Social inequality before farming?

Multidisciplinary approaches to the study of social organization in prehistoric and ethnographic hunter-gatherer-fisher societies

Edited by Luc Moreau
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with contributions from
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Luc Moreau

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I write this preface from the state of Wyoming in the US, a state where COVID-19 has not (yet) struck as hard as it has struck other parts of the world, but where we nonetheless have been under stay-at-home orders. Those orders have given me plenty of time to think about where we went wrong, which in the case of the US is a long list. Coincidentally, I also recently re-read Machiavelli’s sixteenth-century book, *The Prince*, a manual of how to ruthlessly crush opponents while administering (apparent) generosity to acquire the ‘love’ of the masses.

It was in this context that I read the papers in this volume. In doing so, I was struck by two facts. First, inequality’s origin, development and operation are difficult to understand and yet the actions that lead to inequality are easy to implement. This shouldn’t surprise us: no American baseball player mathematically calculates the arc of a fly ball, but he’s still able to position himself in the right place to catch it. You can be utterly uneducated and still know how to manipulate a system to maintain exert, and abuse power. Many world leaders today are proof.

Second, I think that the papers in this volume could be some of the most valuable published in anthropology in many years. Philosophers and social thinkers have tried to understand inequality for a century; indeed, efforts to understand it precede Machiavelli. We bemoan its existence, and yet we have felt unable to grasp it, and, unable to grasp it, unable to do something about it. We muddled through the useless ramblings of nineteenth- and early twentieth-century evolutionists, who, reflecting their colonial environment, often thought that inequality was a good thing, and, if not good, an inevitable thing. Marx tried to shake them out of that complacency, but his brilliance was largely wasted during his ‘second coming’ in the second half of the twentieth century with so much hand-wringing about how a theory intended to explain early capitalism should also apply to hunter-gatherers (because, it must… right?), and so much politically correct posturing that led to no action – and all but disappeared when the Berlin Wall (thankfully) came down and the Soviet Union collapsed. ‘Intensification’ and ‘complexity’, words that should be stricken from anthropology’s vocabulary for their uselessness (and that are thankfully rare in this volume), masked what was really going on: exploitation, oppression, slavery… inequality in all its manifestations. Finally, I think, we have reached the point, through analyses of archaeological and ethnological data, that we might actually understand inequality.

We’ve passed a Rubicon. And this really matters.

The calamity that is COVID-19 has pulled back the curtain on modern society, exposing the weaknesses of its structure, laying bare the inequality between and within countries that Machiavellian leaders exploit and exacerbate for personal gain. Doing something about inequality is the challenge that will remain after COVID-19 dissipates.

These papers help by seeking the origin of inequality in a kind of society, that of nomadic hunter-gatherers, that we once considered ‘the original affluent society’, a classless society, or ‘primitive communists’. Some argue that inequality must be there (as Marxist analysts argued in the 1980s) since it is present in our closest primate relatives, and therefore is in humanity’s genetic foundation. Some see evidence of social and/or political inequality among Palaeolithic hunters, in the evidence for secret societies and in the violence of cave art. I am not convinced by this ‘grimdark’ vision of Palaeolithic society, and see an enormous gap between difference and inequality, between a situation where one person has more than another who nonetheless has enough and one in which society gives a person permission to enslave another.

Nonetheless, these chapters remind us that hunter-gatherers are not angels, and the same self-interest that guides an Iñupiaq man to become a umialik, or that gave privilege to those men allowed to gather in the torch-lit gallery of Lascaux, guides Machiavelli’s anonymous prince. People have different skills, and for some, those skills are political. Under the right conditions, those individuals can consolidate power, convince others to go to battle, and make their personal aggrandizement seem reasonable to the people paying its price. Palaeolithic society had its Hitlers and Stalins, its Caesars and Trumps.

But it didn’t have imperialism, or empires, or palaces, or wealth hidden in tax havens. So other chapters here look for the conditions under which those ‘selfish’ individuals can gain power. High population density (pressure), localized and hence controllable resources,
the ability to build a coalition, which requires a sufficient concentration of population and social institutions that are conducive to creating coalitions, lack of trust in institutions, including sharing networks, to provide in times of stress – these are the conditions that permit those with political skills to pursue self-interest through the manipulation of others.

These conditions are as relevant to understanding the world of today as they are to an understanding of the Palaeolithic world. Today, however, conditions can be manipulated, for example ‘localized’ in off-shore bank accounts. Population pressure is high and will become worse as the world approaches the projected population of 11 billion by 2100. And competition is worsened by a capitalist economy that encourages ever-increasing amounts of consumption and conversion of needed resources, such as food, into higher profit margin items such as crisps and alcoholic beverages. Information is a resource, and technology makes information more available but less trustworthy. Unbelievably expensive displays of potential force – multi-billion-dollar aircraft carriers, atomic weapons, a Space Force – signal a lack of trust in non-violent institutions to resolve the inevitable disputes that arise when people, or countries, pursue their self-interests with little regard for others. Building trust in institutions – in the UN, in voting, in the media, in government itself! – is an integral part of stopping and even reversing the arms race before it drives the world to the poor house.

Inequality is an old story, and one that we understand much better due to the efforts of anthropologists and archaeologists. It hasn’t been easy to arrive at this point. But the really hard work – implementing our knowledge – still lies ahead for us. This volume, and our prehistoric hunting and gathering ancestors tell us what needs to be done. And it is the most important work anyone could be doing in the world today.

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Chapter 18

Social complexity, inequality and war before farming: congruence of comparative forager and archaeological data

Douglas P. Fry, Charles A. Keith & Patrik Söderberg

This chapter examines the origins of warfare as a correlate with social inequality and other features of social complexity. It addresses two interrelated questions. How old is war? And what are the drivers of the origins of war? The chapter draws upon both comparative forager and archaeological data to explore these questions.

Allen (2014; see also Gat 2015) frames the ‘how old is war?’ question in terms of oppositional long chronology and short chronology perspectives, where the former goes back hundreds of thousands, if not millions, of years and the latter is conceptualized as within the Holocene. Long chronologists tend to make three arguments for war being very ancient. The first is to infer a behavioural homology for the intergroup raiding of chimpanzees and humans that stretches back to a common ancestor that lived some five million years ago, a position argued by Wrangham (1999; Wrangham & Peterson 1996; Wrangham & Glowacki 2012) and endorsed by others such as Jones and Allen (2014). A second long chronology argument points to archaeologically recent warfare and ethnographically documented warring to assert that humans in a state of nature are inclined to make war (see Bowles 2009; Jones & Allen 2014; Pinker 2011; Wrangham & Glowacki 2012). The third long chronology argument holds that because traces of war in the very deep past are hard to find, the absence of evidence does not mean the evidence of absence (Alexander 1979; for discussion see Ferguson 1997, 2013a, b). This paper considers why neither comparative forager nor archaeological data support the long chronology view.

Until a couple of millennia before the agricultural revolution began about 10,000 years ago, humankind practiced a mobile forager lifeway (Bicchieri 1972; Henry 1985; Fry 2006, 2013; Lee & Daly 1999; Marlowe 2010). There is widespread agreement that mobile forager band social organization is largely egalitarian (e.g., Bicchieri 1972; Kelly 1995, 2013a; Lee & Daly 1999; Reyna 1994). Two paths toward social inequality entail the advent of farming and the development of complexity among foragers. Appearing within the last 12,000 years in most cases, complex foragers began to settle and undergo transitions away from a nomadic foraging way of life (Fitzhugh 2003a, b; Knauft 1991; Maschner 1997; Maschner & Reedy-Maschner 1998; Price & Brown 1985; Swanton 1946). One feature of complexification is the loss of egalitarianism. On the basis of data from a large sample of foragers, Binford (2001) concludes that foragers remain mobile until population growth initiates settling down, usually in resource-rich aquatic environments, and the more intensive use of resources.

Fry (2006) found that all of the complex, non-egalitarian societies in an ethnographic sample of foragers engaged in war, whereas a majority of the mobile foragers in the sample did not. This finding suggests that changes associated with the development of social complexity – such as settling down, development of social inequalities, population increase, rise of ambitious leaders, accumulation of stored food and other items to plunder – greatly increase the likelihood of warfare over that encountered in mobile forager social organization.

Taking a long chronology view, Bowles (2009) and Pinker (2011) have asserted that mobile foragers from the Pleistocene were subject to high rates of war mortality, proposing that war deaths averaged about 14 per cent. Projecting warfare into the deep past on the basis of self-selecting ethnographic cases and archaeological examples represents a questionable methodology for a variety of reasons. First, there is the problem of sampling bias. Second, ethnohistory and ethnography document time-and-again that colonialism and then national policies impact foragers in various parts of the globe, displacing them from their
land, constricting their habitats, reducing the game upon which they depend, fomenting conflict within and among neighbouring societies, making available alcohol and guns, practicing genocide against them, and so forth (Bodley 1999; Ferguson & Whitehead 1992; Fry 2006, 2013; Fry & Söderberg 2014; Guenther 2014; Headland 1989; Hill & Hurtado 1996; Hill, Hurtado & Walker 2007; Lee 2014). Third, conflicts in mobile forager social organization tend to be interpersonal stemming from sexual jealousy, insults, and revenge for a misdeed rather than intergroup grievances (Griffin 2000; Headland 1989; Hill et al. 2007; Fry 2006; Fry & Söderberg 2013a, b; Service 1966).

Fry & Söderberg (2013a, b) found low levels of group-to-group lethal aggression in mobile foragers and that a majority of lethal events involved only one person killing only one other person. At the minimum, 36 per cent of all lethal events took place within local bands between husband and wife, other relatives, neighbours, and had nothing to do with intergroup hostilities. Five cases of obvious war involved the mobile Hadza foragers of East Africa attacking and being attacked by cattle-herding neighbours. These group-to-group lethal exchanges involving the Hadza show that, although unusual, nomadic foragers are capable of inter-societal group-to-group fighting (Guenther 2014). However, this violent conflict scenario of foragers versus herdsmen cannot logically be projected back into the deep evolutionary past since cattle-herding is a relatively recent development.

The pattern of disputes being individual rather than corporate in nomadic forager societies raises the question as to whether some cases referred to as ‘war’ in the mobile forager literature are in reality interpersonal disputes. There are examples that show the ‘war’ label has been misapplied to individual conflicts in the mobile forager context (Fry 2006; Fry & Söderberg 2014). For example, the term ‘a declaration of war’ was used to describe how an Alacaluf man, aided by his brother, placed objects around his adversary’s hut as a warning that he was going to try to kill him for eloping with his wife: ‘The husband tried to get her back by force, but was beaten off by his competitor. ...The two brothers subsequently ambushed the rival and killed him with a spear’ (Bird 1946: 71).

To address questions about the antiquity and origins of war, this chapter will draw upon archaeological and ethnographic data across the foraging spectrum, from egalitarian to ranked societies. We will suggest that a short chronology view not only has the weight of the archaeological and comparative forager data behind it, but also springs from a corpus of knowledge on the relationship of war and sociopolitical complexity (see for example Ferguson 1990, 1997, 2013a, b; Fitzhugh 2003a, 2003b; Flannery & Marcus 2012; Fry 2006; Johnson & Earle 1987; Kelly 2000; Malinowski 1941; Reyna 1994). The chapter also will offer some philosophy of science reflections as to why the long chronology view of war continues to be asserted despite a paucity of theory and evidence in its favour.

Archaeology provides examples of how complexity developed over time and ethnography shows the variations among societies in the forager spectrum. Consequently, in agreement with Fitzhugh (2003a), complexity is better conceptualized as scalar or as a continuum of increasing features rather than as a threshold that is crossed. Complexity also is multifactorial. In the quest to understand the origins of war, isolating causal factors becomes critical. What are the demographic, subsistence-ecological, and sociopolitical conditions that drive the origin of war? Fitzhugh (2003a: 23) not only provides a listing of elements thought to be important in the complexification process but also presents a model that orders key features into a chronological sequence.

These include 1) colonization and expansion, 2) reduced foraging ranges and territoriality, 3) technological changes to overcome seasonal variation, increased population density and village aggregation, 4) increased structuring of residential populations into corporate groups, localized competition, emergence of inequality and ranking, 5) expansion of political alliances, trade, and warfare, and the emergence of a system of symbolic value capable of discriminating individuals on the basis of their access to resources, labour, and networks of power.

Population growth has been noted to precede the origin of war in places such as the Northwest Coast of North America (Maschner 1997), Kodiak Island (Fitzhugh 2003a, b), and eastern North America (Dye 2009, 2013). Darwent & Darwent (2014) point out that the warring Inuit populations of Northwest Alaska had a much higher population density than the non-warring Inuit groups to the east in Canada and Greenland (Darwent & Darwent 2014). Similarly, Roscoe (2014) notes an association between raiding and population density for New Guinea. Robert Kelly (2013a, b) argues that since net above ground productivity (NAGP) varies across ecosystems, population pressure defined as productivity divided by population density is a better measure than population density per se, and he reports a correlation of population pressure with conflict for a sample of foragers.

Another factor that may contribute to the origin of war is degree of mobility. Binford (2001) concludes on the basis of his comparative study that mobile foragers move in response to conflict but once groups become...
packed with no place to move, they compete. Kelly (2013a: 205) reaches a similar conclusion that foragers settle down 'because population density is so high relative to habitable places on the landscape that residential movement is not possible without displacing another group. War appears when mobility is not an option.' And Haas (1999: 13) concurs when he says, 'warfare tends to go hand in hand with increasing political complexity and rising levels of population density.'

Turning to sociopolitical variables, Raymond Kelly (2000) suggests that another contributor to warfare, or at least feuding, is when a society develops social segments. Dye (2013: 146) concurs and comments on the pattern in eastern North America: ‘As population increases, reliable storage facilities and surplus come into being, bringing about the emergence of segmentary organization and the increased likelihood of feuding.’ Reyna (1994) points out that once hierarchical chiefdoms arise, leaders develop the capacity to order others to fight on their behalf. And Fitzhugh (2003a) proposes that political competition among leaders, not population pressure per se, drives warfare.

In sum, the anthropological literature presents various hypothesized contributors to the origins of war, some of which may synergistically interact with one another, such as population growth, intensification of resource use, sedentism, development of social segments, food storage, leader prerogative and rivalries, social inequality, and quest for wealth accumulation, and so on. Ferguson (2013b: 192) lists preconditions of war:

Geographic concentration of critical resources, sedentism, high population density, food storage and/or livestock, social divisions creating separate collective identities, social and political hierarchy or ranking, monopolizable long-distance trade in valuable prestige goods, and major ecological reversals affecting food production.

On the other hand, Allen, Bettinger, Codding, Jones & Schwitalla (2016: 12, 120) question whether ‘violence should be more common among groups with greater sociopolitical complexity, with leaders able to enforce participation through sanctioned punishment.’ Based on an analysis of a large database from California on nearly 17,000 prehistoric burials, Allen et al. (2016: 12, 122) conclude that ‘violence has little or nothing to do with sociopolitical complexity.’ Whereas the complexity hypothesis stems from the literature about the origins of warfare, Allen et al. (2016: 12, 121) acknowledge that they have not distinguished between ‘interpersonal vs. coalitional lethal aggression, or intra- vs. intergroup violence.’

Research questions

The foregoing introduction leads to several topics that will be investigated here. First, do the features regularly noted to occur during complexification, whether called precursors, drivers, or causes of war, correlate with one another? Should the focus be on population density or population pressure? Does the reliance on aquatic resources correlate with the development of complexity, as Binford (2001) proposes?

Second, does warfare correlate with increased complexity? Anthropologists have long seen war and social complexity going hand-in-hand (e.g., see Hobhouse, Wheeler & Ginsberg 1915; Malinowski 1941; Reyna 1994; Kelly 2000), although a recent archaeological study challenges this association (Allen et al. 2016). Do other forms of lethal aggression (e.g., homicide) correlate with increased complexity?

Third, how does a combined consideration of both comparative forager and archaeological data enhance our understanding of war, violence, and complexity? What do the data suggest about the soundness of adopting long versus short chronologies for the origins of war? How can we move beyond such dichotomized views?

This chapter will present a quantitative analysis of lethal aggression across the forager complexity spectrum using a systematically derived ethnographic sample. In the discussion section, data from archaeology on population, war, and complexity will be integrated with comparative forager findings. The chapter concludes with some broader reflections on the scientific study of the origins of war.

Methods

Sample

A widely used ethnographic sample of 186 societies compiled by Murdock & White (1969), called the Standard Cross-Cultural Sample (SCCS), takes into consideration the lack of independence among ethno- graphic cases within the same culture area (Galton’s problem). The resulting sample represents worldwide cultural provinces including forager societies from around the world.1 Separately, Murdock (1967, 1981) compiled an Ethnographic Atlas, which contains codes for key cultural features for numerous societies.

Murdock’s cultural codes related to subsistence economy (column 7) can be used to separate the non-foragers from the foragers in the SCCS. Foragers are operationally defined in this study as non-equestrian societies having no more than five per cent subsistence dependence on agriculture and animal husbandry (Fry 2006; Fry & Söderberg 2013a, b). Thirty societies
Table 18.1. The forager societies represented in the Standard Cross-Cultural Sample, excluding equestrian hunters.

<table>
<thead>
<tr>
<th>Society</th>
<th>Continent</th>
<th>Population density</th>
<th>Class distinctions</th>
<th>Settlement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobile egalitarian sub-sample</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kung</td>
<td>Africa</td>
<td>6.60</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Hadza</td>
<td>Africa</td>
<td>24.00</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Mbuti</td>
<td>Africa</td>
<td>44.00</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Semang</td>
<td>Asia</td>
<td>17.57</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Andamanese</td>
<td>Asia</td>
<td>33.38</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Vedda</td>
<td>Asia</td>
<td>18.50</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Tiwi</td>
<td>Australia</td>
<td>37.50</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Aranda</td>
<td>Australia</td>
<td>2.66</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Copper Eskimo</td>
<td>North America</td>
<td>.43</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Northern Salteaux</td>
<td>North America</td>
<td>1.20</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Slave</td>
<td>North America</td>
<td>1.00</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Paiute (Harner Valley)</td>
<td>North America</td>
<td>1.24</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Ingalik</td>
<td>North America</td>
<td>2.71</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Naskapi</td>
<td>North America</td>
<td>.41</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Micmac</td>
<td>North America</td>
<td>4.32</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Kaska</td>
<td>North America</td>
<td>.90</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Bodocuda</td>
<td>South America</td>
<td>9.80</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Aweikoma</td>
<td>South America</td>
<td>4.10</td>
<td>No</td>
<td>B</td>
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<tr>
<td>Yahgan</td>
<td>South America</td>
<td>28.42</td>
<td>No</td>
<td>B</td>
</tr>
<tr>
<td>Gilyak</td>
<td>Asia</td>
<td>19.31</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>Yukaghir</td>
<td>Asia</td>
<td>.61</td>
<td>No</td>
<td>S</td>
</tr>
</tbody>
</table>

| **Settled non-egalitarian sub-sample** |           |                    |                    |            |
| Aleut                   | North America | 54.65           | No                 | V          |
| Eyak                    | North America | 5.86            | Yes, wealth-based  | V          |
| Haida                   | North America | 97.09           | Yes, hereditary    | V          |
| Bella Coola             | North America | 13.00           | Yes, hereditary    | V          |
| Twana                   | North America | 32.40           | Yes, wealth-based  | T          |
| Yurok                   | North America | 131.00          | Yes, wealth-based  | V          |
| Eastern Pomo            | North America | 127.00          | Yes, wealth-based  | T          |
| Lake Yokuts             | North America | 38.10           | Yes, wealth-based  | S          |
| Klamath                 | North America | 13.36           | Yes, wealth-based  | S          |

Note: The society names/spellings are retained from the SCCS. Population densities are from Binford (2001). Class presence/absence ratings are from Murdock (1967, column 67) and Settlement ratings are from Murdock (1967, column 30, see also Murdock 1981: 99), where B = fully nomadic band, S = semi-nomadic, T = semi-sedentary settlements, and V = fairly permanent villages and towns.
authority ethnographic material. Data on the specifics of each event were recorded, e.g., sex of killer(s), sex of victim(s), number of perpetrators, number of fatalities, reasons for the lethal encounter, relationship between perpetrator(s) and victims(s), and so forth. Fry and Söderberg (2013a, b) did not classify on an *a priori* basis lethal events as manslaughter, homicide, feud, or war, and the current study followed the same methodological procedures related to the nine additional forager societies in the SCCS.

After an initial collection of events involving lethal aggression, several types of cases were excluded from the analysis. Excluded cases consisted of duplicate mentions of the same event, cases mentioned in principal authority sources that did not actually involve any members of the sample society, and cases that involved only supernatural means of killing (e.g., sorcery). Aside from such exceptions, all lethal events reported in the literature were included in the analysis.

Additionally, data on a variety of demographic, subsistence, and social features were added to the database for the 30 forager societies listed in Table 18.1 from published codes and values by Binford (2001) and Murdock (1967). From Binford (2001), data on population density (DENSITY), population pressure (NAGP/DENSITY) percentage of aquatic resources in the diet (FISHING), ranking (SYSTATE3), political development (POLYSCAL), class structure (CLASS), leadership (PEROGAT), maximal local group size (GROUP2), size of regional aggregations of local groups (GROUP3), and number of residential moves per year (NOMOV) were included (Binford’s variable names appear in all caps in parentheses). From Murdock (1967; see also 1981) the database was expanded to include data on class stratification (column 67), settlement pattern (column 30), and slavery (column 71). SPSS, version 25, was used to investigate relationships among demographic, subsistence, and socio-political variables in relation to types of lethal aggression.

**Results**

*Sub-groups of foragers compared*

Means and standard deviations for the entire sample (n = 30) and for sub-samples defined by a dual consideration of settlement pattern (mobile versus sedentary) and class structure (egalitarian versus hierarchical) are presented in Table 18.2. For the whole sample of foragers, both the number of lethal aggression events per society that involved one person killing one other person, that is, homicide or manslaughter, and those that involved more-than-one perpetrator killing more-than-one other victim, that is, possible acts of war, averaged to about three such events per society. The situation in which more-than-one killer dispatched a single victim occurred less often. The scenario wherein one person killed more-than-one person was comparatively rare (Table 18.2).

Following Fry (2006), when the sample is subdivided based on settlement and class structure to operationally distinguish *mobile egalitarian* foragers from *settled non-egalitarian* foragers, some significant differences emerge. Mobile egalitarian foragers change residence in the course of a year significantly more often than complex foragers (Mann-Whitney U test, p < .001), average about one-fourth the population density as complex foragers (Mann-Whitney U test, p = .003), and face less population pressure than their complex forager counterparts (Mann Whitney U test, p < .001), as reflected in a substantially higher value for this variable, meaning that more food is available per person than in complex forager societies. Settled, non-egalitarian complex foragers also where significantly more reliant upon fishing than their mobile egalitarian counterparts (Mann-Whitney U test, p = .003). No significant difference was found for either band/village group size or maximum group aggregation size for the two sub-samples.

In terms of types of lethal aggression, the only significant difference between mobile and complex foragers involved events wherein more-than-one perpetrator took the life of more-than-one victim, a category of group aggression that could constitute war. This type of group-on-group lethal violence was significantly higher among the complex forager sub-group (Mann-Whitney U test, p = .012). Although not significant, it is worth noting the average for one-on-one lethal aggression for settled non-egalitarian foragers was half the average for mobile egalitarian foragers, or in other words, a non-significant trend in the opposite direction as the significant difference for group-on-group lethal aggression.

*A complexity complex*

Table 18.3 shows correlations for the entire forager sample for various demographic and social features. Population density is positively correlated with sedentism, hierarchical class structure, and social ranking and negatively correlated with the number of residential moves per year, maximal size of temporary aggregations of local groups, and population pressure (where the higher the value for the population pressure variable conversely reflects lower population pressure). Sedentary residence correlated positively with a variety of attributes that reflect hierarchical social structure such as social class, social ranking, prerogatives of leaders, authoritarianness of leadership, and slavery (Table 18.3). The percentage of food that fishing
Table 18.2. Means and standard deviations for the whole sample and sub-samples defined by settlement and class.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Whole sample (n = 30)</th>
<th>Mobile egalitarian (n = 21)</th>
<th>Settled non-egalitarian (n = 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Population density</td>
<td>25.7</td>
<td>35.1</td>
<td>12.3</td>
</tr>
<tr>
<td>Population pressure</td>
<td>145.1</td>
<td>202.8</td>
<td>196.4</td>
</tr>
<tr>
<td>Settlement</td>
<td>2.1</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Settlement (dichotomized)</td>
<td>1.2</td>
<td>.4</td>
<td>1.0</td>
</tr>
<tr>
<td>Group size (band/village)</td>
<td>76.6</td>
<td>107.0</td>
<td>55.9</td>
</tr>
<tr>
<td>Number of moves/year</td>
<td>9.2</td>
<td>8.5</td>
<td>12.3</td>
</tr>
<tr>
<td>Group size (aggregation)</td>
<td>110.4</td>
<td>100.1</td>
<td>128.5</td>
</tr>
<tr>
<td>Social class (B)</td>
<td>1.5</td>
<td>.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Social class (M)</td>
<td>1.3</td>
<td>.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Leadership</td>
<td>5.1</td>
<td>1.1</td>
<td>4.6</td>
</tr>
<tr>
<td>Political development</td>
<td>2.1</td>
<td>1.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Slavery</td>
<td>1.4</td>
<td>.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Reliance on fishing</td>
<td>38.8</td>
<td>31.0</td>
<td>27.4</td>
</tr>
<tr>
<td>Lethal aggression, 1 to 1</td>
<td>2.9</td>
<td>5.3</td>
<td>3.5</td>
</tr>
<tr>
<td>Lethal aggression, &gt;1 to 1</td>
<td>1.7</td>
<td>3.9</td>
<td>1.5</td>
</tr>
<tr>
<td>Lethal aggression, &gt;1 to &gt;1</td>
<td>3.3</td>
<td>6.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Lethal aggression, 1 to &gt;1</td>
<td>.1</td>
<td>.3</td>
<td>.05</td>
</tr>
<tr>
<td>Lethal aggression, total</td>
<td>8.6</td>
<td>14.1</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Sources: Data are derived from Binford (2001) and Murdock (1967). Description of the variables: 1. Population Density is in persons per 100 sq. km (Binford 2001, variable DENSITY). Population Pressure is calculated by dividing Net Above Ground Productivity by Population Density; data for both variables are from Binford (2001, variables NAGP/DENSITY). Note that the higher the value for this Population Pressure variable means that there is more food per capita, and hence relatively higher values conversely mean that there is lower population pressure. Settlement has four values, 1 to 4, on an ordinal scale of increasing sedentism, where 1 = nomadic bands, 2 = seminomadic with mobility for at the minimum of at least half of the year, 3 = transhumance with the switching between either fixed settlements or between a fixed settlement and seasonal camps, and 4 = permanent towns and villages (Murdock 1967: settlement codes, column 30). Settlement (dichotomized) converts Settlement codes 1 and 2 and separately codes 3 and 4 into two new values (mobile versus settled). Group size is the maximum size of the local group, whether a band or a settled village/town (Binford 2001, variable GROUP2; missing cases reduced the n to 27 for this variable). Number of Moves/Year is the number of times that a local group moves in a year’s time (Binford 2001, variable NOMOV). Group Size (aggregation) is the maximum size of temporary aggregations of smaller units (Binford 2001, variable GROUP3). Social Class (B) has three values, 1 to 3, on an ordinal scale of increasing hierarchy, where 1 = absence of any significant class distinctions, 2 = wealth distinctions only, and 3 = dual stratification into inherited nobles and ordinary people (Binford 2001: variable CLASS). Social Class (M) has three values, 1 to 3, on an ordinal scale of increasing hierarchy, where 1 = ‘absence of significant class distinctions among freemen…ignoring variations in individual repute achieved through skill, valor, piety, or wisdom,’ 2 = ‘wealth distinctions, based on the possession or distribution of property, present and socially important but not crystallized into distinct and hereditary social classes,’ and 3 = ‘dual stratification into a hereditary aristocracy and a lower class of ordinary commons or freemen, where traditionally ascribed noble status is at least as decisive as control over scarce resources,’ (Murdock 1967: class stratification codes, column 67; see Murdock 1981: 101–2). Ranking is an ordinal scale of social hierarchy with four values, 4 to 7, where 4 = generic (mobile) foragers, 5 = generic (mobile) foragers with instituted leadership, 6 = wealth-differentiated foragers, and 7 = internally ranked foragers, and is based on Binford’s (2001) composite social system variable called SYSTATE3 (n = 28 for Ranking since three cases with a value of 3 were removed for analysis). Leadership has four relevant values, 1 to 4, on an ordinal scale of increasing authoritative leadership, where 1 = leaders have no special prerogatives, 2 = leaders are not free of subsistence tasks but have assistants, 3 = leaders are not free of subsistence tasks, have minimal specialized emblems, but may have messengers and speakers, and 4 = leaders do have relief from subsistence activities, have various types of assistants, and leader’s wives have status also (Binford 2001: 338, variable PEROGAT). Political Development has four values, 1 to 4, on an ordinal scale on the importance of leaders, where 1 = autonomous local groups have only advisory, informal leadership, 2 = autonomous local groups have performance-based leadership, 3 = autonomous local groups have advisors convened by a leader who has corporate duties, and 4 = local groups are subordinate to overarching leadership (Binford 2001: 252, 338, variable POLYSCAL). Slavery has three values, 1 to 3, on an ordinal scale of increasing degree of socially sanctioned servitude, where 1 = absence of slavery, 2 = incipient slavery, and 3 = hereditary slavery (Murdock 1967: slavery codes, column 71). Reliance on Fishing is the percentage of reliance on aquatic resources in the diet (Binford 2001: variable FISHING). Lethal Aggression 1 to 1 involves one person killing one person; Lethal Aggression >1 to 1 involves more than one person killing one person; Lethal Aggression >1 to >1 involves more than one person killing more than one person; and Lethal Aggression 1 to >1 involves one person killing more than one person (Fry & Söderberg 2013a, b). Lethal Aggression, Total is a summation of all lethal aggression instances.
contributed to the diet also correlated positively with settled residence, local group size, social class, social ranking, leadership, and slavery.

Social organization and types of lethal aggression

Table 18.4 presents correlation coefficients for the four types of lethal aggression and a variety of demographic and social variables. The one-on-one type of lethal violence (homicide and manslaughter) does not correlate with any of the variables. Likewise, there are no significant correlations for the demographic and social variables with either more-than-one killer assaulting a single victim or for a single killer attacking more-than-one victim. However, the type of group-to-group lethal aggression wherein more-than-one perpetrator killed more-than-one victim shows multiple significant correlations. This group-on-group type of lethality correlated positively with population density, sedentism, size of local groups, two measures of social class, and slavery and correlated negatively with the maximum size of aggregations of local groups.

Discussion

Political complexity and war

The discussion will focus on three main areas that consider the comparative forager findings and loop-in what is known from archaeology. One clear conclusion from the comparative forager findings reported here is that there is a complexity complex wherein a host of variables (e.g., population density, population pressure, settlement, social class, slavery) correlate with each other. Given the relatively small sample size and the consequent reduction in statistical power, the large number of correlations that reached significance is noteworthy.

The finding that reliance on aquatic resources also is part of the complexity complex corresponds with ethnographic and archaeological knowledge on complex foragers from such cases as Northwest Alaska, Kodiak Island, the Northwest Coast of North America, New Guinea, and the Calusa of Florida (Binford 2001; Roscoe 2006). The reliance on aquatic resources is consistent with Binford’s (2001) interpretation that fishing and related resources make the development of complexity possible. It is interesting that two early sites showing evidence of violent conflict, Nataruk on the ancient shores of Lake Turkana, dated to about 10,000 yr, and Jebel Sahaba near the banks of then marshy inlets on the Nile River, dated at 11,600 yr, may have exhibited semi-settled, larger populations due to the abundant aquatic resources than were typical at these times (Haas & Piscitelli 2013; Lahr et al. 2016a). In the Nataruk case, the presence of pottery suggests food storage. According to Robert Foley (quoted in Ghose 2016), ‘hunter-gatherers who tend to stay in one place for longer periods often live near lakes, where food is plentiful and unlikely to be depleted by

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Table 18.3. Correlations among demographic and social features.

<table>
<thead>
<tr>
<th>Variables</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Population density</td>
<td>-.623**</td>
<td>.185</td>
<td>.412**</td>
<td>.029</td>
<td>-.414**</td>
<td>.338**</td>
<td>.411**</td>
<td>.364*</td>
<td>.324*</td>
<td>.119</td>
<td>.209</td>
<td>.221</td>
<td>.047</td>
</tr>
<tr>
<td>2. Population pressure</td>
<td>-.296*</td>
<td>-.435**</td>
<td>-.063</td>
<td>-.480**</td>
<td>.148</td>
<td>-.525**</td>
<td>.462**</td>
<td>-.305*</td>
<td>-.068</td>
<td>-.182</td>
<td>-.339*</td>
<td>-.235</td>
<td></td>
</tr>
<tr>
<td>3. Settlement</td>
<td>.731***</td>
<td>.270</td>
<td>-.526***</td>
<td>-.269</td>
<td>.721***</td>
<td>.631***</td>
<td>.482**</td>
<td>.641***</td>
<td>.451*</td>
<td>.645***</td>
<td>.551***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Settlement (dichotomized)</td>
<td>.263</td>
<td>-.536**</td>
<td>-.304</td>
<td>.749**</td>
<td>.736**</td>
<td>.650**</td>
<td>.571***</td>
<td>.410*</td>
<td>.751***</td>
<td>.468**</td>
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<td></td>
</tr>
<tr>
<td>5. Group size (band/village)</td>
<td>-.145</td>
<td>-.057</td>
<td>.225</td>
<td>.263</td>
<td>.362*</td>
<td>.297</td>
<td>.389*</td>
<td>.227</td>
<td>.299*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Number of moves/year</td>
<td>.392**</td>
<td>-.646**</td>
<td>-.545**</td>
<td>-.504**</td>
<td>-.314*</td>
<td>-.342*</td>
<td>-.421*</td>
<td>-.340*</td>
<td>-.152</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7. Group size (aggregation)</td>
<td>-.299</td>
<td>-.196</td>
<td>-.288</td>
<td>-.138</td>
<td>-.201</td>
<td>-.340*</td>
<td>-.152</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Social class (B)</td>
<td>.774**</td>
<td>.877**</td>
<td>.579**</td>
<td>.612**</td>
<td>.695**</td>
<td>.540**</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>9. Social class (M)</td>
<td>.668**</td>
<td>.467**</td>
<td>.383**</td>
<td>.663**</td>
<td>.372</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Ranking</td>
<td>.738**</td>
<td>.704**</td>
<td>.669**</td>
<td>.523**</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>11. Leadership</td>
<td>.647**</td>
<td>.347**</td>
<td>.326</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Political development</td>
<td>.363*</td>
<td>.370</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Slavery</td>
<td>.538**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** = Correlation is significant at the 0.001 level (2-tailed).
* = Correlation is significant at the 0.01 level (2-tailed).
= Correlation is significant at the 0.05 level (2-tailed).

Note: See Table 18.2 for a description of the variables and values. All correlations are based on an n = 30, except for those involving the variables Ranking and Group Size (n = 27). Since most correlations involve one or more ordinal variables, the correlation statistics reported are Kendall’s Tau.
Table 18.4. Correlations of demographic, settlement, social variables with types of lethal aggression.

<table>
<thead>
<tr>
<th>Types of lethal aggression</th>
<th>1 to 1</th>
<th>&gt;1 to 1</th>
<th>&gt;1 to &gt;1</th>
<th>&gt;1 to &gt;1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population density</td>
<td>.004</td>
<td>.207</td>
<td>.528**</td>
<td>-.079</td>
</tr>
<tr>
<td>Population pressure</td>
<td>-.023</td>
<td>-.138</td>
<td>-.224</td>
<td>-.127</td>
</tr>
<tr>
<td>Settlement</td>
<td>-.119</td>
<td>-.010</td>
<td>.195</td>
<td>.199</td>
</tr>
<tr>
<td>Settlement (dichotomized)</td>
<td>-.230</td>
<td>-.023</td>
<td>.441**</td>
<td>.079</td>
</tr>
<tr>
<td>Group size (band/village)</td>
<td>.022</td>
<td>-.042</td>
<td>.726***</td>
<td>-.111</td>
</tr>
<tr>
<td>Number of moves/year</td>
<td>.016</td>
<td>-.060</td>
<td>-.251</td>
<td>-.102</td>
</tr>
<tr>
<td>Group size (aggregation)</td>
<td>-.187</td>
<td>-.202</td>
<td>-.395**</td>
<td>-.027</td>
</tr>
<tr>
<td>Social class (B)</td>
<td>-.205</td>
<td>.118</td>
<td>.374*</td>
<td>.153</td>
</tr>
<tr>
<td>Social class (M)</td>
<td>-.034</td>
<td>.234</td>
<td>.420*</td>
<td>.259</td>
</tr>
<tr>
<td>Ranking</td>
<td>-.239</td>
<td>.078</td>
<td>.291</td>
<td>.066</td>
</tr>
<tr>
<td>Leadership</td>
<td>-.176</td>
<td>-.066</td>
<td>.176</td>
<td>.026</td>
</tr>
<tr>
<td>Political development</td>
<td>-.210</td>
<td>-.042</td>
<td>.111</td>
<td>-.019</td>
</tr>
<tr>
<td>Slavery</td>
<td>-.145</td>
<td>-.025</td>
<td>.403*</td>
<td>.225</td>
</tr>
<tr>
<td>Reliance on fishing</td>
<td>.041</td>
<td>.065</td>
<td>.332</td>
<td>.104</td>
</tr>
</tbody>
</table>

*** = Correlation is significant at the 0.001 level (2-tailed).
** = Correlation is significant at the 0.01 level (2-tailed).
* = Correlation is significant at the 0.05 level (2-tailed).

Note: See Table 18.2 for a description of the variables and values. Kendall’s Tau correlations are reported when ordinal variables are involved; Pearson correlations (*) are reported for interval variables.

Turning to the relationship between types of lethal aggression and the complexity features, only lethal aggression committed by more-than-one person toward more-than-one victim positively correlates with complexity variables (specifically, population density, settlement, local group size, social class, and slavery). Whereas not all cases of group-on-group lethal violence could be considered war (for example if the lethal event took place within the same band/village), many instances did take place between members of different communities or societies, and could be considered war, defined here as ‘relatively impersonal lethal aggression between communities’ (Fry 2006: 91).

Interestingly, none of the other three types of lethal aggression correlate with social complexity variables. This suggests that complexification does not necessarily go along with an increase in one-on-one killings (e.g., homicide or manslaughter). As a caution, it is important to keep in mind that the sample size is relatively small (n = 30). It will be interesting to see if this finding holds up in future studies. It might be that the presence of war can contribute to a lower rate of intra-societal killings as socialization and social pressures are exerted against such deeds in the light of external threats (e.g., see Roscoe 2014; Wallace & Hoebel 1952). Regarding events wherein one person kills more-than-one victim, the relative rarity of such instances may reflect the risks of attacking more than one adversary at the same time. This risk minimization interpretation is consistent with the observation that at least in some cases, the multiple victims were relatively harmless children killed by an adult (Fry & Szala 2013; Wrangham 1999).

The current finding that socio-political complexity correlates significantly with lethal incidences of more-than-one killer engaging more-than-one victim contradicts the conclusion reached by Allen et al. (2016) that there is no relationship between socio-political complexity and lethal aggression, based on their study of skeletal trauma in burials representing 19 prehistoric Californian societies in the late Holocene. There are at least two possible reasons why Allen et al. (2016) did not find a relationship between complexity and lethal aggression. First, their sample is highly homogeneous regarding complexity, which minimized the chance of statistically demonstrating a true association between variables. These Californian societies tended to show some but not maximal features of sociopolitical complexity, having for instance class distinctions based on wealth. For one measure of complexity involving leadership, 16 out of 19 societies had the same value; for their other complexity variable dealing with political organization, 15 out of 19 cases had the identical value. Hence, these two complexity variables are highly homogeneous and, coupled with a relatively small sample, a distribution of this nature poses an obstacle to discovering an existing relationship between complexity and violence. By contrast, the current worldwide sample of foragers addresses Galton’s problem related...
to oversampling from a cultural area and reflects greater cross cultural variation in forager socio-political complexity variables than does the regionally homogeneous sample from central California.

Another possible non-mutually exclusive reason that Allen et al. (2016) find no association between complexity and lethal violence, viewed in light of the finding reported here on one-to-one killings not correlating with complexity, would be if the Californian prehistoric cases of lethal trauma proportionately reflect one-on-one killings relative to cases with more-than-one killers and victims. In other words, if one-to-one killings were heavily represented in their burial cases relative to group-on-group violence, we would not necessary expect to find an association of lethal violence with complexity. As Allen et al. (2016) acknowledge, they do not attempt to distinguish interpersonal from intergroup violence so the types of lethal violence under consideration remains uncertain.

In contrast to the dismissal of complexity by Allen et al. (2016), the findings of the current study correspond with theoretical predictions and previous empirical observations that war and socio-political complexity are in fact associated (e.g., Ferguson 2013a, b; Fitzhugh 2003a, b; Fry 2006; Hobhouse et al. 1915; Johnson & Earle 1987; Malinowski 1941; Reyna 1994) and conversely that war and mobile, egalitarian band social organization tend not to go together (e.g., Darwent & Darwent 2014; Fry & Söderberg 2013a, b; Guenther 2014; R.C. Kelly 2000; R.L. Kelly 1995, 2013a; Lee 2014; Lee & Daly 1999; Service 1966). In sum, both comparative ethnography and archaeology support a congruent overall picture of the association of warfare and social complexity.

Archaeology and the origins of war

Three types of archaeological evidence pertain directly to the timing and nature of the origins of war. The first line of evidence pertains to population changes, the second to the earliest worldwide evidence of war, and the third to regional archaeological sequences demonstrating the relatively recent origins of war from prior conditions of warlessness.

Population. In the current study, population density was strongly correlated with actual population pressure as experienced by forager societies in the sample. Both population density and population pressure correlated strongly with social class and other social inequality variables as well. Interestingly, whereas population density strongly correlated with group-on-group lethal violence, population pressure did not.

Haas & Piscitelli (2013; Haas 1996) point out that the total human population was extremely low over most of the genus Homo’s time on Earth. Only during the Holocene did humans undergo exponential population growth. Just prior to the Holocene (19,000 to 13,000 yr), the Late Pleistocene populations of Australia, Asia, Europe, and Africa combined have been estimated at about 500,000 people, or .3 persons per 100 sq. km (Haas & Piscitelli 2013). By way of comparison, for an extant sample of Holocene foragers from Africa, Asia, Australia, North America, and South America derived by Kelly (2013b: Table 9.1), the average population density is 34.12 persons per 100 sq. km, which amounts to 113 times the estimated population density for the world-wide forager population near the end of the Pleistocene.

In the current study, the average population densities in persons per 100 sq. km for the total forager sample, mobile sub-sample, and complex sub-sample are, respectively, 25.7, 12.3, and 36.9 (Table 18.2), in all cases many times higher than the late Pleistocene estimate of .3. Specifically, the average population density for the SCCS mobile foragers, the majority of which are non-warring, is 41 times higher than this late Pleistocene estimate.

To consider one more population density comparison, Roscoe (2014: 229) reports a population density equivalent to 80.0 persons per 100 sq. km for 10 contact-era, mostly semi-sedentary sago palm harvesting foragers from freshwater wetlands in New Guinea with relatively high rates of lethal aggression. These New Guinea foragers have an average population density 267 times that of the estimated worldwide Late Pleistocene population. An implication is that using high density New Guinea foragers to draw insights about lethal conflict in the evolutionary past is problematic. Complex fisher-foragers from New Guinea, which resemble the North American North West Coast societies in terms of war-making and sociopolitical complexity, have even higher population densities than the New Guinea semi-sedentary freshwater wetlands group (Roscoe 2014).

Even if the .3 world population density estimate for the late Pleistocene were an order of magnitude too low and thus were 3.0, an unlikely possibility, the recent Holocene forager population densities shown in Table 18.2 still average several-to-many times the late Pleistocene estimate, that is, even if divided by 3.0 instead of .3. An implication of these demographic observations is that there may have been too few people, living in small bands, spread out over huge land areas to have any reason for making war over resources. Haas (1996: 1360) proposes that ‘it was only about 10,000 years ago that the niches of the world were filled in through gradual population growth, and people had to develop new settlement and subsistence
strategies to extract adequate resources from decreased territory.’ And Haas & Piscitelli (2013: 176; see also Keely 2000) add: ‘for 190,000 years of human existence on the planet, low population densities obviated all the proposed biological or cultural reasons for warfare and intraspecific conflict.’

Aside from the consideration of worldwide population growth over the Pleistocene and into the Holocene, support for Haas & Piscitelli’s (2013) inference comes, first, from the observation that extant mobile foragers, despite typically higher population densities than Pleistocene estimates and despite a variety of recent conflict-inducing factors, nonetheless tend not to engage in much warfare (Fry 2006; Fry & Söderberg 2013a, b; Guenther 2014). Fry & Söderberg (2013a, b) review nine factors that militate against warfare under mobile forager conditions, of which low population densities is only one. Second, in both the findings of the current study and in the literature, group-on-group fighting is associated with increases in population densities, as one factor in the complexity complex (Darwent & Darwent 2014; Kelly 2000; Roscoe 2014), and/or increases in population pressure (Kelly 2013a, b). Third, whereas mobile forager groups subsisting at low population densities and pressures simply move rather than attempt to displace another group, competition among foragers for territory or resources begins once the population in an area becomes packed, to use Binford’s term, and resource-rich areas become worth fighting over (Binford 2001; Maschner & Reedy-Maschner 1998; Fitzhugh & Kennett 2010; Kelly 2013a).

Lack of pre-Holocene evidence of war. The assertion that war is hundreds of thousands if not millions of years old simply lacks archaeological evidence to support it. With one possible exception, the earliest evidence of warfare anywhere in the world is within the Holocene. After reviewing the archaeological evidence on prehistoric homicides and warfare, Keeley (1996: 39) reaches the conclusion ‘that homicide has been practiced since the appearance of modern humankind and that warfare is documented in the archaeological record of the past 10,000 years in every well-studied region.’ Homicide predates by far the evidence for war and has parallels in the low percentage of intraspecific killing in the mammalian world, averaging 0.3 per cent across more than one thousand species (Gómez, Verdú, González-Megías & Méndez 2016; see also Fry & Szala 2013; Roper 1969; Sala et al. 2015). The central focus here is on the origins of war, not on the homicides that the palaeontological evidence and phylogenetic context suggest have occurred infrequently for a very long time in the human evolutionary line (Gómez et al. 2016; Fry 2006; Fry, Schober & Björkqvist 2010; Roper 1969).

The one possible exception to the existence of war prior to the Holocene is Jebel Sahaba, recently related to at least 11,600 yr (Antoine, Zazzo & Friedman 2013; Zazzo 2014). Jebel Sahaba may or may not reflect war, but certainly shows violence. Initially, 24 out of 59 individuals were seen as having suffered violent deaths due not only to embedded projectile points in their bones but also due to lithic points and barbs found in the burials. This is a very high percentage of violent death in a skeletal population, and some scholars attribute the killings to warfare or feuding, while others caution that an accumulation of homicides and executions over time may have occurred. Ferguson (2013b) points out another problem: the quantity and diversity of lithic material found in the burials – lithics inside skulls with no entry wounds for instance – provides tenuous support for violent death in some cases. Ferguson (2013b: 117) cautions that ‘classifying all those [remains] with associated lithics as war casualties is going too far. Jurmain (2001: 20), a judicious specialist in palaeo-osteology, concludes the number of violent deaths actually should be counted as 4 out of 41 relatively complete skeletons, or 9.8 percent.’

An apparent massacre on the ancient shores of Lake Turkana in Africa at a then marshy place called Nataruk, dated to between 10,500 and 9,500 yr, may be the earliest evidence of warfare. Lahr et al. (2016a) report that for 10 of 12 articulated skeletons there is evidence of cranial and postcranial trauma. The authors also note the presence of pottery, a feature not typical of mobile foragers, and propose that some degree of sedentism and food storage are suggested by this evidence.

However, Stojanowski, Seidel, Fulginiti, Johnson, & Buikstra (2016) challenge the massacre interpretation, first pointing out that the cranial and skeletal damage corresponds with known taphonomic effects of soil compression, weathering cycles of wetness and dryness, and activities of insects, animals, and roots. While Stojanowski et al. (2016) do not dispute the evidence of violence in the case of an embedded obsidian lithic, they question whether all the deaths occurred at the same time and draw upon forensic anthropological knowledge to point out that much osteological damage at Nataruk is inconsistent with perimortum cranial trauma. Stojanowski et al. (2016: 539) conclude that ‘interpersonal violence was surely present in early Holocene African hunter-gatherers, however, the case for a massacre at Nataruk is not supported by the data Mirazón Lahr et al. report.’ In a brief reply, Lahr et al. (2016b: E10) dismiss the points raised by Stojanowski et al. (2016), maintaining that ‘A case of intergroup
conflict remains the best explanation of the events at Natwarl. Perhaps further analyses will resolve some of these differences of interpretation.

Wishing to systematically assess the evidence for warfare older than 10,000 yr, Haas & Piscitelli (2013) made an extensive review of catalogues and site reports that contain information on skeletal material. Their survey resulted in data on nearly 3000 Homo sapiens skeletal remains from over 400 archaeological sites around the world. Out of these 400 sites older than 10,000 yr, Haas & Piscitelli (2013) discovered only four additional sites besides Jebel Sahaba where one or more individuals had projectile points embedded in their bones and one site with a multiple burial of three individuals. The remains in the multiple burial showed no sign of violence and the deceased could have succumbed to disease or some other calamity. Haas & Piscitelli (2013) note that none of the cases provide a basis for concluding the deaths resulted from war as opposed to accidents or homicide. Hass & Piscitelli (2013: 182–3) succinctly conclude, ‘rather than demonstrating the commonness of ancient warfare amongst humans, consideration of the entire archaeological data set shows the opposite.’ Out of nearly 3000 skeletal remains worldwide reviewed by Haas & Piscitelli (2013), only Jebel Sahaba and a handful of other sites showed any evidence of violence prior to 10,000 yr. An implication of these findings is that the assertion that absence of evidence is not evidence of war simply does not ring true; with Jebel Sahaba remaining a puzzle of occasional killing not millions, of years ago also is contradicted by the numerous Holocene prehistoric sequences that document the origins of war before farming in some cases and in others reveal the recent origins of war along with plant domestication. A question that seems never to have been seriously addressed by those who argue that war has been ever-present as a natural feature of proto-human and human social life is: Why do multiple prehistoric time sequences show the birth of war in different places across the Holocene? And why, as illustrated in the comparative forager findings of the current study, do these archaeological sequences follow similar developmental narratives that involve increasing complexity, including rising population densities?

On Kodiak Island the archaeological record goes back at least 7500 years. For the first 5000 years, evidence of war is non-existent (Table 18.5). Fitzhugh (2003) reports the first use of small defendable landforms such as placing camps on steep slopes and promontories at about 1100 yr. A few centuries later, large defendable villages appear in the archaeological record. Fitzhugh & Kennett (2010: 73) explain that inequality arose along with the development of whale hunting and eventually expands to embrace large-scale, endemic warfare mobilized by large boats and long-distance raids.

Dye (2009, 2013) outlines the grand sequence that took place in eastern North America, beginning about 13,000 yr with a nomadic forager phase and concluding with settled agricultural societies at the time of European contact (Table 18.6). While cognizant of local variations, Dye (2009, 2013) highlights three broad phases in lethal aggression and social complexity in eastern North America: nomadic foraging and interpersonal homicides for about 6 millennia, then the rise of villages and feuding beginning about 7000 yr, and finally the appearance of larger polities, alliances, long-distance trade, and war about 3000 yr (Table 18.6).

The next sequence showing the birth of war along with social complexity comes from the Valley of Oaxaca in Mexico (Flannery & Marcus 2003, 2012). The archaeological record begins at 10,000 yr with over 6000 years of mobile forager camps and no evidence of warfare. Subsequently, the arrival of war

<table>
<thead>
<tr>
<th>Approximate dates/period</th>
<th>Housing</th>
<th>Prestige trade</th>
<th>Warfare</th>
</tr>
</thead>
<tbody>
<tr>
<td>7500–5100 yr Ocean Bay 1</td>
<td>Portable</td>
<td>Low importance</td>
<td>Minimal if at all</td>
</tr>
<tr>
<td>5100–3800 yr Ocean Bay 2</td>
<td>Portable then permanent</td>
<td>Low importance</td>
<td>Minimal if at all</td>
</tr>
<tr>
<td>3800–2600 yr Early Kachemak</td>
<td>Permanent</td>
<td>Low importance</td>
<td>Minimal if at all</td>
</tr>
<tr>
<td>2600–700 yr Late Kachemak</td>
<td>Permanent</td>
<td>Moderate importance</td>
<td>First use of defendable landforms; minimal then sporadic</td>
</tr>
<tr>
<td>700–200 yr Early &amp; Late Koniag</td>
<td>Permanent</td>
<td>High importance</td>
<td>Defensive villages; endemic fighting</td>
</tr>
</tbody>
</table>

Table 18.5. The origin of war on Kodiak Island in the North Pacific.

Note: The extent of warfare is estimated from number of defensive sites. Sources are Fitzhugh & Kennett (2010: see Table 6.1) and Fitzhugh (2003a, b).
is unmistakably visible in the archaeological record, as is the rise of the Zapotec state and its concomitant militarism (Table 18.7). Again a regional archaeological sequence shows war to arise from an absence of warfare congruently with other major social changes.

Turning to Europe and the Near East, Ferguson (2013a) reviewed all the available archaeological evidence for each region to evaluate the presence or absence of war and interpersonal aggression across time. Ferguson (2013b: 116) summarizes:

By considering the total archaeological record of prehistoric populations of Europe and the Near East up to the Bronze Age, evidence clearly demonstrates that war began sporadically out of warless condition, and can be seen, in varying trajectories in different areas, to develop over time as societies become larger, more sedentary, more complex, more bounded, more hierarchical, and in one critically important region [the Near East], impacted by an expanding state.

It is important to highlight the methodology employed by Ferguson (2013a) consisted of assessing in a region all available archaeological evidence for the presence or absence of war and violence as contrasted with the practice of merely presenting a limited subset of examples of violence as if they were representative of the archaeological record (e.g., see Bowles 2009; Keeley 1996; Pinker 2011).

Taking a methodological leaf from Ferguson’s book, Nakagawa, Nakao, Tamura, Arimatsu, Matsumoto & Matsugi (2017) and Nakao, Tamura, Arimatsu, Nakagawa, Matsumoto & Matsugi (2016a, b) reviewed all of the available skeletal evidence for Japan looking for any signs of perimortum trauma across the Jōmon forager period, beginning 15,000 \( \text{BP} \), and then for the Yayoi agricultural period, 2800 to 1250 \( \text{BP} \) (Table 18.8). During the forager period, there was evidence of lethal violence but no fortifications or weapons of war; during the farming period, there were fortifications, weapons, and significantly more cases of violent death.

Worldwide archaeological findings show that war originated multiple times in the Holocene and, in correspondence with both a corpus of ethnographic data and the comparative forager findings reported here, also show that war develops along with socio-political complexity. Archaeology shows transitions from warlessness to warfare occurring at different places at different times: 800–750 \( \text{BP} \) among the Anasazi of the North America; 2000 \( \text{BP} \) in Northwest Alaska; 2800 \( \text{BP} \) in the Valley of Oaxaca; 9500 \( \text{BP} \) in parts of the Near East; and perhaps earlier than 11,600 \( \text{BP} \) at Jebel Sahaba (Antoine et al. 2013; Darwent & Darwent 2014; Ferguson 2013a; Flannery & Marcus 2003, 2012; Fry 2006; Haas 1999, 2001). The big picture views from worldwide archaeology and comparative forager studies on the origins and development of war correspond with and complement one another.

### Table 18.6. The origins of war in eastern North America.

<table>
<thead>
<tr>
<th>Dates</th>
<th>Types of violence</th>
<th>Social organization and features</th>
</tr>
</thead>
<tbody>
<tr>
<td>13,000–7000 ( \text{BP} )</td>
<td>Homicide</td>
<td>Non-segmented, mobile, family-level foragers</td>
</tr>
<tr>
<td>7000–3000 ( \text{BP} )</td>
<td>Feuding, raiding</td>
<td>Segmented non-egalitarian tribal-like foragers; settlements appear; trade develops</td>
</tr>
<tr>
<td>3000–300 ( \text{BP} )</td>
<td>Warfare appears</td>
<td>Villages and towns, some palisaded for defence; chiefly societies based on farming; alliance systems, long-distance trade, domination and tribute</td>
</tr>
</tbody>
</table>

Source: Table is based on information in Dye (2009, 2013).

### Table 18.7. The origin of war in the Valley of Oaxaca, Mexico.

<table>
<thead>
<tr>
<th>Dates</th>
<th>Types of violence</th>
<th>Social organization and features</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000–4000 ( \text{BP} )</td>
<td>'Warless societies'</td>
<td>Nomadic camps</td>
</tr>
<tr>
<td>3600+–2800 ( \text{BP} )</td>
<td>Village life begins; social segments arise</td>
<td>Village life begins; social segments arise</td>
</tr>
<tr>
<td>2800–2450 ( \text{BP} )</td>
<td>Raiding and 'chiefly warfare'</td>
<td>Three chiefly centres with buffer zones between them</td>
</tr>
<tr>
<td>2450–2000 ( \text{BP} )</td>
<td>Full-scale warfare</td>
<td>Development of the ancient Zapotec state</td>
</tr>
<tr>
<td>2000–1700 ( \text{BP} )</td>
<td>Military expansion and conquest</td>
<td>State expands into neighbouring areas</td>
</tr>
</tbody>
</table>

Source: Table based on information in Flannery & Marcus (2003, 2012).

### Table 18.8. Skeletal evidence for lethal violence and the origin of war in Japan.

<table>
<thead>
<tr>
<th>Dates/period</th>
<th>Skeletal population</th>
<th>Per cent deaths due to violence</th>
<th>Social organization and features</th>
</tr>
</thead>
<tbody>
<tr>
<td>15,000–2800 ( \text{BP} ) Jōmon Period</td>
<td>1051</td>
<td>1.81</td>
<td>Forager period of Japanese prehistory; no evidence of weapons or fortifications</td>
</tr>
<tr>
<td>2800–1250 ( \text{BP} ) Yayoi Period</td>
<td>1936</td>
<td>3.62</td>
<td>Agricultural period; first evidence of weapons and fortifications</td>
</tr>
</tbody>
</table>

Source: Table is based on information in Nakao et al. (2016a, b) and Nakagawa et al. (2017).
Conclusions and philosophy of science reflections

The findings from comparative forager ethnography and data from archaeology are mutually reinforcing. Neither comparative forager studies nor archaeology show mobile forager band social organization to be conducive to warfare. Archaeological sequences from various regions demonstrate that the origins of war correlate with complexification, including increases in population density, among both foragers and the first farmers. Thus, in considering the antiquity and origins of war, the data clearly favour the interpretation that war arrives along with complexification.

Weaknesses of the long chronology of war include, first, the absence of a theoretical model for predicting war under Pleistocene forager demographic and social conditions, second, the lack of actual evidence of warfare in the deep past (saying absence of evidence is not evidence of absence is no substitution for actually providing evidence of war), and, third, unfamiliarity with the well-documented and geographically diverse sequences showing that war originates as part of complexification.

Several suggestions can be offered for making the study of the origin and development of warfare more scientifically grounded. We can start by questioning whether the dichotomization of researcher views is useful for framing the problem and moving science forward. Categorizing researchers as long versus short chronologists, hawks versus doves, or Roussean versus Hobbesian (Allen 2014; Gat 2015; Jones & Allen 2014; Pinker 2011) puts the focus on researchers rather than on theory, methods, and data and emphasizes competition between ‘camps’ rather than on collaboration in the scientific quest for knowledge. We therefore advocate a closer adherence to the ideals and cannons of the scientific approach, as a collaborative venture, aimed at understanding the origins and antiquity of warfare. A reconceptualization could return the central scientific focus to (1) theory development and theory-driven hypothesis testing, (2) greater attention to sampling and other methodological elements, and (3) self-reflection and self-awareness about how cultural and personal biases and implicit assumptions impact our work. We will now explore why we see philosophy of science reflections on the scientific enterprise as especially necessary concerning the origins and antiquity of warfare.

Theory development and hypothesis testing

We advocate expanding the frame of reference and taking a more holistic view of the data in order to formulate knowledge-based hypotheses and to thus enhance the quality of research. To expand the relevant frames of reference related to the origins and antiquity of war, data appropriate for theory development and hypothesis generation could include areas of knowledge such as non-human primates, especially humankind’s closest ape relatives, patterns of fighting and lethality in mammals more generally, human palaeontology and deep-past archaeology, data on the progression of complexification in the Holocene prehistoric record, comparative ethnography and ethnohistory with special attention to mobile and settled forager societies, and so on. The anthropological study of war seems to have suffered from the unnecessary narrowing of focus, for example, as models about war in human deep prehistory are derived from limited spheres of information. For example, the development of a war model based on observations of coalitional intergroup killings in chimpanzees but without information on non-raiding bonobos and more broadly without knowledge from other relevant realms (e.g., mammalian aggression, archaeology, and social organization) is unlikely to provide a comprehensive explanation (Wrangham & Glowacki 2012).

Similarly, propositions about prehistoric war based on the assumption that forager bands were self-contained independent units subject to group selection (cf. Bowles 2009) can be called into question by copious data on mobile forager band social organization and demographic conditions (cf. Fry 2006; Marlowe 2010).

Furthermore, we suggest that citing cases of violence and/or war in the archaeological records is not enough to prove that war is ancient and hence an evolved human proclivity. Instead, a wider framing of the topic that takes into account, first, evolutionary theory explicitly (Fry 2018) and, second, additional demographic, subsistence, social, and ecological factors – including temporal sequences in the archaeological record that show change, as considered here – could help produce new insights and move science forward. As we have considered in this chapter, archaeological sequences that include shifts toward complexity tell us much about the origins of war. The approach we are advocating includes applying a more holistic, comprehensive frame of reference to this topic of study (Fry 2018).

Giving more attention to sampling, methodology and definitions

Studies of prehistoric war seem to reflect more than their share of methodological problems, such as lack of systematic sampling when using archaeological and ethnographic data, or reliance on secondary rather than primary sources (see critiques in Ferguson 2013a, b; Fry 2006, 2013, 2018; Fry & Söderberg 2014). For example, the estimate that 14 per cent of deaths...
in prehistory were due to warfare (Bowles 2009; Pinker 2011) can be called into question, not only due to being based on self-selected archaeological and ethnographic samples, but also because a cherry-picking approach to sampling yields a value that is contradicted by various other sources (Chatters 2014; Fry 2013; Gómez et al. 2016; Haas & Piscitelli 2013; Ferguson 2013a, b).

Similarly, interpretations become problematic when illustrations of forager violence and warfare are selected without a rigorous sampling scheme and without considering the societal features and context of the selected cases. A case in point, one of the six ethnographic examples selected by Wrangham & Glowacki (2012) to illustrate forager violence and warfare was the Inuit society of Northwest Alaska, an Inuit society that engaged in war and showed more political complexity than the other Inuit societies of the Canadian and Greenland Arctic (Buela, this volume). Darwent & Darwent (2014: 182) explain that ‘violent conflict was frequent, large-scale, pervasive, and brutal’ among the Inuit of Northwest Alaska, but for 12 other Inuit groups to the east ‘the opposite was the case: larger-scale conflicts, which some would characterize as warfare, were almost unheard of among Inuit peoples.’ In other words, the Inuit society selected by Wrangham & Glowacki (2012) to illustrate the occurrence of war was undergoing complexification in comparison to numerous more peaceful Inuit groups to the east. Unlike the other 12 Inuit societies of the North American Arctic – and nearly all mobile foragers societies in general – the Alaskan Inuit were ‘hunter-gatherers of intermediate complexity’ and socially segmented into ‘nations’ (Burch 2005: 5). Darwent & Darwent (2014: 187) expand on the contrast between the Inuit of the northwest and the other Inuit societies, noting:

*The cultural emphasis on war in the west: young men were specifically trained to be warriors, and there was admiration for those who participated in larger-scale violence and were good killers. This was in contrast to the east, where there was no preparation or training for war among the young men; rather, skill as a hunter was revered about all and there was no exaltation of men who killed others.*

Various researchers have pointed out that it is not always possible to tell whether archaeological evidence of lethal trauma reflects war, feud, a hunting accident, homicide, a socially sanctioned execution, or something else (Allan et al. 2016; Ferguson 1997, 2013a, b). This is a situation where expanding the frame of reference to encompass knowledge of forager ethnography could aid with interpretation in some, but not all, archaeological circumstances. For example, the findings of Fry & Söderberg (2013a, b; see also Hill et al. 2007; Griffin 2000) on lethal aggression at the mobile forager band level of social organization form a basis for predicting that when the archaeological context consists of mobile foragers, cases of lethal violence would typically involve personal motives and reflect homicide and manslaughter rather than war.

Turning to definitional issues, we suggest that researchers in this area pay attention to how they operationalize concepts and also be aware of ‘concept drift’. A recurring scenario involving concept drift occurs when the topic under consideration begins as *war*, but then implicitly shifts to encapsulate *other types of lethal aggression*. A variation of this problem occurs when various types of lethal aggression are simply assumed to be war although the evidence does not preclude homicide, accidents, or executions of deviants as viable alternative interpretations to war. Pinker (2011: 48–50), for instance, ostensibly focuses on *warfare*, but then shifts his discussion to ‘percentage of all deaths that are caused by violence’, and later to ‘rate of violent death’, and then back to ‘rates of death by warfare’, causing uncertainty as to whether he means all types of violent death or only war deaths.

Another issue is when a definition of war diverges from the general understanding of the concept. Bowles (2009: 1294) removes the seemingly fundamental condition of lethality and substitutes ‘bodily harm’ when he defines war as ‘events in which coalitions of members of a group seek to inflict bodily harm on one or more members of another group’. Wrangham & Glowacki (2012: 8) adopt Bowles’ (2009) definition but add the phrase at the end, ‘“groups” are independent political units’. Fry & Söderberg (2013a, b) took a different approach and, rather than attempting to distinguish war from other types of lethal aggression at the onset of their research, focused instead on documenting and analysing the salient characteristics of killing events. In presenting both the specifics of 148 cases of mobile forager lethal aggression (Fry & Söderber 2013b) and an overall analysis of the lethal aggression (Fry & Söderberg 2013a), the researchers provide the raw data upon which the conclusion rests that *war* – *relatively impersonal lethal aggression between communities* – is uncommon among nomadic foragers.

**Assumptions versus self-reflection**

If any discipline of scholars would be expected to appreciate the powerful sway of cultural beliefs on human perception, thought, and action, it would be anthropologists. The Western view of human nature
as selfish and violent long predated philosopher Thomas Hobbes (1588–1679) and continues to this day. Sahlins (2008) traces a Western perception of a selfish, violent nature back to the Greeks two millennia ago, through Saint Augustine’s emphasis on Original Sin, Machiavelli’s view of men as ‘ungrateful, fickle, liars and deceivers, fearful of danger and greedy for gain’ (Machiavelli quoted in Sahlins 2008: 64–5), and onward through history to Alexander Hamilton’s characterization in 1788 that ‘fiery and destructive passions of war reign in the human breast with much more powerful sway than the mild and beneficent sentiments of peace’ (Hamilton, n.d.). Freud’s (1961: 59) assertion that history shows a litany of people behaving as ‘savage beasts’ also fits this tradition.

The conceptions of a greedy, warlike human nature akin to those of Thucydides, Machiavelli, Hobbes, Hamilton, and Freud continue to arise regularly in the media and in academic fields from biology and psychology to primatology and archaeology (Fry 2006; Sponsel 2016; Sussman 2013). In the 1950s anatomist Raymond Dart drew upon Australopithecine fossils to argue that humankind is not really so kind (Fry 2006). This classic Western assumption of a violent human nature also manifests itself in popularized science writings such as The Dark Side of Man (Ghiglieri 1999), Demonic Males (Wrangham & Peterson 1996), the Murderer Next Door (Buss 2005), and Noble Savages (Chagnon 2013). ‘If one traces these theories into the history of modern biology, we can see that the Hobbesian view has predominated,’ concludes Sussman (2013: 99).

Fry (2006) has argued using many examples from anthropology and related fields that cultural beliefs about war affect the work of scientists and scholars. It seems unlikely that scientists and scholars born and raised in a cultural milieu where Hobbesian narratives of human nature predominate would not be affected in various ways. Hence one of our prescriptions for researchers working in this area involves the sometimes difficult tasks of self-reflection, self-awareness, and self-questioning in light of their cultural traditions, professional schooling, and social meanings as reflected in extant values, beliefs, and practices.

Darwin (1958: 123) self-reflected on his own tendency to dismiss observations that seemed to be unsupportive of his theorizing, writing, ‘I had, also, during many years, followed a golden rule, namely, that whenever a published fact, a new observation or thought came across me, which was opposed to my general results, to make a memorandum of it without fail and at once; for I had found by experience that such facts and thoughts were far more apt to escape from the memory than favorable ones.’ We think researchers focusing on the origins and antiquity of war could learn from Darwin’s mindful approach and work more collaboratively with less bias toward the shared goals of scientifically investigating war and peace.

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Note

1. Roscoe (2014: 226) among others has proposed that recent foragers ‘inhabited extremely marginal environments’. However, drawing on large world-wide samples of foragers, Binford (2001) and Marlowe (2010) show that this is not the case. Marlowe (2010: 258) notes a bias in viewing habitats in agricultural terms, pointing out that ‘some areas unsuitable for planting can be quite good for foraging’. Based on his sample of nearly four hundred foragers, which includes the current SCCS sample of 30 forager societies, Binford (2001: 137, 158) concludes that foragers rarely live in deserts, semi-desert scrub, and high altitudes. In spite of numerous generalizations in the anthropological literature asserting that hunter-gatherers could be found in the recent era only in the most marginal or nonproductive habitats, I discovered that truly nonproductive habitats were occupied exclusively by pastoralists and agriculturalists’ (Binford 2001: 158, emphasis in original).

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Social inequality before farming?

Archaeological investigations over the past 50 years have challenged the importance of domestication and food production in the emergence of institutionalized social inequality. Social inequality in the prehistoric human past developed through multiple historical processes that operate on a number of different scales of variability (e.g. social, economic, demographic, and environmental). However, in the theoretical and linguistic landscape of social inequality, there is no clear definition of what social inequality is. The lifeways of hunter-gatherer-fisher societies open a crucial intellectual space and challenge to find meaningful ways of using archaeological and ethnographic data to understand what social inequality exactly is with regard to variously negotiated or enforced cultural norms or ethoses of individual autonomy. This interdisciplinary edited volume gathers together researchers working in the fields of prehistoric archaeology and cultural and evolutionary anthropology. Spanning terminal Pleistocene to Holocene archaeological and ethnographic contexts from across the globe, the nineteen chapters in this volume cover a variety of topics organized around three major themes, which structure the book: 1) social inequality and egalitarianism in extant hunter-gatherer societies; 2) social inequality in Upper Palaeolithic Europe (c. 45,000–11,500 years ago); 3) social inequality in prehistoric Holocene hunter-gatherer-fisher societies globally. Most chapters in this volume provide empirical content with considerations of subsistence ecology, demography, mobility, social networks, technology, children’s enculturation, ritual practice, rock art, dogs, warfare, lethal weaponry, and mortuary behaviour. In addition to providing new data from multiple contexts through space and time, and exploring social diversity and evolution from novel perspectives, the collection of essays in this volume will have a considerable impact on how archaeologists define and theorize pathways both towards and away from inequality within diverse social contexts.

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