

VIOLENCE AND WARFARE IN THE PRE-CONTACT CAROLINE ISLANDS

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The Caroline Islands represent a particularly interesting case for the study of social phenomena in indigenous cultures. Spread out over 2700km, they range from tiny Eauripik, whose area of 0.2km² is thought by its inhabitants to support a maximum population of 150 persons (Levin and Gorenflo 1994: 117), to Pohnpei, with an area of 334km² and an estimated pre-contact population of 10,000 (Hanlon 1988: 204). Ecologies range from the isolated volcanic island of Kosrae to many atolls that are within easy sailing reach of their neighbours. The exceptional ability of Carolinean navigators made this one of the most interconnected parts of Oceania. Lessa (1962) argued that frequent canoe voyages led to a homogenisation of culture, but detailed studies of linguistics across the region by Marck (1986) indicate some divergence in dialect (and, one might presume, other cultural elements) when voyaging distances exceeded about 100 miles (161km), i.e., for a canoe journey of more than one day.

In this article I examine the relative levels of violence on and between the Caroline Islands. Lessa (1962: 354) noted that "warfare was part of the way of life throughout all of the Carolines, even though the atolls waged it less intensely." Yet the differences were more than between high islands and atolls. Chuuk (95km²) was perhaps the most violent island in the region (Gladwin and Sarason 1953), but Kosrae (110km²) experienced prolonged periods of relative peace (Peoples 1993). Violence on and between atolls varied between Puluwat, described as the "scourge of this area of the Pacific" (Steager 1971: 61), feared even by the Chuukese, and Namonuito, whose inhabitants vacated their home island when threatened by invasion (Thomas 1978: 32).

I divide violence into two types: interpersonal violence and warfare. Interpersonal violence involves a dyadic relationship between individuals who are frequently, but not always, known to one another. Individual murders, assassinations and revenge killings fall into this category of violence. I use Tefft and Reinhardt's (1974: 154) definition of warfare as "an armed aggression between political communities or alliances of political communities." Warfare differs from interpersonal violence precisely because it is a group-to-group rather than an individual activity.

A rich literature exists on the causes of warfare in small societies (see, for example, Durham 1976, Fry 2006, Haas 1990, Keeley 1996, Kelly

2000, and Otterbein 2000). Since there are few enduring goods on most islands (apart from Yapese stone money and other artefacts), conflict over material resources tended to focus on productive land, especially in the case of atolls (Alkire 1977, Lingenfelter 1975, Steager 1971). The high islands of the Carolines were less affected by the windward (wet) / leeward (dry) asymmetry (Bath 1984) that led to competition on large Polynesian islands (Kirch 1994, Ladefoged 1995), but natural disasters (particularly typhoons) stimulated one group to attack another for resources (Steager 1971). Other causes of war included population pressure (Alkire 1978, Mitchell 1970, Takayama and Intoh 1978), cycles of revenge (Goodenough 1961, Weckler 1947), women (Dernbach 2005, Mitchell 1970), prestige (Hanlon 1988, Lewis 1967, Peoples 1993), and even recreation (Riesenberg 1968). In a previous study of Polynesian islands (Younger 2008), I found that prestige and a desire for power were dominant causes of war between islands. In this article I show that causes of war varied across the Caroline Islands, being a complex mixture of geography, ecology and social dynamics.

The method used is that of “controlled comparison” (Eggan 1954), which limits the range of study to a well-defined set of societies related by culture, history and geography. It is analogous to cross-cultural studies of violence by Ember and Ember (1992), Otterbein (1968), and Otterbein and Otterbein (1965).

DATA FOR THE CAROLINE ISLANDS

The focus of this article is the group of islands between Kosrae in the east and Yap in the west that today comprise the Federated States of Micronesia. Polynesian Outliers, which hosted a different culture pattern, were excluded, as was the Belau Group. I did not include islands that were not occupied at the time of contact (Fayu, Gaferut, Neoch, Oroluk, Pakin, Pikelot and West Fayu), those that were occasionally occupied (Ngulu, Olimarao and Sorol), and satellites of larger islands (Ahnd). There are several gaps in the ethnographic record where I was unable to find sufficient data to make a reasonable determination of levels of interpersonal violence and warfare, specifically Faraulep, Nomwin and, in the case of interpersonal violence, Houk, Puluwat and Woleai.

Land areas are taken from the United Nations database (United Nations n.d.), recognising that, especially on small atolls, land area varied with time owing to the effect of storms, geological activity and human action.

Populations are taken from Cordy’s (1986) analysis, augmented by other sources. Few, if any of the population figures are based on detailed census counts; most are estimates made during brief stops and later mission and

trading contacts. As Carroll (1975) has observed, populations on small islands seldom achieved long term stability owing to the effect of natural or induced sex imbalances, natural disasters and war. Hence population estimates are time dependent, a further complication in citing accurate figures for the pre-contact period.

A more serious complication in comparing violence versus population is that large islands typically contained more than one distinct polity and the political loyalty of smaller islets could be split across atolls. For example, Pohnpei had five distinct polities during the 19th century, social groups that were sometimes engaged in conflict against one another. In the Mortlock Group, Ettal and Namoluk were considered one social unit, with Ettal the "parent" of Namoluk. Also in the Mortlocks, the Satowan and Lukunoch atolls were split in political affiliation. Ettal, Namoluk, Oneop Islet (Lukunoch Atoll) and Moch (Satowan Atoll) were aligned against Lukunoch Islet and the Satowan islets of Satowan, Ta and Kuttu. The most extreme example of this fractionalism was on Chuuk where the total population was divided into a constantly shifting set of alliances of groups seldom numbering more than 100 people.

Rates of lethal violence per thousand people are assigned using a numerical scale:

- (0) none – no recorded instances or very few per century;
- (1) rare – violence very rare, perhaps one death per decade;
- (2) occasional – one or a few deaths per year;
- (3) frequent – several deaths per year, but lethal violence socially disdained;
- (4) chronic – violence was a major part of the culture.

The scale for warfare parallels that of Ember and Ember (1992), and Ember, Russett and Ember (1993):

- (0) none – no recorded instances or only a few over several centuries;
- (1) rare – war very rare, perhaps several times per century;
- (2) occasional – wars every few years;
- (3) frequent – wars every year but not continuous;
- (4) chronic – warfare essentially continuous.

The temporal focus of this study is the period before significant European contact, which for most of the Caroline Islands did not occur until the early to middle 19th century. In some cases, such as Kosrae, an oral record is available for several centuries before contact along with supporting archaeological

information. In others, particularly the smaller atolls, only a few reports from early explorers and traders have survived, along with myths and songs. Few statistics were kept for homicides on any island and reports from early contacts suffer from the very brief duration of those visits, often only a few days. Levels of interpersonal violence in small societies require prolonged observation for accurate measurement—for the standard measure of annual homicides per 100,000 people it would take many years to assemble accurate statistics on an island of less than 1000 residents. Similarly, if there was no war at the time of the visit the observer reported peace. For example, a visit of the ship *Resource* to Puluwat in 1799 reported the inhabitants to be “a mild pacific people” (Riesenberg 1974: 253) whereas oral traditions of the region suggest that the Puluwatese were exceptionally aggressive (Steager 1971). However, while the quantitative measure of interpersonal violence and warfare may be uncertain, their relative ranking may be more reliable. Thus the accumulated evidence suggests that Chuuk was more violent than Kosrae and that Puluwat was more aggressive than Namonuito. A letter grade—A, B or C—assessed the quality of the information on interpersonal violence and warfare.

The frequency of warfare has been linked to social stratification and leadership (Loftin 1971). I follow Goldman’s (1955, 1970) scheme of social hierarchy. Level 1 corresponds to a society with a strong egalitarian ethic and a chief or chiefs with highly circumscribed powers. Level 2 corresponds to a society with stronger chiefs and where violence was used to seize and maintain power. Level 3 refers to a society with several levels of social stratification, a feudal relationship wherein lower chiefs owed tribute and service to higher chiefs. Cordy (1986) has shown that social stratification in Micronesia was strongly correlated with total population. What I refer to as Level 1 typically occurred in populations under 1000 people, Level 2 to between 1000 and 3000 people, and Level 3 to societies with more than 3000 people.

Table 1 contains the results, including estimates of population, population density, social structure, and levels of violence and warfare.

ANALYSIS

Several studies (for example, Loftin 1971, Ross 1985) have found a correlation between levels of interpersonal violence and warfare. In Figure 1, warfare is plotted against interpersonal violence for the Caroline Islands. The correlation coefficient is 0.46, lower than the value of 0.83 that I found in a survey of islands in Polynesia (Younger 2008), but still significant.

Table 1. Violence and warfare in the Caroline Islands.

Island (State)	Type	Area (km ²)	Population	Population Density(km ⁻²)	Social Violence Struct.	Warfare
Chuuk ¹ (Chuuk)	Volcanic	95	11,000	120	2	4(A) 4(A)
Eauripik ² (Yap)	Atoll	0.2	100	500	1	0(C) 1(B)
Elato ³ (Yap)	Atoll	0.5	1200	2400	1?	1(C) 3(C)
Ettal ⁴ (Chuuk)	Atoll	1.9	550	290	1	0(B) 3(B)
Fais ⁵ (Yap)	Atoll	2.8	300	110	1	1(B) 0(B)
Faraulep ⁶ (Yap)	Atoll	0.4	60	150		
Houk ⁷ (Chuuk)	Low coral	2.6	350	130	1?	2(C)
Ifalik ⁸ (Yap)	Atoll	1.5	200	130	1	1(B) 2(B)
Kosrae ⁹ (Kosrae)	Volcanic	110	2750	25	3	2(B) 2(B)
Lamotrek ¹⁰ (Yap)	Atoll	1.0	1000	1000	1	1(C) 4(B)
Losap ¹¹ (Chuuk)	Atoll	1.0	750	750	1	0(C) 2(C)
Lukunoch ¹² (Chuuk)	Atoll	2.8	850	300	1	0(C) 1(C)
Murilo ¹³ (Chuuk)	Atoll	1.3	150	120	1	0(B) 0(C)
Mwoakilloa ¹⁴ (Pohnpei)	Atoll	1.3	200	150	1	4(A) 3(A)
Namoluk ¹⁵ (Chuuk)	Atoll	0.8	350	440	1	0(B) 3(B)
Namonuito ¹⁶ (Chuuk)	Atoll	4.4	440	100	1	1(C) 0(C)
Néma ¹⁷ (Chuuk)	Atoll	0.8	175	220	1	0(C) 2(C)
Nomwin ¹⁸ (Chuuk)	Atoll	1.8	100	56		

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Island (State)	Type	Area (km ²)	Population	Population Density(km ⁻²)	Social Violence Struct.	Warfare
Pingelap ¹⁹ (Pohnpei)	Atoll	1.7	1000	590	2	4(B) 3(B)
Pohnpei ²⁰ (Pohnpei)	Volcanic	334	10,000	30	3	4(B) 3(A)
Pulap ²¹ (Chuuk)	Atoll	0.8	550	690	1	2(C) 2(C)
Puluwat ²² (Chuuk)	Atoll	3.4	500	150	2	4(B)
Sapwuahfik ²³ (Pohnpei)	Atoll	1.7	240	140	3	3(B) 3(B)
Satawal ²⁴ (Yap)	Low coral	1.3	900	690	1	1(C) 3(C)
Satowan ²⁵ (Chuuk)	Atoll	4.6	1500	330	1	1(B) 3(B)
Ulithi ²⁶ (Yap)	Atoll	4.7	650	140	1	1(B) 2(C)
Woleai ²⁷ (Yap)	Atoll	4.5	1500	330	1	4(B)
Yap ²⁸ (Yap)	Continental – Volcanic	105	12,000	110	2	2(C) 4(B)

Notes:

- 1 Caughey (1977), Gladwin and Sarason (1953), Goodenough (1961), Marshall (1979), Oneisom (1991), Swartz (1965), Takayama and Intoh (1978)
- 2 Cordy (1986), Levin (1976), Levin and Gorenflo (1994)
- 3 Gorenflo and Levin (1991)
- 4 Cordy (1986), A. Nason (1970), J. Nason (1970, 1975, 1984)
- 5 Cordy (1986), Hezel and Del Valle (1972), Rubinstein (1979), Tetens (1958)
- 6 Gorenflo and Levin (1991)
- 7 Flinn (1982), Gorenflo (1995)
- 8 Betzig and Wichimai (1991), Burrows and Spiro (1957), Lutz (1984), Spiro (1952), Trifonovitch (1971)
- 9 Athens (2007), Bath (1984), Cordy (1993), Cordy and Ueki (1983), Gorenflo (1993), Lewis (1949, 1967), Peoples (1991), Ritter (1978, 1981), Ueki (1990)
- 10 Alkire (1965, 1972, 1977, 1984), Cordy (1986)
- 11 Cordy (1986), Mitchell (1970), Severance (1976), Tetens (1958)
- 12 Borthwick (1977), Cordy (1986), Floyd (2001 [1827]), Gorenflo (1995), Tolerton and Rauch (1949)
- 13 Floyd (2001 [1827]), Gorenflo (1995)
- 14 Damas (1983), Fischer and Fischer (1953), Knudson (1970), Miedes (2001 [1671]), Morton *et al.* (1973), Weckler (1947)

- 15 Cordy (1986), Marshall (1972), Peoples (1993)
- 16 Tetens (1958), Thomas (1978)
- 17 Gorenflo (1995), Krämer (1984), Mitchell (1970)
- 18 Gorenflo (1995)
- 19 Hurd (1977), Morton *et al.* (1973)
- 20 Athens (1980), Bascom (1950), Bath (1984), Bernart (1977), Cheyne (1971), Fischer (1981), Hanlon (1988, 1992), Mauricio (1987), Riesenbergl (1968)
- 21 Flinn (1982), Gorenflo (1995), Hezel (1973), Lessa (1962)
- 22 Cordy (1986), D'Arcy (2001), Elbert (1971), Gladwin (1970), Steager (1971)
- 23 American Board (1905), Poyer (1983, 1985)
- 24 Gorenflo and Levin (1991)
- 25 Dernbach (2005), Gorenflo (1995), Hezel (1983), Marshall (1979), J. Nason (1970), Ward (1955)
- 26 Hezel and Del Valle (1972), Lessa (1950), Lessa and Myers (1962), Lessa and Spiegelman (1954), Tetens (1958)
- 27 Alkire (1970, 1972, 1974)
- 28 Alkire (1977, 1993), Cheyne (1971), Hunt *et al.* (1954), Hunter-Anderson and Zan (1996), Labby (1972, 1976), Lingenfelter (1975, 1991), Schneider (1968), Tetens (1958)

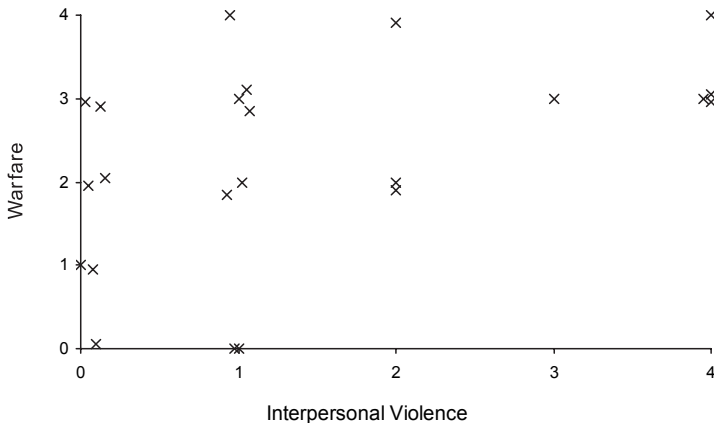


Figure 1. Level of warfare versus level of interpersonal violence.

Two aspects of the relationship between warfare and interpersonal violence merit mention. First, when warfare is infrequent, so too is interpersonal violence. Second, when interpersonal violence is high, so too is warfare. Societies that do not engage in internal violence are unlikely to go to war with their neighbours and societies frequently at war are likely to suffer significant internal violence.

In the majority of cases the level of warfare exceeded the level of interpersonal violence. Many islands in the Carolines, for example Ettal (Nason 1984) and Yap (Lingenfelter 1975), promoted internal harmony as a social virtue even as they engaged in periodic warfare. The Carolines were not unique in this regard. Murphy (1957) noted that among the most warlike people ever encountered were the Mundurucu of Brazil, yet they strongly discouraged any type of conflict within their cultural unit. Indeed, some level of internal cohesion is necessary for the successful prosecution of war.

Population pressure has been identified as a cause of war (Alkire 1978, Mitchell 1970, Takayama and Intoh 1978). Figure 2 plots the level of warfare against population density. The correlation coefficient is 0.19, indicating a weak association. This is consistent with cross-cultural studies (Kelly 2000, Nolan 2003) of violence in simple agricultural societies and, specifically for islands, Earle's (1978) assessment that population density was not a significant cause of war in pre-contact Hawai'i. However, one must distinguish between population *density* and population *pressure*—it was not the density of persons alone that drove conflict, but the response of the population to perceived need within their particular ecosystem. Labby (1972) noted that only about half of the land on Yap was suitable for cultivation, so an accurate measure of population density might be calculated in terms of land productivity rather than simple area. On small islands, periodic storms or droughts limited food production, sometimes for years at a time, making the limiting factor in population the minimum rather than the average carrying capacity. Ember and Ember (1992) found a correlation between resource unpredictability and warfare in a cross-cultural study. The correlation of interpersonal violence with population density is also weak (-0.18).

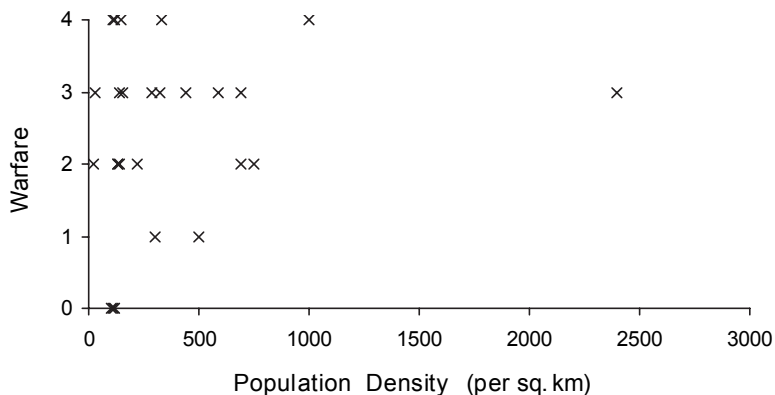


Figure 2. Level of warfare versus population density.

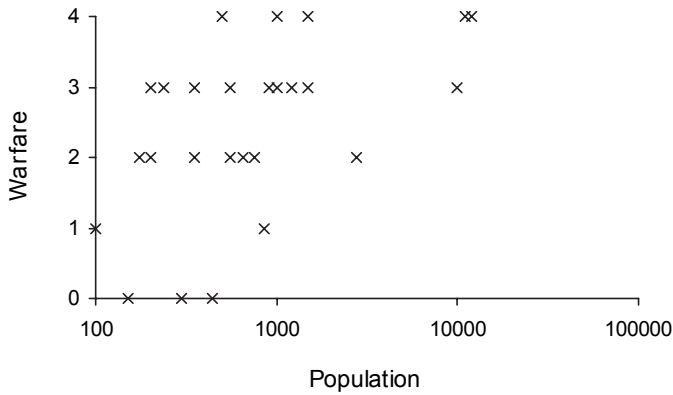


Figure 3. Variation of warfare versus population.

Figure 3 shows a similar plot for warfare against total population of the island. The correlation coefficient of 0.42 indicates that total population is a much stronger determinant of warfare than population density. Small populations span a range of warfare from none to chronic, but all populations over 1000 have moderate to high levels of warfare. The correlation of warfare and population size has been noted in cross-cultural studies by Ember (1974), Leavitt (1977), and Rosenfeld and Messner (1991). The correlation coefficient between interpersonal violence and population in the Caroline Islands is 0.51, indicating that it too increases with population.

Table 2. Averages for small and large islands based on the data in Table 1.

	Population < 1000	Population > 1000	All Islands
Number of Islands	19	9	28
Area	1.9	72	25
Population	390	4700	1800
Population Density	280	550	360
Violence	0.93	2.4	1.4
Warfare	1.9	3.3	2.4

Having found that total population, rather than population density, is the major demographic determinant of violence, I focus my subsequent analysis on two categories of island: those with populations under 1000, which I call “small” islands, and those with populations greater than or equal to this value, which I call “large” islands, independent of their physical size. Table 2 gives averages of key data for these two categories of islands. The level of interpersonal violence on large islands is more than twice what it is on small islands and the level of warfare more than 50 percent greater. (Note that the average population density for large islands is heavily skewed by Elato at 2400/km² and Lamotrek at 1000/km²). When these outliers are excluded, the average population density of large islands is 220/km² (slightly less than for atolls).

Satowan illustrates one of the challenges of estimating violence based on scarce historical sources and oral tradition. Oleson (2007: 156) quoted missionary Edward Doane’s observation of a mild-mannered people on Ta Islet and Hezel (1983: 258) reports similar claims of a German trader who saw no violence during a seven month stay in the 1870s. However, Dernbach (2005: 81) cited a 1907 missionary letter stating that dances led to “deadly feuds and murder and wars” and Marshall (1979: 39) cited another missionary account of tending wounds arising from fighting on Kuttu Islet. Oleson (2007) reported instances of fighting and other violent behaviour in modern times.

A comparable problem exists for Lukunoch. I assigned its level of warfare to be (1) given that I could find no references specific to the atoll that indicated frequent participation in war. However, the inhabited islets of Lukunoch were divided in their political affiliation to the two warring polities of the Mortlocks, so it is likely that they experienced similar levels of war as did Ettal, Namoluk and Satowan. Further discussion of the situation within the Mortlock Islands is given below.

Figure 4 illustrates the percentage of large and small islands that experienced each level of interpersonal violence. Small islands were more likely to have lower levels of interpersonal violence. Conversely, no large island had zero interpersonal violence.

Several factors might account for the contrast in interpersonal violence on small and large islands. First, the precarious nature of life on a small atoll made intra-group violence dangerous for the survival of the population. Second, killing people on your own island might reduce the male population to the point where your island would be an attractive target for an aggressive neighbour. Third, many small islands, particularly those with weak chiefly authority, had a strong normative code that discouraged internal violence.

Figure 5 shows the comparable statistics for warfare. Most small islands were engaged in occasional or frequent warfare. However, it was not continuous and only Puluwat seems to have engaged in chronic warfare. (Lamotrek, with

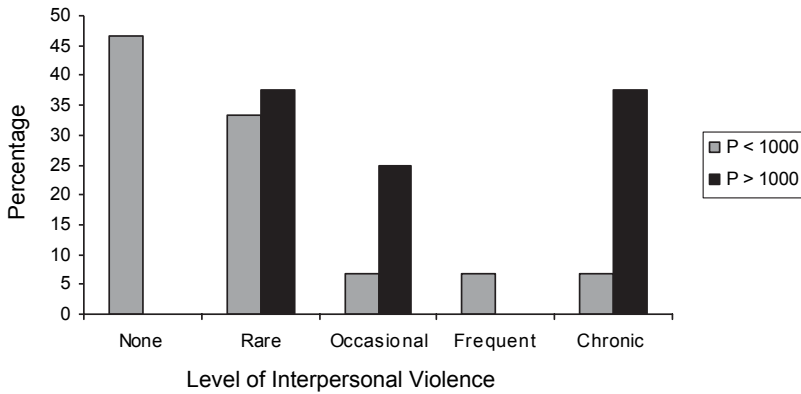


Figure 4. Percentage of islands with each level of interpersonal violence.

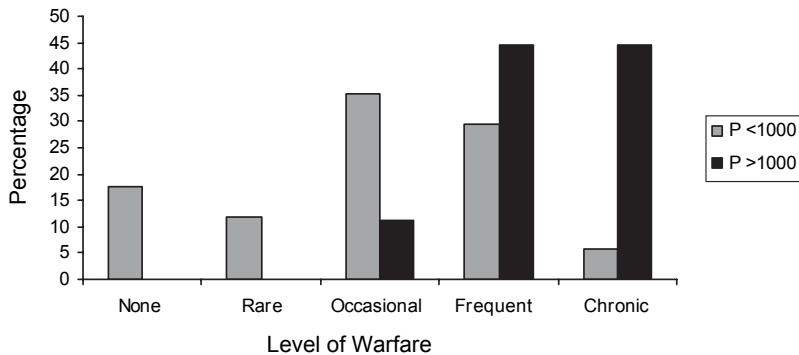


Figure 5. Percentage of islands with each level of warfare.

an estimated population of 1000, is on the dividing line between small and large islands and also suffered from continuous war.) In contrast, most of the islands with large populations were engaged in frequent or chronic warfare and no large population experienced no or rare warfare. Only Kosrae appears to have had extended periods of relative peace, and then only during the time when a paramount chief ruled the island. Significant violence occurred at other periods as lower chiefs competed for power (Peoples 1993).

The most important difference between warfare on small and large islands may lie in the distinction between internal and external war. Smaller islands had multiple districts (typically three, with the smallest middle district sometimes assuming the role of arbitrator) but they often had a recognised paramount chief. While small islands fought other islands, internal conflict was less frequent.

The populations of large islands were also split into multiple polities, but here independent chiefs competed with one another for prestige and control of land. Of the large islands, only Kosrae and, for a shorter period Pohnpei, was unified under a paramount chief. Thus, large islands fought internally whereas small islands fought externally. The absence of external aggression by large islands is supported by the fact that, at least in late pre-contact times, they were much less adept at long range voyaging than the smaller islands.

Cross-cultural studies (Loftin 1971, Otterbein 1968, Otterbein and Otterbein 1965, Ross 1985) have linked violence to leadership (or social stratification). Figure 5 shows this trend for the Caroline Islands. For the lowest level of stratification, warfare ranges from non-existent (e.g., Namonuito) to continuous (Lamotrek and Puluwat). For intermediate stratification, all cases had frequent or continuous warfare. Warfare was less frequent at the highest level of social stratification than for the intermediate level, reflecting the concentration of power in one or a few chiefs who had the power to suppress inter-group violence.

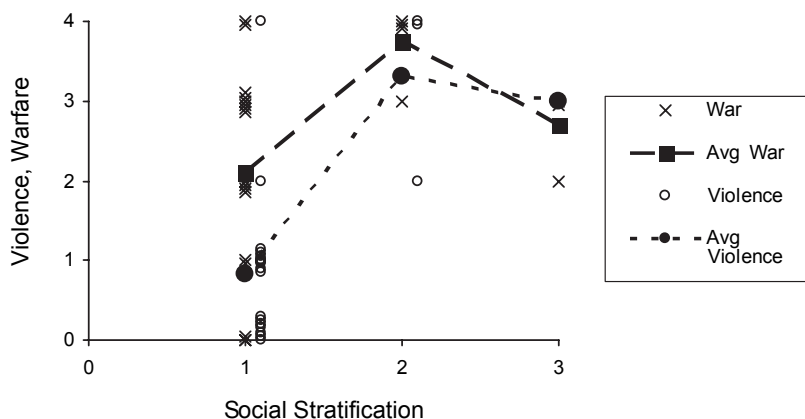


Figure 6. Variation of interpersonal violence and warfare with social stratification. The dashed lines represents the average for each level of social stratification.

Most islands with the lowest level of stratification experienced low levels of interpersonal violence relative to warfare, whereas more stratified societies had comparable high levels of interpersonal violence and warfare. This is counter to the notion that strong central authority suppressed internal violence in order to maximise social cohesion for war. As noted above, stratification itself was a function of population (Cordy 1986). Smaller populations, which were less stratified, may have had lower levels of violence because of the need to maintain a viable population in an ecologically challenged situation. Larger islands, which had higher levels of stratification, could afford higher levels of violence, including harsher punishments inflicted by rulers.

In my previous analysis of interpersonal violence and warfare in pre-contact Polynesia (Younger 2008), I found that islands with populations under 1000 that were separated from their nearest neighbour by more than 100km—the approximate breakpoint for a canoe journey of one day—were more likely to have low levels of interpersonal violence and warfare than small islands in closer proximity to their neighbours. In the Caroline Islands, only Faraulep and Namonuito are more than 100km from their nearest inhabited neighbour. Data on interpersonal violence and warfare is available for Namonuito and suggest a low level of violence. Faraulep was so small and was so isolated from other islands that its viability was marginal—only 60 people were reported by 19th century visitors—and occupation may not have been continuous. Still, Damm (1929) reported the presence of weapons on Faraulep.

Mwoakilloa is a counter-example to the association of peacefulness with small isolated populations. With a population of only 200, it is 96km away from its nearest inhabited neighbour (Pingelap) and had high rates of interpersonal violence and warfare. Small population and isolation do not guarantee peace, particularly when navigational skills permit frequent access to even relatively distant islands. Kosrae, with a moderately large population of 2750, is more than 100km away from its nearest neighbour but its population was large enough to produce internal fractionation and conflict.

There does not seem to be any large scale variation in the level of warfare across the broad expanse of the Carolines. Dividing the islands into the states of the current Federated States of Micronesia, the average level of warfare is 2.6 in the western Yap State (9 islands), 2.2 in the central Chuuk State (12 islands), and 2.8 in the combination of eastern Pohnpei and Kosrae States (5 islands).

SPECIFIC CASES

Chuuk

Chuuk was the most violent large island in the Carolines. Oneism (1991) estimated the homicide rate in the 19th century at 2.25 homicides per year which, given a population of 11,000, translates to a rate of 20 per 100,000 residents per year, comparable to the homicide rate in some the most violent cities in the world today. However, these data appear to have been collected for only a few of the islands in the Chuuk lagoon, so the actual rate for the total lagoon may have been five to ten times higher. Marshall (1979) noted that physical aggression and murder were means of proving manhood, a status that had to be established and constantly maintained.

Chuuk children were socialised towards violence at an early age. Caughey (1977: 27) recounted the story of two mothers who encouraged their year-old children to hit one another. When they refused, their mothers hit them. Non-productive old people were left to starve. Theft was admired in that it demonstrated that the thief was not intimidated by the threat of retaliation (Swartz 1965).

The Chuukese were constantly at war with one another. Gorenflo noted that “the most important cultural factor affecting Chuuk State prior to the TWENTIETH century was warfare” (1995: 53, emphasis in original). Primary causes were disputes over land rights and women, and revenge over insults (Goodenough 1961, Oneism 1991). As far back as memory records, “the slaughter was considerable” (Gladwin and Sarason 1953: 40). Raiding was another way of demonstrating the status of individuals and groups, and cycles of revenge raids were common as each side sought to demonstrate its fearless character (Marshall 1979).

The persistence of warfare in the oral tradition and in historical accounts has some archaeological support. Takayama and Intoh (1978) found that sling stones, a common weapon on Chuuk, were among the most common artefacts recovered, spanning the entire 2000 year history of occupation. Rainbird (1996) has reported the remains of fortifications. The geography of this large atoll, which consists of many small islands, promoted a constantly shifting set of alliances in which no islet or clan could achieve paramount status. The autonomous political unit was only about 100 persons (Peoples 1990: 294), so it would have been difficult for any one social unit to achieve ascendancy over the others. A defeated population could find shelter on another island, perhaps under the protection of an ally, to continue the fight another day (p. 298). Chuuk may have represented the worst possible situation for warfare—a set of islands in close proximity to one another populated by social units too small to achieve significant political unification.

Pohnpei and Kosrae

Pohnpei and Kosrae warfare represent an interesting contrast in large islands. Each supported several thousand people but was well below the carrying capacity of the island (Bath 1984). Each was primarily self-focused, i.e., over time losing its ability to construct sea-going canoes capable of long range travel. Trade relationships were maintained by the outlying atolls rather than the larger island. Pohnpei and Kosrae each evolved complex feudal-like social stratification that culminated in the construction of an elaborate elite centre constructed on a small island. However, centralisation of power persisted longer on Kosrae than on Pohnpei, and Pohnpei experienced a higher degree of conflict than Kosrae. Several factors may have contributed to this difference. First, the smaller land area of Kosrae permitted better internal communication, making it easier for a paramount chief to rule the island. Second, the pre-contact population of Pohnpei was more than three times that of Kosrae, complicating even multi-layered feudal rule. Third, the relative isolation of Kosrae, whose nearest neighbour was 250km away, meant that its evolution was less affected by raids than was Pohnpei, which had numerous islands within a day's sailing distance. Fourth, central governance on Pohnpei was disrupted, perhaps by an invasion from Kosrae, leading to a period of persistent conflict in which none of the five districts could achieve supremacy. Pohnpei may have simply been unable to recover central governance by the time of significant European contact.

On Pohnpei, wars were fought without subsequent occupation of territory (Riesenberger 1968), although tribute might flow to the victor following conquest. Prestige was perhaps the strongest motivator for war. "Wars between tribes, according to native theory, resulted not from economic causes but from vainglory and pride. A *Nahnmwarki* [chief] 'would feel proud when he saw how many people he had and that they were ready to go to war'; he might himself pick a quarrel on slight pretext" (p. 62). Wars between two tribes were referred to as games of Uh, a 'manly sport', after which combatants would be good friends. Sometimes titles were given to good warriors.

The persistence of central governance in Kosrae reduced the level of conflict in the island and led several early observers to remark on its peacefulness. However, Hezel (1983: 96) noted regarding Duperrey's observation of Kosrae:

Weapons were conspicuously absent on the island—a fact that was ascribed to the peace-loving nature of the people and the relative isolation of their island. However, Duperrey might also have observed that in a tightly organized society unified under one absolute ruler, a society that had lost its former navigational skills and could not send its warriors abroad, there was really no one to fight.

In fact, a revolt in 1837 (Ritter 1978: 50) resulted in numerous deaths and Ueki (1990) cited evidence suggesting that conflict was not uncommon during the 14th and 16th centuries. Fighting was associated with “political and prestige rivalries, primarily among titled nobility” (Peoples 1993: 130). Gorenflo (1993: 100) wrote that some of these wars were very bloody:

Numerous internal conflicts that occurred in Kosrae during the 1800’s led to an unknown number of deaths. An uprising of commoners shortly before the arrival of Europeans, possibly in the aftermath of the typhoon... contributed to the eradication of up to half the native population. Subsequent internal conflicts in 1837 to 1857 similarly led to the deaths of more Kosraens, although precise numbers are unknown.

However, Cordy (2009) noted that no archaeological evidence supports the existence of multiple power centres on Kosrae.

Yap

Yap was the only large island in the Carolines that reached or exceeded its carrying capacity; at times of peak population some residents were forced to live on rafts in mangrove swamps and beg for food (Hunt, Kidder and Schneider 1954). Population pressure meant that access to land was the dominant preoccupation in this society and a cause for war. “Every piece of land, every tree, every bit of fishing area within the fringing reef was owned” (Labby 1972: 39). Political power was centred at Gagil, Rull and Tamil and the Yapese believed that it was essential to maintain a balance between these three power centres. “They were said to be like three *ngucol*, the three rocks that support a pot over the fire. For the pot to remain upright, they all had to have equal strength” (Labby 1976: 107). War was a means of maintaining this stability and of resolving internal problems using socially accepted means. “From the beginning, war appeared to be a method of political manoeuvring. Its objectives were generally the death of a particular individual or the destruction of a clubhouse by fire. In many, if not most cases, the paramount chiefs and the *bulce’* and *ulun* [councils] prearranged the war’s outcome” (Lingenfelter 1975: 171). Using war as a means to eliminate a troublesome person enabled the problem to be dealt with without the interpersonal violence that conflicted with the normative code of harmony within the social unit. However, warfare on Yap could be very destructive:

The most common cause of these wars was political rivalry between chiefs and villages. Lower-ranking villages struggling to rise would, with the assistance of a friendly high chief, attempt to wipe out their closest rivals. Informants cited numerous examples of uninhabited or nearly uninhabited villages today in which the majority of the population was wiped out by war. (p. 172)

Cycles of revenge led to raid and counter-raid, some of which could escalate to large battles with high casualties.

Atolls

The interconnected nature of the Caroline Islands did not prevent war—it enabled war. Ettal, with a population of 550, was part of a military alliance that included Namoluk Atoll, Moch Islet (Satowan Atoll) and Oneop Islet (Lukunoch Atoll). They were aligned against Lukunoch Islet and the Satowan Islets of Satowan, Ta and Kuttu (Nason 1975). This is roughly a north-south division of the island group, but the political division is clearly more complex than geography. Kuttu is on the northern side of the Satowan reef, close to Moch, yet it is aligned with Satawaan and Ta on the southern side of the lagoon. Islet population figures at the time of contact are not available, but if one takes the much later estimates of 1925 (Gorenflo 1995) as indicative of the rough distribution of population of the islets, the division between the alliances is approximately $340 \text{ (Namoluk)} + 300 \text{ (Moch)} + 378 \text{ (Oneop)} + 309 \text{ (Ettal)} = 1327$ for the northern alliance, compared to $371 \text{ (Kuttu)} + 116 \text{ (Ta)} + 300 \text{ (Satowan)} + 635 \text{ (Lukunoch)} = 1422$ for the southern alliance. These populations would, of course, have varied with time, but the suggestion is that they were comparable rather than widely disparate, consistent with prolonged competition in which neither side could obtain a decisive advantage. Also, one must not discount the possibility that the alliances changed membership over time. There is a legend that Ettal invaded Lukunoch and temporarily drove off the inhabitants (Borthwick 1977), although it is not clear whether this referred to the atoll in its entirety or only to Oneop.

Size was not the only determinant of military prowess. Puluwat, with an estimated pre-contact population of only 500, was feared throughout the region for its raids in which canoes full of warriors would arrive and take whatever they wanted, sometimes destroying what was left (Flinn 1982). However, even Puluwat was not without need of partners and shifting alliances of atolls paralleled those on Chuuk. Similarly, Mwoakilloa conducted raids against distant neighbours with a home population of only about 200.

Ifalik has been cited as one of the most peaceful societies in modern times (Bonta 1993), but Betzig and Wichimai (1991) noted that Ifalik initiated wars of annihilation against its neighbours as recently as the 19th century. When the occupants of two Ifalik canoes were killed by the people of Lamotrek, Ifalik invaded and killed everyone, resettling the island with its own people (Trifonovitch 1971). Ifalik invaded Woleai and exterminated its population after a chief was beaten in a dispute involving his wife. When Faraulep experienced a civil war that killed all but one of its inhabitants, Ifalik warriors sailed to the island, killed the sole survivor, and resettled the island (Burrows and Spiro 1957).

Arguments on Ifalik were most commonly over land and “there is evidence that individual differences were not infrequently resolved by violence” (Betzig and Wichimai 1991: 249). Interestingly, after the conquest of neighbouring islands, the level of both interpersonal violence and warfare apparently dropped significantly. By the time of Burrows and Spiro’s (1957) visit in the mid-1950s, no one remembered a murder or grievous assault on the island. Once Ifalik had conquered its near neighbours and eliminated all claims to land rights, it had no easily accessible island to fight. Until the arrival of Europeans, sufficient new land was available and an internal normative system of humility and conformity prevailed to produce a low level of violence.

The social response to violence was a component of the value system of the society. The demonstration of an aggressive personality was considered proof of manhood on Chuuk, a positive value. On Ifalik (following neighbour island conquest) aggressive behaviour towards another was strongly discouraged and led to a diminution of personal prestige. Feelings of aggression on Ifalik were expressed against ghosts rather than other human beings, a means of recognising strong feelings while not disturbing social harmony (Spiro 1952). The attitude towards violence may also have been affected by the political situation. Ifaluk permitted violence until it dominated neighbour islands and then shifted to a distinctly non-violent culture. Chuuk maintained political divisions and violent competition was a means of establishing personal identity and character. Both societies were essentially egalitarian, but each expressed this egalitarianism in a different manner.

DISCUSSION

When the population of an island exceeded about 1000, and when the landmass was large enough that communication between extreme parts of the island was difficult, there was a strong probability that multiple independent polities would form and that these polities would compete, sometimes violently. Since each of the large Caroline Islands (except for Yap) was well below its carrying capacity and since the productivity of land was relatively even across the islands, resources alone do not appear to have been the principal driver for war. Paralleling Kelly’s (2000: 135) argument, autonomous polities on large islands could afford to have enemies as neighbours. Population imbalances between groups may have encouraged the larger group to attack the smaller one (Cordy 1993) and the desire for power and prestige may have dominated as a cause of warfare, as it appears to have been done in Hawai‘i (Earle 1978) and elsewhere in Polynesia (Younger 2008). Residents of large islands did not continue long range canoe voyages—they had no need with a large land mass that was relatively stable against the effects of storms and drought. Wars on large islands were primarily internal.

The situation was reversed on atolls. Productive land was at a premium and residents exploited it to a high degree. The only path to expansion for atoll dwellers was to take the land of neighbours. The necessity to invade a neighbour by a longer sea voyage rather than an overland march or coastal journey may have been responsible for the reduced frequency of warfare among the smaller atolls, but it did not lessen its intensity, as evidenced by the practice of killing everyone on the island under attack. Since Carolinian land was inherited along clan lines and according to the seniority of settlement on the island, it was only by eliminating all of the residents of the island that full title could be achieved. Any survivor could have claimed right of ownership (Alkire 1984). In contrast to the case of larger islands, where control rather than occupation of land was sometimes the objective of war, on smaller islands the goal was to secure land for the invaders to occupy and exploit.

Existence on an atoll was a tenuous affair and several were abandoned after prolonged periods of occupation, as evidenced by graves and the remains of house sites. It was essential for atolls to have connections to their neighbours, if only to enable them to survive periodic disasters and, in some cases, to secure exogamous mates. Alkire (1978: 134-35) suggested that "a cooperative exchange system would appear to be a better 'insurance policy' than a pattern of competitive raiding and feuding". It appears that such a mutual support system was indeed foundational in inter-atoll interactions, but it did not prevent war. Nason (1975) noted that Ettal offered assistance even in times of war, suggesting that war occurred on top of a network of co-operation and obligation: "The battle could not proceed until the men had sat facing each other on the beach and learned who belonged to their own clan. These men are then avoided in the ensuing conflict" (J. Nason 1970: 82). Finally, conflict fulfilled a different function than did co-operation, perhaps associated with the desire to accumulate land and prestige, and did not contradict the obligation to help clan-mates in times of need. Atolls in the Carolines were not "small" societies in that they were connected socially by clan and physically by frequent voyaging. In this sense, they depart from Knauft's (1991) observation that violence within and between simple societies is low. The "group" in the Carolines spanned many atolls, the geographic separation of which allowed sufficient social distance to support violent competition.

Revenge was a cause of conflict on many islands, regardless of size. On Mwoakilloa, "feuding kept the population small" (Morton, Hurd and Little 1973: 329). On Pohnpei, "blood feuds between clans were socially approved" (Bascom 1950: 62). Oliver (1989) asserted that revenge was the principal cause of warfare across Oceania.

The intensity of warfare varied widely across the Carolines. Raids, which might last only one day and result in few casualties, were the most

common form of group-to-group conflict on Pohnpei (Hanlon 1988), as they were in most small societies (Keeley 1996). However, raids could escalate to indiscriminate killing of men, women and children (Riesenberg 1968). Casualties in fixed battles, which were sometimes prearranged by time and place, varied from minor to complete elimination of the losing side. The intensity of war also varied on atolls, from periodic raids to wars of annihilation.

Interpersonal violence on atolls was only 40 percent of the level found on large islands. Kinship played a principal role in the suppression of intra-group conflict since violence was often forbidden between members of the same clan (Bascom 1950, Nason 1984), but this alone was not sufficient to maintain internal peace, if only because several clans were resident on most islands. A deeper reason may be the perception of the individual versus the group. Marshall (1994: 1) explained that "Micronesian communities are group-centered and their members are other-directed. The person in these island communities exists not so much as one autonomous self (as in the West), but rather as part of a larger community of selves". Small islands afforded little social isolation—they constituted a face-to-face culture in which nearly everyone encountered everyone else on a daily basis (Nason 1984). While someone on a large island could escape an untenable social situation by moving to another part of the island, avoidance was more difficult on small islands. People had to accommodate one another.

In addition to kinship, a pattern of gift-giving helped to create a network of obligation that bound the society together. In Ulithi, Lessa and Spiegleman (1954) observed that gift-giving "has the role, if not the intent, of binding the members of the community into a tight, inescapable system of mutual obligations which integrates its members and equalizes the satisfaction of wants". Gift-giving often involved items that were readily available to the recipient—it was not the gift itself that was important but the creation of an obligation of reciprocity (Mason 1968, Mauss 1990 [1950]). Ember and Ember (1992) cited mistrust as a significant contributing cause to war; gift-giving served to constantly reinforce trust.

While kinship and gift exchange promoted social harmony, occasional transgressions were inevitable. In an "eye for an eye" culture such as Chuuk, with no central authority to adjudicate disputes, the punishment of offences by the aggrieved party led to protracted cycles of revenge. On Mwoakilloa, such cycles were measured in generations—after the elimination of all adults on one side the quarrel might cool, only to re-ignite when the next generation reached fighting age (Weckler 1947). Other small islands sought to avoid revenge-based feuds by focusing on prevention rather than punishment, hoping to minimise the potential for conflict (Lessa 1962, Rubinstein 1979).

Several mechanisms were used for this purpose. The inhabitants of Ifalik distinguished between “justifiable anger” and violence. The former was accepted as natural—people were upset when they felt abused by others. However, this frustration was vented through talk rather than physical violence and commiseration by listeners helped prevent escalation into physical violence. Rubinstein (1979) discussed the role of gossip as a social sanction on Fais. On a small island it was nearly impossible for something significant to occur unobserved—the threat of gossip, with its associated loss of individual prestige, was a potent deterrent to bad behaviour.

Another potential threat to peace on small islands was the ambitious individual who would dominate the group or, worse, split the group into competing factions that would fight for supremacy. Boehm (1993, 1999) addressed this issue in his concept of “reverse dominance hierarchy” wherein a group recognises the danger of one person acquiring too much authority and takes active measures, through ridicule and status levelling, to prevent it from happening. Nearly all of the small atolls in the Carolines had little social stratification and had governance systems in which a chief required the approval of a council or even the entire population before undertaking significant actions, including war. The cross-cultural study reported by Ember, Ember and Russett (1992) found that participatory societies had lower levels of violence than hierarchical societies.

In summary, the highly constrained ecosystems of the small atolls of the Carolines, along with their close proximity and the resident’s voyaging skills, led to violent competition for land. Conflict within the society was suppressed if for no other reason than the necessity of maintaining a viable population. On larger islands, land was less of a cause of conflict since, except for Yap, the islands seldom approached their carrying capacity. In these cases it was the drive for prestige and control that led chiefs to war. Revenge was a cause of warfare on all sizes of islands. (However, as with any social phenomenon, caution should be exercised in assigning a single cause to war—even small societies exhibit a complex interplay of social forces. The decision to use violence at the interpersonal or group level is more complex than a mechanical cause-effect relationship.)

The need for productive land might be seen as an imperative for small populations living in an uncertain ecosystem whereas the enhancement of prestige and revenge for perceived insults were discretionary pursuits. But in fact all three—land, prestige and revenge—were only *reasons given* for warfare. None of them led inexorably to war as is evidenced by the fact that some atolls did not invade their neighbours and some chiefs on high islands were not engaged in persistent warfare. The immediate and direct *cause* of war was a decision made by an individual or group of individuals to use force

of arms to achieve a perceived need. If this is so then one might ask the more fundamental question of how this decision was made.

From a purely rational perspective, one might invoke the assumption that the potential benefits of violence outweigh the risks, i.e., it is cost effective (Manson and Wrangham 1991). Durham (1976: 389) summarised this "cost-benefit" aspect of war: "...warfare (defined as intergroup conflict that is organized, socially sanctioned, and not considered homicidal by opposing groups when killing occurs) would exist as a cultural traditional only where social and environmental conditions result in continuous or recurrent net benefits to the aggressors." However, generalisations can be misleading, since some groups appeared to have engaged in a culture of warfare with little or no advantage gained beyond the experience of organised violence itself, such as when chiefs on Pohnpei started fights out of pride that their warriors would follow them.

Underlying the decision to fight for land, prestige or revenge is a consideration of justice. The use of violence to acquire land implies that the aggressor believes his right to the land is greater than that of the current inhabitants. The desire for prestige is related to the drive to achieve a status considered to be one's due. Its correlate, revenge, addresses the loss of prestige that might have involved the murder of a close relation or some other insult. In each case, there is an element of justice in the conflict, the desire to right a perceived wrong, be it the distribution of land or of honour. But there is another aspect of justice, one that served to reduce conflict on the assumption that it would lead to revenge: "You should watch out what you do to the other side, lest they return and do it to you" (Labby 1972: 214).

There are two components in the decision to go to war in a small society. The first is a set of individual psychological factors related to a desire to achieve dominance or to validate one's self-worth. The second is a set of structural factors associated with the value system of the society, factors that enabled the individual psychological factors to be realised. Some societies, such as Chuuk, had structural factors in the form of group values that increased the status of violent individuals. Others, such as Kosrae and some of the less violent atolls, had structural mechanisms that reduced the probability of violence. In the case of Kosrae these factors involved strong central leadership whereas on atolls individual behavioural norms were enforced through verbal ridicule and other social pressures.

Structural factors within a society are not permanent, as is illustrated by the remarkable turn-around in violence on Chuuk following the arrival of the German colonial administration in the early 20th century. Recognising the destruction wrought by persistent warfare, the Germans offered payment

for guns and ammunition turned over to the authorities. The result was that endemic violence in the island group was significantly reduced within the course of just a few years. Gladwin and Sarason (1953: 40) noted that the Germans “simply told the Trukese to turn in their guns and to cease making war... this was apparently all that was required of a people who had created for themselves an intolerable condition which they did not know how to stop”.

There was clearly more at work here than removing firearms or accepting the authority of the German administrators. Indigenous means of killing were quite effective, and the loss of firearms in itself would only have returned the Chuukese to the point where they were before the arrival of arms traders. The cessation of war marked a fundamental shift in the structural factors affecting the decision to attack other groups. When questioned about this change, residents said that they were aware that violence was endangering their survival but that they could find no way to end it (Oneisom 1991). The Germans provided such a mechanism. It is noteworthy that the cessation of warfare was not accompanied by a similar move away from interpersonal violence. Various forms of bravado continued to add status to individuals, including fights and the purposeful imposition of discomfort to demonstrate personal strength (Rubinstein 1984).

Interpersonal violence and warfare were forms of competition wherein individuals or groups would demonstrate dominance over others. “While war could only be fought in the pretext of righting some wrong, it was equally clear that war was an assertion of strength” (Labby 1972: 14). When violence was outlawed by colonial powers or by indigenous leaders, other forms of competition, such as feasting or competitive gift-giving, replaced it. In many cases, these non-violent forms of competition were conducted in parallel to the use of violence.

These considerations are not limited to the Caroline Islands or Pacific cultures—the relationship between perceived needs and injustices and the decision to go to war is a common element in all conflicts. Ironically, pre-contact island societies may provide insight into the most daunting challenges faced by our complex modern society (Younger 2007).

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