CHAPTER 12

Lawrence H. Keeley: Pre-state Societies in the Hobbesian Trap

1 The Myth of the Noble Savage in an Evidentiary Solvent

Prehistory was not a peaceful period (Gat 2010; Guilaine and Zammit 2004; LeBlanc and Register 2003; Otterbein 2004; Pinker 2011). Contrawise, current evidence suggests small-scale societies experienced high mortality rates due to homicide, feuding and inter-group conflict (LeBlanc and Register 2003; Guilaine and Zammit 2004; Otterbein 2004; Wrangham et al. 2006; Gat 2008; Pinker 2011; Wrangham and Glowacki 2012; Walker and Bailey 2013; Lahr et al. 2016).[1] Not more than twenty odd years before, this recognition of pre-state violence, though now so thoroughly documented, was scarcely suspected. Born in 1948, Lawrence H. Keeley, this chapter's featured author, passed in October 2017 when this monograph was in preparation. An obituary[2] recalled, without elegiac hyperbole, that Keeley was, "instrumental in shifting debate from whether conflict occurred in the past, to asking how prevalent war was, and why it occurred." For indeed, Keeley was one of the pioneers examining cross-cultural data to determine the pervasiveness, intensity and lethality of war in pre-state societies (1997, 2014). By examining the ethnographic and archaeological record, Keeley (1997) calculated numerous indicators of intergroup aggression in small-scale societies, the following three of which will be reviewed by turns: *per capita lethality*, *percentage of the population mobilized*, and the *frequency of intergroup conflict*.

S. C. Hertler et al., *Life History Evolution*,
https://doi.org/10.1007/978-3-319-90125-1_12

Deflating the *myth of the noble savage*, Keeley's *War Before Civilization* (1997)[3] parses between *absolute* and *per capita* deaths arising from conflict; confirming that the former is, as all expected, higher in nation states; but that the latter is, in fact, far higher in pre-state societies.[4] By way of example, the percentage of European and U.S. male deaths in nation-state conflicts during the twentieth century, together with its World Wars, was less than 1.0%; whereas estimates from small-scale societies ranged between 8.3 for the *Gebusi* of Papua New Guinea, to 59.0 for the *Jivaro* inhabiting the Ecuadorian and Peruvian Amazon (Keeley 1997).[5] Alternatively, take the example of *Maori*,[6] a representative pre-state society studied by Keeley. Maori's 16.7% death toll, exceeds that of Athens at the *Battle of Marathon*, tallying to 1.9%, or the Union at the *Battle of Gettysburg*, tallying to 3.7%. On to the second of these three metrics: As mature states suffer less per capita death, so they commonly mobilize less of their population. In Keeley's reckoning (1997), ancient states, such as Imperial Rome (circa 200 AD), mobilized two percent of its male population for combat. These estimates pale when considering the mobilization of male warriors in societies, such as the *Mae Enga* in Papua New Guinea, where 40% of males went to war. These figures are only approached by modern nation states in their most acute times of existential crisis, as when France mobilized 43% of its male population during *World War I*, or when Germany mobilized 32% of its male population in *World War II*. Turning finally to the frequency of intergroup conflict, this varies in the same direction across several levels of social and political complexity. As in the case of the late Roman Republic and the early decades of the Roman Empire, Keeley estimates ancient nation-states to fall into conflict every 6.5 years (Keeley 1997), with most conflicts being classified as civil wars and revolts, rather than clashes with other states. This pattern was accentuated in modern states, for the data collected by Keeley (1997) indicates that between 1800 and 1940, countries went to war once every 25 years. Alternatively, following the work of Otterbein[7] (1989) and Ross (1983),[8] Keeley concluded that most socially and politically simple societies (e.g. bands and tribes) engaged in raids, ambushes, massacres, small-scale battles, and like forms of lethal intergroup violence, more or less continually.[9]

2 The Irrelevance of Biology

Before binding life history theory to lethal coalitional aggression, it is pertinent to reconcile Keeley's position with contemporary evolutionary perspectives. Despite often being cited in evolutionary publications, Keeley skeptically received "selectionist" explanations of the prevalence and intensity of intergroup conflict across the societies he studied. Keeley's concerns are most pointedly evidenced in a subsection of War Before Civilization entitled, *the irrelevance of biology*. Therein, the author reflects on how biological treatments ostensibly fail to acknowledge cooperative tendencies, and the degree to which such cooperation hinders violent aggression:

> The Hobbesian 'war of all against all' might be used to describe some solitary species of nonhuman animals, but it cannot be applied to any known human society. All societies, however bellicose or violent, use social and cultural devices to preserve havens of peace and cooperation within a group- even if only within a small band or village. If humans can occasionally construct huge societies involving hundreds of millions of individuals within which homicide is nearly eliminated, there is no biological reason why such social units could not include all of humanity. Regarding humans' inborn capacities, it is far easier to explain peace than war. (Keeley 1997; p. 158)

As can be seen, Keeley pits *cooperation* against *conflict* without proper perspective on group membership. Rather than the Hobbesian *war of all against all*, pre-state intergroup conflict exemplifies a *war of us against them*.[10] In other words, agonistic interactions are directed to the in-group, while antagonistic interactions are directed to the out-group. Cooperation is not a force to end all violence; it is rather a feature of human nature to curtail within group violence.[11] As Keeley himself elsewhere allows, humans often cooperate in conflict: "It is hardly surprising that violence, whether against other species or against other humans, often involves cooperation" (Keeley 1997; p. 158).

Apprehension extends from misunderstanding, as is evident in a recent publication wherein Keeley (2014) equates "selectionist" approaches with genetic correlates of behavior as manifest within individual persons. However, rather than genes sequestered within single group members being the sole units of selection, current evolutionary

perspectives consider the effect of selection over higher-order units (Alexander and Bargia 1978; Keller 1999; Okasha 2006; Traulsen and Nowak 2006; Wilson and Sober 1994). The issue of cooperation is at the center of these publications. Hence, current evidence suggests intragroup cooperation and lethal intergroup conflict coevolved (Bowles 2009; Choi and Bowles 2007; Mathew and Boyd 2011), with *groups* being selection loci. Rather than considering cooperation and competition as two separate phenomena, the current evolutionary debate revolves around which cooperative mechanism (e.g. kin selection, indirect and direct reciprocity, or cultural group selection) better fits the patterns observed during intergroup aggression. For instance, an interpretation based on *kin selection* and *inclusive fitness* attributes risk assumption, heroism and cohesion among group members to their higher genetic relatedness, relative to the out-group with which they are contending (Patton 2000). Therefore, the *benefits* obtained from the attack, interacting with the degree of *kinship*, should be higher than the *costs*, as represented by Hamilton's kin selection equation[12] (Hamilton 1964). Alternatively, direct and indirect reciprocity, facilitated by recognition and reputation tracking of individual members, explains cooperative enterprises in larger, unrelated groups (Gilby 2012; Nowak and Sigmund 2005; Trivers 1971). By thus cooperating with others in a raid or massacre, bravado and altruism impart prestige that translates into fitness gains via increasing access to females, copulations, and impregnations (Chagnon 1988; Patton 2000). Moreover, cultural group selection, or *strong reciprocity*, considers the role of punishment, and biased transmission of cultural variants in enforcing intragroup cooperation (Bowles and Gintis 2013; Egas et al. 2013; Henrich 2004; Richerson and Boyd 2005). Furthermore, groups prescribing cooperation among ingroup individuals during intergroup clashes, all else being equal, are predicted to displace, assimilate or annihilate the competing group (Boyd and Richerson 2005). Consequently, even though originally considered by Keeley as a counterargument to "selectionist" perspectives, cooperation, culture and its evolutionary correlates, are now fundamental elements in understanding the behavioral ecology of lethal intergroup aggression through a multilevel selection lens.

3 Life History and Pre-state Conflict

Just as ecology ultimately influences life history speed, so it predicts the frequency and intensity of warfare. For instance, investigating the effects of resource unpredictability in 186 predominantly preindustrial societies, Ember and Ember (1992) found natural disasters and the threat of famine predictive of war frequency in small-scale societies. Similarly, parasite stress, another evolutionary correlate of life history, positively predicts non-state wars and civil wars (Thornhill and Fincher 2014; Letendre et al. 2010).[13] It is also clear that, in predisposing ecological conditions like those just reviewed, sexual selection can favor aggression in pre-state societies. For example, young *Nyangatom* males who raided neighbors, reported having more offspring and wives as they aged. Similarly, among *Yanomamo* in Venezuela, *unokai* males (men who killed other men in raids or ambushes) had more children and wives than non-warrior males (Chagnon 1988). Whereas among the *Achuar* occupying the Ecuadorian Amazon, males were rated as more attractive, when more martial (Escasa et al. 2010). It is likewise clear that pre-state conflict can profoundly affect populations. In demonstration thereof, a cross-cultural study surveying pre-state societies in Papua New Guinea and Irian Jaya found survivors of social extinction apt to be absorbed by larger groups after inter-clan clashes (Soltis et al. 1995). That group size and strength can appreciably wax and wane in response to small scale pre-state violence, is bolstered by chimpanzee raids wherein body mass increase (Pusey et al. 2005), altered female inter-birth intervals (Williams et al. 2004), and post-conflict displacement have been observed (Pusey et al. 2005; Wilson and Wrangham 2003; Wrangham and Peterson 1996; Crofoot and Wrangham 2010). Unfortunately, amidst this fast accreting body of research, there is no attempt to more specifically examine the association between life history and war-induced mortality rates in small-scale societies, which begs the question: *Do variations in life history strategies influence the frequency and intensity of intergroup aggression, as would be the case if life history was a first cause; or does lethal aggression between groups impact life history, as would be the case if warfare was the first cause?*

Much of what is known about life history and lethal conflict comes from the analysis of databases concerning modern nations. For instance, slow life history strategists living in nation-state societies, though expressing high in-group prosocial tendencies, have been found to have

low levels of *Negative Ethnocentrism*, measured by (1) prejudice to out-groups, (2) low motivation to exhibit prejudice towards out-groups, (3) feelings of threats from out-groups, and (4) racism (Figueredo et al. 2011). Inter-regional examinations, based on Spanish, Italian, and Mexican data, have found a similar connection between life history and intra-group egalitarianism (Black et al. 2017). Similarly, Figueredo et al. (2017) collected ecological and demographic data from 66 contemporary national polities. Although life history predicted within-group peace (operationalized as low perceived crime rates, low homicide rates, low violent crime rates, low civilian access to weapons, and low perceived corruption), no association was found between life history and between group peace (a higher order factor built upon inter-national peace and infra-national peace).[14] Within the confines of nation states, life history is a significant predictor of intragroup competition; however, the connection between life history and inter-state peace was fully mediated by within-group peace. As for the conflict expressed within pre-state societies, extrapolating from ethnographic data can in some measure rectify the want of data. Instead of within-group peace extending to cooperative exchanges between neighbors; within-group cooperation coevolves with lethal intergroup competition in pre-state societies (Choi and Bowles 2007; Bowles and Gintis 2011). Thus, cooperative behaviors are selected due to the benefits obtained by collectively targeting other communities. Some of the benefits include: access to resources, capturing females, decreasing the risk of suffering future raids and massacres, cementing alliances with other communities, and the eventual displacement and/or extermination of the rival group (Gat 2008; Wilson 2013; Wrangham and Glowacki 2012).

After immersing ourselves in some pertinent facts and sources, as we have now done, let us progress towards a positive proof, even at the risk of making interpretative leaps over gaps in the literature. It seems that life histories are affected by conflict; but whether conflict slows or speeds life histories is dependent on context. Specifically, Keeley's research informs the important contextual features: (1) frequency and intensity, (2) scale, and (3) per capita combatant ratios. First, with reference to *frequency and intensity*, we simply conjecture that there is some point of sheer attrition beyond which populations are either decimated or unable to attend to the non-violent responsibilities of living. More often than not, these conditions favor the occurrence of fast life histories. Second, with reference to *scale*, it would seem that smaller scale violence in the form of raids

and ambushes systematically selects for faster life histories, while larger scale violence in the form of battles and wars systematically selects for slower life histories. Large scale battles and long enduring wars are frequently decided by commissars, differentiated units and siege technology, logistical feats that concentrate fighting force, tactical and strategic ingenuity, orchestration of supply chains, synchronized drill, the ability to accrue and advantageously deploy resources, the capacity to secure loans and manipulate currency, not to mention the characteristics of discipline, subordination and cooperation.[15] Third, life history speeds as the number of *per capita combatants* rises. When, as is often the case in pre-state conflicts, a great proportion of a population is directly embroiled in violent conflict, slow life history strategies are undermined. Such conditions expose the mass of society to extrinsic mortality threats, with consequent shifts towards mating effort, high birth rates, and shorter inter-birth intervals; or, in other words, a selective regime prioritizing the replacement of population members. In contrast, when a small proportion of a population is exposed to such extrinsic mortality threats, there is that much less by way of directional selection towards the *fLH*-selected end of the life history spectrum. What is more, when large scale war efforts are carried on with a low per capita combatant ratio, it drafts whole sectors of the population into supporting roles. Just as frequently, *sLH*-selection regulates the diversification of cognitive abilities (Woodley et al. 2013). This degree of cognitive specialism is reflected in civilian leaders of the military, the engineers overwhelming the enemy with innovation, and the medical personnel keeping effectives in the field.

4 A Stimulant to Further Research

There is copious evidence of lethal conflict in extinct and extant pre-state societies. Further, small-scale lethal conflict of this variety is associated with life expectancy, longevity, fertility, inter-birth intervals among other life history indicators. Still, no extant research bears on whether intergroup aggression is, or is not, correlated to a latent higher-order life history factor. Indeed, preliminary analyses indicate the factor structure of life history in small-scale societies differs from that of contemporary nation-states, with fertility rates being considerably susceptible to the amount and access to resources.[16] Thus, rather than generalizing the findings between life history, within-group peace, and between group peace from nation-states, further research is needed to examine

in detail, the link between conflict and life history in pre-state societies. Additionally, statistical analyses examining models from a "life history first" or "conflict first" perspective are needed to discern the degree of theoretical and methodological parsimony offered by these approaches. At this time, the evidence would support both models, confounding any possibility of reaching a solid conclusion. The need for such analyses however, does not negate the existence of feedback loops, with the effects of life history increasing warfare, which itself would select for faster life histories. Whatever future research indicates as to the nature of the relationship, the available evidence would signify a significant connection between these variables. Despite current limitations, Keeley's work offers a rich context for the development of further hypotheses regarding the role of life history in the evolutionary origins of lethal intergroup conflict.

Notes

1. Upper Paleolithic sites, such as *Jebel Sahaba*, exemplify the fact clashes were not a single event, but rather a chronic phenomenon (Wendorf 1968).
2. This obituary was posted December 8, 2017 in *Anthropology News*, a publication of the *American Anthropological Association*. In addition to crediting him with revolutionizing the study of pre-state societies, this obituary details Keeley's achievements in microwear analysis for which he received an *Award for Excellence in Lithic Studies* presented by the *Society for American Archaeology*. The eulogium can be read in full at this address: http://www.anthropology-news.org/index.php/2017/12/08/lawrence-h-keeley/.
3. Keeley is also the author of *Experimental Determination of Stone Tool Uses*, though more than any other featured author in this volume, Keeley's publications are nearly exclusively within the primary literature.
4. In the case of battles, contenders usually agreed to a time and place for the confrontation (Keeley 1997); though, these and other trappings of *ritual* belied the lethality of such clashes.
5. In *War Before Civilization*, Keeley further describes multiple instances of massacres in small-scale societies, from Crow Creek, South Dakota (1325 AD), where 60% of the individuals in the village were killed, to the archeological site of Talheim, Germany (7000 years ago), with a death toll of 34 people.
6. The Maori are indigenous Polynesian peoples of New Zealand.
7. In Otterbein's (1989) cross-cultural research with fifty societies, only five were described to rarely suffer intergroup conflicts.

8. Ross found that 13% of a total of ninety societies experienced either none or few conflicts.
9. The following provides the interested reader with further ethnographic details of Keeley's findings:
   Due to the political and social similarities of extant bands and tribes to human societies in the past, Keeley (1997) included in his list, the percentages of individuals killed in various prehistoric archaeological locations such as the Nubian site (117) of Jebel Sahaba (between 14,000 and 12,000 BC), which at the time of the publication of War Before Civilization, exhibited the highest percentage of war deaths (40.7%) in a pre-historic society. In addition, close to half of males (47.7%) and half of the females (45.0%) in site 117 died due to intergroup conflict. Furthermore, rather than being a single event, for F. Wendorf (1968), the violence observed in Jebel Shaba indicated frequent confrontations, as demonstrated by the healed forearm fractures found in some individuals. Although evidence Paleolithic intergroup conflict is still debated, the extent of Mesolithic massacres bolsters the fact that lethal coalitional aggression occurred in small scale societies in the past. Another revealing case is Ofnet, Germany. Keeley (1997) describes the presence of two caches containing the skulls of 34 of individuals. Ofnet not only indicates the presence of Mesolithic lethal intergroup conflicts, but as Keeley acknowledges, the caches may not only be interpreted as a sign of "trophy" hunting during these confrontations. Due to the presence of males, females and children, the site once again corroborates the indiscriminate nature of lethal intergroup aggression, a pattern found in earlier sites such as Jebel Sahaba where males, females and children were also the target of lethal violence (Wendorf 1968).
10. Humans use several mechanisms to discriminate between in-group and out-group members, expressing agonistic interactions with the former and antagonistic interactions with the latter. This ability, however, requires two behavioral and cognitive phenomena: *discrimination* and *cooperation*. Although individuals living in tribes (i.e. rank societies), chiefdoms and states, often use symbolic markers enabling individuals to discriminate group membership (Boyd and Richerson 2005), lethal intergroup conflict has also been observed in bands (Boehm 2013; Lahr et al. 2016; Otterbein 2004; Pinker 2011) where symbolic group distinction (e.g. through ornaments) is either partially manifested or absent (except for linguistic markers; Flannery and Marcus 2012). A potential mechanism enabling group recognition in the absence of symbolic indicators is familiarity (e.g. within group kin and allies; Fried 1967). Hence, the frequent contact between co-residents may decrease the risk of being confused as a member of the rival group during an inter-group confrontation. The discrimination exhibited by chimpanzees targeting

specific outgroup individuals would support this hypothesis (Wrangham et al. 2006; Wrangham and Glowacki 2012), with a higher risk of attack depending on the sex, age, reproductive status, and numeracy of the victims at the time of the attack (Wilson et al. 2001; Wilson and Wrangham 2003). However, the degree of social discrimination exhibited by chimpanzees is not limitless. On the contrary, females who dispersed from the attacking group, had been observed to be attacked by the invading party, suggesting frequency of contact plays a role in recognizing an individual as a member of the group (Chapais 2009).

11. Sociobiologists are not arguing in the wake of Freud for some notion of Thanatos; any violent capacities built into human nature promote individual and group fitness, and have not the end of purposeless destruction.
12. Within Hamilton's kin selection equation (Hamilton 1964), benefits obtained from *attack* are represented by (b) *degree of kinship* is represented by (r) and *costs* are represented by (c).
13. Although the link between parasite stress and lethal conflict has been described before, for the current purposes, further evidence is required to determine the degree of social and political similarity between insurgents and/or belligerents in civil wars, and pre-state societies.
14. It appears that life history in nation states is a significant predictor of the level intragroup competition, however, the connection between life history and inter-state peace is fully mediated by within-group peace.
15. Some of these demanding features of war are broached by Landers (2003), most especially on page 205, section 9.1: *High-Level Warfare: Force, Time, and Space*. Landers (2003; p. 331), continues on to describe the increasing emphasis on coordinated movement above individual valor:

> More time and money was invested in infantry training from the later seventeenth century, but the aim of the training was to render men passive, obedient cogs in a larger machine on and off the battlefield rather than to foster individual-level skill. The bulk of this training expenditure therefore represented what we have termed an 'organization cost', and it went along with more sophisticated unit organization, support services, and chains of command, all of which allowed the deployment of larger forces to good effect.

16. When considering the association between life history and lethal intergroup aggression, it is relevant to consider any differences between life history indicators found in small-scale societies and those exhibited by modern states. Variations in life history across populations had been attributed to differences in extrinsic morbidity and mortality corresponding to each ecology (Stearns 1992; van Schaik and Isler 2012; Hawkes 2006; Kappeler et al. 2003). Consequently, environments in which individuals suffer from either a high risk of predation, parasitism or

lethal intraspecific aggression, are expected to display faster life histories (Brumbach et al. 2009; Ellis et al. 2009). Different from modern nation-states however, pre-states societies without birth control (deemed natural fertility populations), display variations with respect to how life history indicators load into a single life history factor (Peñaherrera-Aguirre et al., unpublished analyses). Hence, whereas in states, total fertility rate has a negative loading in a life history factor (Figueredo et al. 2017), in twenty-two small scale societies, total fertility was not significantly associated with the life history factor or other life history indicators, such as life expectancy (Peñaherrera-Aguirre et al., unpublished analyses). This pattern may be attributed to the moderating role of resource acquisition (Walker et al. 2006). Hence, individuals living in wealthier families, have lower inter-birth intervals, an early age at first reproduction, and higher fertility (Clarke and Low 1992; Skjærvø et al. 2011; Mace 1998). This pattern has also been reported in states prior to the demographic transition, with wealthier classes displaying lower infant mortality rates (Clark 2008; Low 2015). Moreover, these effects are not restricted to female life history. For example, a generalized linear mixed model examining biographical data from Roman kings, consuls and emperors concluded that magistrates with longer lifespans had more offspring (Peñaherrera-Aguirre et al., in preparation). Thus, future research analyzing the link between warfare and life history strategies in natural fertility populations, should take into consideration the moderating effects of resource accessibility.

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