultures.yale.edu/document?id=na12-032.

Kanjou, Y., I. Kuijt, Y. S. Erdal, and O. Kondo. "Early Human Decapitation, 11,700-10,700 Cal bp, within the Pre-Pottery Neolithic Village of Tell Qaramel, North Syria: Cutmarks in PPNA Human Skeletons." *International Journal of Osteoarchaeology* 25, no. 5 (2015): 743–52. https://doi.org/10.1002/oa.2341.

Kantner, John. "Survival Cannibalism or Sociopolitical Intimidation?" *Human Nature* 10, no. 1 (March 1, 1999): 1–50. https://doi.org/10.1007/s12110-999-1000-2.

Karsten, Rafael. "The Head-Hunters of Western Amazonas: The Life and Culture of the Jibaro Indians of Eastern Ecuador and Peru," Commentationes humanarum litterarum, 1935. https://ehrafworldcultures.yale.edu/document?id=sd09-001.

Keeley, Lawrence H. *War Before Civilization: The Myth of the Peaceful Savage*. Cary, UNITED STATES: Oxford University Press USA - OSO, 1996. http://ebookcentral.proquest.com/lib/oxford/detail.action?docID=694019.

———. "War Before Civilization—15 Years On." In *The Evolution of Violence*, edited by Todd K. Shackelford and Ranald D. Hansen, 23–31. New York, NY: Springer New York, 2014. https://doi.org/10.1007/978-1-4614-9314-3_2.

Keenan-Jones, Duncan, and Mark Hebblewhite. "The Pitfalls of Using Ancient Population, Army and Casualty Data without Expert Curation: A Review of Oka et al. 2017." *Cliodynamics: The Journal of Quantitative History and Cultural Evolution* 10, no. 1 (n.d.). https://escholarship.org/uc/item/3x5411p8.

Kellett, Anthony. *Combat Motivation*. Dordrecht: Springer Netherlands, 1982. https://doi.org/10.1007/978-94-015-3965-4.

Kelly, Raymond C. "The Evolution of Lethal Intergroup Violence." *Proceedings of the National Academy of Sciences* 102, no. 43 (October 25, 2005): 15294–98. https://doi.org/10.1073/pnas.0505955102.

———. *Warless Societies and the Origin of War*. University of Michigan Press, 2000.

Kelly, Robert L. *The Lifeways of Hunter-Gatherers: The Foraging Spectrum*. Second edition. Cambridge: Cambridge University Press, 2013.

Kelsay, John. "Al-Shaybani and the Islamic Law of War." *Journal of Military Ethics* 2, no. 1 (April 1, 2003): 63–75. https://doi.org/10.1080/15027570310000027.

———. "Religion, Morality, and the Governance of War: The Case of Classical Islam." *The Journal of Religious Ethics* 18, no. 2 (1990): 123–39. https://www.jstor.org/stable/40015111.

———. "THE NEW JIHAD AND ISLAMIC TRADITION." *The Review of Faith & International Affairs* 7, no. 2 (2009): 43–48. https://doi.org/10.1080/15570274.2009.9523392.

Kennedy, Hugh. *The Prophet and the Age of the Caliphates: The Islamic Near East from the Sixth to the Eleventh Century*, 2016. http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=1124391.

Kenney, Jeffrey T. "Millennialism and Radical Islamist Movements." In *The Oxford Handbook of Millennialism*, 2012. 10.1093/oxfordhb/9780195301052.003.0035.

Kiernan, Ben. *Blood and Soil: A World History of Genocide and Extermination from Sparta to Darfur*. New Haven: Yale University Press, 2007.

Kim, Nam C. "Coercive Power and State Formation in Northern Vietnam." In *Feast, Famine or Fighting?*, edited by Richard J. Chacon and Rubén G. Mendoza, 8:165–96. Cham: Springer International Publishing, 2017. https://doi.org/10.1007/978-3-319-48402-0_7.

Kim, Nam C., and Marc Kissel. *Emergent Warfare in Our Evolutionary Past*. New Biological Anthropology. New York London: Routledge, Taylor & Francis Group, 2018.

Kim, Nam C., and Chapurukha M. Kusimba. "Pathways to Social Complexity and State Formation in the Southern Zambezian Region." *African Archaeological Review* 25, no. 3–4 (2008): 131–52. https://doi.org/10.1007/s10437-008-9031-3.

Kim, Nam C., Chapurukha M. Kusimba, and Lawrence H. Keeley. "Coercion and Warfare in the Rise of State Societies in Southern Zambezia." *African Archaeological Review* 32, no. 1 (March 1, 2015): 1–34. https://doi.org/10.1007/s10437-015-9183-x.

Kirby, Kathryn R., Russell D. Gray, Simon J. Greenhill, Fiona M. Jordan, Stephanie Gomes-Ng, Hans-Jörg Bibiko, Damián E. Blasi, et al. "D-PLACE: A Global Database of Cultural, Linguistic and Environmental Diversity." *PLOS ONE* 11, no. 7 (July 8, 2016): e0158391. https://doi.org/10.1371/journal.pone.0158391.

Kirch, Patrick V. "The Evolution of Sociopolitical Complexity in Prehistoric Hawaii: An Assessment of the Archaeological Evidence." *Journal of World Prehistory* 4, no. 3 (1990): 311–45. https://doi.org/10.1007/BF00974883.

Kirch, Patrick V. "Controlled Comparison and Polynesian Cultural Evolution." In *Natural Experiments of History*, edited by Jared M. Diamond and James A. Robinson. Cambridge, Mass: Belknap Press of Harvard University Press, 2010.

Kissel, Marc, and Nam C. Kim. "The Emergence of Human Warfare: Current Perspectives." *American Journal of Physical Anthropology* 168, no. S67 (2019): 141–63. https://doi.org/10.1002/ajpa.23751.

Knauft, Bruce M. "Melanesian Warfare: A Theoretical History." *Oceania* 60, no. 4 (1990): 250–311. https://www.jstor.org/stable/40332448.

Knauft, Bruce M., Thomas S. Abler, Laura Betzig, Christopher Boehm, Robert Knox Dentan, Thomas M. Kiefer, Keith F. Otterbein, John Paddock, and Lars Rodseth. "Violence and Sociality in Human Evolution [and Comments and Replies]." *Current Anthropology* 32, no. 4 (August 1991): 391–428. https://doi.org/10.1086/203975.

Korotayev, Andrey, Alexander Kazankov, Svetlana Borinskaya, Daria Khaltourina, and Dmitri Bondarenko. "Ethnographic Atlas XXX: Peoples of Siberia." *Ethnology* 43, no. 1 (January 1, 2004): 83. https://doi.org/10.2307/3773857.

Krupnik, Igor. "The 50-Year Arctic Career of Ernest S. Burch, Jr.: A Personal Ethnohistory, 1960 2010," 2012. http://repository.si.edu/xmlui/handle/10088/21714.

Kurz, A. Solomon. *Statistical Rethinking with Brms, Ggplot2, and the Tidyverse*, 2019. https://bookdown.org/ajkurz/Statistical_Rethinking_recoded/multivariate-linear-models.html.

Lambert, Patricia M. "Ethnographic and Linguistic Evidence for the Origins of Human Trophy Taking in California." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by RICHARD J. CHACON and David H. Dye, 65–89. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_5.

Lawson, Tom. "Apocalypse." In *The Princeton Encyclopedia of Islamic Political Thought*, edited by Gerhard Bowering, Patricia Crone, Wadad Kadi, Devin J. Stewart, Muhammad Qasim Zaman, and Mahan Mirza. Princeton University Press, 2013.

Leader Maynard, Jonathan. *Ideology and Mass Killing: The Radicalized Security Politics of Genocides and Deadly Atrocities*. 1st ed. Oxford University PressOxford, 2022. https://doi.org/10.1093/oso/9780198776796.001.0001.

LeBlanc, Steven A. "Warfare and Human Nature." In *The Evolution of Violence*, edited by Todd K. Shackelford and Ranald D. Hansen, 73–97. New York, NY: Springer New York, 2014. https://doi.org/10.1007/978-1-4614-9314-3_5.

LeBlanc, Steven A., and Katherine E. Register. *Constant Battles: The Myth of the Peaceful, Noble Savage*. Macmillan, 2003.

Lee, Richard B. "Hunter-Gatherers and Human Evolution: New Light on Old Debates." *Annual Review of Anthropology* 47, no. 1 (October 21, 2018): 513–31. https://doi.org/10.1146/annurev-anthro-102116-041448.

Lehmann, Laurent, and Marcus W Feldman. "War and the Evolution of Belligerence and Bravery." *Proceedings of the Royal Society B: Biological Sciences* 275, no. 1653 (December 22, 2008): 2877–85. https://doi.org/10.1098/rspb.2008.0842.

Levene, Mark, and Penny Roberts, eds. *The Massacre in History*. War and Genocide, v. 1. New York: Berghahn Books, 1999.

Levy, Jack S, and William R Thompson. *The Arc of War: Origins, Escalation, and Transformation*. Chicago, IL: University of Chicago Press, 2011.

Lewicki, T. "Al-Ibāḍiyya." *Encyclopaedia of Islam, Second Edition*, April 24, 2012. https://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/al-ibadiyya-COM_0307.

Lewis, Bernard. *The Assassins: A Radical Sect in Islam*. New York: Basic Books, 2003.

Lewis, Mark E. "The Just War in Early China." In *The Ethics of War in Asian Civilizations: A Comparative Perspective*, by Torkel Brekke. London: Routledge, 2005.

Lincoln, Bruce. "Notes toward a Theory of Religion and Revolution." In *Religion, Rebellion, Revolution: An Interdisciplinary and Cross-Cultural Collection of Essays*,

edited by Bruce Lincoln, 266–92. London: Palgrave Macmillan UK, 1985. https://doi.org/10.1007/978-1-349-17904-6_13.

Littman, Rebecca. "Perpetrating Violence Increases Identification With Violent Groups: Survey Evidence From Former Combatants." *Personality and Social Psychology Bulletin* 44, no. 7 (2018): 1077–89. https://doi.org/10.1177/0146167218757465.

Littman, Rebecca, and Elizabeth Levy Paluck. "The Cycle of Violence: Understanding Individual Participation in Collective Violence: Cycle of Violence." *Political Psychology* 36 (2015): 79–99. https://doi.org/10.1111/pops.12239.

Lovisek, Joan A. "Human Trophy Taking on the Northwest Coast." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by RICHARD J. CHACON and David H. Dye, 45–64. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_4.

Lyall, Jason. "Why Armies Break: Explaining Mass Desertion in Conventional War." SSRN Scholarly Paper. Rochester, NY, November 14, 2016. https://doi.org/10.2139/ssrn.2524561.

Mace, Ruth, and Clare J. Holden. "A Phylogenetic Approach to Cultural Evolution." *Trends in Ecology & Evolution* 20, no. 3 (March 1, 2005): 116–21. https://doi.org/10.1016/j.tree.2004.12.002.

Mace, Ruth, and Mark Pagel. "The Comparative Method in Anthropology [and Comments and Reply]." *Current Anthropology* 35, no. 5 (1994): 549–64. http://www.jstor.org/stable/2744082.

Madelung, W. "Ḳarmaṭī." *Encyclopaedia of Islam, Second Edition*, April 24, 2012. https://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/*-COM_0451.

Majolo, Bonaventura. "Warfare in an Evolutionary Perspective." *Evolutionary Anthropology: Issues, News, and Reviews* 28, no. 6 (2019): 321–31. https://doi.org/10.1002/evan.21806.

Malešević, Siniša. "Taming or Disguising Violence? War, Civilisation and Social Theory." *Journal of Political Power* 7, no. 2 (May 4, 2014): 325–34. https://doi.org/10.1080/2158379X.2014.925181.

———. *The Rise of Organised Brutality: A Historical Sociology of Violence*. 1st ed. Cambridge University Press, 2017. https://doi.org/10.1017/9781316155332.

Malinowski, Bronislaw. "War and Weapons among the Natives of the Trobriand Islands." *Man* 20, no. 5 (1920): 10–12. https://ehrafworldcultures.yale.edu/document?id=ol06-009.

Man, Edward Horace. *On the Aboriginal Inhabitants of the Andaman Islands*. The Royal Anthropological Institute of Great Britain and Ireland, 1932. https://ehrafworldcultures.yale.edu/document?id=az02-002.

Mann, Michael. "Fear, Loathing, and Moral Qualms on the Battlefield." *Thesis Eleven* 154, no. 1 (2019): 11–27. https://doi.org/10.1177/0725513619874465.

———. "Have Wars and Violence Declined?" *Theory and Society* 47, no. 1 (February 1, 2018): 37–60. https://doi.org/10.1007/s11186-018-9305-y.

———. *The Dark Side of Democracy: Explaining Ethnic Cleansing*. New York: Cambridge University Press, 2005.

Marcus, Joyce. "The Archaeological Evidence for Social Evolution." *Annual Review of Anthropology* 37, no. 1 (2008): 251–66. https://doi.org/10.1146/annurev.anthro.37.081407.085246.

Marean, Curtis W. "The Transition to Foraging for Dense and Predictable Resources and Its Impact on the Evolution of Modern Humans." *Philosophical Transactions of the Royal Society B: Biological Sciences* 371, no. 1698 (July 5, 2016): 20150239. https://doi.org/10.1098/rstb.2015.0239.

Marlowe, Frank W. "Hunter-Gatherers and Human Evolution." *Evolutionary Anthropology: Issues, News, and Reviews* 14, no. 2 (April 13, 2005): 54–67. https://doi.org/10.1002/evan.20046.

Marquardt, William H. "TRACKING THE CALUSA: A RETROSPECTIVE." *Southeastern Archaeology* 33, no. 1 (2014): 1–24. https://doi.org/10.1179/sea.2014.33.1.001.

Maschner, Herbert D. G., and Katherine L. Reedy-Maschner. "Heads, Women, and the Baubles of Prestige." In *The Taking and Displaying of Human Body Parts as*

Trophies by Amerindians, edited by Richard J. Chacon and David H. Dye, 32–44. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_3.

Mason, Owen K. "Memories of Warfare: Archaeology and Oral History in Assessing the Conflict and Alliance Model of Ernest S. Burch." Arctic Anthropology 49, no. 2 (January 1, 2012): 72–93. https://doi.org/10.1353/arc.2012.0027.

Maxwell, Allen R. "Headtaking and the Consolidation of Power in the Early Brunei State." In *Headhunting and the Social Imagination in Southeast Asia*, by Janet Hoskins. Stanford, CA: Stanford University Press, 1996.

Merrills, A. H., ed. *Vandals, Romans and Berbers: New Perspectives on Late Antique North Africa*. Burlington, VT: Ashgate, 2004.

McCool, Weston C., Kenneth B. Vernon, Peter M. Yaworsky, and Brian F. Codding. "Subsistence Strategy Mediates Ecological Drivers of Human Violence." *PLOS ONE* 17, no. 5 (May 23, 2022): e0268257. https://doi.org/10.1371/journal.pone.0268257.

McElreath, Richard. *Statistical Rethinking: A Bayesian Course with Examples in R and Stan*. 2nd ed. CRC Texts in Statistical Science. Boca Raton: Taylor and Francis, CRC Press, 2020.

McKinley, Robert. "Human and Proud of It!: A Structural Treatment of Headhunting Rites and the Social Definition of Enemies." *HAU: Journal of Ethnographic Theory* 5, no. 2 (2015 1979): 443–83. https://doi.org/10.14318/hau5.2.031.

McMahon, Augusta, Arkadiusz Sołtysiak, and Jill Weber. "Late Chalcolithic Mass Graves at Tell Brak, Syria, and Violent Conflict during the Growth of Early City-States." *Journal of Field Archaeology*, July 18, 2013. https://doi.org/10.1179/009346911X12991472411123.

McQuinn, Brian, Fiona Terry, Oliver Kaplan, and Francisco Gutiérrez-Sanin. "Introduction: Promoting Restraint in War." International Interactions 47, no. 5 (September 3, 2021): 795–824. https://doi.org/10.1080/03050629.2021.1931864.

Meade, Andrew, and Mark Pagel. "Ancestral State Reconstruction Using BayesTraits." In *Environmental Microbial Evolution: Methods and Protocols*, edited by Haiwei Luo, 255–66. Methods in Molecular Biology. New York, NY: Springer US, 2022. https://doi.org/10.1007/978-1-0716-2691-7_12.

Melville, Sarah C. "3 Insurgency and Counterinsurgency in the Assyrian Empire during the Late Eighth Century Bce." In *Brill's Companion to Insurgency and Terrorism in the Ancient Mediterranean*, edited by Timothy Howe and Lee L. Brice, 62–92. BRILL, 2016. https://doi.org/10.1163/9789004284739_004.

Mendoza, Rubén G. "The Divine Gourd Tree." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by RICHARD J. CHACON and David H. Dye, 400–443. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_16.

Mensforth, Robert P. "Human Trophy Taking in Eastern North America During the Archaic Period." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by RICHARD J. CHACON and David H. Dye, 222–77. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_10.

Mesoudi, Alex, Andrew Whiten, and Kevin N. Laland. "Towards a Unified Science of Cultural Evolution." *Behavioral and Brain Sciences* 29, no. 4 (August 2006): 329–47. https://doi.org/10.1017/S0140525X06009083.

Metcalfe, Peter. "Images of Headhunting." In *Headhunting and the Social Imagination in Southeast Asia*, by Janet Hoskins. Stanford, CA: Stanford University Press, 1996.

Meyer, Christian, Christian Lohr, Detlef Gronenborn, and Kurt W. Alt. "The Massacre Mass Grave of Schöneck-Kilianstädten Reveals New Insights into Collective Violence in Early Neolithic Central Europe." *Proceedings of the National Academy of Sciences* 112, no. 36 (September 8, 2015): 11217–22. https://doi.org/10.1073/pnas.1504365112.

Milner, George R. "Warfare in Prehistoric and Early Historic Eastern North America." *Journal of Archaeological Research* 7, no. 2 (1999): 105–51. https://doi.org/10.1007/s10814-005-0001-x.

Milner, George R., Eve Anderson, and Virginia G. Smith. "Warfare in Late Prehistoric West-Central Illinois." *American Antiquity* 56, no. 4 (1991): 581–603. https://doi.org/10.2307/281538.

Moffett, Mark W. "Human Identity and the Evolution of Societies." *Human Nature* 24, no. 3 (September 1, 2013): 219–67. https://doi.org/10.1007/s12110-013-9170-3.

Molle, Guillaume, and Vincent Marolleau. "The 'enata Way of War: An Ethnoarchaeological Perspective on Warfare Dynamics in the Marquesas Islands." In *Archaeological Perspectives on Conflict and Warfare in Australia and the Pacific*, by Geoffrey Clarke and Mirani Litster, 2022.

Montagne, Robert. *The Berbers: Their Social and Political Organisation*. 1st ed. Routledge, 1973. https://doi.org/10.4324/9780429056581.

Moravec, Jiří C., Quentin Atkinson, Claire Bowern, Simon J. Greenhill, Fiona M. Jordan, Robert M. Ross, Russell Gray, Stephen Marsland, and Murray P. Cox. "Post-Marital Residence Patterns Show Lineage-Specific Evolution." *Evolution and Human Behavior* 39, no. 6 (2018): 594–601. https://doi.org/10.1016/j.evolhumbehav.2018.06.002.

Morrison, Kathleen D. "Archaeology and History: Early Settlements in the Andaman Islands. By Cooper Zarine. New Delhi: Oxford University Press, 2002. Xv, 207." The Journal of Asian Studies 63, no. 4 (2004): 1166–68. https://doi.org/10.1017/S0021911804002967.

Morrow, James D. "When Do States Follow the Laws of War?" *American Political Science Review* 101, no. 3 (2007): 559–72. https://doi.org/10.1017/S000305540707027X.

Mullins, Daniel Austin, Daniel Hoyer, Christina Collins, Thomas Currie, Kevin Feeney, Pieter François, Patrick E. Savage, Harvey Whitehouse, and Peter Turchin. "A Systematic Assessment of 'Axial Age' Proposals Using Global Comparative Historical Evidence." *American Sociological Review* 83, no. 3 (2018): 596–626. https://doi.org/10.1177/0003122418772567.

Murdock, George. "Ethnographic Atlas, Installments I-XXVII." *Ethnology*, 1971 1962, 1–10.

Murdock, George P., and Douglas R. White. "Standard Cross-Cultural Sample." *Ethnology* 8, no. 4 (1969): 329. https://doi.org/10.2307/3772907.

Muthukrishna, Michael, Joseph Henrich, and Edward Slingerland. "Psychology as a Historical Science." *Annual Review of Psychology* 72, no. 1 (January 4, 2021): 717–49. https://doi.org/10.1146/annurev-psych-082820-111436.

Nadali, Davide, and Jordi Vidal, eds. *The Other Face of the Battle: The Impact of War on Civilians in the Ancient Near East*. Alter Orient Und Altes Testament, Bd. 413. Münster: Ugarit-Verlag, 2014.

Needham, Rodney. "Skulls and Causality." *Man* 11, no. 1 (1976): 71. https://doi.org/10.2307/2800389.

Neff, Stephen C. *War and the Law of Nations: A General History*. Cambridge, UNITED KINGDOM: Cambridge University Press, 2005. http://ebookcentral.proquest.com/lib/oxford/detail.action?docID=237582.

Norenzayan, Ara, Azim F. Shariff, Will M. Gervais, Aiyana K. Willard, Rita A. McNamara, Edward Slingerland, and Joseph Henrich. "The Cultural Evolution of Prosocial Religions." *Behavioral and Brain Sciences* 39 (2016): e1. https://www.cambridge.org/core/product/identifier/S0140525X14001356/type/journal_article.

Nyseth Brehm, Hollie. "State Context and Exclusionary Ideologies." *American Behavioral Scientist* 60, no. 2 (2016): 131–49. https://doi.org/10.1177/0002764215607579.

Oka, Rahul C., Marc Kissel, Mark Golitko, Susan Guise Sheridan, Nam C. Kim, and Agustín Fuentes. "Population Is the Main Driver of War Group Size and Conflict Casualties." *Proceedings of the National Academy of Sciences* 114, no. 52 (December 26, 2017): E11101–10. https://doi.org/10.1073/pnas.1713972114.

Okasha, Samir. Evolution and the Levels of Selection. Oxford : Oxford ; New York: Clarendon Press ; Oxford University Press, 2008.

Olson, Ronald L. (Ronald LeRoy). "Social Structure and Social Life of the Tlingit in Alaska," Anthropological records, 26 (1967). https://ehrafworldcultures.yale.edu/document?id=na12-019.

Orme, David, Rob Freckleton, Gavin Thomas, Thomas Petzoldt, Susanne Fritz, Nick Isaac, and Will Pearse. *Caper: Comparative Analyses of Phylogenetics and Evolution in R* (version 1.0.1), 2018. https://CRAN.R-project.org/package=caper.

Orschiedt, Jörg. *The Head Burials from Ofnet Cave: An Example of Warlike Conflict in the Mesolithic.* Archaeopress, 2005.

Otterbein, Keith F. "A History of Research on Warfare in Anthropology." *American Anthropologist* 101, no. 4 (1999): 794–805. https://doi.org/10.1525/aa.1999.101.4.794.

———. "Feuding— Dispute Resolution or Dispute Continuation?" *Reviews in Anthropology* 12, no. 1 (1985): 73–83. https://doi.org/10.1080/00988157.1985.9977715.

———. *How War Began*. College Station, UNITED STATES: Texas A&M University Press, 2004. http://ebookcentral.proquest.com/lib/oxford/detail.action?docID=3038004.

———. *The Evolution of War: A Cross-Cultural Study*. Human Relations Area Files, Inc., 1970.

———. "The Origins of War." *Critical Review* 11, no. 2 (1997): 251–77. https://doi.org/10.1080/08913819708443456.

———. "Killing of Captured Enemies: A Cross-cultural Study." *Current Anthropology* 41, no. 3 (2000): 439–43. https://doi.org/10.1086/300150.

Padgham, Mark, and Michael D. Sumner. *Geodist*. 2018. Reprint, hypertidy, 2022. https://github.com/hypertidy/geodist.

Page, Abigail E., and Jennifer C. French. "Reconstructing Prehistoric Demography: What Role for Extant Hunter-gatherers?" *Evolutionary Anthropology: Issues, News, and Reviews* 29, no. 6 (2020): 332–45. https://doi.org/10.1002/evan.21869.

Pagel, Mark. "Detecting Correlated Evolution on Phylogenies: A General Method for the Comparative Analysis of Discrete Characters." *Proceedings: Biological Sciences* 255, no. 1342 (1994): 37–45. https://www.jstor.org/stable/49836.

Palmer, Craig T., and Kyle J. Clark. "Individuals, Traditions, and the Righteous." *Behavioral and Brain Sciences* 41 (2018): e213. https://doi.org/10.1017/S0140525X18001577.

Palmer, Patricia. "'A Horses Loade of Heades': Conquest and Atrocity in Early-Modern Ireland." In *The Severed Head and the Grafted Tongue: Literature, Translation and Violence in Early Modern Ireland*. New York: Cambridge University Press, 2013.

———. "'An Headlesse Ladie' and 'a Horses Loade of Heades': Writing the Beheading." *Renaissance Quarterly* 60, no. 1 (ed 2007): 25–57. https://doi.org/10.1353/ren.2007.0091.

Pandya, Vishvajit. Culture Summary: Andamans. HRAF, 1995. https://ehrafworldcultures.yale.edu/cultures/az02/documents/000.

Parry, N. E. (Neville Edward), and J. H. Hutton. *The Lakhers*. Macmillan, 1932. https://ehrafworldcultures.yale.edu/cultures/ar20/documents/001.

Pelleschi, Juan, and Samuel Alexander Lafone Quevedo. "The Mataco Indians and Their Language." *Boletin Del Instituto Geográfico Argentino* 17 (1896 1897). https://ehrafworldcultures.yale.edu/document?id=si07-001.

Pinker, Steven. *The Better Angels of Our Nature: Why Violence Has Declined*. New York Toronto London: Penguin Books, 2011.

Portman, Maurice Vidal. A History of Our Relations with the Andamanese. Office of the Superintendent of Government Print., India, 1899.

Price, T. Douglas, Joachim Wahl, and R. Alexander Bentley. "Isotopic Evidence for Mobility and Group Organization among Neolithic Farmers at Talheim, Germany, 5000 BC." *European Journal of Archaeology* 9, no. 2–3 (2006): 259–84. https://doi.org/10.1177/1461957107086126.

Purzycki, Benjamin Grant, and Martin Lang. "Identity Fusion, Outgroup Relations, and Sacrifice: A Cross-Cultural Test." *Cognition* 186 (May 1, 2019): 1–6. https://doi.org/10.1016/j.cognition.2019.01.015.

Qirko, Hector N. "Induced Altruism in Religious, Military, and Terrorist Organizations." *Cross-Cultural Research* 47, no. 2 (May 1, 2013): 131–61. https://doi.org/10.1177/1069397112471804.

R Core Team. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing, 2021. https://www.R-project.org/.

Radcliffe-Brown, A. R. (Alfred Reginald). The Andaman Islanders: A Study in Social Anthropology. Cambridge University Press, 1922. https://ehrafworldcultures.yale.edu/document?id=az02-001.

Raffield, Ben, Claire Greenlow, Neil Price, and Mark Collard. "Ingroup Identification, Identity Fusion and the Formation of Viking War Bands." *World Archaeology* 48, no. 1 (2016): 35–50. https://doi.org/10.1080/00438243.2015.1100548.

Raffield, Ben, Neil Price, and Mark Collard. "Male-Biased Operational Sex Ratios and the Viking Phenomenon: An Evolutionary Anthropological Perspective on Late Iron Age Scandinavian Raiding." *Evolution and Human Behavior* 38, no. 3 (May 1, 2017): 315–24. https://doi.org/10.1016/j.evolhumbehav.2016.10.013.

Raymond, Gregory A. "The Greco-Roman Roots of the Western Just War Tradition." In *The Prism of Just War: Asian and Western Perspectives on the Legitimate Use of Military Force*, edited by Howard M. Hensel. Justice, International Law and Global Security. Burlington, VT: Ashgate, 2010.

Rácz, Péter, Sam Passmore, and Fiona M. Jordan. "Social Practice and Shared History, Not Social Scale, Structure Cross-Cultural Complexity in Kinship Systems." *Topics in Cognitive Science* 12, no. 2 (2020): 744–65. https://doi.org/10.1111/tops.12430.

Reicher, Stephen, S. Alexander Haslam, and Rakshi Rath. "Making a Virtue of Evil: A Five-Step Social Identity Model of the Development of Collective Hate: Making a

Virtue of Evil." *Social and Personality Psychology Compass* 2, no. 3 (2008): 1313–44. https://doi.org/10.1111/j.1751-9004.2008.00113.x.

Reid, Richard J. *Warfare in African History.* Cambridge: Cambridge University Press, 2012. https://doi.org/10.1017/CBO9781139043090.

Richardson, Seth. "2 Insurgency and Terror in Mesopotamia." In *Brill's Companion to Insurgency and Terrorism in the Ancient Mediterranean*, edited by Timothy Howe and Lee L. Brice, 29–61. BRILL, 2016. https://doi.org/10.1163/9789004284739_003.

———. "Death and Dismemberment in Mesopotamia: Discorporation the Body and Body Politic." In *Performing Death: Social Analyses of Funerary Traditions in the Ancient Near East and Mediterranean*, edited by Nicola Laneri. Oriental Institute Seminars, no. 3. Chicago: The Oriental Institute of the University of Chicago, 2007.

Richerson, Peter J., and Robert Boyd. *Not by Genes Alone: How Culture Transformed Human Evolution*. Chicago: University of Chicago Press, 2005.

Richerson, Peter, Ryan Baldini, Adrian V. Bell, Kathryn Demps, Karl Frost, Vicken Hillis, Sarah Mathew, et al. "Cultural Group Selection Plays an Essential Role in Explaining Human Cooperation: A Sketch of the Evidence." *Behavioral and Brain Sciences* 39 (2016): e30. https://doi.org/10.1017/S0140525X1400106X.

Roos, Patrick, Michele Gelfand, Dana Nau, and Janetta Lun. "Societal Threat and Cultural Variation in the Strength of Social Norms: An Evolutionary Basis." *Organizational*

Behavior and Human Decision Processes, SI: Social Norms and Cultural Dynamics, 129 (July 1, 2015): 14–23. https://doi.org/10.1016/j.obhdp.2015.01.003.

Roque, Ricardo. *Headhunting and Colonialism: Anthropology and the Circulation of Human Skulls in the Portuguese Empire, 1870-1930*. Cambridge Imperial and Post-Colonial Studies Series. Basingstoke [England] ; New York: Palgrave Macmillan, 2010.

Rubenstein, Steven Lee. "CIRCULATION, ACCUMULATION, AND THE POWER OF SHUAR SHRUNKEN HEADS." *Cultural Anthropology* 22, no. 3 (2007): 357–99. https://doi.org/10.1525/can.2007.22.3.357.

Rusch, Hannes. "Asymmetries in Altruistic Behavior during Violent Intergroup Conflict." *Evolutionary Psychology* 11, no. 5 (December 1, 2013): 147470491301100. https://doi.org/10.1177/147470491301100504.

———. "Heroic Behavior: A Review of the Literature on High-Stakes Altruism in the Wild." *Current Opinion in Psychology* 43 (February 1, 2022): 238–43. https://doi.org/10.1016/j.copsyc.2021.07.024.

———. "The Evolutionary Interplay of Intergroup Conflict and Altruism in Humans: A Review of Parochial Altruism Theory and Prospects for Its Extension." *Proceedings of the Royal Society B: Biological Sciences* 281, no. 1794 (November 7, 2014): 20141539. https://doi.org/10.1098/rspb.2014.1539.

Savage, Elizabeth Ruth. "Berbers and Blacks: Ibāḍī Slave Traffic in Eighth-Century North Africa." *The Journal of African History* 33, no. 3 (1992): 351–68. https://www.jstor.org/stable/183137.

Staub, Ervin. *The Roots of Evil: The Origins of Genocide and Other Group Violence*. Cambridge: Cambridge University Press, 1989.

van Buuren, Stef, and Karin Groothuis-Oudshoorn. "Mice: Multivariate Imputation by Chained Equations in R." *Journal of Statistical Software* 45 (December 12, 2011): 1–67. https://doi.org/10.18637/jss.v045.i03.

Sahlins, Marshall D. "Poor Man, Rich Man, Big-Man, Chief: Political Types in Melanesia and Polynesia." *Comparative Studies in Society and History* 5, no. 3 (1963): 285–303. https://doi.org/10.1017/S0010417500001729.

———. "The Segmentary Lineage: An Organization of Predatory Expansion." *American Anthropologist*, New Series, 63, no. 2 (1961): 322–45.

Sanday, Peggy Reeves. "The Socio-Cultural Context of Rape: A Cross-Cultural Study." *Journal of Social Issues* 37, no. 4 (1981): 5–27. https://doi.org/10.1111/j.1540-4560.1981.tb01068.x.

Santos-Granero, Fernando. *Vital Enemies: Slavery, Predation, and the Amerindian Political Economy of Life*. 1. ed. Austin, Tex.: Univ. of Texas Press, 2009. https://ebookcentral.proquest.com/lib/oxford/detail.action?docID=3443394.

Sarkees, Meredith, and Frank Wayman. *Resort to War, 1816-2007*. Washington, DC, 2010. https://doi.org/10.4135/9781608718276.

Sasikumar, Mundayat. "The Battle of Aberdeen: An Indigenous Resistance to Colonialism." Journal of the Anthropological Survey of India 71, no. 2 (2022): 281–92. https://doi.org/10.1177/2277436X221126023.

Sather, Clifford. "Sea Nomads and Rainforest Hunter-Gatherers: Foraging Adaptations in the Indo-Malaysian Archipelago." In *The Austronesians*, edited by Peter Bellwood, James J. Fox, and Darrell Tryon, 245–86. Historical and Comparative Perspectives. ANU Press, 2006. https://www.jstor.org/stable/j.ctt2jbjx1.16.

Savage, Patrick E., Psyche Loui, Bronwyn Tarr, Adena Schachner, Luke Glowacki, Steven Mithen, and W. Tecumseh Fitch. "Music as a Coevolved System for Social Bonding." Behavioral and Brain Sciences 44 (January 2021): e59. https://doi.org/10.1017/S0140525X20000333.

Schaafsma, Polly. "Head Trophies and Scalping." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by RICHARD J. CHACON and David H. Dye, 90–123. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_6.

Schaub, Max. "Threat and Parochialism in Intergroup Relations: Lab-in-the-Field Evidence from Rural Georgia." *Proceedings of the Royal Society B: Biological*

Sciences 284, no. 1865 (October 25, 2017): 20171560. https://doi.org/10.1098/rspb.2017.1560.

Schefold, Reimar. *Culture Summary: Mentawaians*. HRAF, 2001. https://ehrafworldcultures.yale.edu/document?id=od09-000.

Schulting, Rick. "War Without Warriors: The Nature of Interpersonal Conflict before the Emergence of Formalized Warrior Elites." In *The Archaeology of Violence Interdisciplinary Approaches*, edited by Sarah Ralph. Albany, NY: State University of New York Press, 2013. http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=543066.

Sen, Satadru. "Native Among Savages: Reading the Escape Narrative of Dudhnath Tewari." History of Anthropology Newsletter 36, no. 2 (January 1, 2009): 3–9. https://repository.upenn.edu/han/vol36/iss2/3.

———. "Savage Bodies, Civilized Pleasures: M. V. Portman and the Andamanese." American Ethnologist 36, no. 2 (2009): 364–79. https://doi.org/10.1111/j.1548-1425.2009.01140.x.

Shaybānī, Muḥammad Ibn-al-Ḥasan aš-. *The Islamic Law of Nations: Shaybānī's Siyar*. Translated by Majid Khadduri. Baltimore, Md: Johns Hopkins Press, 1966.

Sheehan, Glenn W., and Anne M. Jensen. *Contact and Postcontact Iñupiat Ethnohistory*. Edited by Max Friesen and Owen Mason, vol. 1, Oxford University Press, 2016, https://doi.org/10.1093/oxfordhb/9780199766956.013.14.

Sheehan, Oliver, Joseph Watts, Russell D. Gray, and Quentin D. Atkinson. "Coevolution of Landesque Capital Intensive Agriculture and Sociopolitical Hierarchy." *Proceedings of the National Academy of Sciences* 115, no. 14 (April 3, 2018): 3628–33. https://doi.org/10.1073/pnas.1714558115.

Sheikh, Hammad, Scott Atran, Jeremy Ginges, Nadine Obeid, and Richard Davis. "The Devoted Actor as Parochial Altruist: Sectarian Morality, Identity Fusion, and Support for Costly Sacrifices," 2014, 19.

Shinoda, Minoru. "The Founding of the Kamakura Shogunate, 1180-1185: With Selected Translations from the Azuma Kagami," 1960. https://hdl.handle.net/2027/heb.06044.

Showalter, Dennis E. "Caste, Skill, and Training: The Evolution of Cohesion in European Armies from the Middle Ages to the Sixteenth Century." *The Journal of Military History* 57, no. 3 (1993): 407. https://doi.org/10.2307/2943986.

Silva, Antonio S., and Ruth Mace. "Cooperation and Conflict: Field Experiments in Northern Ireland." *Proceedings of the Royal Society B: Biological Sciences* 281, no. 1792 (October 7, 2014): 20141435. https://doi.org/10.1098/rspb.2014.1435.

Simon, Scott. "Politics and Headhunting among the Formosan Sejiq: Ethnohistorical Perspectives." *Oceania* 82, no. 2 (2012): 164–85. https://doi.org/10.1002/j.1834-4461.2012.tb00127.x.

Singer, Peter. *The Expanding Circle: Ethics, Evolution, and Moral Progress*. 1st Princeton University Press pbk. ed. Princeton, NJ: Princeton University Press, 2011.

Singh, Manvir, and Luke Glowacki. "Human Social Organization during the Late Pleistocene: Beyond the Nomadic-Egalitarian Model." *Evolution and Human Behavior* 43, no. 5 (September 1, 2022): 418–31. https://doi.org/10.1016/j.evolhumbehav.2022.07.003.

Slingerland, Edward, Quentin D. Atkinson, Carol R. Ember, Oliver Sheehan, Michael Muthukrishna, Joseph Bulbulia, and Russell D. Gray. "Coding Culture: Challenges and Recommendations for Comparative Cultural Databases." *Evolutionary Human Sciences* 2 (ed 2020). https://doi.org/10.1017/ehs.2020.30.

Slingerland, Edward, and Brenton Sullivan. "Durkheim with Data: The Database of Religious History." *Journal of the American Academy of Religion* 85, no. 2 (2017): 312–47. https://doi.org/10.1093/jaarel/lfw012.

Smedal, Olaf H. "Review of Headhunting and the Social Imagination in Southeast Asia." *Journal of Southeast Asian Studies* 31, no. 1 (2000): 182–84. https://www.jstor.org/stable/20072216.

Smith, Edwin William, and Andrew Murray Dale. *The Ila-Speaking Peoples of Northern Rhodesia: Vol. 1*. MacMillan and Co., 1920. https://ehrafworldcultures.yale.edu/document?id=fq06-001.

Smith, Robert Sydney. *Warfare & Diplomacy in Pre-Colonial West Africa*. 2nd ed. Madison, Wis: University of Wisconsin Press, 1989.

Snyder, Jack. "Anarchy and Culture: Insights from the Anthropology of War." *International Organization* 56, no. 1 (2002). muse.jhu.edu/article/14312.

Solometo, Julie. "Conflict and Culture Change in Central Arizona." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, edited by Elizabeth Arkush and Mark W. Allen. University Press of Florida, 2008.

Sosis, R, H Kress, and J Boster. "Scars for War: Evaluating Alternative Signaling Explanations for Cross-Cultural Variance in Ritual Costs." *Evolution and Human Behavior* 28, no. 4 (2007): 234–47. https://doi.org/10.1016/j.evolhumbehav.2007.02.007.

Spencer, Paul. "A SURVEY OF VARIATION AMONG THE MAASAI (1977) Unpublished Appendix to Paul Spencer (2003), Time, Space, and the Unknown: Maasai Configurations of Power and Providence," 1977. https://eprints.soas.ac.uk/8362/1/A_Survey_of_Variation_among_the_Maasai__1977_.pdf.

Sponsel, Leslie E. "Response to Otterbein." *American Anthropologist* 102, no. 4 (2000). https://www.jstor.org/stable/684207.

Stanish, Charles, and Abigail Levine. "War and Early State Formation in the Northern Titicaca Basin, Peru." *Proceedings of the National Academy of Sciences* 108, no. 34 (August 23, 2011): 13901–6. https://doi.org/10.1073/pnas.1110176108.

Sterelny, Kim. "Religion: Costs, Signals, and the Neolithic Transition." *Religion, Brain & Behavior*, December 27, 2019, 1–18. https://doi.org/10.1080/2153599X.2019.1678513.

Stirling, Matthew Williams. "Historical and Ethnographical Material on the Jivaro Indians," Bulletin, 1938. https://ehrafworldcultures.yale.edu/document?id=sd09-002.

Straight, Bilinda. "Uniquely Human: Cultural Norms and Private Acts of Mercy in the War Zone." *American Anthropologist* 119, no. 3 (2017): 491–505. https://doi.org/10.1111/aman.12905.

Straus, Scott. "'Destroy Them to Save Us': Theories of Genocide and the Logics of Political Violence." *Terrorism and Political Violence* 24, no. 4 (September 1, 2012): 544–60. https://doi.org/10.1080/09546553.2012.700611.

Swann, William B., Ángel Gómez, Carmen Huici, J. Francisco Morales, and J. Gregory Hixon. "Identity Fusion and Self-Sacrifice: Arousal as a Catalyst of pro-Group

Fighting, Dying, and Helping Behavior." *Journal of Personality and Social Psychology* 99, no. 5 (2010): 824–41. https://doi.org/10.1037/a0020014.

Swann, William B., Ángel Gómez, D. Conor Seyle, J. Francisco Morales, and Carmen Huici. "Identity Fusion: The Interplay of Personal and Social Identities in Extreme Group Behavior." *Journal of Personality and Social Psychology* 96, no. 5 (2009): 995–1011. https://doi.org/10.1037/a0013668.

Swann, William B., Jolanda Jetten, Ángel Gómez, Harvey Whitehouse, and Brock Bastian. "When Group Membership Gets Personal: A Theory of Identity Fusion." *Psychological Review* 119, no. 3 (2012): 441–56. https://doi.org/10.1037/a0028589.

Syed, Mairaj. "Jihad in Classical Islamic Legal and Moral Thought." In *Just War in Religion and Politics*, edited by Jacob Neusner, Bruce Chilton, and Robert E. Tully. University Press of America, 2013.

Syse, Henrik. "Afterword: Ethics Without Borders." In *The Ethics of War in Asian Civilizations : A Comparative Perspective*. Routledge, 2005.

Talalay, Lauren E. "Heady Business: Skulls, Heads, and Decapitation in Neolithic Anatolia and Greece." *Journal of Mediterranean Archaeology* 17, no. 2 (2004): 139–63. https://doi.org/10.1558/jmea.17.2.139.65540.

Talbi, M. "Rustamids." *Encyclopaedia of Islam, Second Edition*, April 24, 2012. https://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/rustamids-SIM_6348.

Terry, Fiona, and Brian McQuinn. "The Roots of Restraint in War." Publication. Geneva: International Committee of the Red Cross, 2018. https://www.icrc.org/en/publication/4352-roots-restraint-war.

Textor, Johannes, Benito van der Zander, Mark S. Gilthorpe, Maciej Liśkiewicz, and George T.H. Ellison. "Robust Causal Inference Using Directed Acyclic Graphs: The R Package 'Dagitty.'" *International Journal of Epidemiology*, January 15, 2017, dyw341. https://doi.org/10.1093/ije/dyw341.

Thomas, Nicholas. "2 Radcliffe-Brown, Geertz and the Foundations of Modern Anthropology." In Out of Time: History and Evolution in Anthropological Discourse, 2nd ed., Includes new afterword. Ann Arbor Paperbacks. Ann Arbor: University of Michigan Press, 1996.

Thornton, Thomas F. "From Clan to Ḵwáan to Corporation: The Continuing Complex Evolution of Tlingit Political Organization." *Wicazo Sa Review* 17, no. 2 (2002): 167–94. https://www.jstor.org/stable/1409579.

Tollefson, Kenneth D. *Culture Summary: Tlingit*. HRAF, 1997. https://ehrafworldcultures.yale.edu/document?id=na12-000.

Trigger, Bruce G. *Understanding Early Civilizations: A Comparative Study*. Cambridge ; New York: Cambridge University Press, 2003.

Tucker, William F. *Mahdis and Millenarians: Shī ʿite Extremists in Early Muslim Iraq*. Cambridge: Cambridge University Press, 2008. https://doi.org/10.1017/CBO9780511512094.

Tung, Tiffiny A. "Trauma and Violence in the Wari Empire of the Peruvian Andes: Warfare, Raids, and Ritual Fights." *American Journal of Physical Anthropology* 133, no. 3 (2007): NA-NA. https://doi.org/10.1002/ajpa.20565.

Tung, Tiffiny A., and Kelly J. Knudson. "Social Identities and Geographical Origins of Wari Trophy Heads from Conchopata, Peru." *Current Anthropology* 49, no. 5 (2008): 915–25. https://doi.org/10.1086/591318.

Turchin, Peter. "Fitting Dynamic Regression Models to Seshat Data." *Cliodynamics* 9, no. 1 (June 30, 2018). https://doi.org/10.21237/C7clio9137696.

———. *Ultrasociety*. Beresta Books, 2015.

———. "Warfare and the Evolution of Social Complexity: A Multilevel-Selection Approach." *Structure and Dynamics* 4, no. 3 (2011). https://escholarship.org/uc/item/7j11945r.

Turchin, Peter, Rob Brennan, Thomas E. Currie, Kevin C. Feeney, Pieter Francois, Daniel Hoyer, Joseph G. Manning, et al. "Seshat: The Global History Databank," 2015. http://uhra.herts.ac.uk/handle/2299/16139.

Turchin, Peter, Thomas E. Currie, and Edward A. L. Turner. "Mapping the Spread of Mounted Warfare." *Cliodynamics: The Journal of Quantitative History and Cultural Evolution* 7, no. 2 (January 12, 2017). https://doi.org/10.21237/C7CLIO7233509.

Turchin, Peter, Thomas E. Currie, Edward A. L. Turner, and Sergey Gavrilets. "War, Space, and the Evolution of Old World Complex Societies." *Proceedings of the National Academy of Sciences* 110, no. 41 (October 8, 2013): 16384–89. https://doi.org/10.1073/pnas.1308825110.

Turchin, Peter, Thomas E. Currie, Harvey Whitehouse, Pieter François, Kevin Feeney, Daniel Mullins, Daniel Hoyer, et al. "Quantitative Historical Analysis Uncovers a Single Dimension of Complexity That Structures Global Variation in Human Social Organization." *Proceedings of the National Academy of Sciences* 115, no. 2 (January 9, 2018): E144–51. https://doi.org/10.1073/pnas.1708800115.

Turchin, Peter, and Sergey Gavrilets. "Evolution of Complex Hierarchical Societies." *Social Evolution & History* 8, no. 2 (2009): 167–98.

Turchin, Peter, Daniel Hoyer, Andrey Korotayev, Nikolay Kradin, Sergey Nefedov, Gary Feinman, Jill Levine, et al. "Rise of the War Machines: Charting the Evolution of Military Technologies from the Neolithic to the Industrial Revolution." *PLOS ONE* 16, no. 10 (October 20, 2021): e0258161. https://doi.org/10.1371/journal.pone.0258161.

Turchin, Peter, Harvey Whitehouse, Sergey Gavrilets, Daniel Hoyer, Pieter François, James S Bennett, Kevin Feeney, et al. "Disentangling the Evolutionary Drivers of Social Complexity in Human History: A Comprehensive Test of Hypotheses." Preprint. SocArXiv, October 12, 2021. https://doi.org/10.31235/osf.io/tekb6.

Underhill, Anne P. "Warfare and the Development of States in China." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, edited by Elizabeth N Arkush and Mark W Allen. Gainesville, FL: University Press of Florida, 2008.

Up de Graff, Fritz W. *Head Hunters of the Amazon: Seven Years of Exploration and Adventure*. Duffield and Company, 1923. https://ehrafworldcultures.yale.edu/document?id=sd09-004.

Valdez, Lidio M. "Walled Settlements, Buffer Zones, and Human Decapitation in the Acari Valley, Peru." *Journal of Anthropological Research* 65, no. 3 (2009): 389–416. https://doi.org/10.3998/jar.0521004.0065.302.

Valentin, Frédérique, and Noémie Rolland. "Marquesan Trophy Skulls: Description, Osteological Analyses, and Changing Motivations in the South Pacific." In *The Bioarchaeology of the Human Head: Decapitation, Decoration, and Deformation*, by Michelle Bonogofsky. University Press of Florida, 2011. https://doi.org/10.5744/florida/9780813035567.001.0001.

Valentino, Benjamin A. *Final Solutions: Mass Killing and Genocide in the Twentieth Century*. First printing$hCornell paperbacks. Cornell Studies in Security Affairs. Ithaca: Cornell University Press, 2005.

———. "Why We Kill: The Political Science of Political Violence against Civilians." *Annual Review of Political Science* 17, no. 1 (2014): 89–103. https://doi.org/10.1146/annurev-polisci-082112-141937.

Valentino, Benjamin, Paul Huth, and Dylan Balch-Lindsay. "'Draining the Sea': Mass Killing and Guerrilla Warfare." *International Organization* 58, no. 02 (2004). https://doi.org/10.1017/S0020818304582061.

Van Der Beek, Zita, and Marcel Vellinga. "Man the Collector." Journal of the History of Collections 17, no. 2 (December 1, 2005): 135–53. https://doi.org/10.1093/jhc/fhi024.

Vayda, Andrew P. "Iban Headhunting." In *War in Ecological Perspective: Persistence, Change, and Adaptive Processes in Three Oceanian Societies*, edited by Andrew P. Vayda, 43–74. Boston, MA: Springer US, 1976. https://doi.org/10.1007/978-1-4684-2193-4_3.

———. *War in Ecological Perspective: Persistence, Change, and Adaptive Processes in Three Oceanian Societies*. Boston, MA: Springer US, 1976. https://doi.org/10.1007/978-1-4684-2193-4_3.

Velji, Jamel. "Seeing Salvation: Authority and Apocalypse in Saint Paul and the Nizari Ismaili *Qiyāma*." *Studies in Religion/Sciences Religieuses* 46, no. 3 (2017): 359–76. https://doi.org/10.1177/0008429816687306.

Venkateswar, Sita. Development and Ethnocide: Colonial Practices in the Andaman Islands. IWGIA, 2004.

Verano, John W. "Trophy Head-Taking and Human Sacrifice in Andean South America." In *The Handbook of South American Archaeology*, edited by Helaine Silverman and William H. Isbell, 1047–60. New York, NY: Springer New York, 2008. https://doi.org/10.1007/978-0-387-74907-5_52.

Waines, David. "Caliph and Amir : A Study of the Socio-Economic Background of Medieval Political Power." Doctoral, McGill University, 1974. https://escholarship.mcgill.ca/concern/theses/x059cc413.

Walker, Robert S., and Drew H. Bailey. "Body Counts in Lowland South American Violence." *Evolution and Human Behavior* 34, no. 1 (2013): 29–34. https://doi.org/10.1016/j.evolhumbehav.2012.08.003.

Watson, Alexander, and Patrick Porter. "Bereaved and Aggrieved: Combat Motivation and the Ideology of Sacrifice in the First World War: Combat Motivation and the Ideology of Sacrifice in the First World War." *Historical Research* 83, no. 219 (2010): 146–64. https://doi.org/10.1111/j.1468-2281.2008.00473.x.

Watts, Joseph, Simon J. Greenhill, Quentin D. Atkinson, Thomas E. Currie, Joseph Bulbulia, and Russell D. Gray. "Broad Supernatural Punishment but Not Moralizing High Gods Precede the Evolution of Political Complexity in Austronesia." *Proceedings of the Royal Society B: Biological Sciences* 282, no. 1804 (April 7, 2015): 20142556. https://doi.org/10.1098/rspb.2014.2556.

Watts, Joseph, Joshua Conrad Jackson, Chris Arnison, Elise M. Hamerslag, John H. Shaver, and Benjamin Grant Purzycki. "Building Quantitative Cross-Cultural Databases From Ethnographic Records: Promise, Problems and Principles." *Cross-Cultural Research*, December 13, 2021, 10693971211065720. https://doi.org/10.1177/10693971211065720.

Watts, Joseph, Oliver Sheehan, Quentin D. Atkinson, Joseph Bulbulia, and Russell D. Gray. "Ritual Human Sacrifice Promoted and Sustained the Evolution of Stratified Societies." *Nature* 532, no. 7598 (April 2016): 228–31. https://doi.org/10.1038/nature17159.

Watts, Joseph, Oliver Sheehan, Simon J. Greenhill, Stephanie Gomes-Ng, Quentin D. Atkinson, Joseph Bulbulia, and Russell D. Gray. "Pulotu: Database of Austronesian Supernatural Beliefs and Practices." Edited by Michiel van Elk. *PLOS ONE* 10, no. 9 (September 23, 2015): e0136783. https://doi.org/10.1371/journal.pone.0136783.

Weiss-Wendt, Anton. *The State and Genocide*. Edited by Donald Bloxham and A. Dirk Moses. Vol. 1. Oxford University Press, 2012. https://doi.org/10.1093/oxfordhb/9780199232116.013.0005.

Whitehead, Neil. "The Snake Warriors- Sone of the Tiger's Teeth: A Descriptive Analysis of Carib Warfare ca. 1500-1820." In *The Anthropology of War*, edited by Jonathan Haas, Transferred to digital print. A School of American Research Book. Cambridge: Cambridge Univ. Press, 1990.

———. "A History of Research on Warfare in Anthropology - Reply to Keith Otterbein." *American Anthropologist* 102, no. 4 (2000). https://www.jstor.org/stable/684206.

Whitehouse, Harvey. "Dying for the Group: Towards a General Theory of Extreme Self-Sacrifice." Behavioral and Brain Sciences 41 (January 2018): e192. https://doi.org/10.1017/S0140525X18000249.

Whitehouse, Harvey, Jonathan Jong, Michael D. Buhrmester, Ángel Gómez, Brock Bastian, Christopher M. Kavanagh, Martha Newson, et al. "The Evolution of Extreme Cooperation via Shared Dysphoric Experiences." *Scientific Reports* 7, no. 1 (March 14, 2017): 1–10. https://doi.org/10.1038/srep44292.

Whitehouse, Harvey, and Jonathan A. Lanman. "The Ties That Bind Us: Ritual, Fusion, and Identification." *Current Anthropology* 55, no. 6 (2014): 674–95. https://doi.org/10.1086/678698.

Whitehouse, Harvey, and Brian McQuinn. "Divergent Modes of Religiosity and Armed Struggle." In *The Oxford Handbook of Religion and Violence*, edited by Michael Jerryson, Mark Juergensmeyer, and Margo Kitts, Vol. 1. Oxford University Press, 2012. https://doi.org/10.1093/oxfordhb/9780199759996.013.0039.

Whitehouse, Harvey, Brian McQuinn, Michael Buhrmester, and William B. Swann. "Brothers in Arms: Libyan Revolutionaries Bond like Family." *Proceedings of the National Academy of Sciences* 111, no. 50 (December 16, 2014): 17783–85. https://doi.org/10.1073/pnas.1416284111.

Wiessner, Pauline., and N. Pupu. "Toward Peace: Foreign Arms and Indigenous Institutions in a Papua New Guinea Society." *Science* 337, no. 6102 (September 28, 2012): 1651–54. https://doi.org/10.1126/science.1221685.

Wiessner, Pauline. "Collective Action for War and for Peace a Case Study among the Enga of Papua New Guinea." *Current Anthropology*, January 1, 2019. https://doi.org/10.1086/702414.

———. "Considering Selection Pressures for Identity Fusion and Self-Sacrifice in Small-Scale Societies." *Behavioral and Brain Sciences* 41 (2018): e220. https://doi.org/10.1017/S0140525X18001681.

Wilkinson, John C. "Moderation and Extremism in Early Ibādi Thought." In *Ibadi Theology. Rereading Sources and Scholarly Works*, edited by Ersilia Francesca. Georg Olms Verlag, 2015.

Willey, Peter. Encyclopaedia Iranica. "ISMAʿILISM Xv. NEZĀRI ISMAʿILI MONUMENTS," 2007. https://iranicaonline.org/articles/ismailism-xv-nezari-ismaili-monuments.

———. "Further Expeditions to the Valleys of the Assassins." *Journal of The Royal Central Asian Society* 54, no. 2 (1967): 156–62. https://doi.org/10.1080/03068376708731988.

———. *Eagle's Nest: Ismaili Castles in Iran and Syria*. Ismaili Heritage Series 10. London ; New York : London: I.B. Tauris ; In association with The Institute of Ismaili Studies, 2005.

Williams, F. E. (Francis Edgar), and Hubert Murray. *Orokaiva Society*. Oxford University Press, 1930. https://ehrafworldcultures.yale.edu/cultures/oj23/documents/001.

Williamson, Ron. "'Otinontsiskiaj Ondaon' ('The House of Cut-Off Heads')." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by Richard J. Chacon and David H. Dye, 190–221. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_9.

Winkelman, Michael. "Political and Demographic-Ecological Determinants of Institutionalised Human Sacrifice." *Anthropological Forum* 24, no. 1 (January 2, 2014): 47–70. https://doi.org/10.1080/00664677.2014.860888.

Wolak, Matthew. *ICC* (version v2.4.0). Zenodo, 2022. https://doi.org/10.5281/ZENODO.6566761.

Wrangham, Richard W. "Evolution of Coalitionary Killing." *American Journal of Physical Anthropology* 110, no. S29 (1999).

Wrangham, Richard W., and Luke Glowacki. "Intergroup Aggression in Chimpanzees and War in Nomadic Hunter-Gatherers: Evaluating the Chimpanzee Model." *Human Nature* 23, no. 1 (2012): 5–29. https://doi.org/10.1007/s12110-012-9132-1.

Wright, Robert. *Nonzero: History, Evolution & Human Cooperation*. London: Abacus, 2001.

Yoffee, Norman. *Myths of the Archaic State: Evolution of the Earliest Cities, States, and Civilizations*, 2005. https://doi.org/10.1017/CBO9780511489662.

Zefferman, Matthew R., and Sarah Mathew. "An Evolutionary Theory of Large-Scale Human Warfare: Group-Structured Cultural Selection." *Evolutionary Anthropology: Issues, News, and Reviews* 24, no. 2 (2015): 50–61. https://doi.org/10.1002/evan.21439.

———. "An Evolutionary Theory of Moral Injury with Insight from Turkana Warriors." *Evolution and Human Behavior* 41, no. 5 (2020): 341–53. https://doi.org/10.1016/j.evolhumbehav.2020.07.003.

Zefferman, Matthew Ryan, Ryan Baldini, and Sarah Mathew. "Solving the Puzzle of Human Warfare Requires an Explanation of Battle Raids and Cultural Institutions." *Proceedings of the National Academy of Sciences* 112, no. 20 (May 19, 2015): E2557–E2557. https://doi.org/10.1073/pnas.1504458112.

Datasets Bibliography

Adriani, Nicolaus, and Albertus Christiaan Kruijt. "The Bare'e-Speaking Toradja of Central Celebes (the East Toradja): First Volume," Verhandelingen, 1950. https://ehrafworldcultures.yale.edu/document?id=og11-002.

Ahmed, Akbar S., and Paul Titus. *Culture Summary: Pashtun*. HRAF, 2002. https://ehrafworldcultures.yale.edu/document?id=au04-000.

Akiga, and Rupert East. *Akiga's Story: The Tiv Tribe as Seen by One of Its Members*. Oxford University Press, 1939. https://ehrafworldcultures.yale.edu/document?id=ff57-001.

Alasow, Omar Abdulle. *Violations of the Rules Applicable in Non-International Armed Conflicts and Their Possible Causes: The Case of Somalia*. Brill | Nijhoff, 2010. https://doi.org/10.1163/ej.9789004164758.i-364.

Alconini Mujica, Sonia, and Alan Covey, eds. *The Oxford Handbook of the Incas*. Oxford Handbooks. New York, NY: Oxford University Press, 2018.

Allen, Mark W., and Terry L. Jones, eds. *Violence and Warfare among Hunter-Gatherers*. Walnut Creek, California: Left Coast Press, 2014.

Alvarsson, Jan-åke. *The Mataco of the Gran Chaco: An Ethnographic Account of Change and Continuity in Mataco Socio-Economic Organization*. Acta Universitatis Upsaliensis, Uppsala Studies in Cultural Anthropology. Academiae Upsaliensis;

Distributed by Almqvist &Wiskell International, 1988. https://ehrafworldcultures.yale.edu/document?id=si07-009.

Andaya, Barbara Watson. "History, Headhunting and Gender in Monsoon Asia: Comparative and Longitudinal Views." *South East Asia Research* 12, no. 1 (2004): 13–52. https://doi.org/10.5367/000000004773487938.

Arhin, Kwame. "Asante Military Institutions." *Journal of African Studies* 7, no. 1 (1980). https://search.proquest.com/docview/1303250268/fulltext/F613933B1D05436APQ/1?accountid=13042&imgSeq=1.

Armit, Ian, ed. "From the Dead to the Living." In *Headhunting and the Body in Iron Age Europe*, 164–203. Cambridge: Cambridge University Press, 2012. https://doi.org/10.1017/CBO9781139016971.006.

———. "Inside Kurtz's Compound: Headhunting and the Human Body in Prehistoric Europe." Report, 2006. https://bradscholars.brad.ac.uk/handle/10454/4166.

Arnade, Peter. *Beggars, Iconoclasts, and Civic Patriots: The Political Culture of the Dutch Revolt*, 2018. https://doi.org/10.7591/9781501726712.

Arnold, Denise Y, and Christine A Hastorf. *Heads of State Icons, Power, and Politics in the Ancient and Modern Andes*, 2016.

Arnold, Jonathan, Shane Bjornlie, and Kristina Sessa. *A Companion to Ostrogothic Italy*. BRILL, 2016. https://doi.org/10.1163/9789004315938.

Azuonye, Chikwuma. "THE HEROIC AGE OF THE OHAFIA IGBO: ITS EVOLUTION AND SOCIO-CULTURAL CONSEQUENCES." *Genève-Afrique/Geneva-Africa* 28, no. 1 (1990). https://search.proquest.com/docview/1297925813?pq-origsite=gscholar&fromopenview=true.

AZUONYE, CHUKWUMA. "THE NARRATIVE WAR SONGS OF THE OHAFIA IGBO: A Critical Analysis of Their Characteristic in Relation to Their Social Function." Doctoral dissertation, School of Oriental and African Studies, University of London, 1979.

Bank, Andrew. "Of 'Native Skulls' and 'Noble Caucasians': Phrenology in Colonial South Africa." *Journal of Southern African Studies* 22, no. 3 (1996): 387–403. https://doi.org/10.1080/03057079608708501.

Barton, Roy Franklin. "Ifugao Law," Publications in American archaeology and ethnology, 1919. https://ehrafworldcultures.yale.edu/document?id=oa19-002.

———. *The Half-Way Sun: Life among the Headhunters of the Philippines*. Brewer & Warren, Inc., 1930. https://ehrafworldcultures.yale.edu/document?id=oa19-012.

Basden, George Thomas, and John Ralph Willis. *Niger Ibos: A Description of the Primitive Life, Customs and Animistic Beliefs, Etc., of the Ibo People of Nigeria*. Cass, 1966. https://ehrafworldcultures.yale.edu/document?id=ff26-007.

Basedow, Herbert. *The Australian Aboriginal*. F. W. Preece and sons, 1925. https://ehrafworldcultures.yale.edu/document?id=oi08-007.

Bashir, Shahzad. "Shah Ismaʿil and the Qizilbash: Cannibalism in the Religious History of Early Safavid Iran." *History of Religions* 45, no. 3 (2006): 234–56. https://doi.org/10.1086/503715.

Beierle, John. *Culture Summary: Tupinamba*. HRAF, 2003. https://ehrafworldcultures.yale.edu/document?id=so09-000.

Berndt, Guido M. "'The Goths Drew Swords Together' Individual and Collective Acts of Violence by Gothic Warlords and Their War Bands." In *Killing and Being Killed: Bodies in Battle*, 15–42. transcript Verlag, 2018. https://www.degruyter.com/document/doi/10.1515/9783839437834-004/html.

Bhattacharjee, Jayanta Bhusan. "The Garos and the English 1765 to 1874." *University*, February 28, 1971. http://shodhganga.inflibnet.ac.in:8080/jspui/handle/10603/67589.

Blankinship, Khalid Yahya. *The End of the Jihâd State: The Reign of Hisham Ibn ʻAbd al-Malik and the Collapse of the Umayyads*. SUNY Series in Medieval Middle East History. Albany: State University of New York Press, 1994.

Boehm, Christopher. *Blood Revenge: The Enactment and Management of Conflict in Montenegro and Other Tribal Societies*. 2nd pbk. ed. The University of Pennsylvania Press Publications in Ethnohistory. Philadelphia, PA: University of Pennsylvania Press, 1987.

Bohannan, Paul. *Justice and Judgment among the Tiv*. Published for the International African Institute by the Oxford University Press, 1968. https://ehrafworldcultures.yale.edu/document?id=ff57-031.

Bonatz, Dominik. "Ashurbanipal's Headhunt: An Anthropological Perspective." *Iraq* 66 (2004): 93. https://doi.org/10.2307/4200564.

Bonogofsky, Michelle. *The Bioarchaeology of the Human HeadDecapitation, Decoration, and Deformation*. University Press of Florida, 2011. https://doi.org/10.5744/florida/9780813035567.001.0001.

Bosworth, C. E. "Ghaznevid Military Organisation." *Der Islam* 36, no. 1–2 (1960). https://doi.org/10.1515/islm.1960.36.1-2.37.

Bosworth, C. Edmund. "GHURIDS." In *Encyclopaedia Iranica*. Accessed February 11, 2021. https://iranicaonline.org/articles/ghurids.

Bouchery, Pascal. "Naga Ethnography and Leach's Oscillatory Model of Gumsa and Gumlao." In *Social Dynamics in the Highlands of Southeast Asia*, edited by François Robinne and Mandy Sadan, 109–25. BRILL, 2007. https://doi.org/10.1163/ej.9789004160347.i-331.31.

Bowers, Nancy. "KAPAUKU NUMERATION: RECKONING, RACISM, SCHOLARSHIP, AND MELANESIAN COUNTING SYSTEMS." *The Journal of the Polynesian Society* 86, no. 1 (1977): 105–16. https://www.jstor.org/stable/20705230.

Boyd, Robert, and Peter J. Richerson. "Large-scale Cooperation in Small-scale Foraging Societies." *Evolutionary Anthropology: Issues, News, and Reviews* 31, no. 4 (2022): 175–98. https://doi.org/10.1002/evan.21944.

Brandt, Erik. "Images of War and Savagery: Thinking Anthropologically about Warfare and Civilisation, 1871–1930." *History and Anthropology* 12, no. 1 (2000): 1–36. https://doi.org/10.1080/02757206.2000.9960926.

Brett, Michael. *The Rise of the Fatimids: The World of the Mediterranean and the Middle East in the Fourth Century of the Hijra, Tenth Century CE*. The Medieval Mediterranean, v. 30. Leiden ; Boston: Brill, 2001.

Brown, Zachary. "'Indianizing the Confederacy': Understandings of War Cruelty During the American Civil War and the Sioux Uprising of 1862." *Penn History Review* 23, no. 2 (December 23, 2016). https://repository.upenn.edu/phr/vol23/iss2/6.

Burch, Ernest S. *Alliance and Conflict: The World System of the Iñupiaq Eskimos*. Northern Lights Series, no. 8. Calgary: University of Calgary Press, 2005.

Burns, Thomas S. *A History of the Ostrogoths*. Indiana University Press, 1991.

Campbell, Roderick, ed. *Violence and Civilization: Studies of Social Violence in History and Prehistory*. Joukowsky Institute Publication 4. Oxford: Oxbow Books, 2014.

Canós-Donnay, Sirio. "The Empire of Mali." In *Oxford Research Encyclopedia of African History*, by Sirio Canós-Donnay. Oxford University Press, 2019. https://doi.org/10.1093/acrefore/9780190277734.013.266.

Çekiç, Can Eyüp. "Hamidian Epic: War Literature in the Late Nineteenth Century Ottoman Empire." Doctoral, Bilkent University, 2016. http://hdl.handle.net/11693/29124.

Chapman, Anne. *Drama and Power in a Hunting Society: The Selk'nam of Tierra Del Fuego*. Cambridge University Press, 1982. https://ehrafworldcultures.yale.edu/document?id=sh04-005.

Claude, d'Abbeville, Alfred Métraux, and Margaret Coughlin. *History of the Mission of the Capuchin Fathers on the Isle of Maragnan and the Surrounding Lands*. Impr. de F. Huby, 1614. https://ehrafworldcultures.yale.edu/document?id=so09-006.

Cohen, Ronald. *Incorporation in Bornu*. Chandler Publications in Anthropology. Chandler Pub. Co., 1970. https://ehrafworldcultures.yale.edu/document?id=ms14-011.

Colbacchini, Antonio, Cesar Albisetti, and Ivana Lillios. "The Eastern Bororo Orarimogodogue of the Eastern Plateau of Mato Grosso," Brasiliana (Grande Formato), 4 (1942). https://ehrafworldcultures.yale.edu/cultures/sp08/documents/009.

———. "The Eastern Bororo Orarimogodogue of the Eastern Plateau of Mato Grosso," Brasiliana (Grande Formato), 4 (1942). https://ehrafworldcultures.yale.edu/document?id=sp08-009.

Cooper, John Montgomery. "Analytical and Critical Bibliography of the Tribes of Tierra Del Fuego and Adjacent Territory," Bulletin, 1917. https://ehrafworldcultures.yale.edu/document?id=sh04-004.

Covey, R. Alan. "The Inca Empire." In *The Handbook of South American Archaeology*, edited by Helaine Silverman and William H. Isbell, 809–30. New York, NY: Springer New York, 2008. https://doi.org/10.1007/978-0-387-74907-5_40.

Cowgill, George L. "STATE AND SOCIETY AT TEOTIHUACAN, MEXICO." *Annual Review of Anthropology* 26, no. 1 (October 21, 1997): 129–61. https://doi.org/10.1146/annurev.anthro.26.1.129.

Cox, Rory. "Expanding the History of the Just War: The Ethics of War in Ancient Egypt." *International Studies Quarterly* 61, no. 2 (2017): 371–84. https://doi.org/10.1093/isq/sqx009.

Crocker, William H. (William Henry). "The Canela (Eastern Timbira), I: An Ethnographic Introduction," Smithsonian contributions to anthropology, no. 33 (1990). https://ehrafworldcultures.yale.edu/cultures/so08/documents/005.

Crowe, David. *War Crimes, Genocide, and Justice: A Global History*. First edition. New York, NY: Palgrave Macmillan, 2014.

Daftary, Farhad, ed. "Nizārī Ismāʿīlī History during the Alamūt Period." In *The Isma'ilis: Their History and Doctrines*, 2nd ed., 301–402. Cambridge: Cambridge University Press, 2007. https://doi.org/10.1017/CBO9780511497551.009.

D'Altroy, Terence N. *The Incas*. Second edition. Chichester, West Sussex ; Malden, MA: Wiley-Blackwell, 2014.

Dam, Caspar ten. "How to Feud and Rebel: 1. Violence-Values among the Chechens and Albanians." *Iran and the Caucasus* 14, no. 2 (2010): 331–65. https://doi.org/10.1163/157338410X12743419190340.

Darbyshire, Gareth, Stephen Mitchell, and Levent Vardar. "The Galatian Settlement in Asia Minor." *Anatolian Studies* 50 (2000): 75–97. https://doi.org/10.2307/3643015.

Davison, Julian, and Vinson H. Sutlive. "The Children of NISING: Images of Headhunting and Male Sexuality in Iban Ritual and Oral Literature." In *Female and Male in Borneo : Contributions and Challenges to Gender Studies*, 1:153–230. Monograph Series. The Borneo Research Council, Inc., Department of Anthropology, College of William and Mary, 1991. https://ehrafworldcultures.yale.edu/document?id=oc06-035.

de Wolf, Jan J. "Ecology and Conquest: Critical Notes on Kelly's Model of Nuer Expansion." *Ethnology* 29, no. 4 (1990): 341. https://doi.org/10.2307/3773603.

De la Garza, Andrew. *The Mughal Empire at War: Babur, Akbar and the Indian Military Revolution, 1500-1605*. 1st edition. Asian States and Empires 12. London ; New York: Routledge Taylor & Francis Group, 2016.

De Laguna, Frederica. "Under Mount Saint Elias: The History and Culture of the Yakutat Tlingit," Smithsonian contributions to anthropology, 7 (1972). https://ehrafworldcultures.yale.edu/document?id=na12-020.

Derven, H. J. Van. *Warfare in Chinese History*. BRILL, 2000.

Donohue, John J. *The Buwayhid Dynasty in Iraq 334h., 945 to 403h., 1012: Shaping Institutions for the Future*. BRILL, 2003.

Downs, Richard Erskine. *The Religion of the Bare-'e-Speaking Toradja of Central Celebes*. Uitgeverij Excelsior, 1956. https://ehrafworldcultures.yale.edu/document?id=og11-001.

Du Tertre, Jean Baptiste, Marshall Bassford McKusick, and Pierre Verin. "Concerning the Natives of the Antilles." *General History of the Antilles Occupied by the French …* 2 (1667). https://ehrafworldcultures.yale.edu/cultures/st13/documents/004.

Durham, M. E. (Mary Edith). *Some Tribal Origins, Laws, and Customs of the Balkans*. George Allen and Unwin, 1928. https://ehrafworldcultures.yale.edu/document?id=eg01-002.

Duval, Colin, Thomas Cucchi, Marie-Pierre Horard-Herbin, and Sébastien Lepetz. "The Development of New Husbandry and Economic Models in Gaul between the Iron Age and the Roman Period: New Insights from Pig Bones and Teeth Morphometrics." *Journal of Archaeological Science* 99 (2018): 10–18. https://doi.org/10.1016/j.jas.2018.08.016.

Dyson-Hudson, Rada, and J. Terrence McCabe. "South Turkana Nomadism: Coping with an Unpredictably Varying Environment," HRAFlex books, ethnography series, 1985. https://ehrafworldcultures.yale.edu/document?id=fl17-003.

Eckstein, A.M. "Human Sacrifice and Fear of Military Disaster in Republican Rome." In *American Journal of Ancient History*, edited by Ernst Badian, 69–95. Gorgias Press, 2017. https://doi.org/10.31826/9781463237479-006.

Elliott, Mark C. *The Manchu Way: The Eight Banners and Ethnic Identity in Late Imperial China*. Stanford University Press, 2001. https://ehrafworldcultures.yale.edu/document?id=ag04-037.

Ellis, William. "A Narrative of a Tour through Hawaii, or Owhyhee: With Remarks on the History, Traditions, Manners, Customs, and Language of the Inhabitants of the Sandwich Islands," The Advertiser Historical Series, 1917. https://ehrafworldcultures.yale.edu/document?id=ov05-011.

Evaneshko, Veronica. *Tonawanda Seneca Ethnic Identity: Functional and Processual Analysis*. University Microfilms International, 1974. https://ehrafworldcultures.yale.edu/document?id=nm09-059.

Evans-Pritchard, E. E. (Edward Evan). *The Azande: History and Political Institutions*. Clarendon Press, 1971. https://ehrafworldcultures.yale.edu/document?id=fo07-068.

———. *The Nuer: A Description of the Modes of Livelihood and Political Institutions of a Nilotic People*. At the Clarendon press, 1940. https://ehrafworldcultures.yale.edu/document?id=fj22-001.

———. "The Nuer: Tribe and Clan." *Sudan Notes and Record* 16 (1933): 1–53. https://ehrafworldcultures.yale.edu/document?id=fj22-012.

Ewers, John Canfield. "The Blackfeet: Raiders of the Northwestern Plains," Civilization of the American Indian, 49 (1958). https://ehrafworldcultures.yale.edu/cultures/nf06/documents/008.

Fallers, Margaret Chave. "The Eastern Lacustrine Bantu (Ganda and Soga)," Ethnographic survey of Africa : East central Africa, 1960. https://ehrafworldcultures.yale.edu/document?id=fk07-012.

Fierro, Maribel. "DECAPITATION OF CHRISTIANS AND MUSLIMS IN THE MEDIEVAL IBERIAN PENINSULA: NARRATIVES, IMAGES, CONTEMPORARY PERCEPTIONS." *Comparative Literature Studies* 45, no. 2 (2008): 137–64. https://doi.org/https://www.jstor.org/stable/pdf/25659647.pdf.

Fischer-Bovet, Christelle. *Army and Society in Ptolemaic Egypt*. Cambridge University Press, 2014.

Flannery, Kent V., and Joyce Marcus. "The Origin of War: New 14C Dates from Ancient Mexico." *Proceedings of the National Academy of Sciences* 100, no. 20 (September 30, 2003): 11801–5. https://doi.org/10.1073/pnas.1934526100.

Fleisher, Michael. *Kuria Cattle Raiders: Violence and Vigilantism on the Tanzania/Kenya Frontier*. Ann Arbor: University of Michigan Press, 2000.

Foster, George McClelland. "A Summary of Yuki Culture," Anthropological records, 1944. https://ehrafworldcultures.yale.edu/cultures/ns30/documents/002.

Fragner, Bert. "ECONOMY Vii. SAFAVIDS THROUGH THE ZANDS – Encyclopaedia Iranica." 1977. Accessed March 18, 2021. https://iranicaonline.org/articles/economy-vii-from-the-safavids-through-the-zands.

Freeman, Derek. "Some Reflections on the Nature of Iban Society," Occasional paper of the Department of Anthropology, Research School of Pacific Studies, the Australian National University, 1981. https://ehrafworldcultures.yale.edu/document?id=oc06-019.

Friday, Karl F. *Samurai, Warfare and the State in Early Medieval Japan.*., 2003. https://ebookcentral.proquest.com/lib/uqac-ebooks/detail.action?docID=5292574.

Fuchs, Andreas. "Assyria At War: Strategy and Conduct." In *The Oxford Handbook of Cuneiform Culture*, edited by Karen Radner and Eleanor Robson, 1st ed. Oxford University Press, 2011. https://doi.org/10.1093/oxfordhb/9780199557301.001.0001.

Gailey, Christine Ward. *Kinship to Kingship: Gender Hierarchy and State Formation in the Tongan Islands*. Texas Press Sourcebooks in Anthropology. University of Texas Press, 1987. https://ehrafworldcultures.yale.edu/cultures/ou09/documents/113.

Gaiser, Adam. *Muslims, Scholars, Soldiers: The Origin and Elaboration of the Ibadi Imamate Traditions*. Oxford University Press, 2010.

Galaty, Michael. "An Offense to Honor Is Never Forgiven...": Violence and Landscape Archaeology in Highland Northern Albania." In *The Archaeology of Violence: Interdisciplinary Approaches*, edited by Sarah Ralph. IEMA Proceedings. Albany, NY: State University of New York Press, 2013.

Geertz, Clifford. *Negara*. Princeton University Press, 1980.

Gibson, Thomas. "Raiding, Trading and Tribal Autonomy in Insular Southeast Asia." In *The Anthropology of War*, edited by Jonathan Haas. A School of American Research Book. Cambridge: Cambridge Univ. Press, 1990.

Gifford, Edward Winslow. "Tongan Society," Bulletin, 1929. https://ehrafworldcultures.yale.edu/cultures/ou09/documents/001.

Gluckman, Max. "Economy of the Central Barotse Plain," Papers, no. 7 (1941). https://ehrafworldcultures.yale.edu/cultures/fq09/documents/010.

Golitko, Mark Louis. "Warfare and Alliance Building during the Belgian Early Neolithic, Late Sixth Millennium, BC." Doctoral, University of Illinois at Chicago, 2010.

Gomes, Edwin H. *Seventeen Years among the Sea Dyaks of Borneo: A Record of Intimate Association with the Natives of the Bornean Jungles*. Seeley & Co., Ltd., 1911. https://ehrafworldcultures.yale.edu/document?id=oc06-007.

Gordon, Robert. "The Decline of the Kiapdom and the Resurgence of 'Tribal Fighting' in Enga." *Oceania* 53, no. 3 (1983): 205–23. https://www.jstor.org/stable/40330675.

Graff, David A. "The Chinese Concept of Righteous War." In *The Prism of Just War: Asian and Western Perspectives on the Legitimate Use of Military Force*, by Howard M. Hensel. Florence: Taylor and Francis, 2010.

Grant, Peter. "The Saulteux Indians about 1804." In *Les Bourgeois de La Compagnie Du Nord-Quest*, 303–66. De L'Imprimerie Generale A. Cote et cie, 1890. https://ehrafworldcultures.yale.edu/document?id=ng06-019.

Gratton, Nancy. *Culture Summary: Kapauku*. HRAF, 1998. https://ehrafworldcultures.yale.edu/document?id=oj29-000.

Grenier, John. *The First Way of War: American War Making on the Frontier, 1607–1814*. 1st ed. Cambridge University Press, 2005. https://doi.org/10.1017/CBO9780511817847.

Grinnell, George Bird. *Pawnee, Blackfoot and Cheyenne: History and Folklore of the Plains*. Charles Scribner's Sons, 1961. https://ehrafworldcultures.yale.edu/document?id=nq18-012.

Gronenborn, Detlef. "Climate Change and Socio-Political Crises: Some Cases from Neolithic Central Europe." *Journal of Conflict Archaeology* 2, no. 1 (2006): 13–32. https://doi.org/10.1163/157407706778942231.

Gulliver, P. H. "A Preliminary Survey of the Turkana: A Report Compiled for the Government of Kenya," University of Cape Town, Communications from the School of African Studies, no. 26 (1951). https://ehrafworldcultures.yale.edu/document?id=fl17-009.

Gulliver, Pamela, and P. H. Gulliver. "The Turkana." In *The Central Nilo-Hamites*. Ethnographic Survey of Africa: East Central Africa. International African Institute, 1953. https://ehrafworldcultures.yale.edu/document?id=fl17-001.

Gusinde, Martin. "The Fireland Indians: Vol. 1. The Selk'nam, on the Life and Thought of a Hunting People of the Great Island of Tierra Del Fuego," Expeditions, 1931. https://ehrafworldcultures.yale.edu/document?id=sh04-001.

Halsall, Guy Richard William. "The Ostrogothic Military." edited by Jonathan Arnold, Shane Bjornlie, and Kristina Sessa, 173–99. Leiden: Brill, 2016. https://eprints.whiterose.ac.uk/110306/.

Harrison, Simon. "Chapter Four: The European Enlightenment and the Origins of Scalping." In *Dark Trophies: Hunting and the Enemy Body in Modern War*, 1st ed. Berghahn Books, 2012. https://doi.org/10.2307/j.ctt9qchnf.

———. "Hunting and War: The European History of a Metaphor." In *Dark Trophies: Hunting and the Enemy Body in Modern War*, 1st ed. Berghahn Books, 2012. https://doi.org/10.2307/j.ctt9qchnf.

Haruko, Wakita, and Suzanne Gay. "Marriage and Property in Premodern Japan from the Perspective of Women's History." *Journal of Japanese Studies* 10, no. 1 (1984): 73–99. https://doi.org/10.2307/132182.

Hasluck, Margaret Masson Hardie, and J. H. (John Henry) Hutton. *The Unwritten Law in Albania*. University Press, 1954. https://ehrafworldcultures.yale.edu/document?id=eg01-010.

Hatch, Mallorie A. "Politics and Social Substitution in Total War: Exploring the Treatment of Combatants and Noncombatants During the Mississippian Period of the Central Illinois Valley." In *Bioarchaeology of Women and Children in Times of War*, edited by Debra L. Martin and Caryn Tegtmeyer, 49–69. Cham: Springer International Publishing, 2017. https://doi.org/10.1007/978-3-319-48396-2_4.

Heywood, Linda M. (Linda Marinda). *Contested Power in Angola, 1840s to the Present*. University of Rochester Press, 2000. https://ehrafworldcultures.yale.edu/document?id=fp13-010.

Higham, Charles. *The Archaeology of Mainland Southeast Asia: From 10,000 B.C. to the Fall of Angkor*. Cambridge University Press, 1989.

Hirth, Kenneth G. "Militarism and Social Organization at Xochicalco, Morelos." In *Mesoamerica after the Decline of Teotihuacan, A.D. 700-900*, edited by Richard A. Diehl, Janet Catherine Berlo, and Dumbarton Oaks. Washington, D.C: Dumbarton Oaks Research Library and Collection, 1989.

Hommon, Robert J. *The Ancient Hawaiian State: Origins of a Political Society*. New York: Oxford University Press, 2013.

Hope, Michael. "The Mongols in South Asia." In *The Mongol World*, edited by Timothy Michael May and Michael Hope. Routledge Worlds. Abingdon, Oxon ; New York, NY: Routledge, 2022.

Hungry Wolf, Beverly. *The Ways of My Grandmothers*. Morrow, 1980. https://ehrafworldcultures.yale.edu/cultures/nf06/documents/020.

Hyde, George E. *The Pawnee Indians*. The Civilization of the American Indian Series. University of Oklahoma Press, 1974. https://ehrafworldcultures.yale.edu/document?id=nq18-017.

Innokentii, Saint, Rossiisko-amerikanskaia Kompaniia, B. Keen, and Assya Kardinelowska. *Notes on the Islands of the Unalaska District*. Russian-American Company, 1840. https://ehrafworldcultures.yale.edu/document?id=na06-001.

Jackson, Peter. *The Delhi Sultanate: A Political and Military History*. Cambridge University Press, 2003.

Jákl, Jiří. "The literary Motif of Head-Taking in Old Javanese Court Poems (*Kakavin*): Cěńěl and Varagaṅ Terms Revisited." *Indonesia and the Malay World* 44, no. 129 (May 3, 2016): 165–87. https://doi.org/10.1080/13639811.2015.1133140.

Jervis, Amy Elizabeth. "Talking Heads: The Iconography of Mutilation in the Roman Republic - ProQuest." Doctoral, Stanford University, 2001. https://www.proquest.com/docview/304726373.

Jochelson, Waldemar. "The Koryak." *Publications of the Jesup North Pacific Expedition*, Memoir of the American Museum of Natural History, x (1908 1905). https://ehrafworldcultures.yale.edu/document?id=ry04-001.

Jones, Dorothy Miriam. *A Study of Social and Economic Problems in Unalaska, an Aleut Village*. University Microfilms, 1970. https://ehrafworldcultures.yale.edu/document?id=na06-070.

Julien, Catherine. "War and Peace in the Inca Heartland." In *War and Peace in the Ancient World*, edited by Kurt A. Raaflaub, 329–47. Oxford, UK: Blackwell Publishing Ltd, 2007. https://doi.org/10.1002/9780470774083.ch19.

Junker, Laura Lee. "WARRIOR BURIALS AND THE NATURE OF WARFARE IN PREHISPANIC PHILIPPINE." *Philippine Quarterly of Culture and Society*, no. SPECIAL ISSUE: NEW EXCAVATION, ANALYSIS AND PREHISTORICAL INTERPRETATION IN SOUTHEAST ASIAN ARCHAEOLOGY (1999). https://www.jstor.org/stable/pdf/29792432.pdf.

Junod, Henri Alexandre. *The Life of a South African Tribe: Vol. 1*. Macmillan and Co., Limited, 1927. https://ehrafworldcultures.yale.edu/cultures/ft06/documents/001.

Kagwa, Apolo, Ernest B. Kalibala, May (Mandelbaum) Edel, and John Roscoe. "The Customs of the Baganda," Contributions to anthropology, 22 (1934). https://ehrafworldcultures.yale.edu/cultures/fk07/documents/008.

———. "The Customs of the Baganda," Contributions to anthropology, 22 (1934). https://ehrafworldcultures.yale.edu/document?id=fk07-008.

Kamen, Henry Arthur Francis. *Spain's Road to Empire: The Making of a World Power, 1492-1763*, 2003. https://www.overdrive.com/search?q=7D15607F-F55B-4C33-ACB4-3242B4E94B42.

Karsten, Rafael. "The Head-Hunters of Western Amazonas: The Life and Culture of the Jibaro Indians of Eastern Ecuador and Peru," Commentationes humanarum litterarum, 1935. https://ehrafworldcultures.yale.edu/document?id=sd09-001.

Kelly, Raymond C. *The Nuer Conquest: The Structure and Development of an Expansionist System*. Ann Arbor: University of Michigan Press, 1985.

Kiernan, Ben. *Blood and Soil: A World History of Genocide and Extermination from Sparta to Darfur*. New Haven: Yale University Press, 2007.

———. *Việt Nam: A History from Earliest Times to the Present*. First issued as an Oxford University Press paperback. New York, NY: Oxford University Press, 2019.

Knauft, Bruce M. "Melanesian Warfare: A Theoretical History." *Oceania* 60, no. 4 (1990): 250–311. https://www.jstor.org/stable/40332448.

Kolb, Michael J., and Boyd Dixon. "Landscapes of War: Rules and Conventions of Conflict in Ancient Hawai'i (And Elsewhere)." *American Antiquity* 67, no. 3 (2002): 514–34. https://doi.org/10.2307/1593824.

Krauss, Ferdinand. "The Zulu." *Africana Notes and News* 18, no. 5 (1969): 201–20. https://ehrafworldcultures.yale.edu/document?id=fx20-044.

Lambrecht, Francis. "The Mayawyaw Ritual: Parts 1-5," Publications, 4, no. 1–5 (1935, 1938, 1939, 1941 1932). https://ehrafworldcultures.yale.edu/document?id=oa19-009.

Lange, Christian. "Torture and Public Executions in the Islamic Middle Period (Eleventh–Fifteenth Centuries)." In *The Cambridge World History of Violence*, edited by Matthew Gordon, Richard Kaeuper, and Harriet Zurndorfer, 1st ed., 164–84. Cambridge University Press, 2020. https://doi.org/10.1017/9781316661291.009.

———. "Torture and Public Executions in the Islamic Middle Period (Eleventh–Fifteenth Centuries)." In *The Cambridge World History of Violence*, edited by Matthew Gordon, Richard Kaeuper, and Harriet Zurndorfer, 1st ed., 164–84. Cambridge University Press, 2020. https://doi.org/10.1017/9781316661291.009.

LeBar, Frank M. "Atayal." *Ethnic Groups of Insular Southeast Asia, : Philippines and Formosa* 2 (1975): 142–48. https://ehrafworldcultures.yale.edu/document?id=ad08-001.

Lee, A. D. "Roman Warfare with Sasanian Persia." In *The Oxford Handbook of Warfare in the Classical World*, by A. D. Lee, 707–25. edited by Brian Campbell and Lawrence A. Tritle. Oxford University Press, 2013. https://doi.org/10.1093/oxfordhb/9780195304657.013.0037.

Lee, Mai Na M. "The Dream of the Hmong Kingdom: Resistance, Collaboration, and Legitimacy under French Colonialism (1893–1955)." The University of Wisconsin, 2005.

Lee, Wayne E. "Peace Chiefs and Blood Revenge: Patterns of Restraint in Native American Warfare, 1500–1800." *The Journal of Military History* 71, no. 3 (2007): 701–41. https://doi.org/10.1353/jmh.2007.0216.

Levine, Donald Nathan. *Wax & Gold: Tradition and Innovation in Ethiopian Culture*. University of Chicago Press, 1965. https://ehrafworldcultures.yale.edu/cultures/mp05/documents/011.

Lewis, I. M. "Peoples of the Horn of Africa: Somali, Afar, and Saho," Ethnographic survey of Africa : Northeastern Africa, 1955. https://ehrafworldcultures.yale.edu/document?id=mo04-001.

Lewis, Mark E. "The Han Abolition of Universal Military Service." In *Warfare in Chinese History*, edited by Hans van de Ven, 33–76. BRILL, 2000. https://doi.org/10.1163/9789004482944_004.

———. "The Just War in Early China." In *The Ethics of War in Asian Civilizations: A Comparative Perspective*, edited by Torkel Brekke. London; New York: Routledge, 2006.

Lindholm, Charles. *Generosity and Jealousy: The Swat Pukhtun of Northern Pakistan*. Columbia University Press, 1982. https://ehrafworldcultures.yale.edu/document?id=au04-003.

Low, Hugh Brooke, and H. Ling Roth. "The Natives of Borneo: Edited from the Papers of the Late Brooke Low, Esq." *The Journal of the Anthropological Institute of Great Britian and Ireland* 22 (1893): 22–64. https://ehrafworldcultures.yale.edu/document?id=oc06-005.

Lynn, John A. *Giant of the Grand Siècle: The French Army, 1610–1715*. 1st ed. Cambridge University Press, 1997. https://doi.org/10.1017/CBO9780511572548.

———. *Giant of the Grand Siècle: The French Army, 1610–1715*. 1st ed. Cambridge University Press, 1997. https://doi.org/10.1017/CBO9780511572548.

Mair, Lucy Philip. *An African People in the Twentieth Century*. Routledge & Sons, 1934. https://ehrafworldcultures.yale.edu/document?id=fk07-001.

Malinowski, Bronislaw. "War and Weapons among the Natives of the Trobriand Islands." *Man* 20, no. 5 (1920): 10–12. https://ehrafworldcultures.yale.edu/document?id=ol06-009.

Man, Edward Horace. *On the Aboriginal Inhabitants of the Andaman Islands*. The Royal Anthropological Institute of Great Britain and Ireland, 1932. https://ehrafworldcultures.yale.edu/document?id=az02-002.

Marginedas, Francesc, Antonio Rodríguez-Hidalgo, Maria Soto, Silvia M. Bello, Isabel Cáceres, Rosa Huguet, and Palmira Saladié. "Making Skull Cups: Butchering Traces on Cannibalised Human Skulls from Five European Archaeological Sites." *Journal of Archaeological Science* 114 (February 1, 2020): 105076. https://doi.org/10.1016/j.jas.2020.105076.

Mariner, William, and John Martin. *An Account of the Natives of the Tonga Islands, in the South Pacific Ocean: With an Original Grammar and Vocabulary of Their Language*. J. Murray, 1818. https://ehrafworldcultures.yale.edu/cultures/ou09/documents/002.

Marquardt, William H. "TRACKING THE CALUSA: A RETROSPECTIVE." *Southeastern Archaeology* 33, no. 1 (2014): 1–24. https://doi.org/10.1179/sea.2014.33.1.001.

Maschner, Herbert D. G., and Katherine L. Reedy-Maschner. "Heads, Women, and the Baubles of Prestige." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by Richard J. Chacon and David H. Dye, 32–44. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_3.

Mattingly, D. J, and John Salmon. *Economies beyond Agriculture in the Classical World*. London; New York: Routledge, 2002. http://site.ebrary.com/id/10070637.

Maxwell, Allen R. "Headtaking and the Consolidation of Political Power in the Early Brunei State." In *Headhunting and the Social Imagination in Southeast Asia*, edited by Jules de Raedt and Janet Hoskins. Stanford, Calif: Stanford University Press, 1996.

———. "Headtaking and the Consolidation of Power in the Early Brunei State." In *Headhunting and the Social Imagination in Southeast Asia*, by Janet Hoskins. Stanford, CA: Stanford University Press, 1996.

McCall, John C. (John Christensen). *Dancing Histories: Heuristic Ethnography with the Ohafia Igbo*. University of Michigan Press, 2000. https://ehrafworldcultures.yale.edu/document?id=ff26-048.

McDonough, Scott. "The Legs of the Throne: Kings, Elites, and Subjects in Sasanian Iran." In *The Roman Empire in Context: Historical and Comparative Perspectives*, by Johann P. Arnason and Kurt A. Raaflaub. John Wiley & Sons, 2010.

McMahon, Daniel. "Marking 'Men of Iniquity': Imperial Purpose and Imagined Boundaries in the Qing Processing of Rebel Ringleaders, 1786-1828." *Journal of Chinese Military History* 7, no. 2 (October 16, 2018): 141–83. https://doi.org/10.1163/22127453-12341330.

McPhillips, Stephen, and Paul D. Wordsworth, eds. *Landscapes of the Islamic World: Archaeology, History, and Ethnography*. Philadelphia: University of Pennsylvania Press, 2016.

https://www.researchgate.net/profile/David_Thomas74/publication/299428569_The_architectural_legacy_of_the_seasonally_nomadic_Ghurids/links/5f88e18c458515b7cf84e5f4/The-architectural-legacy-of-the-seasonally-nomadic-Ghurids.pdf.

Meggitt, M. J. "'PIGS ARE OUR HEARTS!': THE TE EXCHANGE CYCLE AMONG THE MAE ENGA OF NEW GUINEA 1." *Oceania* 44, no. 3 (1974): 165–203. https://doi.org/10.1002/j.1834-4461.1974.tb01800.x.

Melville, Sarah C. "Insurgency and Counterinsurgency in the Assyrian Empire during the Late Eighth Century BCE." In *Brill's Companion to Insurgency and Terrorism in the Ancient Mediterranean*, edited by Timothy Howe and Lee L. Brice. Brill's Companions in Classical Studies: Warfare in the Ancient Mediterranean World, Volume 1. Leiden ; Boston: Brill, 2016.

———. "The Role of Rituals in Warfare during the Neo-Assyrian Period: Neo-Assyrian War Rituals." *Religion Compass* 10, no. 9 (2016): 219–29. https://doi.org/10.1111/rec3.12206.

Merker, Meritz. *The Masai: Ethnographic Monograph of an East African Semite People*. Dietrich Reimer (Ernst Vohsen), 1910. https://ehrafworldcultures.yale.edu/document?id=fl12-018.

Metcalfe, Peter. "Images of Headhunting." In *Headhunting and the Social Imagination in Southeast Asia*, by Janet Hoskins. Stanford, CA: Stanford University Press, 1996.

Meyer, Christian, Olaf Kürbis, Veit Dresely, and Kurt W. Alt. "Patterns of Collective Violence in the Early Neolithic of Central Europe." In *Prehistoric Warfare and Violence: Quantitative and Qualitative Approaches*, edited by Andrea Dolfini, Rachel J. Crellin, Christian Horn, and Marion Uckelmann, 21–38. Quantitative Methods in the Humanities and Social Sciences. Cham: Springer International Publishing, 2018. https://doi.org/10.1007/978-3-319-78828-9_2.

Mikhail, Alan. "AN IRRIGATED EMPIRE: THE VIEW FROM OTTOMAN FAYYUM." *International Journal of Middle East Studies* 42, no. 4 (2010): 569–90. https://doi.org/10.1017/S0020743810000826.

Milburn, Olivia. "Headhunting in Ancient China: The History of Violence and Denial of Knowledge." *Bulletin of the School of Oriental and African Studies* 81, no. 1 (February 2018): 103–20. https://doi.org/10.1017/S0041977X17001446.

Milner, George R., Eve Anderson, and Virginia G. Smith. "Warfare in Late Prehistoric West-Central Illinois." *American Antiquity* 56, no. 4 (1991): 581–603. https://doi.org/10.2307/281538.

Misra, Sanghamitra. "Peasants, Colonialism, and Sovereignty: The Garo Rebellions in Eastern India." *Modern Asian Studies*, February 1, 2021, 1–37. https://doi.org/10.1017/S0026749X20000426.

Mitchell, Colin Paul. *The Practice of Politics in Safavid Iran: Power, Religion and Rhetoric*. I.B. Tauris & BIPS Persian Studies Series 1. London : New York: Tauris Academic

Studies ; distributed in the United States and Canada exclusively by Palgrave Macmillian, 2009.

Morehart, Christopher T., Abigail Meza Peñaloza, Carlos Serrano Sánchez, Emily McClung de Tapia, and Emilio Ibarra Morales. "HUMAN SACRIFICE DURING THE EPICLASSIC PERIOD IN THE NORTHERN BASIN OF MEXICO." *Latin American Antiquity* 23, no. 4 (2012): 426–48. https://www.jstor.org/stable/23645606.

Morgan, Lewis Henry, and Herbert M. Lloyd. *League of the Ho-De'-No-Sau-Nee or Iroquois. Vol. I.* Dodd, Mead and Company, 1901. https://ehrafworldcultures.yale.edu/document?id=nm09-001.

Moses, A. Dirk. *Empire, Colony, Genocide: Conquest, Occupation, and Subaltern Resistance in World History*, 2010. http://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=1323678.

Murphy, Robert Francis. "Intergroup Hostility and Social Cohesion." *American Anthropologist* 59 (1959): 1018–35. https://ehrafworldcultures.yale.edu/document?id=sq13-007.

Mustafa, Mentor, and Antonia Young. "Feud Narratives: Contemporary Deployments of the Kanun in Shala Valley, Northern Albania," 2008. https://open.bu.edu/handle/2144/4349.

Nadali, Davide. “Images of Assyrian Sieges: What They Show, What We Know, What Can We Say.” In *Brill’s Companion to Sieges in the Ancient Mediterranean*, edited by Jeremy Armstrong and Matthew Trundle, 53–68. BRILL, 2019. https://doi.org/10.1163/9789004413740_005.

Nyakatura, J. W. (John W.), and Zebiya Kwamya Rigby. *Aspects of Bunyoro Customs and Tradition*. East African Literature Bureau, 1970. https://ehrafworldcultures.yale.edu/cultures/fk11/documents/013.

Ohadike, Don C. *Anioma: A Social History of the Western Igbo People*. Ohio University Press, 1994. https://ehrafworldcultures.yale.edu/document?id=ff26-049.

Olson, Ronald L. (Ronald LeRoy). “Social Structure and Social Life of the Tlingit in Alaska,” Anthropological records, 26 (1967). https://ehrafworldcultures.yale.edu/document?id=na12-019.

O’Neal, Michael. “ʿAlāʾ al-Dīn Ḥusayn (Ghūrid).” *Encyclopedia of Indian Religions*, January 1, 2017. https://www.academia.edu/43833823/_Al%C4%81_al_D%C4%ABn_%E1%B8%A4usayn_Gh%C5%ABrid_.

Onuora, Chijike. “IKORO DRUMS AMONG THE IGBO: ICONOLOGY AND DESIGN SYMBOLS” 5, no. 1 (2016).

Osimī, Muḥammad, ed. *History of Civilizations of Central Asia: A.D. 750 to the End of the Fifteenth Century. Part 1: Vol. 4, The Age of Achievement The Historical, Social*

and Economic Setting / Ed.: M. S. Asimov. Paris: UNESCO Publ, 1998. https://ru.unesco.org/silkroad/sites/default/files/knowledge-bank-article/vol_IVa%20silk%20road_the%20ghurids.pdf.

Pacheco-Forés, Sofía I., Christopher T. Morehart, Jane E. Buikstra, Gwyneth W. Gordon, and Kelly J. Knudson. "Migration, Violence, and the 'Other': A Biogeochemical Approach to Identity-Based Violence in the Epiclassic Basin of Mexico." *Journal of Anthropological Archaeology* 61 (2021): 101263. https://doi.org/10.1016/j.jaa.2020.101263.

Pelleschi, Juan, and Samuel Alexander Lafone Quevedo. "The Mataco Indians and Their Language." *Boletin Del Instituto Geográfico Argentino* 17 (1896 1897). https://ehrafworldcultures.yale.edu/document?id=si07-001.

Perdue, Peter C. *China Marches West: The Qing Conquest of Central Eurasia*. Cambridge, Mass.; London: Belknap, 2010. https://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=3300134.

Petersen, James, and John Crock. "Introduction to Human Trophy Taking." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, edited by Richard Chacon and David H. Dye, 5–31. Boston, MA: Springer US, 2007. https://doi.org/10.1007/978-0-387-48303-0_2.

Playfair, Alan. *The Garos*. David Nutt, 1909. https://ehrafworldcultures.yale.edu/document?id=ar05-002.

Pospisil, Leopold J. "'I Am Very Sorry I Cannot Kill You Any More': War and Peace among the Kapauku." In *Studying War : Anthropological Perspectives*, 2:113–26. War and Society. Gordon and Breach, 1993. https://ehrafworldcultures.yale.edu/document?id=oj29-007.

———. "Kapauku Papuans and Their Law," Yale University publications in anthropology, no. 54 (1958). https://ehrafworldcultures.yale.edu/document?id=oj29-001.

Powesland, P. G. "History of the Migration in Uganda." In *Economic Development and Tribal Change: A Study of Immigrant Labour in Buganda*, 17–51. Published for the East African Institute of Social Research by W. Heffer & Sons Ltd., 1954. https://ehrafworldcultures.yale.edu/document?id=fk07-006.

Pritchard, W. T. *Polynesian Reminiscences: Or, Life in the South Pacific Islands.* London: Dawsons of Pall Mall, 1968.

Qian, Yang. "Conflict and Identity: The Ritual of Wall Construction in Early China." *Asian Perspectives* 58, no. 2 (2019): 287–315. https://doi.org/10.1353/asi.2019.0017.

Radner, Karen. "Economy, Society, and Daily Life in the Neo-Assyrian Period." In *A Companion to Assyria*, edited by Eckart Frahm, 209–28. Chichester, UK: John Wiley & Sons, Ltd, 2017. https://doi.org/10.1002/9781118325216.ch9.

Raymond, Gregory A. "The Greco-Roman Roots of the Western Just War Tradition." In *The Prism of Just War: Asian and Western Perspectives on the Legitimate Use of Military Force*, edited by Howard M. Hensel. Justice, International Law and Global Security. Burlington, VT: Ashgate, 2010.

Reid, Richard J. *Warfare in African History*. 1st ed. Cambridge University Press, 2012. https://doi.org/10.1017/CBO9781139043090.

Richards, D. S., ed. *The Chronicle of Ibn Al-Athir for the Crusading Period from al-Kamil Fi'l-Ta'rikh. Part 2: The Years 541–589/1146–1193: The Age of Nur al-Din and Saladin*. London: Routledge, 2020. https://doi.org/10.4324/9781315240701.

———. *The Chronicle of Ibn Al-Athīr for the Crusading Period from al-Kāmil Fī'l-Ta'rīkh Part 2: The Years 541–589/1146–1193 The Age of Nur al-Din and Saladin*. London: Routledge, 2020. https://doi.org/10.4324/9781315240701.

Richards, John F. *The Mughal Empire*. The New Cambridge History of India. Cambridge: Cambridge University Press, 1993. https://doi.org/10.1017/CBO9780511584060.

Richter, Daniel K. "War and Culture: The Iroquois Experience." *The William and Mary Quarterly* 40, no. 4 (1983): 528–59. https://doi.org/10.2307/1921807.

Ritterbush, Lauren W. "9. Late Prehistoric Oneota in the Central Plains," n.d., 14.

Roscoe, John. *The Baganda: An Account of Their Native Customs and Beliefs*. Macmillan and Co., 1911. https://ehrafworldcultures.yale.edu/cultures/fk07/documents/002.

———. *The Baganda: An Account of Their Native Customs and Beliefs*. Macmillan and Co., 1911. https://ehrafworldcultures.yale.edu/document?id=fk07-002.

Ross, Marc Howard. "Political Decision Making and Conflict: Additional Cross-Cultural Codes and Scales." *Ethnology* 22, no. 2 (1983): 169–92. https://doi.org/10.2307/3773578.

Rubin, Barnett R. "Lineages of the State in Afghanistan." *Asian Survey* 28, no. 11 (1988): 1188–1209. https://doi.org/10.2307/2644508.

Rui, Yifu, Ting-jui Ho, Shu-hsüeh T'ao, Shih-chen Hsü, and Ch'i-ch'ien Ch'iu. "Ethnographical Investigation of Some Aspects of the Atayal, Chin-Shui Ts'un, Miaoli Hsien." *Bulletin of the Department of Archaeology and Anthropology, National Taiwan University [Kao Gu Ren Lei Xue Kan]*, no. 5 (1955): 113–27. https://ehrafworldcultures.yale.edu/document?id=ad08-050.

Ryan Goodale, Mark. "Leopold Pospisil: A Critical Reappraisal." *The Journal of Legal Pluralism and Unofficial Law* 30, no. 40 (1998): 123–49. https://doi.org/10.1080/07329113.1998.10756500.

Sandin, Benedict. *Iban Way of Life: A Translation from Tusun Pandiau*. Borneo Literature Bureau, 1976. https://ehrafworldcultures.yale.edu/document?id=oc06-032.

Sather, Clifford. ""All Threads Are White": Iban Egalitarianism Reconsidered." In *Origins, Ancestry and Alliance*, edited by Clifford Sather and James J. Fox, 73–112.

Explorations in Austronesian Ethnography. ANU Press, 2006. https://www.jstor.org/stable/j.ctt2jbjs3.8.

Schefold, Reimar. *Culture Summary: Mentawaians*. HRAF, 2001. https://ehrafworldcultures.yale.edu/document?id=od09-000.

Schimmel, Annemarie, Corinne Attwood, and Burzine K. Waghmar. *The Empire of the Great Mughals: History, Art, and Culture*. New Delhi: Oxford University Press, 2005.

Seligman, C. G. (Charles Gabriel). "The Northern Massim." In *The Melanesians of British New Guinea, by C. G. Seligmann*, 660–735. Cambridge University Press, 1910. https://ehrafworldcultures.yale.edu/document?id=ol06-047.

Sepe, Agostino. "Back to the Roots: The Imperial City of Shenyang as a Symbol of the Manchu Ethnic Identity of the Qing Dynasty." *MING QING YANJIU* 16, no. 01 (February 14, 2011): 129–76. https://doi.org/10.1163/24684791-01601006.

SHELACH, GIDEON. "The Qiang and the Question of Human Sacrifice in the Late Shang Period." *Asian Perspectives* 35, no. 1 (1996): 1–26. https://www.jstor.org/stable/42928374.

Shennan, Stephen. *The First Farmers of Europe: An Evolutionary Perspective*. 1st ed. Cambridge University Press, 2018. https://doi.org/10.1017/9781108386029.

Siddall, Luis R. "The Nature of Siege Warfare in the Neo-Assyrian Period." In *Brill's Companion to Sieges in the Ancient Mediterranean*, edited by Jeremy Armstrong

and Matthew Trundle, 35–52. BRILL, 2019. https://doi.org/10.1163/9789004413740_004.

Simón, Francisco Marco. "Insurgency or State Terrorism? The Hispanic Wars in the Second Century BCE." In *Brill's Companion to Insurgency and Terrorism in the Ancient Mediterranean*, edited by Timothy Howe and Lee L. Brice, 1:217–47. Brill's Companions to Classical Studies: Warfare in the Ancient Mediterranean World, 2016. https://brill.com/view/book/edcoll/9789004284739/B9789004284739_009.xml.

Simon, Scott. "Politics and Headhunting among the Formosan Sejiq: Ethnohistorical Perspectives." *Oceania* 82, no. 2 (2012): 164–85. https://doi.org/10.1002/j.1834-4461.2012.tb00127.x.

Sinha, Tarunchandra. "The Psyche of the Garos," Memoir, no. 12 (1966). https://ehrafworldcultures.yale.edu/document?id=ar05-018.

Smith, Edwin William, and Andrew Murray Dale. *The Ila-Speaking Peoples of Northern Rhodesia: Vol. 1*. MacMillan and Co., 1920. https://ehrafworldcultures.yale.edu/document?id=fq06-001.

Snaitang, O. L. *Christianity and Social Change in Northeast India: A Study of the Role of Christianity in Social Change among the Khasi-Jaintia Hill Tribes of Meghalaya*. Vendrame Institute ; Firma KLM Private Ltd., 1993. https://ehrafworldcultures.yale.edu/cultures/ar07/documents/022.

Southwold, Martin. "The Ganda of Uganda." In *Peoples of Africa*, 81–118. Holt, Rinehart and Winston, 1965. https://ehrafworldcultures.yale.edu/document?id=fk07-015.

Spencer, Charles S., and Elsa M. Redmond. "The Chronology of Conquest: Implications of New Radiocarbon Analyses from the Cañada de Cuicatlán, Oaxaca." *Latin American Antiquity* 12, no. 2 (2001): 182–201. https://doi.org/10.2307/972055.

Spencer, Paul. *The Maasai of Matapato: A Study of Rituals of Rebellion*. International African Library. Indiana University Press, 1988. https://ehrafworldcultures.yale.edu/document?id=fl12-020.

Spier, Leslie. "Klamath Ethnography," Publications in American archaeology and ethnology, 30 (1930). https://ehrafworldcultures.yale.edu/document?id=nr10-001.

Stair, John B. *Old Samoa: Or Flotsam and Jetsam from the Pacific Ocean*. The Religious Tract Society, 1897. https://ehrafworldcultures.yale.edu/cultures/ou08/documents/017.

Stanish, Charles. *Ancient Titicaca: The Evolution of Complex Society in Southern Peru and Northern Bolivia*. University of California Press, 2003. https://doi.org/10.1525/california/9780520232457.001.0001.

Stark, Miriam T. "After Collapse: The Regeneration of Complex Societies." In *After Collapse: The Regeneration of Complex Societies*, by John J. Nichols and Glenn M. Schwartz. Tucson, Ariz.: University of Arizona Press, 2006.

Strobel, Karl. "The Galatians in the Roman Empire: Historical Tradition and Ethnic Identity in Hellenistic and Roman Asia Minor." In *Ethnic Constructs in Antiquity*, edited by Ton Derks and Nico Roymans, 117–44. The Role of Power and Tradition. Amsterdam University Press, 2009. https://www.jstor.org/stable/j.ctt46n1n2.8.

Struve, Lynn A., ed. *Voices from the Ming-Qing Cataclysm: China in Tigers' Jaws*. New Haven: Yale Univ. Press, 1993.

Sturtevant, William C. *Tupinambá Chiefdoms?* University Press of Florida, 1998. https://ehrafworldcultures.yale.edu/document?id=so09-027.

Suri, Renu. *The Angami Nagas*. Mittal Publications, 2006.

Sutton, Donald S. "Ethnic Revolt in the Qing Empire: The 'Miao Uprising' of 1795-1797 Reexamined." *Asia Major* 16, no. 2 (2003). https://www.jstor.org/stable/41649879.

Taqyuddin, and N. Susanti. "Food Culture and Land Use in Ancient Times." In *Cultural Dynamics in a Globalized World*, n.d.

TEFFT, STANTON K. "COGNITIVE PERSPECTIVES ON RISK ASSESSMENT AND WAR TRAPS: AN ALTERNATIVE TO FUNCTIONAL THEORY." *Journal of Political & Military Sociology* 18, no. 1 (1990): 57–77. https://www.jstor.org/stable/45294007.

Thompson, Laura. "Southern Lau, Fiji: An Ethnography," Bulletin, no. 162 (1940). https://ehrafworldcultures.yale.edu/cultures/oq06/documents/002.

Thompson, Victor D., William H. Marquardt, Karen J. Walker, Amanda D. Roberts Thompson, and Lee A. Newsom. "Collective Action, State Building, and the Rise of

the Calusa, Southwest Florida, USA." *Journal of Anthropological Archaeology* 51 (September 1, 2018): 28–44. https://doi.org/10.1016/j.jaa.2018.05.003.

Tor, D.G. *Violent Order: Religious Warfare, Chivalry, and the ʿAyyar Phenomenon in the Medieval Islamic World*. E-Book. Würzburg: Ergon-Verlag GmbH, 2016.

Truschke, Audrey. "CHAPTER II Difference That Mattered Defining the Ghurid Threat." In *CHAPTER II Difference That Mattered Defining the Ghurid Threat*, 44–65. Columbia University Press, 2021. https://www.degruyter.com/document/doi/10.7312/trus19704-008/html.

TSE, WICKY W K. *COLLAPSE OF CHINA'S LATER HAN DYNASTY, 25-220 CE: The Northwest Borderlands and the Edge of Empire.* S.l.: ROUTLEDGE, 2020.

Tse, Wicky W. K. "The Others within: The Qiang Wars and the Abandonment of the Northwest." In *The Collapse of China's Later Han Dynasty, 25–220 CE: The Northwest Borderlands and the Edge of Empire*, 1st ed. Routledge, 2018. https://doi.org/10.4324/9781315532332.

Tsekov, Georgi. "Sons of the Eagle: Clan Warfare, Organized Crime and State Disintegration in the Western Balkans." *Southeast European and Black Sea Studies*, April 17, 2008. https://doi.org/10.1080/14683850208454701.

Tuden, Arthur. "Ila Slavery." *Rhodes-Livingstone Journal* 24 (1958): 68–78. https://ehrafworldcultures.yale.edu/document?id=fq06-010.

Tung, Tiffiny A. "Gender-Based Violence in the Wari and Post-Wari Era of the Andes." In *The Routledge Handbook of the Bioarchaeology of Human Conflict*, edited by Christopher Knüsel and Martin Smith. Routledge Handbooks. London ; New York, NY: Routledge/Taylor & Francis Group, 2014.

———. "Trauma and Violence in the Wari Empire of the Peruvian Andes: Warfare, Raids, and Ritual Fights." *American Journal of Physical Anthropology* 133, no. 3 (2007). https://doi.org/10.1002/ajpa.20565.

Tung, Tiffiny A., and Kelly J. Knudson. "CHILDHOOD LOST: ABDUCTIONS, SACRIFICE, AND TROPHY HEADS OF CHILDREN IN THE WARI EMPIRE OF THE ANCIENT ANDES." *Latin American Antiquity* 21, no. 1 (2010): 44–66. https://www.jstor.org/stable/25766978.

Turner, George. *Samoa, a Hundred Years Ago and Long before: Together with Notes on the Cults and Customs of Twenty-Three Other Islands in the Pacific*. Macmillan and co., 1884. https://ehrafworldcultures.yale.edu/document?id=ou08-016.

Unesco. *History of Civilizations of Central Asia*. UNESCO, 1998.

Valentin, Frédérique, and Noémie Rolland. "Marquesan Trophy Skulls: Description, Osteological Analyses, and Changing Motivations in the South Pacific." In *The Bioarchaeology of the Human Head: Decapitation, Decoration, and Deformation*, by Michelle Bonogofsky. University Press of Florida, 2011. https://doi.org/10.5744/florida/9780813035567.001.0001.

Van Der Lem, Anton. *Revolt in the Netherlands: The Eighty Years War, 1568-1648*, 2019. http://www.vlebooks.com/vleweb/product/openreader?id=none&isbn=9781789140880.

Vayda, Andrew P. "Iban Headhunting." In *War in Ecological Perspective: Persistence, Change, and Adaptive Processes in Three Oceanian Societies*, edited by Andrew P. Vayda, 43–74. Boston, MA: Springer US, 1976. https://doi.org/10.1007/978-1-4684-2193-4_3.

———. "War and Coping." *Reviews in Anthropology* 6, no. 2 (1979): 191–98. https://doi.org/10.1080/00988157.1979.9977441.

———. *War in Ecological Perspective: Persistence, Change, and Adaptive Processes in Three Oceanian Societies*. Boston, MA: Springer US, 1976. https://doi.org/10.1007/978-1-4684-2193-4_3.

Villaverde, Juan, Dean C. Worcester, and L. E. Case. "The Ifugaos of Quiangan and Vicinity." *Philippine Journal of Science* 4 (1909). https://ehrafworldcultures.yale.edu/document?id=oa19-019.

Voigt, Mary M. "The Violent Ways of Galatian Gordion." In *The Archaeology of Violence: Interdisciplinary Approaches*, edited by Sarah Ralph. IEMA Proceedings, volume 2. Albany, NY: State University of New York Press, 2013.

Wagner, Ulla. *Colonialism and Iban Warfare*. [s.n.] OBE-Tryck Sthlm, 1972. https://ehrafworldcultures.yale.edu/document?id=oc06-024.

Waines, David. "Ibn Baṭṭūṭa on Shedding of Blood in the Delhi Sultanate." *Al-Masāq* 24, no. 3 (2012): 279–92. https://doi.org/10.1080/09503110.2012.727658.

Wallace, Anthony F. C., and Sheila K. Steen. *The Death and Rebirth of the Seneca*. Vintage Books, a division of Random House, 1972. https://ehrafworldcultures.yale.edu/document?id=nm09-041.

Webb, Denver A. "WAR, RACISM, AND THE TAKING OF HEADS: REVISITING MILITARY CONFLICT IN THE CAPE COLONY AND WESTERN XHOSALAND IN THE NINETEENTH CENTURY." *The Journal of African History* 56, no. 1 (2015): 37–55. https://doi.org/10.1017/S0021853714000693.

Wheeler, Douglas C., and C. Diane Christensen. *To Rise with One Mind: The Bailund War of 1902*. Materialien Zu Entwicklung Und Politik. Weltforum Verlag, 1973. https://ehrafworldcultures.yale.edu/document?id=fp13-012.

Wiessner, Pauline. "Collective Action for War and for Peace a Case Study among the Enga of Papua New Guinea." *Current Anthropology*, January 1, 2019. https://doi.org/10.1086/702414.

Wiessner, Polly. "From Spears to M-16s: Testing the Imbalance of Power Hypothesis among the Enga." *Journal of Anthropological Research* 62, no. 2 (2006): 165–91. https://doi.org/10.3998/jar.0521004.0062.203.

Wilkinson, T. J., Jason Ur, Eleanor Barbanes Wilkinson, and Mark Altaweel. "Landscape and Settlement in the Neo-Assyrian Empire." *Bulletin of the American Schools of Oriental Research* 340 (2005): 23–56. https://doi.org/10.1086/BASOR25066913.

Wilson, H. Clyde. "Regarding the Causes of Mundurucú Warfare." *American Anthropologist* 60, no. 6 (1958): 1193–96. https://www.jstor.org/stable/665391.

Wolfram, Herwig. *History of the Goths*. New and Completely rev. from the second German ed. Berkeley: Univ. of California Pr, 1987.

Yoffee, Norman. *Myths of the Archaic State: Evolution of the Earliest Cities, States, and Civilizations*, 2005. https://doi.org/10.1017/CBO9780511489662.

Zefferman, Matthew R., and Sarah Mathew. "An Evolutionary Theory of Moral Injury with Insight from Turkana Warriors." *Evolution and Human Behavior* 41, no. 5 (2020): 341–53. https://doi.org/10.1016/j.evolhumbehav.2020.07.003.

Ziolkowski, Adam. "Urbs Direpta, or How the Romans Sacked Cities." In *War and Society in the Roman World.*, edited by John Rich and Graham Shipley, 2002. http://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=169089.

Zürcher, Erik Jan. "The Ottoman Conscription System, 1844–1914." *International Review of Social History* 43, no. 3 (1998): 437–49. https://doi.org/10.1017/S0020859098000248.

Appendix 1.1. Codebook for chapters 1-4

Variable: Population size
Dataset variable name: pop_res1
Description: Population estimates for each society at the date range being coded, binned according to the number of places.
Codes: (0-99=1; 100-999=2; 1000-9999=3; 10000-99999=4; 100000-999999=5; 1000000-9999999=6;10000000-99999999=7; 100000000-999999999=8)
Transformations for analyses: 1-8, standardized (mean centered at 0, sd = 1)
Chapters: 1, 2, 3

Variable: Agricultural intensity
Dataset variable name: agr_ins
Description: Ethnographic Atlas variable 28, ranging from no agriculture to agriculture with widespread irrigation systems
Original codes: 1 (no agriculture), 2 (occasional/casual), 3 (shifting/seasonal), 4 (horticulture), 5 (permanent agriculture), 6 (permanent agriculture with irrigation)
Codes for analyses: 1-6
Chapters: 1, 3

Variable: Political expansion
Dataset variable name: ter_res
Description: Whether warfare conducted by the society increased the territory or population under its political control. Roughly equivalent to the SCCS variable 909: Subjugation of territory or people and the Seshat warfare variable of Annexation. It indicates deliberate attempts to expand political control but not decentralized expansion into land e.g. for hunting, grazing, or farming that involves fighting.
Original codes: inferred/yes, inferred/no, unclear
Codes for analyses: 0/1
Chapters: 2, 3

Variable: Degree of political centralization
Dataset variable name: pol_cent
Description: How centralized is the cultural unit to which the practices coded for the most external level of war refer.
Original codes: 1. acephalous (absence of any political organization, even locally; equivalent to EA090); 2. autonomous communities (local political integration transcending kin groups, includes societies coded under EA090 autonomous local communities and peace groups); 3. loose/nominal/minimal states (a central government with some control or authority over relatively autonomous regional rulers, equivalent to

EA090 minimal states and Seshat nominal, loose polities); 4. confederated/feudal states (the central government has more control over regional rulers but not complete authority); 5. unitary states (as defined by the Seshat variable- regional governors are appointed and removed by the central authorities, taxes are imposed by, and transmitted to the center)
Codes for analyses: 1-5
Chapters: 1, 2, 3

Variable: Hierarchical governing levels
Dataset variable name: ext_hier
Description: Number of administrative/governing levels beyond the local community; roughly equivalent to Ethnographic Atlas variable 33 'Jurisdictional hierarchy beyond local community' generally used as a measure of political complexity in cross-cultural studies.
Original codes: Coded from 0 to 5 rather than the original 1 to 5 in EA033 to make code equal to the number of levels and to accommodate larger polities in the dataset. From description on D-place: 0 (=EA033 1, acephalous, no political authority beyond community, autonomous bands and villages); 1 (one level, petty chiefdoms); 2 (two levels, larger chiefdoms); 3 (three levels, states); 4 (four levels, large states); 5 (my addition, five or more levels, empires)
Codes for analyses: 0-5, standardized (mean centered at 0, sd = 1)
Chapters: 1, 2, 3

Variable: Community size
Dataset variable name: commsize_scale
Description: The average size of local communities, coded based on EA variable 031 'Mean size of local communities'
Original codes: 0 (<50), 1 (50-59), 2 (100-199), 3 (200-399), 4 (400-1000), 5 (1000-5000), 6 (5000-50000), 7 (50000+)
Codes for analyses: 0-7, standardized (mean centered at 0, sd = 1)
Chapters: 1

Variable: Political complexity
Dataset variable name: PC1
Description: Overall measure of political complexity created from community size (Chapter 1 only), population size, hierarchical levels, and centralization variables.
Original codes: NA
Codes for analyses: first component from PCA of above variables, standardized (mean centered at 0, sd = 1)
Chapters: 1, 2, 3

Variable: Presence of formal military organization
Dataset variable name: mil_org
Description: Whether there is a formal standing army or military organization, or whether warriors are mobilized through social relations such as friends or kin. Coded according to the SCCS variable 894: Form of military mobilization (originally coded in Otterbein 1970). Original codes: 0 (informal, social relations, mass mobilization), 1 (age-grades or armies with professional training)
Codes for analyses: 0/1
Chapters: 1, 2, 3

Variable: Intensive agriculture
Dataset variable name: Agriculture_Horticulture
Description: Pulotu variable 'Agriculture/horticulture' under Subsistence and Economy/Land-based means of subsistence
Original codes: absent, minor, medium, major, principal depending on importance as source of food.
Codes for analyses: 0/1 for not principal/principal
Chapters: 4

Variable: Self-sacrificial behavior in war
Dataset variable name: sac_scale
Description: Is there any evidence that fighters are commonly expected to risk or sacrifice their lives for their companions or the group as a whole?
Original codes: 1 (no indication that risking one's life or sacrifice on behalf of the group is devalued or discouraged), 2 (indication that risking one's life is valued but unclear about degree to which sacrifice on behalf of others is valued), 3 (indication that loyalty to and sacrifice for the group is valued but no explicit mention or proof of sacrificial acts/deaths), 4 (explicit description of combat deaths on behalf of others in the group and that this is socially valued).
Codes for analyses: 1, 2, 3, 4
Chapters: 1

Variable: Institutionalized trophy-taking
Dataset variable name: trophies
Description: Whether body parts are taken from enemies in an institutionalized or widespread manner, as a primary or expected outcome of war.
Original codes: yes (described in sources), no (described in sources as taboo or explicitly not practiced), inferred no (no evidence in context of otherwise detailed descriptions of combat so can be inferred absent)

Codes for analyses: 0/1
Chapters: 3

Variable: Enemies killed in external war
Dataset variable name: kill_ext
Description: Whether enemy individuals in the following age/gender categories tend to be killed during war: male or female infants/toddlers; children; younger adults; older adults
Original codes: 1-8. 1 point is added for each age/gender category, with the minimum being 0 (none) and the maximum being 8 (everyone). For instance, the Nuer would be scored a 5 (male and female infants/toddlers + male young adults + male and female older adults). Ranges are used for some societies when there is ambiguity or overlap across categories.
Codes for analyses: 1-8
Chapters: 2

Variable: Enemies killed measurement error
Dataset variable name: kill_se
Description: The difference between the mean and maximum/minimum of range of enemies killed for each society.
Original codes: NA
Codes for analyses: 0-3
Chapters: 2

Variable: Headhunting
Dataset variable name: crania (Chapter 3), headhunting (Chapter 4)
Description: Whether trophy heads/skulls were commonly taken during warfare with other societies. This is slightly different from the Pulotu definition of killing people for the purpose of obtaining their heads. The current definition is in keeping with the broader research questions of interest, which are concerned with the political and ecological correlates of institutionalized or culturally significant trophy-taking practices during war.
Original codes: present, absent
Codes for analyses: 0/1
Chapters: 3, 4

<u>Unused variables for Chapter 2</u>

Variable: Restraints

Description: Whether there any formal codes (regardless of whether they are followed) or social norms limiting violence in war
Codes: none or based on preference for captives, based on identity (age, gender, occupation, status), based on action (fleeing, being in a safe place, being wounded, surrendering, asking for mercy), based on social/cultural distance, based on scale or form of violence (e.g. no mutilation or torture)

Variable: Enemy treatment
Description: Whether persons in an age/gender category are subject to particular treatments; and whether they are targeted specifically and deliberately, or incidentally/as collateral
Codes: Age/gender category are: not harmed/ captured (enslaved)/ captured (adopted)/ tortured/ mutilated/ cannibalized/ raped/ ritually sacrificed/ killed
targeted or incidentally

Appendix 1.2. eHRAF keywords

These were modified depending on the amount of materials available for each society, with broader terms only included if there were limited descriptions of warfare.

Chapter 1: fallen brave* risk* daring danger* peril* fortitude valor* valour* hero* courage* fearless* sacrific* honour* honor* glory chivalry* morale defense defend valiant gallant* rescue* "die in battle" "died in battle" "death in battle" "die fighting" "killed in battle" martyr* duty solidarity loyal* altruis* virtu*
shirk* coward* deserted deserting deserter discipline* punish* betray* abandon* disob* fear* fright* afraid treacher*

Chapter 2: enem* kill* death die demolish* violen* massacre* slaughter* exterminat* annihilat* genocid* dispatch* tortur* destroy* suffer* cruel* victim* harm injur* atrocit* violat* brutal* feroc*
age sex old young gender girl* boy* women child children infant infants surrender* protect* defeat* convention* limit* norm norms normative unarmed innocent lenien* pity compassion* charit* quarter sympathy immun* mercy merciful spare* discriminate* indiscriminate taboo sanctity* sanctuary asylum conduct civilian* noncombatant* refuge inviolab* restrain* clemency refrain* ethic* moral*

Chapter 3: trophy trophies heads headhunt* headtaking skull* scalp* teeth bone* "body parts" mutilat* dismember* flesh limb* sever severed