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THE WORST ANGELS OF OUR NATURE: HAS VIOLENCE DECLINED?

by

Redyn Keller

A Thesis Submitted in Partial Fulfillment
of the Requirements for a Degree with Honors
(Anthropology)

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University of Maine

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ABSTRACT

The purpose of this study is to examine and assess the accuracy of Table 6.1, *Annual Warfare Death Rates*, and Table 6.2, *Percentage of Deaths Due to Warfare*, in Lawrence Keeley's text, *War Before Civilization*. There has been a lot of recent debate within anthropology about the intensity and impact of small-scale warfare. In this book, Keeley argues that pre-contact, small-scale warfare produced higher death rates than the most war-torn modern states. The following thesis will examine the war death percentages of these two tables and will evaluate the accuracy of Keeley's calculations, citations, and the sources that he used to obtain data. This body of work will present the data that needs to be reworked or removed from the tables so that Keeley can present reliable and substantial datasets.

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CHAPTER 1: THESIS INTRODUCTION

Anthropologists and archaeologists have long strove to understand the complexities and ambiguities of humanity in the past and present of this world. To fully understand what it means to be human and the ways in which we immerse ourselves into the social patterns and practices of cultures around the world, anthropologists must examine every aspect of life across human history. Since human beings first walked the Earth they have developed numerous cultures, each with a unique set of shared beliefs, values, practices, and rituals. Anthropologists have a profound interest in the way individuals find a place within their own culture and society, but also in the ways these different groups interact with one another. With such a diverse and intricate conglomerate of societies, it is commonplace that clashes of identity will arise. For at least 10,000 years, if not far longer, war has been an integral part of these interactions.

Warfare has always been of some interest to anthropologists but recent years have seen a tremendous growth in the analysis of its causes and consequences. There are differences over how warfare should be defined. Commonly, it is taken to be “armed combat among territorial or political communities” (Scupin 2006: 209), with many sources adding that the political communities at issue are “autonomous” or “sovereign” units. Other anthropologists though, consider that “feud” should be distinguished from “war,” with feuds being “a type of armed combat occurring within a political community and usually involve one kin group taking revenge against another kin group” (Otterbein 1974; Kelly 2003). In the past, it was a fairly small number of people dedicating their time to the study of war and these anthropologists rarely possessed war experiences of their own. Reliable data is hard to come by, especially where small-scale societies-- also

called village and tribal societies-- and those from the past are concerned. Battlefields are not safe places, and colonial authorities have been reluctant to allow ethnographers¹ to conduct fieldwork among small-scale societies still at war. As a result, anthropologists interested in small-scale warfare must rely to a great extent on historical records or post-pacification interviews with participants in order to reconstruct military behavior. At times these accounts can be unreliable, hard to decipher, and very difficult to attain from an inside observer. It is even more difficult to understand prehistoric warfare—war conducted in the era before writing and before the establishment of large social entities known as states. When recorded data is scarce anthropologists and archaeologists must rely on physical remains such as skeletal evidence, burials, weaponry, and fortifications. At times they must rely on graphic evidence such as cave-art renditions of fighting. All of these factors have resulted in a minimal amount of research on village and tribal warfare in the past. This is beginning to change however. In recent decades the number of anthropologists deciding to compile information regarding small-scale warfare has increased. These anthropologists have chosen to take a deeper look into attacks, raids, and battles between local indigenous populations in Australia, the Americas, parts of Africa, Asia, and the Pacific Islands.

There are a multitude of questions to be asked regarding small-scale warfare in these locations. The assumption in anthropology and other disciplines has long been that warfare in early societies was relatively harmless. Only with the rise of state-level societies did it cross a “military horizon²” (Turney-High) to become the indiscriminate,

¹ Ethnography is the branch of anthropology that deals with the scientific description of specific human cultures (American Heritage Dictionary).

² A military horizon is a sharp line above which real warfare was conducted by states and below which occurred only the sub-military combat of primitives (Keeley 1996: 10).

mass slaughter that we are familiar with today. Scholars have not debated the existence of warfare in tribal societies but in the last ten to fifteen years, increasing attention has been paid to the bloodiness of small-scale warfare in comparison to modern warfare.

Anthropologists and archaeologists have worked together to uncover the ways in which village and tribal warfare were fought and to determine what consequences ensued. They have collected data from societies around the world that practiced small-scale warfare and have attempted to calculate the number of people being killed in each population. Those interested in this subject are comparing the number of deaths in these small-scale societies³ with the larger states⁴ practicing modern warfare to determine which leads to greater devastation.

Because it is difficult for anthropologists to collect and complete accurate datasets, an intense academic debate has resulted over whether the toll that warfare takes on humanity is rising or falling. The data sources that do exist are used to argue one form over another. In 1996, archaeologist Lawrence Keeley forcefully challenged the assumption of a peaceful past. In his book, *War Before Civilization*, Keeley argues that small-scale warfare among tribes was in fact far deadlier than modern warfare when casualty rates were applied. To collect data for these rates Keeley used prehistoric findings by archaeologists, 20th century ethnographic surveys by cultural anthropologists who lived among surviving “primitive” peoples, and historical accounts of early contact with western civilization. With this information he created two tables that will be the

³ A small-scale society generally has a population of a few dozen to several thousand people. They live by hunting, foraging wild foods, herding domesticated animals or practice non-intensive horticulture on the band or village level.

⁴ States represent highly complex organizational structures that function to control large societies. Robert Carneiro (1970) defines the state as “an autonomous political unit, encompassing many communities within its territory and having a centralized government with the power to collect taxes, draft men for work or war, and decree and enforce laws.”

main focus of this thesis. The tables attempt to show that relative rates for war mortality in small-scale societies were higher than those for large states. It was the first time this sort of data had been assembled and his tables received wide attention; several anthropologists then began to use his data in their own work. The Harvard primatologist, Richard Wrangham, has relied on the tables to compare killing rates among chimpanzees to those of humans living in small-scale societies (Wrangham, Wilson & Muller 2006). Keeley's ideas and calculations caught the attention of many who had previously believed in a peaceful past. Since its publication, *War Before Civilization* has become an important text internationally.

Keeley's data recently received even greater attention with the publication of Harvard psychologist, Steven Pinker's book—*The Better Angels of Our Nature: Why Violence Has Declined* (2011). Pinker suggests that violence as a whole has declined across the world. He uses Keeley's model as a major source for his argument, drawing from the tables and warfare mortality calculations. His text has reintroduced Keeley's data and is attracting a lot of public attention. While Keeley's calculations are the primary focus of this thesis, it is important to first present the ideas behind Pinker's book.

In the many pages of his book, Pinker goes through the ways in which all forms of violence have decreased over time. He begins by stating that a “modern concern with the dignity and rights of all peoples inhibits us from speaking too frankly about rates of violence in preliterate peoples, and the ‘anthropologists of peace’ have worked to give them a Rousseauian⁵ image makeover” (Pinker 2011: 43). According to Pinker, people have created stereotypes and myths ritualizing small-scale battle. These ‘people’ believe

⁵ “Rousseauian” refers to the idea of the noble savage and that in a state of nature humans are essentially good.

this type of warfare was far less destructive than modern day bloodshed. He attributes this common belief to the notion of cultural memories often pacifying the past. Most do not recognize or acknowledge that small-scale warfare throughout the years was very brutal and greatly impacted the tribal populations. “According to two ethnographic surveys, 65 to 70 percent of hunter-gatherer groups are at war at least every two years, 90 percent engage in war at least once a generation, and virtually all the rest report a cultural memory of war in the past” (Pinker 2011: 52; Prevalence of war among hunter-gatherers: Divale, 1972; Ember, 1978; Keeley, 1996). Pinker gathers information to suggest warfare was prevalent in almost every tribal society and that no one can argue its existence, nor its devastation.

Pinker also criticizes the many anthropologists who suggest violence has increased among these societies with European contact. There has been much debate about the effect that interaction had on these societies. Pinker argues contact did not lead to more violence but instead the “pacification process⁶” began. He refers to this decline as the “Pacifist’s Dilemma.” He states that societies were forced to shift from aggression to pacifism when faced with state authority. Europeans wanted to control and put an end to intertribal warfare. Penalties were imposed and societies involved in small-scale warfare began to initiate peace talks and treaties. Pinker suggests these tribal societies, prior to colonization and contact, were engaged in battles comparable to those of the bloodiest modern wars.

⁶ Pinker defines this process as the move from hunter-gatherer societies to organized states. He argues this transition led to a major decrease in violence because the state stepped in during conflicts as the arbiter of justice as opposed to the tribal tendencies or retaliatory attacks and revenge murders. (Pinker 2011).

When dealing with small-scale warfare Pinker presents data to further support his hypothesis that the death rates in these societies were more detrimental to the populations than in large states.

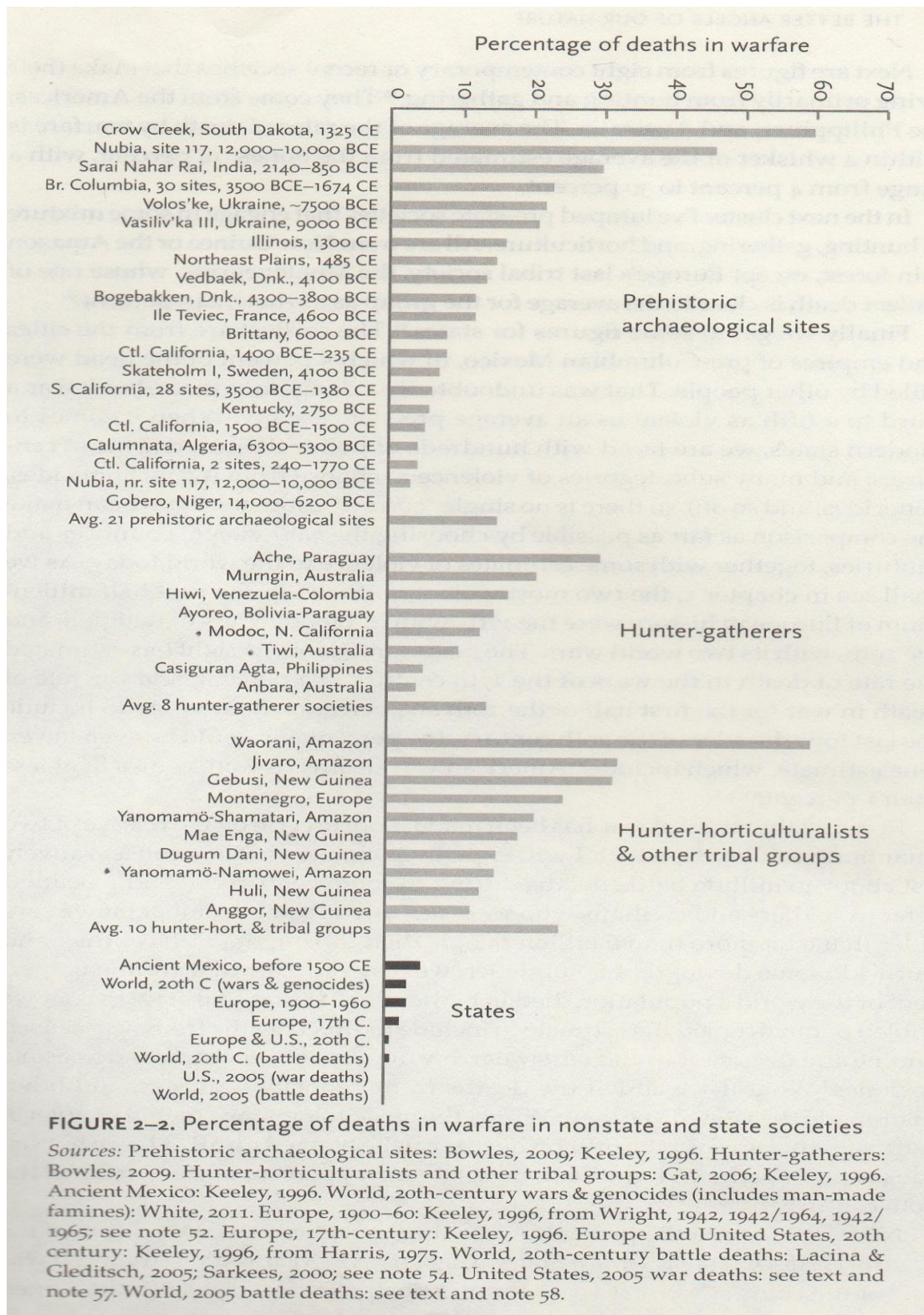
“The actual death counts from primitive warfare show that the apparent harmlessness of a single battle is deceptive. For one thing, a skirmish may escalate into an all-out combat that leaves the battlefield strewn with bodies. Also, when bands of a few dozen men confront each other on a regular basis, even one or two deaths per battle can add up to a rate of casualties that is high by any standard” (Pinker 2011: 43).

Pinker furthers the idea Keeley attempted to illustrate, that in order to determine if the impact of small-scale warfare is higher or lower than civilized societies, one must look at the rate rather than the number of violent deaths.

“In absolute numbers, of course, civilized societies are matchless in the destruction they have wreaked. But should we look at absolute numbers, or at the relative numbers, calculated as a proportion of the populations? The choice confronts us with the moral imponderable of whether it is worse for 50 percent of a population of one hundred to be killed or 1 percent of a population of one billion” (Pinker 2011: 47).

Pinker uses Keeley ‘s warfare calculations from small-scale societies across the world to demonstrate their high rates of warfare deaths.

Pinker created two tables, based on the two ways researchers can convert raw counts of violent deaths into rates. The first table depicts war mortality—the percentage of all deaths in a society that occur during war (Pinker 2011: 49, Figure 2-2).



In this table, Pinker lists four different types of society, the first showing the rate of violent deaths for skeletons excavated from prehistoric archaeological sites. These twenty-one sites represent hunter-gatherers and hunter-horticulturalists dating from 14,000 BCE to 1770 CE in Asia, Africa, Europe and the Americas. The death rates range from 0 to 60 percent, with an average of 15 percent. The next group includes eight societies that made their living through hunting and gathering in the Americas, the Philippines, and Australia. The war mortality in these groups ranged from 4 to 30 percent and averaged 14 percent. The third grouping is pre-state societies engaged in horticulture, along with some hunting and gathering. These groups came from New Guinea and the Amazon rainforest, with the exception of the Montenegrins (Europe's last tribal society); the average war mortality for this cluster was 24.5 percent. The final cluster lists eight states from different centuries, and the war mortality did not reach higher than 5 percent in any of them. Pinker chose these eight states to show war-torn civilizations did not compare to small-scale societies.

“When it comes to modern states, we are faced with hundreds of political units, dozens of centuries, and many subcategories of violence to choose from (wars, homicides, genocides, and so on), so there is no single ‘correct’ estimate. But we can make the comparison as fair as possible by choosing the most violent countries and centuries, together with some estimates of violence in the world today” (Pinker 2011: 50).

He chooses the two most violent centuries as being the 17th, with the European Wars of Religion, and the 20th, which saw two world wars. Quoting Quincy Wright (1942: 245), he estimates the rate of war deaths for the 17th century at 2 percent and at 3 percent for the first half of the 20th century. For a more recent analysis, Pinker focused on the United States in 2005 when 945 Americans were killed in Afghanistan and Iraq. According to the *Statistical Abstract of the United States*, 2,448,017 Americans died in 2005 and

therefore the number killed in war would represent 0.0004 percent of the total deaths. He creates this comparison, using many of the societies and rates from Keeley's data to demonstrate that the percentage of all deaths caused by violence was much greater in tribal societies than in states.

Pinker's second table depicts war death rates—i.e., the number of killings per year per 100,000 people (Pinker 2011: 53, Figure 2.3).

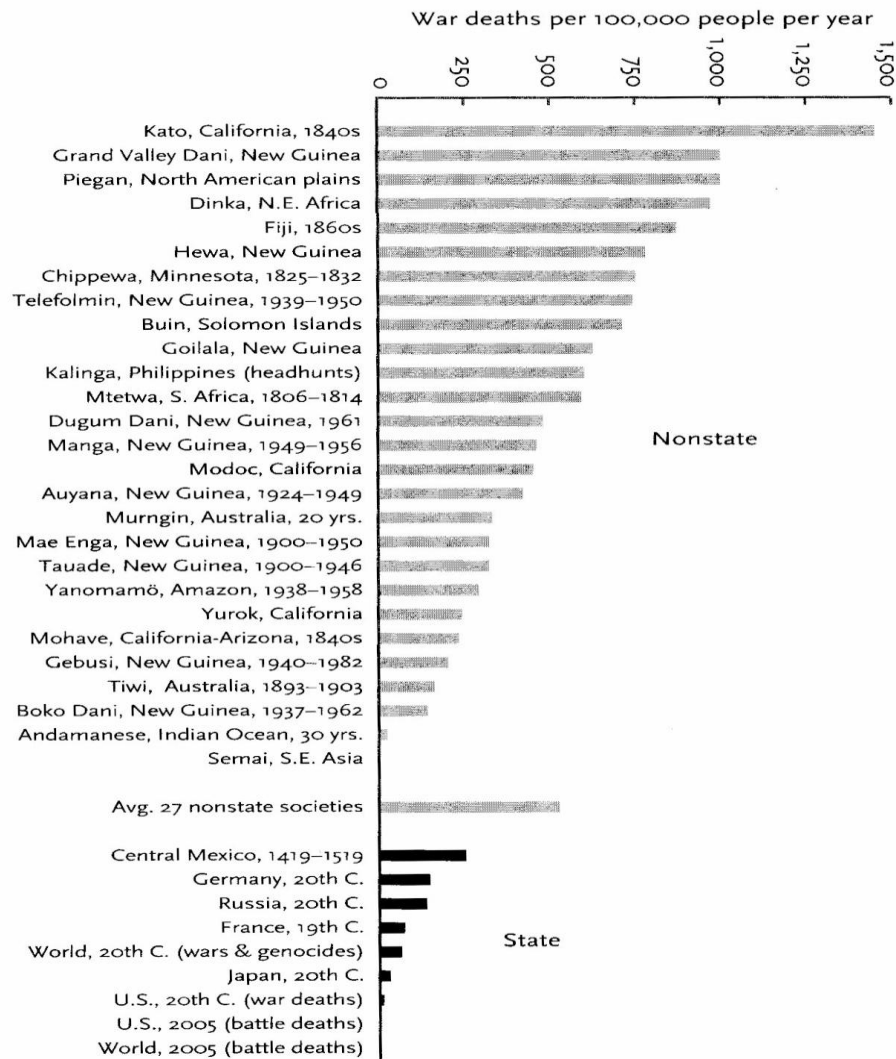


FIGURE 2–3. Rate of death in warfare in nonstate and state societies

Sources: Nonstate: Hewa and Goilala from Gat, 2006; others from Keeley, 1996. Central Mexico, Germany, Russia, France, Japan: Keeley, 1996; see notes 62 and 63. United States in the 20th century: Leland & Oboroceanu, 2010; see note 64. World in 20th century: White, 2011; see note 65. World in 2005: Human Security Report Project, 2008; see notes 57 and 58.

The table shows war mortality rates for twenty-seven “nonstate” societies in comparison to states.

“The average annual rate of death in warfare for the nonstate societies is 524 per 100,000, about half of 1 percent. Among states, the Aztec empire of central Mexico, which was often at war, had a rate of about half that. Below that bar we find the rates for four state societies during the centuries in which they waged their most destructive wars... But the annual cost in American lives was even smaller than those of the other great powers of the century, about 3.7 per 100,000. Even if we add up all the deaths from organized violence for the entire world for the entire century—wars, genocides, purges, and man-made famines—we get an annual rate of around 60 per 100,000” (Pinker 2011: 52).

Based on this figure, Pinker argues that states are far less violent than traditional bands and tribes. Even at times when war was most intense, civilized countries in the Western world suffered no more than a quarter of the average war death rates of nonstate societies.

According to Pinker the decline in violence across the world first began with the pacification of tribal societies. Before this time, societies were actively and regularly participating in intertribal warfare that had lasting effects on their populations. He collected warfare death rates from several distinguished researchers to show this, and much of this data came from Lawrence Keeley (1996). Pinker is one of many to have used the information in Keeley’s tables, yet they may not be a reliable source. To date, scholars have not taken the time to thoroughly examine or assess the accuracy of Keeley’s calculations and this must be done before referencing them.

This thesis takes an in-depth look at the mortality data that Keeley presented in *War Before Civilization*. It focuses in detail on Tables 6.1 and 6.2, located in the appendices of the text and will attempt to determine if Keeley’s annual warfare death rates have been calculated correctly. The idea for thesis emerged from discussion with

my advisor, Dr. Paul (“Jim”) Roscoe. For some time now, Dr. Roscoe has wondered about the reliability of the calculations and data in Keeley’s tables and he proposed a division of labor for my honors thesis. Dr. Roscoe specializes in the anthropology of New Guinea. We decided that he would examine the reliability of the fourteen New Guinea cases from Keeley’s tables: nine from Table 6.1 and five from Table 6.2. I would then examine the remaining twenty “non-state” societies in the tables: sixteen from Table 6.1 and four from Table 6.2. Dr. Roscoe’s research revealed that three of Keeley’s New Guinea cases were either unreliable or impossible to verify; three appeared to be too high; four were too low; four seemed to be accurate. Dr. Roscoe determined that Keeley actually seems to have underestimated the death toll that resulted from New Guinea warfare. With Dr. Roscoe’s evaluation complete, I then undertook the process of examining the accuracy for the remaining twenty societies.

To begin, I focused on Table 6.1 (Keeley 1996: 195), which compares the annual warfare death rates for twenty-five “non-state” societies with the rates of six modern states. The table is divided into four columns: Society, Region, Annual % Rate and Source. The societies with the highest annual war death percentage are positioned at the top of the list. The annual percentages range from 1.45 % down to .00%. Sixteen of these twenty-five societies were “non-states,” located in regions other than New Guinea. These were the focus of my research.

Table 6.1 Annual Warfare Death Rates

<i>Society^a</i>	<i>Region</i>	<i>Annual % Rate</i>	<i>Source</i>
Kato (Cahto) 1840s	California	1.45	Kroeber 1965: 397-403
Dani-S. Grand V.	New Guinea	1.00	Heider 1970: 129
Piegan	N. Plains	1.00	Livingstone 1968: 9
Dinka 1928	N.E. Africa	.97	Kelly 1985: 55
Fiji 1860s	Melanesia	.87 ^b	Carniero 1990: 199
Chippewa 1825-1832	Minnesota	.75	Hickerson 1962: 28
Telefolmin 1939-1950	New Guinea	.74	Morren 1984: 188
Buin	Solomon Is.	.71	Wright 1942: 569
Kalinga (headhunts)	Phillippines	.60 ^c	Dozier 1967: 71
Mtewa 1806-1814	S. Africa	.59 ^d	Otterbein 1967: 356-57
Dugum Dani 1961	New Guinea	.48 ^e	Heider 1970: 128
Manga 1949-1956	New Guinea	.46	Pflanz-Cook and Cook 1983: 188; Vayda 1976: 109
Modoc	California	.45 ^f	Ray 1963: 134-35, 143
Auyana 1924-1949	New Guinea	.42	Robbins 1982: 211
Murngin 20 years	Australia	.33	Wright 1942: 569
Tauade 1900-1946	New Guinea	.32 ^g	Hallpike 1977: 120, 202
Mae Enga 1900-1950	New Guinea	.32 ^h	Meggitt 1977: 12-13, 109
Yanomama 1938-1958	Brazil	.29 ⁱ	Early and Peters 1990: 18
<i>C. Mexico 1419-1519</i>	Mesoamerica	.25	Thieme 1968: 17
Yurok	California	.24	Wright 1942: 570
Mohave 1840s	Calif.-Ariz.	.23	Stewart 1965: 377, 379
Gebusi 1940-1982	New Guinea	.20 ^j	Knauff 1985: 119, 376-77
Tiwi 1893-1903	Australia	.16	Pilling 1968: 158
<i>Germany 1900-1990</i>	Europe	.16	various ^k
<i>Russia 1900-1990</i>	Europe-Asia	.15	various ^k
Boko Dani 1937-1962	New Guinea	.14	Ploeg 1983: 164
<i>France 1800-1899</i>	Europe	.07	Wright 1942: 570
<i>Japan 1900-1990</i>	Asia	.03	various ^k
Andamanese 30 years	Indian Ocean	.02	Wright 1942: 569
<i>Sweden 1900-1990</i>	Europe	.00	various ^k
Semai	S.E. Asia	.00	Dentan 1979

^aStates are italicized.

^b1,500-2,000 deaths each year (average = 1,750), population in 1860 = 200,000.

^cFor a regional population of 1,000, if it was 500, then rate doubles; "battle" not included only raid deaths.

^d85 deaths/battle; 5 battles 1806-1814; population of 9,000.

^eDoes not include deaths from "secular" war occurring once every 10-20 years; were these included, the rate would be .85-1.23.

^fAverage of one raid per year; average loss 7.5% of average war party of 60; population of 1,000 estimated from various sources including Ray 1963: 204-11.

^gIntertribal killings only; including intratribal ones raises the rate to .53.

^h200 wars in 50 years, averaging 4 deaths/war, for an average population of 5,000.

ⁱContact population of 121, 7 war deaths ca. 1938, and no warfare because of isolation until 1958.

^jRaid and battle deaths only; internal homicides excluded.

^kPopulations averaged from Kennedy 1987: 199, 436; war deaths from Wright 1942: 664; Wilmott 1989: 477; Winter 1989: 206 and other sources. If these rates were calculated for only the bloodier period from 1900 to 1950, they would more or less double.

After evaluating the accuracy of the annual warfare death rates in Table 6.1, I focused on Table 6.2 (Keeley, 1996: 196). In this table, Keeley located the percentage of male deaths, female deaths, and all deaths due to warfare for several tribes. Once again, Keeley took the percentage of war deaths for small-scale societies and compared them to states. There were four societies researched out of the thirteen total: the Jivaro, the Yanomamo-Shamatari, the Murngin, and the Yanomamo-Namowei.

Table 6.2 Percentage of Deaths Due to Warfare

<i>Society^a</i>	<i>Male Deaths</i>	<i>Female Deaths</i>	<i>All Deaths^b</i>	<i>Source</i>
Jivaro	59.0	27.0	32.7 ^c	Ross 1984: 96
Yanomamo-Shamatari	37.4	4.4	20.9	Chagnon 1974: 160
Mae Enga	34.8	2.3 ^d	18.6	Meggitt 1977: 110-12
Dugum Dani	28.5	2.4	15.5	Heider 1970: 128
Murngin	28.0	—	—	Harris 1975: 262
Yanomamo-Namowei	23.7	6.9	15.3	Chagnon 1974: 160
Huli	19.6	6.1	13.2	Glasse 1968: 98
Anggor	—	—	11.9	Huber 1973: 639
Gebusi	8.3	8.2	8.3	Knauff 1985: 117-19
<i>Ancient Mexico</i>	—	—	5.0	Thieme 1968: 17
<i>France 19th century</i>	—	—	3.0	Wright 1942: 665
<i>Western Europe 17th C.</i>	—	—	2.0	Wright 1942: 212
<i>U.S. and Europe 20th C.</i>	<1.0	—	—	Harris 1975: 262

It took several months to track down all of Keeley's sources for his war death percentages. Listed next to almost every society was the author, year and page number(s) used. He listed the complete citation in the back of the book. Some citations did not have the page numbers listed, or did not list all of the pages from which he had obtained his

data. As a result, I had to read the entire source for each of the sixteen cases. I read through each text carefully and kept note of any mention of years, specific battles, war party numbers, population numbers, and war deaths. In a number of cases, Keeley cited a secondary source rather than the primary sources⁷, and I tracked down the original source to check that the information was accurate. I went through each text in depth before moving on to the next. The past few months have been spent collecting data and assessing how accurate each of the twenty death rate percentages are.

After careful examination (methodology to follow), I have determined Keeley's warfare rates in Tables 6.1 and 6.2 are not reliable overall. He did accurately list the societies in order from the highest war death rates to the lowest; based upon these numbers he is demonstrating that small-scale societies have relatively higher death percentages than modern states. Only a few of his cases were not calculated correctly. Some were off by a hundredth of a percent or were rounded incorrectly, but for the most part Keeley found the right percentage with the data he possessed. Although most of the cases were accurate in calculation, I found several problems with other factors that will be discussed in-depth in this thesis.

I am attempting to follow in Keeley's footsteps: to track down from where and when his information stems, and to determine the accuracy of each war death percentage. I am not suggesting Keeley's hypotheses and ideas are incorrect. I am also not stating that Steven Pinker and other scholars should not use Keeley's database to further their own ideas. This thesis merely attempts to assess the accuracy of the numbers, not the ideas behind the calculations. I will state which of the percentages are accurate and will suggest

⁷ Keeley would quote or use data from a text that was not the original source. He would cite where he located the information (even if the author was referencing someone else) and therefore these became secondary sources.

which need to be discarded, along with my reasoning, in order for the tables to be a complete set for others to use in their own research.

CHAPTER 2: WAR BEFORE CIVILIZATION

Lawrence Keeley was one of the first anthropologists to begin compiling data regarding small-scale warfare and death rates. His book, *War Before Civilization*, attempts to show how small-scale warfare was more deadly, more ruthless, and more frequent than modern warfare. In his opening pages Keeley states,

“Archaeology is the study of patterns of effects, repetitions of human behaviors that leave enduring marks on the physical world. Warfare- the armed conflict between societies- whether its scale is large or small, is such a pattern and leaves very enduring effects. In this work, I have tried to muster a mass of evidence to convince not just archaeologists and historians but also the educated public that the notion of prehistoric and primitive warfare is not an oxymoron” (Keeley 1996: x).

Keeley felt that far too many anthropologists of the postwar period were pacifying the past with ideas of low-impact warfare. They were leading people to believe that “prehistoric” warfare was not a very deadly activity. He rejected this idea, suggesting instead small-scale, or “primitive” warfare as he labels it, was far more destructive for populations than civilized warfare. To accurately examine this, he focused on the rate of people being killed in relation to the entire population (or war party). Keeley stated that when looking at the war death percentages for these small populations, one could clearly see this form of warfare was far more lethal and would have greater consequences for a small group of people.

Keeley begins his book by stating the importance behind the *War Before Civilization*'s publication. Keeley recognizes this is not a simple field of study. The reason anthropologists have not written much about it, is due to the extreme difficulty of tracking down data from pre-contact years. Recorded history represents less than half of

one percent of the years humans have existed (Keeley 1996: 4) and prehistoric warfare can only be documented reliably within the past twenty to thirty thousand years. There are still many regions of the world that are difficult to access and little is known archaeologically; therefore the available evidence of human skeletons with weapon trauma and fortification⁸ remains are limited to certain areas and complete sets of data are very scarce. Anthropologists do not know exactly what evidence indicates about the past. They must infer, to the best of their ability, what happened from the remains, and piece together history. A great deal of the information anthropologists gather comes from direct participant observation and by living among the group they are researching. They observe the present culture and speak with current members to determine what past traditions and practices would have been like. Warfare was an important part of many of these cultures, and researchers have attempted to study what it was like before European contact. “Few of these ethnographers were explorers, however, and they usually lived with people who had already been pacified by Western administration. Thus they had to rely on their informants’ memories of precontact⁹ warfare and had little opportunity to observe it directly. But such accounts tended to idealize or bowdlerize¹⁰ behavior” (Keeley 1996: 8). Keeley mentions some of the anthropologists who have lived among societies and learned about warfare death rates through them, but states “the ethnographers seldom analyzed casualties in relation to the small numbers who fought and thus could not compare them on this basis to larger-scale civilized battles” (Keeley 2011: 9). Keeley sets

⁸ A fortification is a defense wall or other reinforcement built to strengthen a place and group from attack (American Heritage Dictionary).

⁹ Pre-contact warfare refers to the violence taking place between tribes, prior to European contact and colonization.

¹⁰ To bowdlerize is to remove material that is considered improper or offensive (from a text or account), especially with the result that it becomes weaker or less (American Heritage Dictionary).

forth to collect data and calculate these casualty rates; his goal is to show that peaceful societies of the past have in fact been very rare and all available evidence suggests warfare was frequent and lethal.

Keeley defines “primitive warfare” as being preindustrial or preliterate warfare (Keeley 1996: 27). He argues that this form of warfare was actually equal or superior to civilized battle in terms of devotion to the offensive, the use of surprise, scouting and intelligence, tactical mobility, and the use of terrain (Keeley 1996:42). Tribal members, primarily men, spent most of their childhood preparing for battle and learning how to be warriors. They witnessed violence at a young age and knew their immediate enemies. There were many different kinds of violence: Keeley divides them “roughly into formal battles, small ambush raids, and large raids or massacres. For most primitive groups, small raids have been the most and massacres the least frequent form of combat” (Keeley 1996: 59). Keeley recognizes these battles between tribes were often prearranged, and the fighting was called off after a few casualties or when “revenge” had been achieved. He does not criticize the anthropologists who recorded these battles as being somewhat controlled; he says instead that far too many ethnographers only vaguely note the small number of casualties, not bothering to actually count how many people were killed. According to Keeley, a battle with low casualty rates can have greater effects than one with high numbers if the group has a smaller population and less people to sustain the war party.

With regards to these casualty rates, Keeley does make a distinction between formal battle and raiding. Raiding uses the element of surprise and often involved groups

outmaneuvering and outnumbering another who was positioned on weaker terrain.

Formal battles occurred frequently but more deaths were inflicted by raids.

“Raids characteristically kill only a few people at a time; they kill a higher proportion of women than do battle, or even the routes that follow them; they kill individuals or small groups caught in isolated circumstances away from major population concentrations; and because the victims are outnumbered, surprised, and often unarmed, their wounds are often inflicted as they try to flee. Archaeologically this pattern will thus be evidenced by four corresponding characteristics: burials of individual or small groups of homicide victims; women as a high proportionate of the victims, burials sometimes located away from the major habitation zones (although raid victims were recovered and buried in the usual cemeteries) and evidence that most wounds, even on adult males, were inflicted from behind” (Keeley 1996: 66).

Often raids were used as a form of revenge, meant only to kill a few people and to even the score between tribes. Revenge was a very important concept in these small-scale societies and when one of their own was killed, the victim group would plan to avenge the death. Even in some battles, fighting would end once an equal number had been killed on each side. It was only during massacres, which were larger surprise attacks that the motive was to completely annihilate the enemy social unit.

There were times when tribes formed treaties with their enemies, and Keeley suggests this was partly due to and enforced by contact with Western administrations. Before these forms of pacifications however, tribes enacted their animosity towards other groups for generations. “In many cases, primitive warfare requires long periods of time—even generations- to gain its ends” (Keeley 1996: 80) These tribes truly possessed a strong hatred for one another and the cycle of raiding and fighting continued for many years.

“The precipitating causes of most wars—primitive and civilized—are acts of violence that provoke further violence in immediate defense or subsequent retaliation. In preliterate societies, the original killing or attack

that instigated a cycle of revenge may be lost in the mists of traditional enmities^[11], but the latest violence by the other side provides ample immediate justification for further hostilities” (Keeley 1996: 116).

For some tribes, fighting only occurred every few years but for others, it was much more frequent. Keeley argues almost every tribal society across the world engaged in warfare, and for even the most peaceful societies violence was not completely unknown. Small-scale, “primitive” warfare had devastating effects on these populations, yet the groups did not eliminate violence. They continued to lose tribal members at the hands of their enemies (until contact and pacification occurred, according to Keeley).

“The high death rates among most nonstate societies are obviously the result of several features of primitive warfare; the prevalence of wars, the high proportion of tribesmen who face combat, the cumulative effects of frequent but low-casualty battles, the unmitigated deadliness and very high frequency of raids, the catastrophic mortalities inflicted in general massacres, the customary killing of all adult males, and the often atrocious treatment of women and children. For these reasons, a member of a typical tribal society, especially a male, had a far higher probability of dying ‘by the sword’ than a citizen of an average modern state” (Keeley 1996: 93).

To validate his hypothesis, Keeley created two tables to show that war mortalities in small-scale groups were higher than in modern civilized societies.

In Table 6.1, Keeley has calculated annual warfare death rate percentages for thirty-one societies across the world; twenty-five come from small-scale tribes and the remaining six are modern states during their deadliest centuries. He chose the thirty-one societies based on the available data from tribes across the world. In order to calculate the percentage of annual death rates in war, he needed to know each society’s population size. Sometimes he used the population for a single year, often when a census was available. In other cases, he used the average size of the population over a number of years. Keeley at times did not use the population of the entire tribe but instead, only

¹¹ Enmity is the state or feeling of being actively opposed or hostile to someone or something.

obtained data for the war party; he either had the average war party size or the number of people who participated in a single battle. He used these numbers to represent the total number of people in the society, even if it did not include the women and children and therefore, his population data was inconsistent for each tribe.

Because Keeley was attempting to calculate warfare percentages on an annual basis, he needed data on the number of people killed each year in war. This was not consistent for every society; for some Keeley used the number of people killed in a single battle and for others Keeley used the average number killed in all battles. To calculate the percentages, Keeley took the number of people killed in war and divided it by the population (of either the tribe or the war party). In some cases, he then divided this number by the range of years—e.g.; the Yanomama data is from 1938-1958 and so the war death percentage had to be divided by 20 to calculate the annual percentage. Keeley computed these percentages to best determine the average annual death rate for each population.

Keeley calculated the annual percentages for both the small-scale societies and the modern states. He listed them all from highest to lowest in Table 6.1. In his text, Keeley expressed:

“It comes as a shock to discover that the proportion of war casualties in primitive societies almost always exceeds that suffered by even the most bellicose or war-torn modern states... Figure 6.1 compares these casualty rates with those of the most war-torn modern states. Following the practice of several ethnographers, to facilitate comparison, these war death rates are expressed as annual percentages of mean population. Another measure of the deadliness of warfare is the proportion of all deaths caused by war; these figures are given in Figure 6.2. By either measure, primitive warfare was much deadlier than its modern counterpart²¹” (Keeley 1996: 88).

“21. Some readers may be unconvinced by percentage comparisons between populations of hundred or thousands of people and populations of

millions and tens of millions- that is, they are more impressed by absolute numbers than ratios. However, consistent with such views, such skeptical readers must also disdain any calculations of death ratios per patient or passenger-mile and therefore always chose to undergo the critical surgery at small, rural, Third World clinics and fly on small airlines. At such medical facilities and on such airlines, the *total* number of passenger or patient deaths are always far fewer than those occurring on major airlines or at large university and urban hospitals. These innumerate readers should also prefer residence on one of the United State's small Indian reservations to life in any of its metropolitan areas since the annual *absolute* number of deaths from homicide, drug abuse, alcoholism, cancer, heart disease, and automobile accidents will always be far fewer on the reservations than in major cities and their suburbs" (Keeley 1996: 214, fn 21).

As Keeley puts forth, one must always look at the relative number of deaths, and not the total. Small-scale societies face more devastating consequences than large states because of the smaller populations.

In Table 6.1, the societies with the highest annual percent rates were primarily small-scale tribes. Keeley compared the small-scale societies to six states in the table: C. Mexico 1419-1519, Germany 1900-1990, Russia 1900-1990, France 1800-1899, Japan 1900-1990, and Sweden 1900-1990. The annual warfare percentages for these states all fall in the bottom half of the table. None of these societies have an annual rate higher than 0.25% and according to Keeley, there should be an even greater gap between the percentages for small-scale societies and the larger states. He argues that even though the percentages for states are already very small, these numbers may actually be an overestimation. Many war deaths in modern societies have been the result of disease and accidents involving horses, vehicles, and weapons. The deaths recorded for the "primitive" groups on the other hand, were all the direct result of injuries during combat (Keeley 1996: 89). Unlike the modern societies, Keeley says the numbers for "primitive" groups have probably been underestimated, due to the difficulty of assessing war deaths. In most archaeological sites, only skeletons with projectiles in their bones are counted as

war deaths. He did not include skeletons with blunt force trauma which also would indicate violence was present. There were many people who died from war whose remains did not show evidence of violence or whose bodies were never recovered. If all the data from small-scale societies was complete and accurate, the divide between these and modern societies would be even greater.

Many ethnographers engaged in the debate argued that even when using relative numbers, the low mortality rates did not bring as much devastation to small-scale societies. Keeley rejects this by claiming warriors and chiefs were forced to end battles after only a few losses. The entire population's survival was at stake and the tribesmen, women and children waiting back home depended on those who comprised the small war parties. If wars between small-scale societies were allowed to continue, the number of mortalities would have been even higher. Keeley argues that the annual warfare death percentages for small-scale societies would be larger if wars were not stopped after a few deaths.

“How can such high losses be reconciled with the low casualty rates generally observed in primitive battles, where action is often broken off when both sides have suffered a few dead? Part of the answer lies in the higher sortie rate of primitive warriors. As was noted earlier, warfare occurs much more frequently in most primitive societies than in civilized ones. Thus a relatively low loss rate per war, battle, or raid can accumulate very rapidly to catastrophic levels. Suppose that a tribe with 100 warriors breaks off fighting or arranges a truce in a battle after a loss of just 5 percent dead or mortally wounded. If such battles occurred about four times a year, the cumulative loss in just five years would be 64 percent, leaving only about 36 warriors alive to defend the group. Given a high frequency of warfare, likely losses due to small raids and ambushes, and other sources of losses to warrior strength from accident and disease, no small group could afford to accept losses in a battle exceeding 2 percent” (Keeley 1996: 91).

These groups were so small in population that any death would have an impact on how the tribe could function and survive in their next battle. They did not have sufficient populations to sustain losing a great amount of their men; the remainder of their population would be left to fend for themselves and as a result, the entire tribe could be massacred if a group took advantage of their weakness.

In Table 6.2, *Percentage of Deaths Due to Warfare* (Keeley 1996: 196), Keeley lists nine small-scale tribal societies and compares the percentage of male deaths, female death and all deaths to the percentages for four states. Five of the small-scale societies came from the New Guinea region and were part of Dr. Roscoe's research. The other four were from Ecuador, Brazil, and Australia and all had higher death percentages than the four states of Ancient Mexico, 19th Century France, 17th Century Western Europe, and 20th Century U.S. and Europe. For some of these calculations, Keeley computed the percentage for "all deaths" by averaging the male and female figures, thus assuming the sex ratio was equal for that society. There were also some instances, which he mentions in the footnotes, when the numbers came from times of firearm use. This indicates western contact and influence had already begun and the death rates were not from pre-contact warfare. For one of the societies—the Murngin of Australia—Keeley does not have percentages for the "female death" or "all death" categories. The table is fairly incomplete for several of the societies, but Keeley is able to demonstrate the numbers he did obtain were much higher than those of modern states. Keeley created Tables 6.1 and 6.2 in his appendices to show these high casualty rates for societies across the globe. He effectively demonstrates that when looking at absolute rates and percentages, rather than total numbers, the smaller populations were affected at more deleterious levels.

These populations have gone through processes of pacification and Keeley suggests that lethal warfare ended in these societies. In the debate about colonialism, he favors the idea that western contact led these societies away from deadly battle. He attributes the decline in war mortalities to a global shift from tribal villages to civilized societies.

“One author has estimated that more than 100 million people have died from all war-related causes (including famine and disease) on our planet during this century (Rhodes 1986: 779 (citing Gil Eliot)). These deaths could be regarded as the price modern humanity has paid for being divided into nation-states. Yet this appalling figure is twenty times smaller than the losses that might have resulted if the world’s population were still organized into bands, tribes and chiefdoms... A typical tribal society lost about .5 percent of its population in combat each year (Figure 6.1). Applying this casualty rate to the earth’s twentieth-century population predicts more than 2 billion war deaths since 1990” (Keeley 1996: 93).

Keeley emphasizes that tribal warfare needs thorough research and cannot simply be dismissed as ritualized, insignificant violence. He expands his hypothesis with a great deal of evidence from anthropologists and archaeological data. There are many who disagree with Keeley’s ideas about pre-contact warfare but his text has also gained attention and support from others, such as Steven Pinker. These scholars have all taken a side on the great debate about small-scale violence but have not yet assessed the accuracy of Keeley’s warfare calculations. For one to support Keeley and use his data in one’s own publications, one must ensure that his numbers and citations are accurate. I will now attempt to evaluate Keeley’s work in the remainder of this thesis and can hope to only strengthen the tables by assessing the precision of his warfare mortality calculations.

CHAPTER 3: ASSESSMENT OF FIGURES 6.1 and 6.2

This thesis will now assess the figures presented by Lawrence Keeley (1996: Tables 6.1; 6.2) to represent the annual death toll in small-scale warfare. It will examine in detail the accuracy of Keeley's calculations, citations, and whether the sources used to compute the percentages were reliable.

In Table 6.1 Keeley intended to demonstrate the high level of annual warfare death rates for small-scale societies across the world. He mentions the difficulty in acquiring substantial warfare data for these groups and had to rely on the minimal amount of information that exists. Most of his data on death rates comes from the late 19th and early 20th centuries. The number of small-scale societies surviving in this period of time is unknown but there were hundreds to thousands of bands and tribes scattered throughout the world. In this table Keeley only uses a data pool of thirty-one groups. Twenty-five of these can be classified as small-scale societies and he compares their warfare death percentages to those of six states. Of the twenty-five small-scale societies, nine come from the region of New Guinea and were Dr. Roscoe's focus. The remaining sixteen societies in the table (listed below with an asterisk) were my concentration and these groups came from several different locations. The figure below, *Table 3.1* shows where all thirty-one societies are located in the world.

TABLE 3.1 *Region of Each Society*

	SOCIETY	REGION	LOCATION
1	Kato (Cahto) *	North America	California
2	Dani- S. Grand V.	New Guinea	South Baliem Valley
3	Piegan *	North America	N. Plains
4	Dinka *	Africa	N.E. Africa
5	Fiji *	Island Melanesia	Melanesia
6	Chippewa *	North America	Minnesota
7	Telefolmin	New Guinea	Telefomin
8	Buin *	Island Melanesia	Solomon Islands
9	Kalinga *	Other	Philippines
10	Mtetwa *	Africa	S. Africa
11	Dugum Dani	New Guinea	Mid-Baliem Valley
12	Manga	New Guinea	Bismarck Mountains
13	Modoc *	North America	California
14	Auyana	New Guinea	Eastern Highlands
15	Murngin *	Australia	Northeast Arnhem Land
16	Tauade	New Guinea	Goilala Sub Province
17	Mae Enga	New Guinea	Western Highlands
18	Yanomama *	Other	S. America
19	C. Mexico	MesoAmerica	---
20	Yurok *	North America	California
21	Mohave *	North America	California-Arizona
22	Gebusi	New Guinea	Papuan Plateau
23	Tiwi *	Australia	Melville and Bathurst Islands
24	Germany	Europe	---
25	Russia	Europe-Asia	---
26	Boko Dani	New Guinea	Bokondini
27	France	Europe	---
28	Japan	Asia	---
29	Andamanese *	Other	Indian Ocean
30	Sweden	Europe	---
31	Semai *	Other	S.E. Asia

Keeley chose these small-scale societies to demonstrate that although there is a range in the percentages, these societies generally have higher casualty rates than most states. He created this table to portray small-scale warfare as a fairly deadly activity but the societies he chose do not represent an equal array of groups from across the globe. The majority of the groups are from New Guinea or the United States. This is partly due to available data and the number of ethnographers studying these groups. South America, Africa, and Asia are very underrepresented in the table with only a few societies from each continent. There are many bands and tribes that have practiced warfare in these nations but Keeley does not explain his decision to not use more groups. I believe that adding more societies would have contributed greatly to the substance of his argument. Twenty-five groups is a small dataset to use in comparison to the number of tribes existing at the time. There is no evident correlation between the groups he did choose to reference. As a whole, they do not present an ample model.

The sixteen societies I evaluated in Table 6.1 are dispersed throughout the world. Keeley has classified them all as small-scale groups but there are several differences in the make up of these groups. They have different subsistence patterns¹² which include hunting and gathering techniques, fishing, the practice of cultivation through horticulture¹³ or subsistence agriculture¹⁴, pastoralism,¹⁵ and the processes of distribution and exchange. They also had very different settlement patterns and this would have affected the ways in which warfare was carried out. Nomadic groups traveled from place

¹² Subsistence refers to the action or fact of maintaining and supporting oneself at the minimum level (American Heritage Dictionary).

¹³ Horticulture is based on the use of simple tools and includes plant cultivation (American Heritage Dictionary).

¹⁴ Subsistence agriculture involves the continuous use of arable land and is more labor intensive.

¹⁵ Pastoralism is the raising of grazing animals and members of the society follow the herd.

to place at all times. Their shelters were easy to transport and they would travel on foot, often with their herds. They would move seasonally to follow the available wild plants and game. The semi nomadic groups had living habits that largely resembled nomads but there were times when crops were planted at a base camp. There were other groups that remained in the same location year round and lived in permanent settlements. These groups were more likely to depend on cultivation for survival. The subsistence and settlement patterns of these societies also impacted the political form of each group.

There are four major types of political organization that are ranked by social complexity. It begins at the lowest level with bands and becomes more complex with tribes, chiefdoms and then states. A band is a small autonomous group of twenty to a few hundred people. The group is made up of nuclear families that are loosely associated with the land on which they hunt. The second major form of political structure is the tribe. Tribes are a large collection of clans with ties binding them together. Tribes have developed kin-based mechanisms to accommodate sedentary life, to redistribute food, and to organize some communal services. An elder man of influence acts as an advisor and holds leadership in the tribe. The majority of the sixteen societies in Table 6.1 were either bands or tribes. These are the smaller forms of political organization and Keeley focused on warfare death rates from these groups.

The third level of political organization is the chiefdom. Fiji is the only society from the table that can be defined as such. Chiefdoms are kin-based but are structured with ascribed leadership. They have a greater population density and display signs of social ranking. A chiefdom society is more complex and more organized than bands or tribes. Warfare in these groups was bloodier, more intense, and was considered an

occupation for men of the society. At the top, the highest form of organization is the state level. States have a centralized government and represent highly complex organizational structures that function to control large societies. State warfare is considered to have devastating effects on its land and populations. Keeley wanted to debunk the idea that state warfare had higher death rates than bands and tribes.

Table 3.2: Types of Society summarizes the basic ethnographic contours of the political organization, along with the subsistence and settlement patterns of the sixteen societies in question. The table is incomplete because I was not able to locate data on every ethnographic feature of these societies. The table is simply meant to provide a basic summarization of each group.

The majority of these societies are hunter-gatherer bands or tribes living in small villages. Many of them have similar living patterns but warfare would have differed between tribes that live nomadic, forager lifestyles and those that practiced cultivation in permanent settlements. Warfare was enacted differently between these bands and tribes. Their settlement patterns determined whether they carried out violence through ambush, raids, or battle. Tribes that lived in larger permanent villages carried out pitched battle with enemy groups. Ambush and raid were used more for revenge circumstances. These independent groups practiced different styles of warfare and some went to war more often than others. The Fiji society in the table is a chiefdom that went to war many times a year. War became a necessary element of life with the need for expansion, resources, and in order to sustain a growing population (Carniero 1990). This would not have been the case for a band such as the Andamanese. These people lived in small isolated

TABLE 3.2 *Type of Society*

	SOCIETY	DESCRIPTION OF SOCIETY
1	Kato (Cahto)	Hunter-gatherer; partially nomadic; villages w/ chiefs
2	Piegan	Hunter-gatherer; some cultivation; buffalo hunters; partially nomadic; tribe
3	Dinka	Agro-Pastoral; rely on cattle herding; some cultivation; independent but interlinked clans
4	Fiji	Cultivation, fishing; chiefdom
5	Chippewa	Hunting; fishing; agriculture; sedentary; bands
6	Buin	Cultivation; hamlets
7	Kalinga	Hunter-gatherer; cultivation; pastoralism; villages
8	Mtewa	Confederation of tribes/clans
9	Modoc	Hunter-gatherer; fishing; seasonal migration; band
10	Murngin	Hunter-gatherer; semi-nomadic; tribe
11	Yanomama	Hunting; shifting cultivation; village-polities
12	Yurok	Hunter-gatherer; fishing; sedentary; village-polities
13	Mohave	2 divided villages ruled by chiefs; one advocates peace, the other war
14	Tiwi	Hunter-gatherer; bands
15	Andamanese	Hunter-gatherer; isolated bands
16	Semai	Horticulturalists; semi-sedentary; village-polities

groups. They had little contact with external societies and warfare in this tribe often occurred through surprise ambushes on neighboring individuals (Radcliffe-Brown 1922). It is difficult to group these sixteen societies on the same level of complexity and it is important to examine their living patterns when studying war casualty rates. Keeley does not differentiate between these groups and places them within the same table to represent small-scale societies as a whole.

Keeley chose not to mention the differences in the living patterns of these societies, but does acknowledge that different forms of warfare were carried out. He admits the total percentage of war casualties is so low that it is difficult to separate killings that occurred from battles, raids, or ambushes. Battle is the largest form of violence and is a sustained fight between large, organized armed forces. At times, especially in tribal societies, these battles were arranged and called off after a few deaths on each side. There has been a lot of debate about ritualized fighting in these battles and some scholars believe the fights were less about killing and instead took place to display courage, masculinity, and emotion. Keeley hoped to show these war deaths actually had a great impact on the societies, but many of his percentages came from surprise attacks rather than battles. Surprise attacks should not be compared with modern states that practice full out battle involving two enemy sides.

Ambush and raids rely on the element of surprise and the victims do not have the opportunity to fight back equally. Ambush is a surprise attack from a concealed position. Several of the sources used by Keeley depict instances when single individuals were outnumbered and killed by an enemy group. He also used examples from raids, which are larger surprise attacks. These occurred when a small group of people attacked another

village. Strategy was involved in raids and resulted in high casualties. The group would often approach during the night and attack the unaware villagers at dawn. In these raids men, women, and children were killed and it was difficult to fight back; their only option was to flee. Keeley used these deaths in his calculations and considered them to be war casualties. Many scholars, including Douglas Fry, suggest that surprise attacks should be considered homicide rather than acts of war at times. In Fry's text, *Beyond War: The Human Potential for Peace*, he writes about the Murngin, one of the tribes in Table 6.1. Fry argues the deaths attributed to these people occurred instead through feud and should be categorized as homicide.

“The loose application of martial vocabulary such as war and battle to individual self-redress, feuds, punishment of wrongdoers, and even regulated fights that serve as a form of conflict resolution occurs with some regularity in the literature on Australia and elsewhere. For example, W. Lloyd Warner tallied up violent deaths among the Murngin, lumping together those that resulted from individual fights, group fights revenge homicides, and even capital punishment. Compounding the confusion Warner titled his chapter “Warfare” and therein stated that “there are six distinct varieties of warfare among the Murngin. Such labeling muddles the issue, for as Ronald and Catherin Berndt point out about Warner’s six types, “not all can be termed warfare.” Corresponding with Williams’ statement that Murngin “war” is actually blood revenge, Warner reports that the Majority of the killings stemmed from revenge seeking” (Fry 2005: 116).

Scholars define warfare in different ways and this poses a problem when collecting the number of casualties.

In my estimation, there are many times when Keeley should not have used data from ambush and raids in his percentages. He estimates the annual warfare death rate for the Kalinga tribe at 0.60%. He does indicate that the casualties were the result of headhunting rather than battle, but I believe these should not be considered warfare deaths. The Kalinga would set out and attack individuals so they could bring scalps back

to their village. Headhunting could be considered a ritual activity rather than an act of war in these tribes. I do not believe that 0.60% can represent the annual warfare death rate for the Kalinga when the data comes strictly from headhunting. Another instance that should not be classified as warfare occurs in Keeley's calculation for the Murngin. He estimates the percentage of war deaths at 0.33% but includes two deaths that occurred from a fight within the camp. It is not warfare when members of the same tribe kill one another. After close examination I have determined that several of Keeley's calculations included losses that should not be included in the table.

I suggest that Keeley needs to further clarify which of the calculations included deaths from ambush and raid. He does make a distinction for some societies, listing that battle was not present. I found several instances however when battle was not the cause of death, yet Keeley made no note of it. It is difficult to assess which deaths should be included but I have based my evaluation off of Keeley's own definitions and explanations. There needs to be consistency when one is comparing percentages and Table 6.1 would be more accurate if all deaths occurred in the same manner. Below, I have created *Table 3.3: Types of Warfare* to summarize the forms of warfare that each percentage resulted from. I have based these distinctions on the data from the original source. I do not know a sufficient amount of information about each group's total forms of war. If a group is listed as losing its members to raid it does not mean that battle and ambush were not conducted as well. I am only assessing the data that Keeley used for his calculations and the forms of war are not consistent in the table

TABLE 3.3 *Types of Warfare*

	SOCIETY	FORM OF WARFARE
1	Kato (Cahto)	Battle
2	Piegan	Battle
3	Dinka	Raid
4	Fiji	Battle
5	Chippewa	Battle
6	Buin	Ambush
7	Kalinga	Headhunting
8	Mtetwa	Battle
9	Modoc	Battle
10	Murngin	Battle; Ambush; Fights within Camp
11	Yanomama	Ambush; Raid
12	Yurok	Battle; Raid
13	Mohave	Battle
14	Tiwi	Ambush; Arranged Battle
15	Andamanese	Ambush; Raid
16	Semai	N/A

It was important for Keeley to use war deaths, regardless of which form they were, that occurred before western contact was made with these tribes. He believed that these societies were pacified when Europeans colonized their lands and enforced peace upon them.

“As we have seen, in many tribal areas, peace was imposed by an external power that punished fighting with superior force. Some areas pacified themselves when repeating rifles became readily available and trade with the wider world increased—like in many areas of Melanesia and among the Kalinga of the Philippines (Rodman and Cooper 1983; Dozier 1967). In all these cases, changes made either warfare significantly more costly or peace substantially more profitable (or both)” (Keeley 1996: 160).

A large part of Keeley’s argument is that warfare in these tribes was far more lethal before Europeans arrived. For some of the societies in Table 6.1 Keeley lists the year(s) when the warfare deaths occurred. He acquired this information from the sources he used but in many instances the texts did not list when the warfare was taking place. The dates are known for only half of the sixteen societies but it was important to determine whether or not contact had been made between the tribes and Europeans. To assess this, I had to conduct research outside of the sources Keeley cited.

Europeans were in fact present before the year(s) when these deaths occurred in six of the societies. I was not able to obtain this information for every group but if contact was being made with civilized groups, attempts at pacification may have already been under way. The Dinka, for example had a high percentage of 0.97%. This number resulted from deaths occurring in 1928 but by this time, the British were actively seeking to end fighting and establish control over the region. It is therefore possible that contact may have increased warfare as groups attempted to rebel against European influence. If

Keeley wanted to demonstrate the high level of war casualties before contact, he should have used numbers coming from years when western administrations were not present. In these cases I do not know the level of influence that Europeans had on the tribes and therefore I cannot accurately evaluate whether pacification elevated or deflated warfare. It is important to note however, that Keeley does not mention when contact was established with these societies. *Table 3.4: Warfare Year(s)* summarizes the information that I have just gone over for the sixteen groups.

Keeley's aim was to calculate war death percentages on an annual basis. For the societies with data on when the deaths occurred, it was important to know the time span. In some cases, Keeley accessed information from several years of warfare. At other times he had the number of people that were killed in a single year. In order to calculate the annual percentage, the number of deaths in relation to the population then had to be divided by the numbers of years. For example, the percentage of deaths for the Yanomama came from the years of 1938-1958. The percentage had to be divided by 20 so that it represented the rate of deaths annually. In many of these cases, it is unknown how many acts of war were occurring in each year of the time span. Keeley created an average by dividing the total number of years but it is possible that there were some bloody years and other peaceful years during this time. Once again, the data is inconsistent. Keeley states it is difficult to acquire any information about warfare mortalities, let alone a consistent database for every society, and this is why he uses different kinds of data for each percentage.

TABLE 3.4 Warfare Year(s)

	SOCIETY	YEARS	TIME SPAN	PRECONTACT WARFARE?
1	Kato (Cahto)	1840s	10 Years	No (1769-1834 Mission Period)
2	Piegan	Unknown	Unknown	Unknown
3	Dinka	1928	1 Year	No (British actively seeking to end fighting, establish control)
4	Fiji	1860s	10 Years	No (by 1860s, European influence had lessened fighting)
5	Chippewa	1825-1832	7 Years	No (contact made in 1700s)
6	Buin	1908-1909	1 Year	No (though only under minimal German influence)
7	Kalinga	Unknown	1 Year	Yes
8	Mtetwa	1806-1814	8 Years	Yes
9	Modoc	Unknown	Unknown	Unknown
10	Murngin	Unknown	20 Years	Unknown
11	Yanomama	1938-1958	20 Years	No (first contact in 1958)
12	Yurok	Unknown	Unknown	Unknown
13	Mohave	1840s	10 Years	Yes (contact in 1859 but warfare continued after)
14	Tiwi	1893-1903	10 Years	Yes
15	Andamanese	Unknown	30 Years	Unknown (British colonial presence in 1789)
16	Semai	Unknown	Unknown	N/A

In some cases, Keeley used data from just a single battle. The source he cited lists a particular battle and the number of casualties that resulted. Keeley took the number of people killed in the battle and used this to compute the annual percentage of war-related deaths. It is not very reliable to assume that the casualties from one battle can represent warfare in general for a society. There are a lot of factors that can influence the outcome of war and to make an evaluation from only a single occasion is precarious. The inconsistency of the data that Keeley used made it difficult to determine how he was calculating the war death percentage at times. In my evaluation the deaths from one battle cannot be used to determine an annual average. These percentages should be removed from the table.

A crucial part of this thesis was to determine if Keeley had calculated the war death percentages correctly. In order to assess this I had to examine the sources and find which numbers Keeley had used. In most cases, he took the number of mortalities and divided it by the society's population to compute a rate. The following chapter will show the exact computations for each society and I have determined that fourteen were calculated correctly. There were times when the data was unreliable but he accurately calculated the rates with the information he possessed. In five of the fourteen accurate cases, Keeley's rounding was slightly off in the percentages. The difference was only one hundredth of a percent and so this was not enough of a fault to alter my assessment of the rate's accuracy. The exact percentages should be noted and are listed in Table 3.5.

There were only two cases in which I could not determine how Keeley calculated the death percentages. In the case of the Mohave, Keeley cited the incorrect edition of the text that he used to gather information. He cited Stewart's book from 1965 but there was

not a version of *The California Indians* published in this year. I made the assumption that he intended to cite the 1967 edition that exists but in this version, several key pieces of data Keeley refers to were not present. I was unable to re-compute the warfare death percentage of 0.23% with the information in this source. I do not know which numbers Keeley used or how he calculated this percentage. In the case of the Tiwi, Keeley incorrectly computed the percentage. He lists a death rate of 0.16% but I have not found a way this number can be attained using the information Keeley cites. There were some problems with calculations but in my estimation, the majority of Keeley's calculations are accurate. I have created *Table 3.5* to show the accuracy of each percentage.

I found very few problems with Keeley's calculations. I have determined, however, that there are numerous problems with the data and sources Keeley used to create these warfare rates. At times, Keeley would cite a secondary source in his table. When I examined the source that he listed, the information was actually coming from another work or text. I had to track down the original source to find the data used for these calculations. Twelve of Keeley's citations included secondary sources and it should be very important for anthropologists to cite where their information came from, not simply someone else who has referenced it. Keeley should have cited the primary accounts to ensure the data and percentages were accurate. In some cases, Keeley would cite the correct primary source but then would also use information that was not listed in that particular text. This made it very difficult to distinguish where he was obtaining his data and it took a long time to track down all of the numbers.

TABLE 3.5 *Assessment of Calculations*

	SOCIETY	CALCULATION ACCURACY	NOTES (Incorrect rounding)
1	Kato (Cahto)	Inaccurate	Available data \neq 1.45%
2	Piegan	Accurate	---
3	Dinka	Accurate	---
4	Fiji	Accurate	0.87 \rightarrow 0.88 %
5	Chippewa	Accurate	0.75 \rightarrow 0.77 %
6	Buin	Accurate	0.71 \rightarrow 0.69 %
7	Kalinga	Accurate	---
8	Mtetwa	Accurate	---
9	Modoc	Accurate	0.45 \rightarrow 0.41 %
10	Murngin	Accurate	---
11	Yanomama	Accurate	---
12	Yurok	Accurate	---
13	Mohave	Unknown	Insufficient data to calculate 0.23%
14	Tiwi	Inaccurate	Available data \neq 0.16%
15	Andamanese	Accurate	---
16	Semai	Accurate	---

For some societies, I do not know if the numbers used were the correct population or number of casualties. Keeley used several numbers that were not cited at all in his text. In the footnotes under Table 6.1, Keeley would occasionally make note of a number but there was nothing to explain where it came from. For the Kalinga, Keeley mentioned in a footnote that he used a regional population of 1,000 to calculate the death rate. He cited Dozier 1967 for the Kalinga but this text does not mention a population of this size. Keeley did the same for the Mteuta and noted a population of 9,000 and supplied 85 war deaths for the group. Otterbein's 1967 text does not make note of either of these numbers, yet Keeley's calculation was based on them. I was unable to locate the data when Keeley did not provide citations for it. Therefore, it was impossible to assess if his percentages could actually represent the annual death rate for some societies.

There were many cases when I did obtain the numbers Keeley used but I have determined that some of these sources are unreliable. The data from these should not have been included in the percentages. Keeley notes that it is difficult to acquire information that is complete and accurate but some of his sources were far too unsubstantial to use. The percentage for the Kalinga was calculated using a single memory from a headhunter. "In Bolo, in the region of Salegseg, an old warrior considered a half-dozen heads lost to the enemy during the course of a year, a reasonable estimate at the height of the head-taking period in his boyhood" (Dozier 1967: 71). Keeley used this estimate to calculate the annual death percentage and in my opinion, this is not a reliable source to conclude what warfare was typically like in Kalinga society. Keeley uses many sources that are memories and estimations of tribal members. He admits that village members often underestimate the number of casualties from their own

group and overestimate the number of their adversaries killed. I am not capable of assessing whether the numbers of deaths were too high or too low. If they are not accurate though, Keeley's percentages may be too liberal or conservative.

Another factor that could affect the data is authors and historians often do not write about nonviolent years of a tribe's history. When living with a tribe they record the acts of war and the number of mortalities. When killings do not occur they write about others factors of life and little is known about the peaceful times. This tends to lead to overestimations regarding violence within these groups. All of these things should be considered when examining Keeley's percentages. I believe that Keeley should have been more careful with his sources. It would have been beneficial to mention that some data may have come from a somewhat unreliable origin. Because this was not done, one looking at Table 6.1 would assume that the listed percentages of war-related deaths were very accurate estimations for each society.

As I have demonstrated, several of Keeley's sources and citations are questionable. He lists data that is not cited properly or is not cited at all in the table or the bibliography. In Table 6.1 he lists the page numbers he used to acquire data. Many times I found the necessary information on pages that were not cited and had to read through each text carefully. At the end of this process, I determined whether or not the citations for each society are complete. My evaluations are listed below in *Table 3.6: Assessment of Citations*. Only three of the societies were cited accurately and had reliable sources to determine the annual warfare death percentages. In my evaluation, the remaining thirteen percentages need to be altered and in present condition are not accurate enough to represent these societies. I have found many problems with Keeley's data and most of the

percentages do not bear the weight placed upon them under close scrutiny. It is apparent that Table 6.1 is incomplete and scholars should take a careful look at the sources before using them in their own data.

After determining that there are many problems with the data and percentages in Table 6.1, I then examined and assessed the percentages of deaths due to warfare in Table 6.2. This took far less time than the previous table because there were only four small-scale societies for me to research. The Jivaro, the Yanomama-Shamatari, the Murngin, and the Yanomama-Namowei were the four societies in this table that were small-scale and were not from New Guinea. This table was fairly incomplete and once again there were some problems with the calculations, citations, and the sources.

I have already introduced the Murngin and the Yanomama people, for they were included in Table 6.1. The remaining society, the Jivaro is located in Ecuador and the Peruvian Amazon. These people live in small villages and practice subsistence patterns of hunting and gathering, fishing, and cultivation. Keeley includes this tribe, along with the other three societies with the percentages of male deaths, female deaths, and all deaths for each group. The following table will assess the accuracy for these percentages like I have done so above but there was far less data to draw on for Table 6.2. Table 6.1 was the primary focus of my thesis but I feel it is important to include this information as well, even though it is fairly incomplete.

TABLE 3.6 *Assessment of Citations*

	SOCIETY	PRIMARY OR SECONDARY SOURCE?	COMPLETE CITATION?	SOURCE KEELEY NEEDS TO CITE	DATA KEELEY USED BUT DID NOT LIST A SOURCE FOR
1	Kato (Cahto)	Primary	Yes	---	---
2	Piegan	Secondary	No	Ewers 1955: 212	---
3	Dinka	Secondary	No	Unknown	Colonial Records listing number of deaths in 1928
4	Fiji	Primary & Secondary	No	Williams 1870: 53	---
5	Chippewa	Secondary	No	Schoolcraft 1834: 85	---
6	Buin	Secondary	No	Thurnwald 1936: 347-348	---
7	Kalinga	Primary	No	Unknown	Population of 1,000
8	Mtetwa	Primary & Secondary	No	Unknown	Population of 9,000; 85 war deaths
9	Modoc	Primary & Secondary	No	Unknown	Population of 1,000
10	Murngin	Secondary	No	Warner 1931: 457-458; 481-482	---
11	Yanomama	Primary & Secondary	No	Unknown	7 war deaths ca. 1938
12	Yurok	Secondary	No	Kroeber 1925: 126	---
13	Mohave	Primary & Secondary (Cites incorrect edition)	No	Unknown	5 to 7 killed in average battle
14	Tiwi	Primary	Yes	---	---
15	Andamanese	Secondary	No	Radcliffe-Browne 1922: 18; 86	---
16	Semai	Primary (Citation vague; cites whole book rather than pages)	Yes	---	---

TABLE 3.7 *Table 6.2 Evaluation*

	Jivaro	Yanomama-Shamatari	Yanomama-Namowei	Murngin
Cited Correctly	Yes	Yes	Yes	No-Cited Secondary Source
Reliable Source	Yes	Yes	Yes	No
Accurate Percentages	Male %- Yes Female %- Yes Total %- Unknown	Male %- No Female %- Yes Total %- No	Male %- Yes Female %- Yes Total %- No	Male %- Yes Female %- Unknown Total % Unknown

As one can see, there were a few problems with the percentages and sources used in Table 6.2 as well. The following chapter will now go through each of the problems that I have outlined for the societies in question. It will allow the reader to view the errors in regards to the citations, the calculations, and the sources that Keeley used to create these warfare death percentages. It will examine each society on an individual basis and I will explain why I believe many of these rates and sources should not have been used by Keeley.

CHAPTER 4: EVALUATION OF SOCIETIES

In this chapter, I will introduce and evaluate each of the societies from Tables 6.1 and 6.2. I will first suggest whether the percentage should be used to represent the war death rate for the society. If the percentage has been calculated correctly, I still may suggest that it should be removed from the table. If I was unable to locate the numbers that Keeley used to calculate the percentage I cannot assess whether this data is reliable. Also, in many cases the data came from raids and ambush rather than battle. I will not use this as a deciding factor to eliminate the percentage but will note that Keeley should have mentioned the form of warfare taking place. After this general assessment, I will then reiterate briefly what the problems with the calculations, citations, or the sources were for each group. I will include all calculations and the raw data that I examined in the appendices of this thesis. This section is intended to break down the previous tables I have introduced so that one can examine each society individually. I will begin with the sixteen societies from Table 6.1.

1) Kato (Cahto)

In my evaluation, the annual warfare death rate of 1.45% is not an accurate assessment by Keeley. I was able to acquire data that created a percentage of 1.46% from the 1925 edition of Kroeber's text. Keeley cited the 1965 edition of *The California Indians: A Source Book* however. There is not a 1965 edition of this text in existence but I assumed that he intended to cite the 1967 copy. With the information that was listed in

the cited pages, I was not able to determine how he calculated this annual warfare death percentage.

2) Piegan

In my estimation, the annual warfare death rate of 1.00% is not an accurate assessment by Keeley. I was able to determine how Keeley arrived at this number but there are several reasons why it should not be used. Keeley cited Livingston 1968 for this number but the data actually came from the research of Ewers (1955). Keeley cited the secondary source instead of the primary. In Ewers text it states “there may have been a number of years in which more than 1 percent of the total Piegan population died in battles large and small” (Ewers 1955: 212). This does not state that the annual rate is exactly 1 percent. Also, Keeley should not have assumed that 1 percent is so accurate that he could take it out to two decimal places, listing 1.00 percent. I was not able to determine how this number was computed. This is a faulty number and should not be used to represent the Piegan’s annual war death percent.

3) Dinka

In my evaluation, the annual warfare death rate of 0.97% is not an accurate assessment by Keeley. I was able to determine how Keeley calculated this number but it should not represent the annual percentage for the Dinka. Keeley computed this percentage with data from only one year, 1928. Below this information in the source it also lists that in 1916 there was an annual war death percentage of 1.83. Keeley did not incorporate this number and I do not think it is representative of the group to only use the

deaths occurring in 1928. Also, these deaths occurred after the British sought to end fighting and establish control over the territory. It cannot be considered pre-contact warfare and does not demonstrate how lethal violence was before western administrations were present.

4) Fiji

In my evaluation, the annual warfare death rate of 0.87% is not an accurate assessment by Keeley. I was able to determine how Keeley calculated this number but he rounded the percentage incorrectly. He listed a rate of 0.87% but it should be 0.88%. This number also does not represent the average rate for this society. He mentioned in a footnote that there were 1,500-2,000 deaths each year and he used 1,750 to represent the average number of casualties. When I checked the source however, it states “the loss of life in war on Fiji was reckoned as high as 1,500-2,000 a year” (Carneiro 1990: 199). These numbers represent when warfare was most destructive. Fiji, as a chiefdom, had much more intense and bloody war than the smaller societies (Carneiro 1990). Keeley also listed in his footnote that there is a population of 200,000 in 1860. This number does not come from the text that Keeley cited. Keeley should have used societies practicing the same levels of war or at least should have made note of the differences between these tribal and chiefdom warfare.

5) Chippewa

In my evaluation, the annual warfare death rate of 0.75% is an accurate assessment by Keeley. I was able to determine how he calculated the number but he rounded the percentage incorrectly. He listed a rate of 0.75% and it should be 0.77%. Trade and contact with European fur traders began in the 1700s and the warfare deaths occurred in 1825. There is data suggesting that traders were helping to initiate and facilitate truces so this percentage should not be considered pre-contact. In this case, Keeley cited a secondary source. He cited Hickerson (1962) and in this journal article, the data regarding warfare deaths comes from Schoolcraft (1834). The percentage does accurately represent the annual warfare death rate for the Chippewa but Keeley needs to ensure that his source and citations are reliable.

6) Buin

In my evaluation, the annual warfare death rate of 0.71% is not an accurate assessment by Keeley. I was able to determine how he calculated the number but he rounded the percentage incorrectly. He listed a rate of 0.71% and it should be 0.74%. He cited Wright 1942 but this is a secondary source. Keeley should have cited Thurnwald 1936. In Thurnwald's text, it lists a population for the Buin of 7,000 to 8,000 people. When calculating his percentage, a population of 7,000 is used and it should have been the average of 7,500. The deaths that were used in the percentage resulted from surprise ambushes on individuals. I also do not believe that Thurnwald should be used as reliable source. "One proof of the full survival of the old order was the fact that while I stayed in my camp at the coast *hardly* a week passed without a message, brought with more or less

excitement saying that someone had been killed. This meant a frequency of about 52 attacks a year” (Thurnwald 1936: 348). Fifty-two deaths is only an estimate of how many people were killed; yet Keeley used this in his percentage. It is also very likely that some of these deaths were rumors as Thurnwald only heard stories that were passing through villages. I do not believe that these can be used as an accurate number of war deaths.

7) Kalinga

In my evaluation, the annual warfare death rate of 0.60% is not an accurate assessment by Keeley. I was able to determine how this number was calculated but it came from an extremely unreliable source. The number of deaths came from the mouth of one old warrior who recalled six casualties a year from his boyhood. Keeley used this number to represent the impact warfare usually had in an average year. He used this number in comparison to a population of 1,000 people. Keeley listed this number in a footnote under the table but in Dozier’s text, there is no mention of this population size. I was not able to locate this number and this is not a reliable percentage or source. These deaths also occurred in headhunting, which could be more for ritual purposes than acts of war. I found many things wrong with the percentage for the Kalinga and I believe it should not be included in this table.

8) Mtetwa

In my evaluation, the annual warfare death rate of 0.59% is not an accurate assessment by Keeley. I was able to determine how this number was calculated but Keeley did not cite two of the numbers he used. In a footnote he listed “85 deaths/battle; 5 battles 1806-1814; pop. of 9,000.” I was able to determine why Keeley listed five battles but there was no information for the 85 deaths or a population of 9,000 in the text he cited. I was unable to assess Keeley’s percentage due to the missing data.

9) Modoc

In my evaluation, the annual warfare death rate of 0.45% is not an accurate assessment by Keeley. I was able to determine how this number was calculated. Keeley listed the war death percentage as 0.45% but it should have been 0.41%. Keeley listed an average war party of 60 but according to the source, the fighting unit consisted of ten to a hundred men. The average should have been 55 men and this would alter the final percentage to be 0.41%. Keeley noted that he used a population of 1,000 people. He estimated this number “from *various sources* including Ray 1963: 204-2011.” I was unable to locate this population size in the Ray text and Keeley did not cite the other documents that he used.

10) Murngin

In my evaluation, the annual warfare death rate of 0.33% is not an accurate assessment by Keeley. I was able to determine how this number was calculated. Keeley cited Wright 1942 but this is a secondary source. Keeley should have cited Warner 1931. This percentage is calculated using deaths that should not be considered warfare. Warner listed the different ways people were killed in this society and Keeley added them up to compute a total number of deaths. Keeley used the total of 100 deaths but when added, they actually equal 96 mortalities. He used all of the deaths that Warner presented and two of these deaths occurred as fights within the camp. These two deaths should have been eliminated from the total and Keeley should have instead listed the total death count at 94 people. Keeley's percentage of 0.33% was therefore a slight overestimation. Warner states, "these figures obviously do not include all of the deaths that occurred from such a cause. There are none recorded for the people south of Caledron Bay, and only a few for those around Wessel Island and the English Company Islands, where heavy fighting has always taken place. It would be safe to add, on the basis of population, another hundred casualties to this figure, making a total of two hundred men who had been killed" (Warner 1931: 482). Keeley used Warner's estimation and doubled the number of deaths. It is not very reliable to assume that a certain region would have an equal amount of warfare and an equal number of people killed. I do not believe this number should have been doubled. It would have been a more reliable percentage if Keeley had only used numbers that he could supply data for.

11) Yanomama

In my evaluation, the annual warfare death rate of 0.29% is not an accurate assessment by Keeley. I was able to determine how Keeley calculated the number. To compute the percentage however, Keeley used the 7 war deaths that are known from ca. 1938. The source does not list a population for 1938 but had a population of 121 people for the year 1958, when contact was first established. Even though the number of deaths and the population are from twenty years apart, Keeley used these two numbers to find a rate of 0.29%. It is not valid to compare these pieces of data. I also was not able to determine how Keeley came up with 7 war deaths. The source provided data on warfare between the Ninam and the Maquiritare. It lists several instances when these two groups killed members from the other and in total I was able to distinguish 6 Ninam deaths and 4 Maquiritare deaths. I do not know how 7 deaths were totaled from this data and Keeley did not explain his addition. These deaths also took place through surprise ambush and raid rather than battle. It is difficult to assess if this can be considered warfare because the Ninam and the Maquiritare are groups that were once a single, united group. They split into separate Yanomama groups and this is when raiding began. They also fought many other tribes outside of their villages and it may have been better to use data from these acts of war.

12) Yurok

In my evaluation, the annual warfare death rate of 0.24% is not an accurate assessment by Keeley. I do know how the percentage was calculated but could not determine where the numbers came from. Keeley cited a secondary source. He cited

Wright 1942 but the information came from Kroeber's text. Keeley used the data in his calculation stating there was an average loss of three people per raid. This number is listed in the Wright text, but Kroeber's original text did not contain it. Kroeber wrote about the wars between the Yurok and the Hupa but I do not believe that these should be considered warfare. The Yurok did not attempt to stop the Hupa from killing their people in the great war. They had previously killed a number of Hupa and knew that these mortalities would even the score. They did not fight back and these deaths should not be representative of Yurok warfare.

13) Mohave

In my evaluation, the annual warfare death rate of 0.23% is not an accurate assessment by Keeley. Keeley did not list the correct edition of Stewart's text. He cited Stewart 1965 but the text was actually published in 1967. Stewart's journal article in this text did not provide a sufficient amount of information to create a war death percentage. I am unsure as to how Keeley calculated 0.23%. I assume that Keeley used a piece of information from Stewart's article stating "Pete Lambart estimated that in an average battle from five to seven Mohave were killed; fifteen dead was a great loss" (Stewart 1967: 379). Neither Keeley nor Stewart cited Pete Lambart and it was not possible to determine where this data came from. I attempted to use the information that was present in Stewart's text but I could not come up with a percentage of 0.23%. This is yet another instance where Keeley needed to cite all of the information he used in a correct manner.

14) Tiwi

In my evaluation, the annual warfare death rate of 0.16% is not an accurate assessment by Keeley. I was not able to determine how this number was calculated. The excerpt that Keeley used to obtain the data is a single paragraph in Pilling's text. It states that in one decade at least sixteen males were killed. This number represented over ten percent of all males in the tribe. With this information, it is impossible to obtain a war death percentage of 0.16%. It is not a thorough source and I do not know how Keeley computed the numbers.

15) Andamanese

In my evaluation, the annual warfare death rate of 0.02% is not an accurate assessment by Keeley. Keeley cited a secondary source for this case. He cited the 1942 text by Wright but the data originally came from Radcliffe-Brown 1922. The percentage is calculated using the number of deaths in small ambushes between the Great Andamanese and the Jarawa. Both of these groups are a part of the larger Andamanese tribe and Radcliffe-Brown's text lists a total population of 1200 people. This population includes both of the tribes that were engaged in warfare. The source also lists six war deaths for the Andamanese. The Jarawa killed these people and Keeley divided the six by the total population to calculate the percentage. He cannot use 1200 as the total population however because this number includes the Jarawa people. Keeley should have used the percentage for solely the Great Andamanese people to calculate an accurate rate.

There are also several killings mentioned that Keeley does not include as warfare death rates. He only chose some to include and this does not provide an average representation.

16) Semai

In my evaluation, the annual warfare death rate of 0.00% is an accurate assessment by Keeley. Keeley did not cite a page in his source and I had to read through the text to determine that the Semai are primarily a peaceful tribe. There are no killing and death rates listed in this text. It does mention however that when the Semai made contact with the British they were recruited into joining their insurgencies. They participated in war and the killing of others. This is worth mentioning, even if there is not data of Semai mortalities, for they were not completely peaceful.

TABLE 3.7 *Overall Assessment of Error*

	SOCIETY	ERRORS
1	Kato (Cahto)	Cited incorrect edition of text; do not know how percentage was calculated
2	Piegan	Does not cite original source; Inappropriate use of decimal point (Spurious precision)
3	Dinka	Data from only one year; Data only from raids against one tribe; Does not cite original source; Not pre-contact warfare; Deaths do not occur in battle
4	Fiji	Incorrect decimal place rounding; Conservative Rate; Not pre-contact warfare
5	Chippewa	Incorrect percentage; Not pre-contact warfare
6	Buin	Does not cite original source; Deaths do not occur in battle; Unreliable source; Conservative Rate
7	Kalinga	Does not cite population of 1,000; Possible conservative number of deaths; Unreliable source; Data from only one year; Deaths occurred in headhunting, not battle
8	Mtewa	Does not cite 85 war deaths; Does not cite population of 9,000; Unreliable/Unknown Source
9	Modoc	Incorrect percentage; Does not cite all sources; Does not cite population of 1,000
10	Murngin	Does not cite original source; Includes deaths from fights within camp; Incorrect Math; Unreliable source
11	Yanomama	Not pre-contact warfare; Deaths do not occur in battle; Does not cite 7 war deaths; Intertribal warfare
12	Yurok	Does not cite original source; Does not cite average loss of 3 per raid; Deaths did not occur in battle
13	Mohave	Unknown how percentage was calculated; Cites wrong edition of text; Does not cite Pete Lambart source
14	Tiwi	Incorrect percentage; Not pre-contact warfare
15	Andamanese	Does not cite original source; Deaths did not (all) occur in battle; Does not include all deaths; Intertribal warfare
16	Semai	Not completely peaceful; Not pre-contact warfare

The table above shows the errors I found for each society and the percentage Keeley has calculated. It summarizes the information that I have gone through in detail. When looking at all of the errors in a single table, it allows the reader to see that Table 6.1 has an outstanding number of problems and needs to be reassessed. Out of the sixteen societies I only determined that three of the percentages were completely reliable. This is not an appropriate amount of valid data for the table to be considered accurate.

After assessing the data for Table 6.1 I evaluated the four societies from Table 6.2. There proved to be problems with the calculations and citations for these as well.

1) Jivaro

In my evaluation, Keeley has accurately assessed the male deaths, female deaths, and total deaths for this society. Keeley correctly cited the text and page number where he located this data. Keeley did not need to calculate these percentages on his own and I do not know how they were constructed. The author, Ross (1984) listed these percentages and Keeley put them directly into his table. The text did imply that these deaths occurred through intertribal warfare; members of the same Achuara group were killing one another. Firearms were used in these killings and the percent of total deaths also included children who were shot. There are a few things Keeley should have mentioned to create a solid database but overall this is an accurate assessment.

2) Yanomamo-Shamatari

In my evaluation, Keeley has not assessed the male deaths or the total deaths for this society in an accurate manner. He cited the correct text that the data came from. On

page 160 of Chagnon's text there is a table listing the causes of death for the people of this group. It lists the number of people that die from several different causes and said there were 52 male and 5 female deaths resulting from warfare. For the males of this population there were 129 deaths total. If 52 of these deaths stemmed from warfare they would represent 40.3% of the total deaths and Keeley listed a percentage of 37.4%. He did calculate the percentage of female deaths correctly. Because his calculation of male death percentages was incorrect it affected the accuracy of the total deaths. Keeley calculated a percentage for "all deaths" as 20.9% and it should have been 23.4%. His calculations were slightly off for the "male" and "all" deaths for this society.

3) Yanomamo-Namowei

In my evaluation, Keeley assessed the male deaths and female deaths accurately for this society. He did not correctly compute the percentage for "all deaths" however. This data came from the same source as the group listed above. In Chagnon's table it listed 44 male deaths due to warfare out of a total 185 deaths. The warfare deaths represent 23.8% of the total number. Keeley listed a percentage of 23.7%, which is mostly accurate. For the female deaths there were 9 warfare deaths out of a total 130 mortalities. This represents 6.9% of the total deaths and Keeley listed this as the percentage for female deaths. Keeley incorrectly calculated the "all death." With males and females combined there were 315 deaths. Out of these, 53 were due to warfare and would represent 16.8% of the deaths. Keeley listed a percentage of 15.3% which is an underestimate.

4) Murngin

In my evaluation, Keeley has assessed the male deaths correctly for this society. He cited the page and data correctly and I was able to assess how he determined a percentage of 28.0%. He listed a secondary source for this society however and I was unable to determine how this number was computed. Keeley does not include a percentage for female deaths or all deaths however and therefore the table is slightly incomplete.

CHAPTER 5: THE FINAL ASSESSMENT

The conclusion of this thesis will be brief, as I do not wish to reiterate over and over that there are many unreliable components to Tables 6.1 and 6.2 in Lawrence Keeley's text, *War Before Civilization*. Going into this process, I knew there would be several problems with the ways in which he calculated his warfare death percentages. I also assumed that I would have a difficult time examining the sources that Keeley used but knew it was important to ensure that he was citing everything appropriately. I did not expect to find the number of errors that were present and this thesis does a thorough job of listing the elements that need to be reexamined. I have estimated, to the best of my ability, the warfare death rates and the pieces of data that should be removed or reworked to complete these two tables. In Table 6.1, fourteen out of the total sixteen societies have a substantial amount of errors that I believe take away from the foundation of Keeley's argument. In Table 6.2, two out of the four percentages were very unreliable as well. Most who examine these tables would not analyze the data in the way I have during these past months. They would assume that these warfare death rates are reliable for Keeley makes no mention of the problems that I have put forth.

Once again, I do not wish to take away from the ideas behind Keeley's text. He put a lot of work into the hypothesis that small-scale warfare was far more deadly and lethal than many anthropologists have previously assumed. He has presented that the past was not a fully peaceful environment and he used a great deal of factual evidence to support this. Keeley introduced many interesting and original notions about the kinds of warfare that bands and tribes were conducting before European contact. Since the

publication of his book, many scholars have used Keeley's data to further this notion and Steven Pinker has reintroduced many of the warfare death rates that Keeley calculated over a decade ago. I strongly believe that in order to guarantee one's own work is as thorough and accurate as possible, you must check every component of data that you plan to use. Steven Pinker presented an idea that is gaining national attention and he should have gone through Keeley's text very closely, as I have just done, to determine what data could stand as strong empirical evidence. There is a great deal of information that is accurate but I believe that overall, in present condition, the tables are not an accurate source to use in an anthropological work.

As I have gone through the calculations and citations I have thought about Keeley's data and whether or not it supports his actual thesis. Steven Pinker used Keeley's data to argue that warfare became less lethal with European contact and that overall, violence has declined since these early days. He used Keeley's percentages to compare small-scale societies to states but I found that in many instances, Keeley's calculations were overestimated. There were three instances when they were underestimated, four when they were completely accurate, and there were three cases when I was unable to assess the percentage for various reasons. But for Table 6.1, there were six cases when Keeley overestimated the annual warfare death percentage. Even if the rate was only off by a small percentage, Keeley is suggesting to his readers that warfare was more deadly than it actually was. A lot of his data came from the bloodiest years and the most deadly battles, when mortality rates were highest. Much of this warfare occurred after European contact and although I cannot suggest this in complete certainty, it does appear that western administrations may have briefly elevated warfare

among these societies. As I have demonstrated throughout this thesis, Steven Pinker cannot use Keeley's percentages to show that violence has declined without careful examination and a reassessment of his tables.

APPENDIX

KATO (CAHTO) 1.45%

CALCULATION:

According to Kroeber, there were 700 people engaged in the battles that took place over one summer.

I would estimate that this could be divided by the two groups involved,

Therefore there would be 350 Kato.

There were 16 Kato mortalities listed so it should be-

$4+3+1+3+2+1+2 = 16$ deaths listed in text.

$16 \text{ deaths} / 350 \text{ people total} = 4.57\%$ on an annual basis.

Keeley cited the 1967 edition of the text. There is other information regarding Kato warfare in the 1925 edition but with this data from the cited 1967 text, I do not know how this percentage was calculated.

RAW DATA:

“The Kato story is mainly that of a series of pitched battles at agreed times and places during one summer. Between them, the two accounts (Yuki account mentioned above) probably give a fairly complete picture of the principal events of a major war ultimately involving a number of tribelets or independent political communities on each side. It seems to be also an objective or at least unbiased picture” (Kroeber 1967: 398).

“Four girls were eating clover at Martinez, a mile east from here. The Yuki from Tatnak killed them in the field” (Kroeber 1967: 399).

“It was a big fight. I think there must have been seven hundred in it. On both sides some stood and looked on” (Kroeber 1967: 400).

“The chiefs stood on each side and told each other how many had been killed. The Yuki chief said: ‘Six are killed.’ ‘On this side three.’ Then our chief said to his people, ‘Enough! Stop! Don’t fight any more! In ten days we will begin again” (Kroeber 1967: 400).

“The chief walked about, watched the battle, looked at the sun, but never shot. Then he would call, ‘Enough,’ and they stopped. ‘How many are killed on your side?’ ‘Two. And on yours?’ ‘One.’ ‘It is enough.’ Then they stopped” (Kroeber 1967: 401).

“They shot until three were killed. The Yuki lost two” (Kroeber 1967: 401).

“The Yuki shot back and killed two. Then they stood and rested, but quarreled and began shooting again. One of us was killed, and four of the Yuki. That was too many” (Kroeber 1967: 401).

“Then the Kato gathered at Williams’, traveled over to the coast, and fought. Two Kato were killed” (Kroeber 1967: 403).

PIEGAN 1.00%

CALCULATION:

Keeley lists a percentage of 1.00% from Livingston's (1968) text. It appears this data was taken from Ewers (1955) claim that more than 1 percent died. It is unknown how this number was computed from Ewers (1955).

RAW DATA:

"Ewers (1955) lists many of the recorded battles on the Northern Plains and estimates a loss of 1 percent per year for the Piegan, which would amount to perhaps 25 percent per generation" (Livingston 1968: 9).

"Throughout the historic period prior to 1885, warfare caused a heavy drain on the Blackfoot population. Although the numbers killed in single actions usually were small, the ratio of losses to tribal populations was high compared with the ratios between casualties in modern warfare and national populations. There must have been a number of years in which more than 1 percent of the total Piegan population died in battles large and small" (Ewers 1955: 212).

DINKA 0.97%

CALCULATION:

300 Dinka per village x 30 villages = 9000 Dinka

87 deaths in 1 year / 9000 people (population) = 0.00966 or 0.97%

RAW DATA:

“In 1928, only 87 Dinka lost their lives in the course of the Nuer attacks on thirty villages. This averages to only about three deaths per community of approximately 300 Dinka” (Kelly 1985: 55).

“Colonial records archived in England and the Sudan contain information on twenty-six Nuer (and three Dinka) raids that took place” (Kelly 1985: 9).

“In 1908-10 the British sought to end the fighting and establish control over the area... Although a substantial portion of this grant represented an uninhabited no-man’s-land between the Nuer and the Dinka, the Nuer were also required to relinquish territory under active occupation. They undoubtedly viewed the transfer as a government-sponsored Dinka invasion” (Kelly 1985: 37).

“In 1916, 165 Dinka were killed in Nuer raids on an unknown number of villages... Assuming thirty villages of 300 persons each were also raided in 1916, the number of Dinka killed would represent 1.83 percent of the population in the area under attack” (Kelly 1985: 44).

FIJI 0.87%

CALCULATION:

Keeley lists rate of 1500-2000 deaths; acquired from Carneiro (1990) & Williams (1870).
 $1500 + 2000 = 3500$; $3500 / 2 = 1750$ (average number of deaths)
 $1750 / 200,000$ (population) = 0.00875 or 0.88%

RAW DATA:

“1,500-2,000 deaths each year (average=1,750), population in 1860 = 200,000” (Keeley 1996: 195, fn. b).

“As late as the 1860s, when European influence had already begun to lessen the amount of fighting, the loss of life in war on Fiji was reckoned as high as 1500 to 2000 a year” (Carneiro 1990:199).

“Warfare among the Fijians was all-out and bloody, with no respect shown for sex and age. Women and children were killed ruthlessly and indiscriminately” (Carneiro 1990: 198-99).

“Then, as the growth of population led to a shortage of arable land, war became redirected from the avenging of personal offenses, its traditional cause, to the taking of territory. With this change in objectives, war became at once more frequent, more intense and more important” (Carneiro 1990: 190-91).

“Yet, altogether the total loss of life in consequence of war, amounting to probably 1500 to 2000 per annum has hitherto told heavily on the population of Fiji; and perhaps the number here stated does not include the widows who are strangled on the deaths of their lords” (Williams 1870: 53).

CHIPPEWA 0.75%

CALCULATION:

43 deaths / 7 years (1825-32) = 6.14 killed per year
6.14 / 800 (population) = 0.007678 or 0.77%

RAW DATA:

“In 1832, Flat Mouth, one of the civil chiefs at Leech Lake, complained to Schoolcraft that since the peace treaty at Prairie du Chien, in 1825, 43 of his people, and it may be guessed that most were men in the prime of life, had been killed by Dakota (Schoolcraft 1834: 85). In a population of about 800 this was a large number” (Hickerson 1962: 27-28).

BUIN 0.71%

CALCULATION:

There are 52 weeks / year

1 man killed / week on average = 52 killed in one year

52 deaths / 7000 (population) = 0.007428 or 0.74

If Keeley had used average population of 7500

52 deaths/ 7500 (population) = 0.69% (this should be the correct annual percentage)

RAW DATA:

“Thurnwald estimates that in Buin of the Solomons, before white influence, with a population of seven thousand, an average of one man a week was killed by war or feud. This would mean the very large annual loss of 0.71 percent of the population” (Wright 1942: 569).

“From 1908 to 1909 I lived in Buin, a thickly inhabited country with an area of about 80 to 100 square miles and a population of about 7,000 to 8,000” (Thurnwald 1936: 347).

“One proof of the full survival of the old order was the fact that while I stayed in my camp at the coast hardly a week passed without a message, brought with more or less excitement, saying that someone had been killed. This meant a frequency of about 52 attacks a year in a population of approx. 7,000. A missionary who knew the old times confirmed the approximate frequency from his own records. Most of these affrays were treacherous attacks by arrow, club, or tomahawk. Attacks from ambush were considered a justifiable form of revenge for real or imaginary crimes, such as those committed by black magic” (Thurnwald 1936: 348).

KALINGA 0.60%

CALCULATIONS:

Half-dozen heads = 6 deaths in one year
6 deaths / 1000 (population) = 0.006 or 0.60% for one year

RAW DATA:

“For a regional population of 1,000, if it was 500, then rate doubles; ‘battle’ not included only raid deaths” (Keeley 1996: 195, fn c).

“In Bolo, in the region of Salegseg, an old warrior considered a half-dozen heads lost to the enemy during the course of a year, a reasonable estimate at the height of the head-taking period in his boyhood” (Dozier 1967: 71).

“It was not possible to determine the number of heads lost by a regional group to the enemy during the course of a year. Old men who had a reputation for being headhunters boasted of taking ten or more enemy heads but when asked about the number lost to their own regional population, their estimates became highly conservative” (Dozier 1967:71).

MTETWA 0.59%

CALCULATION:

Keeley lists 85 deaths x 5 battles = 425 deaths in these 5 battles
425 deaths / 9000 (population) = 0.0472 people
0.0472 people / 8 year period of time (1806-1814) = 0.005902 or 0.59 %

RAW DATA:

“85 deaths/battle; 5 battles 1806-1814; population of 9,000” (Keeley 1996: 195, fn d).

Table 3: Types of Zulu Wars (Otterbein 1967: 357)

1810: Dueling Battle

1811: Battle of Subjugation

1812: Battle

1813: Battle of Subjugation

1814: Battle

MODOC 0.45%

CALCULATION:

Keeley uses data from Ray to determine average number killed in war- 5 % of deaths + 10 % of deaths = 15 % of deaths / 2 = 7.5 % (average killed in war)

He determined the average war party- 10 men + 100 men = 110 men / 2 = 55 (average war party)

Keeley used 60 as average war party however (instead of 55) and therefore,

7.5 % of 60 men = 4.5 people killed in war party

4.5 people / 1000 (total population) = 0.0045 or 0.45%

If he had used the average war party of 55 then,

7.5% of 55 men = 4.125 people killed in a war party

4.125 people / 1000 (total population) = 0.41% (is what annual percentage should be)

RAW DATA:

“Average of one raid per year; avg. loss 7.5% of avg. war party of 60; pop. of 1,000 estimated from various sources including Ray 1963: 204-211” (Keeley 1996: 135).

“Even against the Pit River Tribes, the Modoc seldom moved more often than once a year. Each venture usually involved a single battle lasting one or two days” (Ray 1963: 134).

“The Modoc fighting unit consisted of ten to a hundred men” (Ray 1963: 135).

“As accurately as can be estimated, 5 or 10 percent of those engaged in such a battle were killed” (Ray 1963: 143).

MURNGIN 0.33%

CALCULATION:

Keeley acquired his percentage from Wright who used Warner's data to calculate the percent as follows:

29 deaths + 35 + 27 + 3 + 2 = 96 deaths; Keeley used 100 deaths

100 x 2 (double the figure) = 200 war casualties

200 deaths / 20 year time span = 10 deaths per year

10 deaths in a year / 3000 (population) = 0.33%

RAW DATA:

“Warner was able to learn of one hundred killed in seventy-two engagements during a period of twenty years in the Murngin population of about three thousand. He thought these figures should be doubled to account for the cases not heard of, thus making an average annual loss of ten a year, or 0.33 percent of the population” (Wright 1942: 569).

“Out of seventy-two engagements in which men were killed, twenty-nine were slain by a gaingar (ghost spear, pitched battle) fight, thirty-five by maringo (death adder, a night attack in which the entire camp is surrounded), twenty-seven by narrup (a secret method of killing), three by milwerangel (a general open fight between at least two groups), and two by nirimaoui yolno (a fight within the camp)” (Warner 1931: 457-48).

“A fairly accurate estimate of the total population of this area places the population around three thousand people” (Warner 1931: 481).

“In the summary made of men killed in battle the writer recorded about one hundred deaths due to war in the last twenty years. These figures obviously do not include all of the deaths that occurred from such a cause. There are none recorded for the people south of the Caledon Bay, and only a few for those around Wessel Island and the English Company Islands, where heavy fighting has always taken place. It would be safe to add, on the basis of population, another hundred casualties to this figure, making a total of two hundred men who had been killed” (Warner 1931: 482).

YANOMAMA 0.29%

CALCULATION:

Keeley lists 7 war deaths (it should be 6) but uses this to compute
 $7 \text{ deaths} / 121 \text{ (population)} = 0.057851$
 $0.0578 / 20 \text{ year time span (1938-1958)} = 0.00289 \text{ or } 0.29\%$

RAW DATA:

“Contact population of 121, 7 war deaths ca. 1938, and no warfare because of isolation until 1958” (Keeley 1996: 195, fn i).

“Sometime during the 1930s the Maquiritare group, from whom the Ninam had originally separated, descended the Uriricuera and killed a Ninam Yanomama while he was gathering palm fruit. In retaliation the Ninam raided the Maquiritare village, killed all the men, took their steel goods, and fled with four women captives” (Early & Peters 1990: 18).

“Around 1936 a Maquiritare family was returning upstream after trading with the Brazilians. They were noticed by the Ninam, who lured them to the riverbank in the pretext of wishing to exchange gifts. The Ninam seized their trade goods, killed the husband and two sons, and took the wife captive” (Early & Peters 1990: 18).

“Whatever the reason for the original Ninam raid on the village, the Maquiritare raided the Ninam in retaliation. It is reported that many men were killed on both sides. Genealogical information indicates that at least five Ninam Yanomama men were slain. Also killed was one of the Maquiritare women who had previously been abducted by the Ninam” (Early & Peters 1990: 18).

“In 1958 missionaries made the first permanent contact with this group and established a mission station near the two” (Early & Peters 1990: 4).

Table 3.1 (Early & Peters 1990: 28) lists a contact population of 121 in 1958.

YUROK 0.24%

CALCULATION:

Keeley uses data from Wright to compute the percentage, some of this data is missing from the original source of Kroeber however:

3 lost in a raid / 2500 (population) = 0.0012

0.0012 / 2 raids per year = 0.0024 or 0.24%

RAW DATA:

“Kroeber states that in their largest war, in 1830 or 1840, the Yurok, with a population of twenty-five hundred, collected an army of eighty-four, and half a year later their enemy, the Hupa, retaliated with an army of a hundred. There seem to have been seldom over three to ten lost in such engagements, sometimes none at all. Assuming an average loss of three in a raid, and an average of two raids a year the percentage of casualties would be less than among the Murngins—0.24 percent of the population” (Wright 1942: 570).

“In one encounter, each party lost three men; in another, five were killed on one side, probably the Yurok one” (Kroeber 1925: 126).

“In the war between Rekwoi and Takimitlding village in Hupa, about 1830 or 1840, the greatest war of which the Yurok have recollection...” (Kroeber 1925: 126).

“The conclusion is that the aggregate Yurok population can not have been much below and was certainly not above 2500” (Kroeber 1925: 17).

“About a half a year later the Hupa retaliated... nearly 100 of them are said to have gone. Rekwoi was attacked and burned as Takimitlding had been. Those not slain had trouble living through the winter. Had the Yurok been possessed of any national sentiment in the matter, they could have easily mustered several hundred warriors to overwhelm the Hupa while they were occupied with their difficult navigation. As a matter of fact, the Yurok relate, the villages along the Klamath made no attempt to stop the war party. They concluded that scores being now substantially even, a settlement would soon follow. The Hupa indeed sent to ask for a settlement, and this took place, large amounts being paid on each side” (Kroeber 1925: 51).

MOHAVE 0.23%

CALCULATION:

I was unable to determine how Keeley calculated a percentage of 0.23%.

In an average battle, 5-7 Mohave were killed,

Once or twice a year = 10-14 deaths per year at most

There were 40-50 men (in whole tribes) so about 80-100 people in the tribe.

If this information is accurate the annual percentage could range from 6.25% -14.0%

Most conservative estimate- 5 deaths/80 people = 6.25%

Most liberal estimate- 14 deaths / 100 people = 14.0%

I do not know how 0.23% was calculated with the available data.

RAW DATA:

“There was a definite distinction between the small raiding (hunyu) consisting of ten or twelve kwanamis, and the larger war party (kwanatme), which engaged in pitched battle. Raiders went out whenever seized with the desire to fight” (Stewart 1967: 377).

“The war party, an undertaking of the tribe as a whole, had an average strength of forty to fifty men, although on rare occasions, it comprised over a hundred warriors. A war party might go out once or twice a year, although usually the intervals between expeditions were longer” (Stewart 1967: 377).

“Pete Lambart estimated that in an average battle from five to seven Mohave were killed; fifteen dead was a great loss” (Stewart 1967: 379).

TIWI 0.16%

CALCULATION:

16 deaths / 10 years (one decade) = 1.6 deaths / year

If 16 males are 10% of total males, then there are 160 males

1.6 deaths / 160 males in population = 0.01 % per year.... \neq 0.16%

RAW DATA:

“In one decade (1893-1903), at least sixteen males in the 25-45 age group were killed in feuding; either during sneak attacks or in arranged pitch battles. Those killed represented over 10 percent of all males in that age category, which was the age group of the young fathers” (Pilling 1968: 158).

ANDAMANESE 0.02%

CALCULATION:

Keeley acquired this percentage from Wright who used Radcliffe-Brown's data:
He found 6 deaths / 30 years = 0.2 people killed per year
0.2 killed / 1200 (population) = 0.00016 or 0.02%

RAW DATA:

“Radcliffe-Brown was able to learn of only six killed in eight attacks during a period of thirty years among the people of the South Andaman Islands numbering some twelve hundred, an annual loss of less than 0.02 percent of the population” (Wright 1942: 569).

“In the years 1872 to 1902 the Jarawa made eight attacks on camps of the friendly Andamanese in different places, in which two of the friendly Andamanese and one girl were killed and three men and one boy wounded. There were also one or two casual meetings between Jarawa and the friendly Andamanese. One of the friendlies was surprised and killed while turtle hunting in 1894. During the same years the Jarawa made on different occasions about twenty attacks on altogether 27 convicts and two police constables, and wounding six other convicts in these skirmishes and in the expeditions to which they gave rise three Jarawa were killed and seven wounded on various occasions” (Radcliffe-Brown 1922: 86, footnote).

Estimated former population of South Andaman (Aka-Bea & Jarawa)- 1200 people (Radcliffe-Brown 1922: 18).

SEMAI 0.00%

CALCULATION:

Killing rate is 0 and therefore a percentage does not need to be calculated.

RAW DATA:

“Murder is of course almost unthinkable. Informants say there were no penalties for murder because ‘it never happens, in the olden days, or today.’ Since a census of the Semai was first taken in 1956, not one instance of murder, attempted murder, or maiming has come to the attention of either government or hospital authorities” (Dentan 1979: 58).

“It should be clear at this point that the Semai are not great warriors. As long as they have been known to the outside world, they have constantly fled rather than fight, or even than run the risk of fighting. They had never participated in a war or raid until the Communist insurgency of the early 1950s when the British raised troops among the Semai, mainly in the west. Initially, most of the recruits were probably lured by ways, pretty clothes, shotguns, and so forth. Many did not realize that soldiers kill people... Taken out of their nonviolent society and ordered to kill they seem to have been swept up in a sort of insanity which they call ‘blood drunkenness.’ A typical veteran’s story runs like this, ‘we killed, killed, killed... we only thought of killing. Won, truly we were drunk with blood’ (Dentan 1979: 58).

6.2 JIVARO

CALCULATION:

Keeley acquired these percentages from Ross (1984) text.

RAW DATA:

“A mortality sample of over 250 relatives of Achuara informants in the upper Morona region alone reveals that 59% of adult males and 27% of adult females were shot, chiefly by other Achuara in revenge for a previous killing or following supernatural attribution of disease-related deaths. Twelve percent of the children were shot, as well, during the course of intercommunity revenge raids” (Ross 1984: 96).

6.2 YANOMAMA-SHAMATARI

CALCULATION:

Male deaths listed in the table- 129

Male deaths due to warfare- 52

52 warfare deaths / 129 total deaths = 40.3% (Keeley lists 37.4%)

Female deaths listed in the table- 115

Female deaths due to warfare- 5

5 warfare deaths / 115 total deaths = 4.4 %

All deaths- 244 male and female deaths in table

57 male and female warfare deaths

57 warfare deaths / 244 total deaths = 23.4% (Keeley lists 20.9%)

RAW DATA:

Table 4.10 Causes of Death (Chagnon 1983: 160)

Cause of Death	Male	Female
“Natural” Causes	0	0
Epidemics	3	14
Dysentery	1	1
Warfare	52	5
Duels	1	1
By Husband	0	0
Snake Bite	1	3
In Childbirth	0	0
Respiratory Infection	1	5
Hayaheri “pain”	0	1
Old Age	7	4
Sorcery	27	11
Crushed by Falling Tree	1	0
Hekura	6	5
Shawara	28	55
Wayuwayu	1	9
Measles	0	1

6.2 YANOMAMA-NAMOWEI

CALCULATION:

Male deaths listed in the table- 185

Male deaths due to warfare- 44

44 warfare deaths / 185 total deaths = 23.8% (Keeley lists 23.7%)

Female deaths listed in the table- 130

Female deaths due to warfare- 9

9 warfare deaths / 130 total deaths = 6.9 %

All deaths- 315 male and female deaths in table

53 male and female warfare deaths

53 warfare deaths / 315 total deaths = 16.8% (Keeley lists 15.3%)

RAW DATA:

Table 4.10 Causes of Death (Chagnon 1983: 160)

Cause of Death	Male	Female
“Natural” Causes	0	2
Epidemics	6	11
Dysentery	14	5
Warfare	44	9
Duels	5	0
By Husband	0	1
Snake Bite	4	2
In Childbirth	0	1
Respiratory Infection	3	0
Hayaheri “pain”	6	1
Old Age	8	3
Sorcery	15	5
Crushed by Falling Tree	1	0
Hekura	13	20
Shawara	66	70
Wayuwayu	0	0
Measles	0	0

6.2 MURNGIN

CALCULATION:

Keeley listed 28.0% for percentage of male deaths due to warfare.
He acquired this data from Harris (1975).
I do not know how this percentage was calculated.

RAW DATA:

“In contrast, Lloyd Warner estimated that 28 percent of the adult male deaths among the Murngin, a hunting and gathering culture of Northern Australia, were due to battlefield casualties” (Harris 1975: 262).

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Redyn Keller was born in the small town of Plainfield, Massachusetts. She was raised in this town and was actively involved at Mohawk Trail Regional throughout her high school career. Upon graduating, she decided to attend the University of Maine at Orono. Here she majored in anthropology and received a minor in political science. At the University of Maine she was a member of the Honors College, Pi Sigma Alpha, and played on the women's club ice hockey team. After graduating she hopes to continue her education but plans on doing quite a bit traveling beforehand.