



History, explanation, and war among the Yanomami: A response to Chagnon's *Noble Savages*

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Abstract

Why do people make war? Is it in human nature? Publication of Napoleon Chagnon's *Noble Savages* resurrects old arguments, largely displaced in recent times by study of larger scale political violence, and sidelined by more contemporary theoretical currents. This shift ceded the human nature issue to a variety of biologicistic approaches, for which Chagnon's image of the Orinoco-Mavaca Yanomamo is foundational. Chagnon proposes that war is driven by reproductive competition, with men fighting over women, revenge, and status, among a 'Stone Age' people living as they had for countless generations, in a tribal world untouched by larger history or the world system. This paper challenges each of those claims, and offers alternatives that provide a very different view of Yanomami warfare, and why men fight wars.

Keywords

anthropology and science, Napoleon Chagnon, human nature, Davi Kopenawa, noble savages, war, Yanomami

Introduction

Two major books on the Yanomami appeared in 2013: *The Falling Sky: Words of a Yanomami Shaman*, by Davi Kopenawa and Bruce Albert, and *Noble Savages: My Life among Two Dangerous Tribes – the Yanomamo and the Anthropologists*, by Napoleon Chagnon. In *The Falling Sky*, Kopenawa gives us the Yanomami view of people, spirits, and the forest in natural order, along with a searing critique of the outsiders who invaded, exploited, sickened, and portrayed them. In *Noble Savages*, Chagnon combines reminiscence and score-settling against multitudinous enemies

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with detailed explication of sociobiological theory as it applies to Yanomami social behavior. Both books deal with a characteristic of Yanomami life which has been most noted in the outside world – war.

This paper relates these books to the research presented in my own *Yanomami Warfare: A Political History* (Ferguson, 1995), to highlight persisting issues in anthropological explanation of war. My main argument will be with the claims of Chagnon, in *Noble Savages* and his earlier publications, but *The Falling Sky* informs us at several junctures. Critically evaluating Chagnon's work is necessary as his research has been lionized as science prevailing over politically motivated attack (Dreger, 2015; Edge, 2013; Wade, 2013). If at this moment of high visibility, anthropologists do not scientifically evaluate Chagnon's representations and theory, and offer an alternative explanation of why Yanomami fight, they cede understanding to psychological Darwinist interpretations which persuasively argue that men are born to kill (Ferguson, 2011, 2013).

Alternative perspectives

Although the two new books are about as different as can be, close reading reveals similarities in their portrayal of why war happens among Yanomami. Some anthropologists argue – with well-considered reasons – that Yanomami raiding should not be categorized as 'war', as Chagnon and I do. Kopenawa observes that Yanomami 'arrowing' and white people's war are extremely different, in objectives and indiscriminate slaughter. But he does not dispute that their own 'arrowing each other' is war. 'Yet it was not because of land, gold, or oil that *Oeoerie* brought the *waitiri* war valor into existence at the beginning of time . . . We inhabitants of the forest only go to war to avenge ourselves' (Kopenawa and Albert, 2013: 359–60). Kopenawa does differ strongly with how much emphasis Chagnon gives to war – 'they continue to lie about us by saying "The Yanomami are fierce. All they think about is warring and stealing women. They are dangerous!" Such words are our enemies and we detest them' (Kopenawa and Albert, 2013: 24).

Nevertheless, Kopenawa's emphasis on valor and revenge as the personal motivations leading to war is similar to Chagnon (2013: 230; Kopenawa and Albert, 2013: 357–8, 362). Kopenawa dismisses the idea that raids are launched to capture women, though female captives may be taken if the opportunity presents during raids for revenge (Kopenawa and Albert, 2013: 366–7, 557). His own father had two wives taken by capture (Kopenawa and Albert, 2013: 173). That too is much as Chagnon (2013: 226) has said: captured women are 'an unexpected bonus' in raids for revenge.

The major difference between these two perspectives is that while Kopenawa acknowledges that men 'furiously confront' each other and 'ardently struggle' over women, that is usually settled by non-lethal fights. Though, on occasion, a man is killed, and then revenge raiding begins. 'But this kind of thing rarely happens. . . . Our elders certainly did not arrow each other because of women,

unlike what the white people sometimes claim' (Kopenawa and Albert, 2013: 366–7). For Chagnon, 'The motive the Yanomamo give for lethal raids almost always has to do with revenge for the death of some person. As emphasized elsewhere, the previous killing is often a result of some fight over women' (2013: 257), although he also stresses that a great many personal grudges of all sorts lead up to killings that provoke revenge (Chagnon, 1990a: 101; 2013: 214–22).

The essential difference in the way these books portray war is how these culturally constructed personal motives are understood. For Kopenawa, these motives in themselves explain why Yanomami shoot arrows at each other – period. For Chagnon, these are proximate goals – to maximize sexual access to women, to take revenge, and to seek cultural recognition – which serve the ultimate evolutionary goal of increasing inclusive fitness by fostering the survival and reproduction of self and close kin. In this contrast, Kopenawa and Albert provide an emic understanding, and Chagnon an etic explanation.

Emics and etics (Harris, 1979: 32–41) involve two entirely different and equally important approaches to the study of social life. Emics are the perspective of native actors. Any study of agency must well attend to them, for those are the immediate rationales for behavioral choices. An emic study can also communicate to readers cultural understanding, the local meaning of life and action. Anyone seeking to grasp the emotional, cognitive, symbolic logic of another people is seeking emic knowledge. Davi Kopenawa's narrative is incomparable in this regard.

Regarding the reasons why men fought, Kopenawa's stated motivations are very similar to emic accounts that were collected and reported for indigenous people around the world, before the anthropology of war developed as a distinct field. For decades, field anthropologists dutifully reported what native people told them about life when they were a child, or their father was a child, and these accounts consistently presented the moral values that justified deadly violence as the reasons why wars occurred. In my first overview of the anthropological literature, revenge in particular was identified as the single most common explanation of why tribal people make war (Ferguson, 1984a: 39). These ethnographic reports did not lead to any broader understanding of war causation. An etic approach to war, in contrast, frames it in terms of theory developed by outside analysts, in terms of factors and patterns which are potentially generalizable across different cultures. There is no hint that etic is superior to emic. They are addressed to different ends. If what you want to know is how Yanomami themselves think about war, read Kopenawa and Albert.

I agree with Chagnon in employing an etic approach. What he seeks to explain, the explanandum, is why men, Yanomami men in this case, go to war. His explanans, that which explains this behavior, is reproductive competition between men. The evidence he provides in support of reproductive competition is of two sorts: anecdotal accounts where a killing and/or raiding is preceded by a conflict over women; and with much more probative weight, statistics that are claimed to show that killers have higher reproductive success. I think this etic explanation is faulty, and will challenge the evidence which supposedly supports it.

My own book, *Yanomami Warfare: A Political History* (Ferguson, 1995), offers a very different etic theory. What I seek to explain is variations in the occurrence of actual, specific wars: first, times of peace vs. times of war; second, what type of group is attacked, vs. what type of group does the attacking. My explanans is a pattern of material interests, based on antagonistic relations in access to steel tools and other western manufactures, in the times when they were very scarce. In this explanation, actors' stated reasons for fighting, whether for revenge, or over women, insults, or suspicions of sorcery, are understood as cultural rationales for underlying material objectives. These are the sparks that set off a raid, and they determine exactly when and against whom deadly action is taken. However, the decisions occur within a highly structured context that establishes directionality of hostilities, and sets options for political behaviors.

Specifying the expectations and evidence for both etic approaches occupies the second half of this paper. Other work must be done first: describing how western expansion has shaken the Yanomami world for centuries; and then showing how, by the second half of the 20th century, Yanomami society had been radically transformed by the combined effects of a quest for western goods, the devastation of new infectious diseases, and the resulting maelstrom of war. This historical moment is the starting time of Kopenawa's own memories and Chagnon's detailed reconstructions of raiding behavior.

Throughout his writings, and again in *Noble Savages*, Chagnon portrays the Yanomami and their wars as representing 'a truly primitive cultural adaptation... before it was altered or destroyed by our culture' (Chagnon, 1977: xi). Their wars are said to be a normal, expected form of political behavior, among 'our contemporary ancestors' (Chagnon, 1983: 213–14), at the dawn of agriculture (1983: 30). In *Noble Savages*, the message is plain: 'The Yanomamo are probably a typical example of what life is like in a state of nature' (2013: 231). Their fighting exemplifies 'Warfare in the Stone Age' (2013: 217):

Life in the societies of the ancient past – the 'Stone Age' – appears to have been decidedly uncertain and fraught with danger, mostly from neighboring peoples... The distant past of humanity may have been more like what Thomas Hobbes had in mind, a life that was short, nasty, and brutish. Perhaps we might want to consider this possibility as we learn more about the nature of human life in a 'state of nature'. (Chagnon, 2013: 7)

The Yanomami seem untouched by history to Chagnon because he never looked for it.

By the starting time of Kopenawa's memories and Chagnon's ethnographic reconstructions, Yanomami social existence had been thoroughly transformed, in a way that fostered much greater violence. What seemed normal to them was a recent, derived situation. Explanation of Yanomami wars must be grounded in the practicalities of historically transformed social reality. That context must be laid out before considering the explanandum and explanans of war.

The plan

This paper will make four broad points. Part I demonstrates that Chagnon's representation of the Yanomamo as unaffected by the outside world until the 1950s is indefensible, by outlining the complex history of western contact. (I use *Yanomami* to designate the entire ethnolinguistic people, and *Yanomamo* to designate the western Yanomami of the far upper Orinoco, including those studied by Chagnon.) Part II refutes Chagnon's claim that the Yanomamo as he found them were living representatives of our Stone Age ancestors, detailing the social changes that transformed the Orinoco-Mavaca River area by the time of Chagnon's original fieldwork. This same perspective applies to the context of the intense warfare of Davi Kopenawa's childhood. Part III turns to explanations of Yanomami warfare. Chagnon's theory – popularly boiled down to fighting over women and revenge – is non-predictive and poorly supported by cases. Against that I offer my own explanation, which is predictive and strongly supported by evidence from all over Yanomami lands. In applying an historical perspective to conflict, Part III will consider the role Chagnon sometimes played in aggravating intergroup tensions. Part IV evaluates Chagnon's central theoretical claim, that Yanomamo killers have three times as many children as non-killers of the same age. As thus stated, this claim is plainly untrue. Beyond that, his data does not indicate *any* reproductive advantage for killers, whatsoever.

To make these points requires drawing on a very large evidentiary base, far too much for a journal article, so I will summarize arguments and evidence presented in my other publications. I cannot proceed, however, without acknowledging predecessors who provided much of the historical information I synthesize: Padre Luis Cocco (1972) and Ernest Migliazza (1972) for broad historical studies; Bruce Albert (1988), John Early and John Peters (1993; Peters, 1973), Raymond Hames (1983); Alcida Ramos (1972), Giovanni Saffirio (1985), and William Smole (1976) for the Yanomami areas within which they worked; Nelly Arvelo-Jimenez (1973), Janet Chernela (1993), John Hemming (1987), Neil Whitehead (1988), and Robin Wright (1981) for overviews of and around the Yanomami region; and for 'internal' histories of Orinoco-Mavaca area Yanomamo, Napoleon Chagnon's tireless village history reconstructions (1966, 1974, 1977) and Helena Valero's (1984; Biocca, 1971) peerless accounts from inside the Yanomamo world, during the 20th-century ebb and incoming tide of western intrusion. Much research has been added since publication of *Yanomami Warfare*, so much that I cannot begin to list relevant sources – although mention must be made of Caballero's (2014) new history of western incursions into the far upper Orinoco.

I A people without history

The lost world of pre-Columbia

Contrary to the widespread view at the time of Chagnon's early fieldwork, pre-Columbian native societies of northern Amazonia were not characterized by the

small size and simple organization of ethnographically known shifting horticulturalists. Ethnohistory and archaeology reveal large riverine settlements, bordering on urban scale, linked together with connections of trade, marriage, war, alliance, and ritual. These systems reached into smaller scale societies in highland interiors. Without any doubt, these were social worlds full of tumult, change, and conflict. Whether, how, and why Yanomami warred is entirely unknown. It is clear, however, that they were actors in this larger system, not 'isolated' as in later times. Participation in this vast network is indicated by their role as long-distance traders of precious 'Amazon stones', sacred items for lowland chiefs (Ferguson, 1995: 68–9). Accordingly, my emphasis on western contact should not be misconstrued. Europeans did not initiate the current of local history. They only stepped into it, with terrible consequences for indigenous peoples. But at least with the European intrusion, some observations were committed to writing, which enables us to grasp their impact.

The genocidal centuries

Slave raiding by or for Europeans reached the Negro, Branco, and Orinoco rivers that encompass Yanomami highlands from the 1620s onward, more or less rapidly devastating lowland societies. Some were by Spanish or Portuguese, but both (and the Dutch) engaged 'friendly' natives to go deep into the forests to capture humans for trade, killing many more in the process. 'The desire of exchanging slaves (*poitos*) for hatchets, fish-hooks, and glass trinkets, induced the Indian tribes to make war upon one another' (Humboldt, 1889: 427). In the 1730s, captive-taking reached a peak, with some 20,000 going to the Portuguese from 1740 to 1750. These wars for captives totally transformed the indigenous world of northern Amazonia (Ferguson, 1995: 77–82).

After roughly 1750, the scale of slaving diminished across the northern Amazon. The Spanish and Portuguese tried to establish political control on their respective sides of the border, and used trade goods to entice locals to leave the interior forests and settle in villages. Yet slave-taking still went on. The first historical mention of Yanomami, by their earlier name Guaharibo, comes from a Yecuana ally of the Spanish around 1759, who knew all the rivers and passes up to the Orinoco headwaters, where they went to raid. The Yanomami's recent status as the largest 'unacculturated' native population in the Americas is because their Parima and Siapa highlands are not traversed by any of the rivers that carried slavers. Yet the predators came in from the edges (Ferguson, 1995: 82–91).

How Yanomami lived during the slaving holocaust is conjectural, but they certainly were less reliant on horticulture and more on foraging than observed Yanomami (Ferguson, 1998). Of course, gardens can be made with stone axes, burning, and taking down trees with vines and deadfalls, but it takes a small fraction of the effort with steel tools. Some steel was entering Yanomami trade networks by the late 18th century, often accompanied by existential hazard. Yanomami military prowess is evident as those who raided them were also

'dying of fear' from their retaliations. Under such circumstances, internal war among Yanomami is expectable, but not documented (Ferguson, 1995: 68–76, 82).

Middle history

The upper Orinoco region included two Yanomami language groups, the Sanema of the upper Ventuari and environs, and Yanomamo in the Parima highlands and far upper Orinoco. The Sanema were near to Yecuana peoples, who raided them for captives up to 1838. Yanomamo were more insulated, though still raided for captives by neighboring peoples (Ferguson, 1995: 180–2).

The Yecuana were heavily involved in the rubber boom, which in this area began in 1875–80. Throughout Amazonia, the rubber boom was another period of cataclysmic destruction of forcibly conscripted indigenous peoples. Venezuelan presence on the upper Orinoco increased dramatically, alternating strangling monopolies with violent rebellions. Yecuana suffered, but also became major traders, and began to fear raids by Yanomami seeking plunder (Ferguson, 1995: 184–8).

The year 1913 began a special horror, as local tyrant Tomas Funes created a reign of terror to force labor. Yecuana fled into the higher forests and kept on the move. Yanomamo were not as exposed, but not immune. Along the far upper Orinoco, tappers' scars on trees were visible 60 tough kilometers beyond the Guaharibo Rapids, the traditional border of Yanomamo land. There is substantial evidence that in the late 19th century Yanomami lived in the region between the Orinoco and Siapa rivers who later disappeared, quite possibly extinguished by Funes or driven into higher land (Ferguson, 1995: 106–8, 187–91).

During the boom, steel tools reached some Yanomami, by plunder or exchange, but again with risks from outside, and attendant internal raiding. Some Yanomamo, including the Shamatari population bloc, began moving south from the highlands towards rivers feeding the Orinoco and Rio Negro in Brazil. Chagnon (1973) emphasizes that they were moving away from enemies. But equally important was the pull of machetes and axes. The general pattern was to move to headwaters and then down streams, to where steel could be obtained without danger (Ferguson, 1995: 191–5, Map 4). More steel, and the absence of regular raiding from outside, enabled these Yanomamo to greatly expand their reliance on cultivated foods. 'Presumably the size of the populations involved is a function of their agricultural potentials, and the Shamatari apparently expanded earlier than the Namowei-tedi because they had access to steel tools sooner' (Chagnon, 1966: 167).

Life after Funes

With the rubber industry in collapse and Funes killed, Venezuelans fled the upper Orinoco. A passing observer in 1932 found local natives decrying a dearth of the manufactured goods they now required: 'an interesting spectacle is taking

place...affording an opportunity for some ethnologist to record a brand-new primitive culture in the making' (Hanson, 1933: 588). This is the brief interlude that Chagnon and others mistook for timeless isolation, an unbroken continuum from the Stone Age.

Western retractions are times of indigenous revivals. The Yecuana became large-scale, long-distance traders. Sanema raiding of Yecuana villages and traveling parties became common. A new kind of relationship also began, with some Sanema becoming dependent, subservient, wife-giving adjuncts to well-provided Yecuana traders. This became so common later that it acquired a name, 'Shirishanization' (Ferguson, 1995: 110–15). Chagnon and colleagues (1970: 343) describe its terms, using the older name for Yecuana, the Makiritare. The latter's supply of steel tools and other goods:

has given them a trading hegemony over the Yanomama, who have remained isolated and thereby avoid direct contacts with outsiders. The Yanomama have traditionally relied on the Makiritare for steel tools...It is for this reason that groups of Yanomama periodically take up temporary residence with the Makiritare; they work for them in order to obtain the necessary and extremely desirable steel tools that make their agricultural economy more efficient...The fact that the Makiritare have a monopoly on steel tools, which they jealously guard, has given them the advantage in the various social relationships that emerge in mixed villages. One way in which this advantage is expressed is that Makiritare men (in mixed villages) demand and usually obtain sexual access to Yanomama women. If intermarriage or semi-permanent co-residence does take place, it invariably involves a Makiritare man with a Yanomama woman.

This differs from internal relations among Yanomami groups, due to the categorical cultural difference, and the Yecuana's (sometimes) more cohesive tribal political structure. But in its basis in the Yecuana trade monopoly, and the extraction of women and labor from dependent Sanema, it resembles relations between Yanomami villages when one has a monopoly on western goods. This form of inequality is the basis of my theory of Yanomami warfare (Ferguson, 1995: 115).

Southern Yanomamo

Further south, in the 1920s, Yanomamo known as Shamataari from the Parima highlands were approaching creole woodsmen on the left bank of the Rio Negro, sometimes raiding and killing them for their goods. In one of the last raids by Shamataari against retreating woodsmen, around 1932, Yanomamo captured a young girl, Helena Valero (Ferguson, 1995: 197–205). She lived with Yanomamo until escaping to a mission in 1956, and has given two independent tapings of her life among them, during the period of retraction and then return of westerners (Biocca, 1971; Valero, 1984). Her cross-checkable narratives provide an incomparable window into Yanomami life and warfare (Ferguson, 1995: 197, 393–5).

Valero's captors were at the forefront of Yanomamo expansion, gaining many machetes and axes. Soon they were raided by another Yanomamo group, as women fled to the forest trying to hide their western goods. Several died, and Valero was taken again, beginning her long odyssey across several local groups. The starting point of her captivity was a time of intense violence, as the only sources of steel in that whole area were disappearing, then gone. Steel was so precious that men sat on their machetes, kept them in hand, and slept with them on their chests. But with no continuing sources of western goods to generate inequality and hostility, eventually raiding fell off.

When Valero passed to the Orinoco area, and to the Namowei bloc of Yanomamo later studied by Chagnon, she saw inter-group tensions rise just as woodsmen, the US Army Corps of Engineers, a boundary commission, and finally missionaries entered the region (Ferguson, 1995: 197–220). When her hot-headed husband, Fusiwe (or Husiwe), seemed intent on starting a war, an older man counseled peace. Fusiwe, he said, was too young to remember how terrible the past time of war had been. 'I know it, because I am old . . . Your father used to weep with me and you yourself, who were then a child, used to weep for hunger' (Biocca, 1971: 218). The period of maximum isolation of the far upper Orinoco was a time of peace. With the western return, peace did not last.

Around the Toototobi River

By the 1940s, peaceful interactions with woodsmen along Negro tributaries picked up, as Shamatarí traded with and worked for them. Davi Kopenawa was born along the Toototobi River around 1956. This is the beginning of his historical recollections, based on what his elders told him. They spoke of long journeys to Shamatarí to get steel tools (Kopenawa and Albert, 2013: 173–4).

What they really wanted from the white people of the river were their brand new metal tools, for they did not possess any. At the time, it was very difficult to obtain such tools. So they returned from their long journeys downriver with a few machetes and sometimes an axe head, but it was always with great difficulty. Then they could clear new, vaster gardens, and grow the plants that would feed their relatives. Yet they still needed to take turns lending each other these few tools . . . this way, when a man had finished clearing his plot, another could take a turn working, and then another and another . . . The elders often told me this when I was a child.

Kopenawa refers to the westerners who invaded the forest as 'the People of Merchandise' (Kopenawa and Albert, 2013: 8) – which could be a suitable title for a Yanomami ethnography of ourselves.

Although Kopenawa's discussion of why Yanomami make war is quite different from my etic explanation, his portrayal of the quest for western goods, and the general description of historical periods, is very much in accord with mine. Even though he clearly and correctly connects association with outsiders as bringing

disease, the goods they offer became an obsession: ‘Our mind is constantly attracted by white people’s merchandise. We are too often thinking about obtaining machetes, axes, fishhooks, pots, hammocks, clothes, guns, and ammunition’ (Kopenawa and Albert, 2013: 160). What Kopenawa does not do is connect this obsession, and the antagonisms related to unequal access, to the structure of political relations and war in a given area. But what actor in any local world does social analysis like that?

Overview

For all Yanomami, the 20th century was characterized by two historical themes: varying availability and modalities of securing steel, and danger of being attacked by raiders seeking captive labor or western goods. From Venezuela to Brazil, the same options appear: raid ‘whites’ or other natives who had a much better stock of goods; submit to trade controllers in a dependent, exploitative relationship; or occupy a position to spatially control trade.

The Yanomami were not unusual. Across Amazonia, steel and other manufactured goods quickly became necessities, and were the means of seducing indigenous peoples. Subsistence practice rapidly came to require steel tools, which became necessary means of production. Native people traveled long, dangerous distances to get them. All over Amazonia, across historical periods, indigenous people raided both Europeans and other natives to get their tools and other highly desired goods (Ferguson, 1990: 244). Hemming (1978: 9) calls this the ‘fatal fascination, the greatest weakness of Brazilian Indians’. The lure of steel might be compared to that of gold on Europeans.

One of the most anthologized articles of bygone years was Lauriston Sharp’s ‘Steel Axes for Stone Age Australians’ (1952). He revealed how this substitution led to social transformation. Very little was ever done to follow up on Sharp’s astute observations. That is a notable blindness throughout anthropological theory (Ferguson, 1998). With so many high-minded theoretical issues to contemplate and argue, why focus on something as mundane as acquiring new metal tools? But for social relations on the ground, nothing – not even massive deaths from new diseases – has more profound implications. Steel axes and other goods produce not only a technological revolution, transforming indigenous subsistence possibilities, but also a revolution in *dependency*, in that they only originate with aliens. This dependent relationship is so powerful that Yanomami knowingly expose themselves to deadly infection to secure a better supply – as Kopenawa confirms.

When Chagnon reviewed *Yanomami Warfare*, he wrote: ‘If you substitute the words “machete” or “steel tool” for “Coke bottle,” you get an academic version of “The Gods Must Be Crazy” theory of primitive warfare’ (Chagnon, 1996: 207). Steel tools are not a Coke bottle dropped from a plane. They are the cutting edge for massive transformation of Yanomami life. The exact character of that transformation is described next, for the most thoroughly documented Yanomami region, that of ‘Chagnon’s’ Yanomamo.

II 'The ethnographic present'

Chagnon began his fieldwork, centered at the juncture of the Orinoco and Mavaca rivers, in 1964. This, he tells readers, is the Stone Age (albeit without stone tools), the Yanomamo before western contact changed them. That window of observation is what anthropologists used to call the ethnographic present.

Almost two decades before his arrival, several hours upstream from Boca Mavaca, the Mahekoto-teri opened the modern era of western contact when they created a plantain garden alongside the Orinoco to attract woodsmen. It did, and trade was set at three stalks of plantains for one machete – a bonanza. In 1948 New Tribes evangelists began visiting them, and in 1950 created a mission nearby (Ferguson, 1995: 217–18). In the popular, history-free story of the 'untouched' Yanomami, this is their first major contact with the outside world. NTM missionary James Barker is the man who introduced Chagnon to the Yanomamo.

An important document in Yanomami historiography is Barker's relatively unknown article in the *Boletín Indigenista Venezolano* (1959). He portrays a series of fights and raids around and even into his mission that is one of the most intense episodes of Yanomami violence ever described. Eventually, things settled down around the mission, as they usually do. I mention this because it bears striking comparison to Davi Kopenawa's discussion of the period of intense, multilateral raiding of his early childhood. His people raided and were raided by others all around, during a time when major Brazilian expeditions came through, and two permanent missions were established within striking distance (Kopenawa and Albert, 2013: 364–5). It is not possible to match the specific antagonisms he mentions with the general history of contact, conflict, and raiding for that time and place described in *Yanomami Warfare* (Ferguson, 1995: 155–63). However, its timing and the subsequent establishment of mission-dominated peace are consistent with my reconstruction.

To return to the Orinoco-Mavaca Yanomamo, the Namowei – a population bloc including the Bisaasi-teri, Chagnon's initial study population – in the early 1940s made long treks to ask for or take western goods from other Yanomamo or outsiders, just as Davi Kopenawa's people did. Once Mahekoto-teri attracted the woodsmen, Namowei cemented an alliance with them. The Mahekoto-teri gave them axes and machetes, which Namowei traded to more interior groups for dogs, as Namowei in turn traded dogs to Mahekoto-teri (Ferguson, 1995: 216–26). The Bisaasi-teri group moved to the Mavaca River by 1950, giving them access to more outsiders. Around 1953 they made a garden on the Orinoco itself. In 1958 they were invited to move in next to a new government malaria station at the mouth of the Mavaca, where in 1959 they were joined by New Tribes missionaries (Ferguson, 1995: 241, 264–65).

As noted by Chagnon (1977: 161), 'No Yanomamo would tolerate the discomfort of living near the bug-infested rivers unless there were powerful incentives, such as trade goods, to attract them there.' It is not in doubt: where Yanomamo moved to and where they chose to live often were efforts to get better access to

steel. Steel is only the start, followed by a procession of other foreign goods, each with its own cultural impact, such as cooking pots, clothes, medicines, outboard motors, and shotguns. That is the contact context. What was the result?

Social breakdown and interpersonal violence

Chagnon's claims of a 'state of nature' notwithstanding, examination of his and others' writings establishes that in the Orinoco-Mavaca region, social relations were thoroughly transformed by the early 1960s – as summarized in 'A Savage Encounter' (Ferguson, 1992).

Whenever a mission was established anywhere in Yanomami lands, some local group moved fast to make a garden alongside it, and thereafter stayed put, both to get western goods for themselves and to prevent others from breaking their trade monopoly. This sharply contrasts with more traditional groups, who spend much time on trek and visiting old gardens (see Good, 1989). As a result, areas near Western outposts were largely hunted out. Although mission food, river resources, and traveling in launches to hunt may have kept nutrition adequate, none of the mission villages in the Orinoco-Mavaca area had the extensive sharing of game animals which is the social glue uniting people in more remote and mobile groups. Fixity also eliminated what is otherwise an option in highly conflicted situations, to move away from opponents – though that is what raiders may seek (Ferguson, 1992: 204–6).

Increasing contact meant more disease. Two dozen Namowei died in 1945, and 10 percent of the local population all at once in 1960. By Chagnon's initial fieldwork, 130 of 240 deaths were from disease, plus 25 from 'sorcery'. War accounted for 37 more. Only a quarter of children had both parents alive and co-resident by the time they reached 15. Among the Yanomami, kinship, economics and politics are one, and marriages are the result of long negotiations with pre- and post-marriage obligations. So many deaths in a short time shred the social fabric (Ferguson, 1992: 203–4; 1995: 209, 232). 'Disruption of village life and their resulting coalescence or fusion shatters the social organization and creates chaos, conflict, and disorder in the newly-constituted village(s)' (Chagnon and Melancon, 1982: 73).

One of the most striking aspects of Chagnon's descriptions is the abused condition of women, which markedly contrasts with descriptions from elsewhere (Ramos, 1979). Yanomami in general are very patriarchal, though Chagnon's own emphases certainly amplify that (Tiffany and Adams, 1994). Comparing Orinoco-Mavaca Yanomamo to other lowland South American peoples, their strong fraternal interest groups and reliance on plantains (which in contrast to bitter manioc does not encourage female cooperative labor) are consistent with stronger patriarchy (Ferguson, 1988: 149–50). However, contact made it worse for women. Drastically increased sedentism and curtailed trekking eliminated their more traditional and vital food-gathering role, making them specialists in the drudge labor of finding firewood and hauling water. The unusual number of

in-married women in pursuit of trade relations left them without the protection of resident male relatives; and the intensity of war put women at risk and dependent on aggressive men (Ferguson, 1992: 220–1).

Inter-group relations

Western contact, particularly the arrival of fixed outposts of missions and anthropologists, transformed marital and trade relations between villages. As discussed by Chagnon (1977: 69–73; 2013: 322–32), the marriage pattern he traced back across generations was largely endogamous among cross-cousins. An important change occurred once missions were in place. A brother-in-law is expected to provide machetes, axes, and other western goods to his in-laws. Consequently, many brides were pushed upstream in the trade current leading out from western posts. There was ‘a cline in sex ratios’ of males to females (Chagnon, 1966: 57–8), extending from the mission village Bisaasi-teri through its chain of dependent allies: 0.8, 1.1, 1.2, 1.8. Ironically, polygyny was far more common in mission villages than in others. A related contact-induced change is the skewing of bride service. When men from villages with good sources of steel married women from other villages, they substituted trade goods for work. Outside males that obtained women from mission villages were forced into unusually lengthy and onerous toil (Ferguson, 1992: 214–216; 1995: 31–2, 281–2).

Trade between villages went through a similar reorganization. Formerly there were networks of balanced reciprocity (see Sahlins, 1972), sometimes reflecting ecological variations, involving hunting dogs, curare, bows, arrows, baskets and more. When westerners established bases, those became exchange hubs, with spokes radiating outward to more isolated groups. Hubs ceased making these labor-intensive traditional goods, instead getting them from others in exchange for steel. One telling example is from Bisaasi-teri, which were given spun cotton from one dependent ally, then told another to return it as woven hammocks – ‘the importer merely contributing labor to the process’ (Chagnon, 1977: 101). Balanced reciprocity had given way to negative reciprocity in exchange of both women and goods, based on control of incoming western trade (Ferguson, 1992: 209–11; 1995: 28–31).

Status and politics

The status system too was transformed by the influx of western goods. Peters’ (1973: 144–51; see also Ferguson, 1995: 141; Peters, 1998) dissertation on Yanomami of the Mucajai mission describes changes in inter-village marriage patterns virtually identical to those just noted, but he goes further, in a way that cannot be documented for the Orinoco-Mavaca area simply because no one has written about it, rendering it ethnographically invisible. At the Mucajai mission, possession of western goods became the key to both personal and village status. Younger men with quick appreciation of missionary needs rose to precocious

leadership positions. A new kind of material inequality developed, with some young men earning five times the trade goods of others.

Back around the Orinoco, once possessing a surplus of machetes, etc., men actualized their social value by exchange. Trade could be tense. A machete freely given would raise the giver's status. But they also were extorted, and when that happened the receiver's status went up, and the giver's went down. In their intense quest to obtain these trade goods, aggressive intimidation, pushing to the brink of violence, became common in the Orinoco-Mavaca area. Showing readiness to reciprocate in kind was necessary to prevent loss of both goods and status (Ferguson, 1992: 221–2; 1995: 41–2).

The status of headmen was elevated in a very non-traditional way by making them conduits of large numbers of machetes. Headman status was also elevated by the high level of conflict. The mid-1960s Orinoco-Mavaca area contrasts measurably with other described Yanomami groups in the scale of pounding matches that had to be managed, the frequency of feasting that was the basis of alliance, and the complications of alliance and enmity characteristic of war zones (Ferguson, 1992: 217–20).

The transformations of contact led to severe tensions both between groups and between factions within groups. Chagnon repeatedly emphasizes that Orinoco-Mavaca headmen are 'Machiavellian' (Chagnon, 2013: 70, 98, 259), maximizing their own political advantage. Within and between groups, status domination backed by force or its threat was used to influence social and economic relationships. Within and between groups, the principle stake was access to western manufactures, directly or in terms of exchange. Having more steel and other foreign goods in itself strongly tilted relationships in favor of those with better access, but that could be countered by threatening force. Between groups, alliances were amicably close or strained to the point of war, depending on a mix of four basic factors: the amount of disposable trade goods, direct backing by westerners (including with shotguns), number of warriors and allies, and renowned fierceness of individuals (Ferguson, 1995: 34–7).

Davi Kopenawa lived through a similar period of mission hegemonization in Yanomami lands around the Catrimani and Toototobi rivers. Once again, one does not expect social analysis in emic recollections, and the transformations noted above cannot be inferred from his narrative. But co-author Bruce Albert did an etic analysis for that region, which I incorporated as part of my own study:

The communities closest to the missions assume a regional monopoly of manufactured objects which they obtain in abundance. . . . They benefit first from missionary paramedical assistance and from protection from the risks of intercommunity politics, in which a dissuasive presence is assured them, in the minds of more isolated groups, by the 'whites' and their overwhelming power. The 'mission communities' thus try to monopolize and to manipulate to their own profit, in the game of intercommunity politics, the material and non-material advantages deriving from the presence of these posts established in their territory. . . . Networks of intercommunity alliance become more polarized and progressively more dense around these mission communities: neighboring local

groups attempt to weave with them as many matrimonial ties as they can, in order to arrange, through affinal relations, regular access to the attentions and windfall wealth of the missionaries. (Albert, 1988: 102–3, translated by Barbara Price)

Albert makes a few allusions to these events in footnote, but the sharp contrast between his earlier portrayal, and his and Kopenawa's recent portrayal, shows how qualitatively different are emic and etic analyses.

A State of Nature?

This systematic transformation of social life in the Orinoco-Mavaca area, starting with the renewed penetration of woodsmen in the middle 1930s, is just the latest manifestation of tribal zone dynamics (Ferguson and Whitehead, 1992) dating back to the early 17th century. When Chagnon arrived, the people of the Orinoco-Mavaca area represented a Yanomami life-style in extreme conflict mode, unlike most other Yanomami (Good with Chanoff, 1991; Ramos, 1987). Incessant warfare is *not* their natural condition.

William Smole is a neutral party, publishing early and not engaged in the later contention over the Yanomami. His fieldwork was in the traditional Yanomami highlands of the Venezuelan and Brazilian Parima, mainly in 1970. But in 1964 he visited Bisaasi-teri and other nearby villages, scouting possible research sites, months before Chagnon arrived. Here is his reaction to 'the fierce people' perspective (1976: 31–2):

Much has been written about the violent and fierce nature of the Yanoama. It is implied that this particular culture trait is as universally distributed over Yanoama territory as the language, the teri and shabono institutions, and the plantain gardens; it is also implied that it characterizes Yanoama men as much as do long bows and arrows, quivers, and tobacco wads. It would appear, however, that, in contrast to these universal traits, the degree of ferocity is spatially variable like trade goods, fishing, and the use of dugout canoes. Perhaps there is even a positive correlation between these particular variables. Conceivably, certain lowland Yanoama (such as the Orinoco Waika [another name for Yanomamo]), far removed from the security of their own cultural and spatial dominance, constantly menaced by aliens and foreign values, respond violently as an exaggerated defense to compensate for their insecurity. Certainly the Yanoama who have moved to sites on or near navigable water are not representative. They are outside their niche in the broadest sense, caught in a squeeze between various adverse influences of 'civilization.'

Psychological Darwinists cling to the image of Stone Age Yanomami as vindicating their view of human nature. But to see Yanomami fighting as happening in a situation unaffected by centuries of western disruption, to ignore the documented social transformation occurring in the time leading up to 'the fierce people', is an act of willful blindness.

III An alternative theory of war: Antagonisms over western goods

Yanomami Warfare uses a methodology first applied to indigenous warfare on the Pacific Northwest coast, of mapping historical changes in contact circumstances against actual wars (Ferguson, 1984b). Applied through Yanomami ethnography, the method leads to a model (1995: 21–58) with specific behavioral expectations for a specific historical context. By situating behavioral predictions in concrete circumstances, testable generalizations combine with history.

Explaining war, in this approach, means accounting for two things. First, temporally, why are some periods peaceful and others filled with deadly violence. Second, spatially, what sort of group – as defined by access to western goods – is attacked, and what sort does the attacking. Rather than using selected cases of war as anecdotal illustration, *Yanomami Warfare* incorporates *every* instance of war reported anywhere among all Yanomami. Reports about Yanomami group behaviors – including not just raiding but long-distance movements, alliances, and political relations between groups – are matched with a detailed reconstruction of changes in the western presence. This shows a clear spatial and temporal connection between political actions including war, which I explain as responses to a combination of danger of being raided and the compelling need to acquire steel. In a historicized social context, the model predicts that Yanomami raid when that has the prospect of improving or protecting access to critical and scarce western goods.

Sometimes this spatial patterning is obvious, as with raiding of whites or other natives, Yanomami or otherwise, to take their goods. Across Yanomami lands there is a broad pattern of those without outside trade connections raiding those with them. More theoretically interesting is when one local group raids another, without expectation of acquiring a lot of booty. For these situations it is predicted that those groups with good access to established sources, such as missions or anthropologists, use force to protect their monopoly, operating with a mixture of generosity, threat, and raid. Those without direct access to western sources use force or its threat to extract western goods in antagonistic trade, to drive away middlemen, or impose themselves as middlemen, at or near the source of western goods. Villages controlling a trade source often combine with dependent allies one step out to attack more distant villages which pose a threat, reinforcing their dominance in the area.

Temporally, intergroup conflict is expected to be low when western manufactures are so scarce that no group stands out among others as having many of them. Raiding is likely to be frequent when there is a major change in the western presence which dramatically alters the influx of steel – such as when a mission opens, moves, or shuts down. Major change means that established intergroup relations break down. If the western presence remains steady in one place, accommodations of one sort or another eventually lead to little or no raiding. That, in a nutshell, is how I explain variations in times of war or peace, and what sort of group attacks whom (Ferguson, 1995: 55, 344–9).

Emics and etics

Yanomami do not think about war in such materialistic terms. War is personal. Not just Chagnon or Kopenawa, but field researchers of diverse theoretical orientations (Albert, 1989, 1990; Good with Chanoff, 1991; Lizot, 1994; Peters, 1998) agree that suspicions of sorcery, the desire for vengeance, and valorization of male aggressiveness and confrontation are personal motivations that make men raid (Chagnon, as noted, stands apart from them all in emphasizing conflict over women).

I fully agree that these motivations are the immediate reasoning for taking action, so are crucial for understanding agency. Within any structured situation, there are always options. On top of that is the fog of war – the fears, rumors, deceptions, and unknowns that pervade a state of active threats, and so force hasty choices. Assessments and choices must be made, and individual perceptions and feelings can tip the scales – to attack or ally, and who, and when (Ferguson, 1995: 364–7). This is how decisions are made. Actual choices cannot be reduced to systemic factors, and they will be the main story in any emic account of war, what it meant or means to those who fought it. But these decisions work within a highly structured context, which sets up the oppositions and choices to be made.

An etic behavioral theory addresses the *underlying structure* that imparts actionable form to the multiplicity of individual understandings and motivations that arise in the course of daily life. Why do violent acts display *patterns*? Why do individual grievances and fears only sometimes lead to war, and between certain categories of people? In lived conditions, what constitutes a severe insult, who is suspected of sorcery, when does an old killing require revenge and when can it be overlooked? In most situations, the build-up of personal animosities reflects a larger, ongoing relationship, which I argue is based on the availability of western goods, and the ability to apply force. Then, when a relationship has turned poisonous, the most trivial slight can be the spark for violence (Ferguson, 1992: 222–5).

Although people fight over things like land, or power, or machetes, they fight *against* other people, whose lives must be taken. The issues underlying war are emically framed in terms of culturally specific values, both to persuade others and to justify oneself. The Yanomami think of war their own way, and every warrior has his own reasons. Nevertheless, when one examines the total record of actions, war patterns are explained by antagonisms related to the introduction of steel tools and other western trade goods.

I do not dispute what Chagnon says Yanomamo told him about why they fight – although I do suspect that they figured out that this outsider liked to hear that they fought over women. I also believe that where he worked, fights between men over women were more common than elsewhere among Yanomami. Partly that is because so many men gave daughters as brides to establish channels for trade goods, and those marriage arrangements could be extremely fraught (Ferguson, 1992: 213–16; 1995: 355–8).

But even in the Orinoco-Mavaca area, fighting over women is not at all *predictive* of war. In a theoretical exposition, Chagnon (1990a: 96–7) presents two cases as illustration. In one, a major breach developed over reclassifying potential marriage partners, giving some men a classificatory advantage. Bad feeling persisted. Thirty years later, no war had developed out of this quarrel, but Chagnon stresses that it still might. In the other case, a major war broke out involving multiple villages and deaths, with no suggestion of any fight over women preceding it (Ferguson, 1995: 355–8). Most fights over women do not lead to war, most wars are not outgrowths of fights over women.

Revenge

Nor does revenge explain the continuation of raiding, as Chagnon claims. Yes, revenge can be a powerful force, especially if several people have been killed by enemies. But considering the actual record of killings and raids, reasons for taking revenge are acted on or deferred, trumped up or negotiated away, depending on other circumstances. For the Orinoco-Mavaca area, with its relatively comprehensive coverage of raids, deadly retaliation for a killing is simply not the rule. Reasons for revenge can be constructed even without a killing when there is an interest in striking another group; and a history of killings can be overlooked if there are reasons for allying (Ferguson, 1995: 353–4).

Yet almost any war that happens will be justified as revenge. Sometimes revenge raids invoke prior death shamanism – a person dies of a fever, and his enemies sent sickness into him. As the British structural-functional school discovered about sorcery accusations, they are crystallizations of social relations that are already bad, a ‘strain gauge’ (Marwick, 1970). So too a personal affront that is perceived as requiring violent retaliation depends on the prior status of relations among those involved. All these personal motivations are real, but they are all shaped by the availability and flow of western goods. That is what gives them collective power – why individual grudges develop in the same direction. That is what makes personal grievances build to the point of collective attack (Ferguson, 1995: 353–4).

Davi Kopenawa gives as much or more emphasis to revenge than Chagnon. After one killing, he says, raids followed inexorably out of revenge. ‘Seized with the anger of mourning for their dead kin, they carried out raids until they were able to avenge them’ (Kopenawa and Albert, 2013: 357). As he understands the way of his ancestors: ‘When an elder, a great man, has been arrowed by enemies or had his bones shattered by *oka* sorcerers, his people instantly go to war because of the grievance of his bone ashes’ (2013: 362).

My own reconstruction of raiding in the area of Kopenawa’s youth is much thinner than for the Orinoco-Mavaca region, and it does include one massacre followed by revenge raiding. In my theory, when a massacre kills several individuals, that indeed can be sufficient grounds for revenge raiding (though that also may not happen; Ferguson, 1995: 354). Yet the tensions which lead to the extreme step of a massacre can be related to intense conflicts over a major new western presence (Ferguson, 1995: 45). The time of killing during Kopenawa’s boyhood

was a time of massive and tumultuous disruption due to multiple intrusions by westerners, including expeditions, woodsmen, and new missions (Ferguson, 1995: 156–7; Saffirio, 1985: 87–102).

The explanatory limitation of revenge motivation is clear in Kopenawa's discussions of why raiding stopped while he was still young. He relates that 'once the most aggressive warriors on both sides had been killed', former enemies sought reconciliation. Of course, by the logic of implacable revenge, that would be impossible. But other considerations prevailed.

Then they spoke words of friendship and reaffirmed the end of hostilities: '*Awe!* Let us stop arrowing each other! Let us stop mistreating each other like that! Become our friends! We are tired of mourning our kin! We don't want to constantly make war anymore! Enough! It is pitiful that we can no longer clear a garden, hunt, or even draw water without fear of being arrowed. We want our children to stop crying with hunger and thirst.' Then fear came to an end on both sides and people started to think: '*Awe!* This is a good thing! I will be able to acquire their goods and we will become friends.' They started bartering hammocks, pots, machetes and axes, knives, glass beads, cotton, tobacco, and dogs. (Kopenawa and Albert, 2013: 363)

Albert adds in a footnote that 'The groups on the Rio Toototobi stopped most of their raiding activities in the 1960s, following the contacts with the New Tribes Mission, and above all, the epidemics that decimated their population' (Kopenawa and Albert, 2013: 557). This is the way it always went for Yanomami in the 1950s and 1960s: arrival or movement of a mission set off great tensions and raids, which eventually diminished as some enemies moved away, others became trade-dependent allies, and mission dominance increased.

In sum, those individual motivations shape and sometimes decide courses of action in war, and certainly give it lasting meaning. But they themselves are structured by factors that determine the character of relations between local groups. This structure is revealed by mapping changes in western presence that affect the incoming flow of trade goods, particularly steel tools, then follows the pattern of access and exclusion to explain the political relationships and war between local groups. This perspective fits raiding as historically or ethnographically noted all across Yanomami lands, but the patterning of antagonisms can be traced in finest detail in the Orinoco-Mavaca area. Most of Chapters 10 through 14 in *Yanomami Warfare* deals with that area, and the wars which were made famous by Napoleon Chagnon, with some also described by Helena Valero. Making the case that these deadly conflicts respond to changing interests and antagonisms in the western trade takes up most of 146 pages. All that I can do here is indicate what that analysis finds.

Applications

Helena Valero, after being taken near the Rio Negro, through capture and flight eventually came to be with the Namowei. Her eyewitness account of the killing of

visiting Shamatari is the start of the near-history of Yanomamo warfare, as made known by Chagnon (Ferguson, 1995: 208–9, 226–30). Trade, alliance, and marriage exchanges were rapidly extending from the main source around Platanal, through the Namowei, to more remote Shamatari to the south, who themselves were splitting into deadly factions. Men of one Shamatari faction visited and asked Valero's hot-headed husband Fusiwe to kill their rival, Ruwahiwe, when he came to trade. They told Fusiwe that his brother, who had died from a fever, had been the victim of Ruwahiwe's sorcery. When Ruwahiwe came to trade, he ignored Fusiwe and traded – the basic early swap, dogs for steel – only with Repowe, Fusiwe's political rival. Fusiwe and his followers came up behind and smote them with axes, then shot them with arrows. Ruwahiwe and several others died in the massacre. Repowe yelled at Fusiwe, 'Why did you kill them? Huh? Because they did not give you a dog. That. Because they only gave to me and my son, you killed them out of envy' (Valero, 1984: 237, my translation).

The Shamatari did not take vengeance against Fusiwe. But in a few years he came into conflict with those who would later become Chagnon's Bisaasi-teri, over a key trade location between Mahekoto-teri and Shamatari to the south, just as woodsmen and then missionaries increased their presence. After Bisaasi-teri provocations, Fusiwe raided, starting war among the Namowei. His aggressiveness led others to desert him, and soon he was killed by Bisaasi-teri (Ferguson, 1995: 230–8). This is the beginning of the intermittent, scattered wars that Chagnon reported in *The Fierce People*. The tensions over trade are obvious, once brought into focus.

The same is true for all the other major conflicts in that book. In September 1950, a huge event occurred: the New Tribes Mission was established alongside the Mahekoto-teri at Platanal, vastly upping the trade goods stakes. Only a few months later, in February, came the biggest killing ever recorded among Yanomami, the slaughter of about 11 Bisaasi-teri at a Shamatari feast (Ferguson, 1995: 240). The next few years saw attacks from all sides against Mahekoto-teri, as well as numerous short-lived alliances (Ferguson, 1995: 251–7), as Barker (1959) vividly describes. About this extreme violence, the missionary's conclusion was consistent with the New Tribes view of native people under the sway of Satan: Yanomamo men fought endlessly over women. It was Barker who later introduced graduate student Chagnon to the Yanomamo.

Eastern Namowei divisions soon moved to the Mavaca and Orinoco and made their own contacts with outsiders (Ferguson, 1995: 241–2). After this period of intense change and violence, things settled down, so 'in 1960, the political milieu was quite serene' (Chagnon, 1977: 80). But then came a new round of changes in the western presence, and with them the major conflicts observed by Chagnon and narrated in *The Fierce People*: the hostilities between Patanowa-teri and Monouteri/Bisaasi-teri, transpiring just as Chagnon arrived; the factional tensions within Bisaasi-teri; the alliance of some northward moving Shamatari villages with Bisaasi-teri; the unsuccessful conspiracy of Bisaasi-teri and allied Shamatari to

slaughter Iwahikoroba-teri; and the severe club fight between Mahekoto-teri and Bisaasi-teri (Ferguson, 1995: 289–306).

To the hundreds of thousands of students who read *The Fierce People*, or those who read *Noble Savages*, these are presented as timeless expressions of Yanomamo culture. But they are specific events, in a specific historical context, serving specific interests. In only one case, the breach between Monou-teri and Patanowa-teri – the dripping green snot incident so relished by Chagnon's (1977: 5; 2013: 19) readers – is there any indication of a preceding conflict over women. Even in that case, Monou-teri's grabbing of seven women from the visiting Patanowa-teri makes sense as a move to forestall a disadvantageous alliance between Patanowa-teri and a Bisaasi-teri faction (Ferguson, 1995: 295–306).

Coming after a quarter century of contact-induced social change, the middle 1960s was a highly conflicted period for three reasons. First, local social organization had been shattered by contact and reconstituted in a way that encouraged personal violence. Second, the establishment of a new, beckoning 'unclaimed' Salesian mission across the river from Bisaasi-teri and its two New Tribes posts, government malaria station, and Chagnon's base was very destabilizing (Ferguson, 1995: 278, 283–4). The priest liberally dispensed western goods as enticements, and as soon as he left the field, Chagnon says (2013: 114), the priest "'purchased" half of the Bisaasi-teri to get them to move to his side of the river'. Third was the new presence of Chagnon.

Chagnon's role in conflicts

Much has been written and speculated about Chagnon's role in aggravating tensions, a point that causes him special umbrage in *Noble Savages*. 'They argue that my allegedly unpleasant demeanor provoked the Yanomamo to do violent things they never before did' (2013: 230). Many have discussed this in ethical terms. My goal is just to explain why there was so much conflict swirling all around him. For that, his personality is not the issue (except with Moawa, below), but his actions are. Additionally, the polemical character of *Noble Savages* cannot be ignored, even if Chagnon has been subject to intense political attack himself. The issue of his behavior in the field and its relationship to Yanomamo conflicts simply must be addressed.

When he first visited a village, he brought 'a quantity of assorted trade goods for the known leaders and important men in the village', and more each time he returned (Chagnon, 1974: 164). Exchanging trade goods for hospitality and cooperation is the foundation of ethnography, among Yanomami and everywhere. This practice by other field workers could lead to serious problems, notably as the unprecedented coordinated attacks against Jacques Lizot's locally arrogant main base of Tayari-teri in 1979 (Ferguson, 1995: 337–8). But Chagnon's field situation was different. He did not work in one or a few villages, but tried to roam all over. Starting in 1967, he was the point man for an Atomic Energy Commission project gathering blood, genealogical data and other information from as many villages as possible (Chagnon, 2013: 33–7; Tierney, 2000: 36–46).

His large gifts became legendary, known to Yanomami far away: 'I was identified by the Yanomamo as an inexhaustible fount of goods' (Chagnon, 1974: 165). When he visited Iwahikoroba-teri, they had a few 'extremely dull and badly worn' machetes obtained 'via a long trading network' from Brazil. He gave the headman and his companions some 25 machetes to distribute (Chagnon, 1974: 176–7, 180). That largesse is why Yanomami everywhere wanted him to come (back then, not more recently), and did everything they could to keep him from leaving and going on to others. That is why his biomedical colleagues could show up in an uncontacted village, write numbers on skin, take body measurements, photos, draw blood, and at one point vaccinate them against measles (compare Chagnon, 2013: 203–13, 442–7; Tierney, 2000: 53–106).

Chagnon is very explicit about the strenuous and inventive efforts Yanomami made to control his movement between villages (Chagnon, 1974: 7–12): 'The Bisaasi-teri did not want me to give my tools directly to the Momaribowei-teri when I went there to visit, and the Momaribowei-teri did not want me to take my goods past them to the Reyabobowei-teri. Each group wanted a monopoly' (1974: 11). So it was, everywhere. Chagnon's movements were sharply contested – an essential fact for understanding the extraordinary atmosphere of tension, threat, rumor, fear, and betrayal that pervades *Noble Savages*. His presence was not as weighty in the long run as the impact of missions. But the missions generally stayed put, while Chagnon moved around, and was the subject of unremitting efforts to manipulate his movements, including telling tales of the dangers posed by others. Everywhere killers lurked, just outside the shabono.

It would be difficult for readers of *Noble Savages* to glean any idea about destabilization from Chagnon's descriptions of his tireless efforts to gather scientific data. It would be hard for them to understand why anthropologists have raised ethical questions about his behavior in the field. Partly, that is because the most questionable actions described in earlier works are absent in this telling. Carrying the Monou-teri up the Mavaca so they could unexpectedly raid the Patanowa-teri before inundated trails opened up (Chagnon, 1977: 135) – gone (2013: 97). His method of extracting and confirming genealogical information by exploiting tensions between villages (Chagnon, 1977: 12) – gone (2013: 56–8). His issuing a public denunciation of the domineering and belligerent Mishimishimabowei-teri headman Moawa, which was pretty close to a death threat (Chagnon, 1974: 195–6) – not there (2013: 372).

Chagnon's relationship with Moawa is a dramatic focus of *Noble Savages* (2013: 351–72) and *Studying the Yanomamo* (1974: 180–97). This Shamataari settlement was his base on several research visits from 1968 to 1972. When he first arrived, they had two 'badly worn down and dull axes' among 80 people. He promised them 15 machetes, six axes, and 12 cooking pots (Chagnon, 1974: 30–31, 35–6). Whenever Chagnon came to visit, Moawa compelled him to hang his hammock right next to his own, and exercised extreme and escalating demands that Chagnon either give him all his trade goods, even medicines, or else distribute them only to individuals Moawa selected. Their final confrontation, 'one of the most volatile situations I have ever been in', was directly over Moawa's control of Chagnon's machete

distribution (1974: 188–93). ‘Many readers will be tempted to reduce my conflict with Moawa to a simple explanation that it represents only an ethnographer, in possession of valuable goods, giving them away in such a fashion that it was perceived by the headman as a threat to his authority and an undermining of it.’ But he adds that another problem was that ‘the nature of our personality characteristics simply did not mix well together’ (Chagnon, 1974: 197). Point granted.

Science?

Despite all the aggressive efforts to monopolize him, despite the massive effects of missions, despite the transformation of inter-village trade and marriage evident in Chagnon’s own ethnography, despite the history of movements and wars among the Yanomami and across Amazonia openly aimed at procuring western goods, Chagnon refuses to consider the explanation that the Yanomami wars we know about were driven by conflicts over those goods.

His emic explanation invoking revenge, women, witchcraft, status, and insult as the reasons for war is solidly within the mainstream of ethnography stretching back into the 19th century. But it is entirely *non-predictive* of actual behavior. The etic behavioral approach I propose does make specific predictions about variations between war or peace, and of what sort of group attacks and what sort is attacked.

For Chagnon, the lack of prediction is not an issue, because he has a sociobiological bottom line: all these aggressive motivations among Yanomami confer reproductive success. The most famous of all Chagnon’s assertions is that killers’ reproductive success is triple that of non-killers. ‘Chagnon’s most arresting claim is that among the Yanomami, men who have killed enemies in combat have, on average, three times as many offspring as men who haven’t. If true, that fact carries enormous implications for any collective attempt to reduce levels of violence in the world’ (Junger, 2013). It is not true.

IV Unokais

Unokais are Yanomami who have gone through a ritual purification, typically for having participated in a killing. If many men participate in one killing, even by shooting arrows into a corpse, they all go through the ritual. Albert (1989) and Lizot (1994) take issue with Chagnon’s representation of the meaning of *unokai*. My argument (Ferguson, 1989; 1995: 358–62; 2001: 107–8) has been about the numbers. Chagnon’s own data invalidates this much repeated claim.

To begin, there is an elephant in the room. Chagnon repeatedly states that his data regarding ‘*unokais* (those who have killed someone) indicates that they, *compared to same age non-unokais*, have over twice as many wives and over three times as many children’ (Chagnon, 1990a: 95, my emphasis; and see Chagnon, 1992a: 39–40; 1992b: 205; 1997: 205). He says it again in *Noble Savages*, just across the page from his data table. ‘The bottom row reveals that *unokais* have, on average, 4.91 children compared to *same-age non-unokais*, who average only 1.59 offspring

Table 1. Unokai and Non-Unokai Offspring.

Ages	Unokais			Non-unokais		
	n	Number of offspring	Average number of offspring	n	Number of offspring	Average number of offspring
20–24	5	5	1.00	78	14	0.18
25–30	14	22	1.57	58	50	0.86
31–40	43	122	2.83	61	123	2.02
>41	75	524	6.99	46	193	4.19
Total	137	673	4.91	243	380	1.59

each, that is, *unokais* have three times as many offspring as non-*unokais*' (Chagnon, 2013: 277, my emphasis). That statement is false. Chagnon's bottom row is *all* men, not sorted by age (see Table 1).

The actual advantage by age categories is 5.6 x for the 20–24-year-olds, 1.8 x for 25–30, 1.4 x for 31–40, and 1.7 x for >41. If the relative reproductive advantage of *unokais* over non-*unokais* is averaged for the whole sample, weighted for age categories, it is 2.48 x. More than half of that is due to the 20–24 age group. Yet 'the five men who were estimated by me to be younger than 25 years may, in fact, be 25 years old or older' (Chagnon, 1990b: 50). Yanomami men under 25 are rarely fathers, and rarely *unokais*. So why include them? Chagnon himself (1988: 987) eliminates 20–24-year-olds when calculating the total percentage of adult men who are *unokai*. Doing the same, subtracting the 20–24 age-group, the weighted average for all age groups over 25 years of age gives *unokais* 1.61 x as many children as non-*unokais*: 61 percent more is not nearly as dramatic as 'three times more children' but would still represent a major reproductive advantage. Except that this seeming advantage is entirely eliminated by three problems with the data.

The headman effect

All village headmen were *unokai* (Chagnon, 1988: 988). It is a commonplace of Amazonian ethnography that headmen are more polygynous than others (Clastres, 1989: 32). Inclusion of all headman in the *unokai* category confounds the actual reproductive advantage associated with *unokai* status itself. Responding to an earlier critique (Ferguson, 1989), Chagnon obligingly factored out the 13 headmen and presented the *unokai* advantage as still being statistically significant at the 0.05 level, except for the 31–40-year-old category – where it was not (Chagnon, 1989: 566).

The age effect

Within the age categories, co-variation of age with both *unokai* status and more children exaggerates the advantage of being *unokai*. In his response to my critique,

Chagnon created and attacked a straw man: that I ‘assume’ that all men produce the same number of offspring if they live to be the same age. Of course not. This non-response notwithstanding, the point is obvious: as a man progresses through Chagnon’s four age categories, he is more likely to have gone through the *unokai* ceremony, and more likely to have more children. Inescapably, some part of the *unokai* reproductive advantage *within age categories* is due to co-variation with age.

The age effect adds to the headman effect in exaggerating the reproductive advantage of being *unokai*. There is no way of telling how much, though Fry makes a heroic effort. Using various assumptions and combinations of factors, he calculates that a combination of the headman effect and the age effect reduces the *unokai* reproductive advantage by 56 percent to 104 percent (Fry, 2006: 195; Miklikowska and Fry, 2012). Taking 80 percent as the median of Fry’s reduction of reproductive advantage, and applying that to a 61 percent weighted advantage for *unokai*, produces a ballpark figure of the remaining *unokai* vs. *non-unokai* reproductive advantage of around 13 percent. Whether or not that reaches statistical significance really does not matter, since even that edge is cancelled out by the next and most serious problem.

The dying-early effect

Chagnon’s data on reproductive success includes only living fathers: ‘living children whose fathers are dead . . . are not included in this table’ (Chagnon, 1988: 989). This raises the critical question: does participating in a killing increase one’s chance of being killed? Non-*unokais* >41 have an average of 4.19 offspring, while *unokais* of 31–40 years have 2.83. This means that non-killers who live past 40 average a 48 percent reproductive advantage over killers who are killed in their 30s, and a 90 percent advantage over all *unokais* who die younger than 40. Any increase in risk of being killed can more than offset any possible reproductive advantage of being *unokai*.

Chagnon (1988: 990) himself raised this issue, but did not resolve it. ‘[I]t is possible that many men strive to be *unokais* but die trying and that the apparent higher fertility of those who survive may be achieved at an extraordinarily high mortality rate.’ That seems very likely, since ‘Yanomami raiders always hope to dispatch the original killer’ (Chagnon, 1988: 985). But Chagnon speculates that while raiders can make themselves targets for future raids, there may be ‘an underlying rationality: swift retaliation in kind serves as a deterrent over the long run’ (1988: 986). Yet his own data fail to support that idea. ‘A logical assumption would be that if *unokais* deter the violence of enemies, they would lose fewer close kin than non-*unokais*. In actual fact, they lose about as many close kin due to violence as non-*unokais* do’ (1988: 990).

Other evidence indicates that killing and becoming *unokai* does indeed shorten life span. When Patanowa-teri was under attack from different directions, ‘they concentrated on raiding [the Hasabowa-teri] until . . . their fierce ones were all dead’ (Chagnon, 1977: 127). In *Yanomami Warfare*, six of eight identified war leaders

died in war. People expected another to be killed, but he fled to a mission. Only one flourished, also under the protection of a mission, and in possession of a shotgun (Ferguson, 1995: 361). Lizot (1994: 854–5), who worked near to Chagnon's base, comments: 'The men who have the reputation of being waitheri are also the favorite targets for enemy arrows . . . very few of these men died a "natural death".' Davi Kopenawa is very clear about this. After a killing occurs, all efforts are directed toward dispatching the killer (Kopenawa and Albert, 2013): 'Above all, they tried to strike men who had already killed' (p. 357); 'If one of our people is killed by arrows or sorcery blowpipes, we only respond by trying to kill the enemy who ate him and is in an onakae homicidal state' (p. 359); 'it is these aggressive and valiant men who were primarily targeted in our elders' incursions' (p. 364).

Putting all this together, how can one *not* conclude that engaging in deadly violence substantially reduces male procreative years, and therefore reduces their lifetime reproductive success, which is the evolutionarily significant measure? Since after considering the headman and age effects, the *unokai* reproductive advantage was on the order of 13 percent, even a small dying-early effect would mean that killers actually had *lower* lifetime reproductive success than non-killers. All the evidence indicates that the dying-early effect is anything but small.

Conclusion

In making his sociobiological case, Chagnon excoriates anthropologists as enemies of science. In doing so he garnered wide media coverage and high profile endorsements. As Robin Fox put it on the dust jacket of *Noble Savages*, 'this book is his final knockout punch in a fight he didn't pick but has most assuredly won'. Introducing a special online *homage* (Edge, 2013), Richard Dawkins wrote: 'Napoleon Chagnon is a Living World Treasure. Arguably our greatest anthropologist.' In *The New York Times* Nicholas Wade (2013: D3) wrote that Chagnon's book gives us 'a deep insight into the last remaining tribe living in the state of nature . . . an untouched human society'. That is one reason for this response. A better reason is that the issue matters.

Are humans by nature prone to war? For many years in many ways, many have argued we are (Ferguson, 2011, 2013). Chagnon's (1990a) own theory is simple: that men are primed to use deadly violence in reproductive competition. If resources needed to survive and reproduce are scarce, they will fight over that. If not, then men will fight over 'reproductive resources', namely women – as the Yanomamo supposedly prove. There is *always* an evolved reason to kill. Hobbes was right (cf. Fry, 2011).

Chagnon's work is a major buttress for many other innatist explanations, many of which invoke the Yanomami, even when Chagnon's own writings *directly contradict* their hypotheses (Ferguson, 2001: 106–11). In one form or another, these all hold that evolution somehow coded into our genes and brains proclivities that make men prone to war. We are capable of learning peace – all psychological Darwinists will say that – but our basal state tilts towards war. If *science* says that is

true, it makes a big difference in anyone's thinking about the future of war and peace.

This article has argued against drawing that conclusion from the Yanomami. They do not represent humankind in a state of nature, but were mightily 'touched' by the imperial world for centuries. The society Chagnon studied was drastically restructured by western contact, both within and between local groups. Fighting over women or for revenge does not predict the patterning of warfare – antagonism over steel tools and other western goods does. There is no evidence that participating in killings leads to any increase in reproductive success and, much more likely, reduces it.

Yes, war has been an important aspect of Yanomami culture for centuries at least. But Yanomami are not naturally warlike. In some places and times, they became that way. Neither does war spring out of human DNA. War is a cultural and historical variable. It is also one of the greatest curses to afflict humanity. It is a duty of anthropology, with its cross-cultural and holistic perspective, to generate and test theory for explaining war.

References

- Albert B (1988) La Fumee du metal: Histoire et representations du contact chez les Yanomami (Bresil). *L'Homme* 28(2–3): 87–119.
- Albert B (1989) Yanomami 'violence': Inclusive fitness or ethnographer's representation? *Current Anthropology* 30: 637–640.
- Albert B (1990) On Yanomami warfare: Rejoinder. *Current Anthropology* 31: 558–563.
- Arvelo-Jimenez N (1973) *The Dynamics of the Ye'cuana ('Maquiritare') Politic System: Stability and Crisis*. Copenhagen: International Work Group for Indigenous Affairs, No. 12.
- Barker J (1959) Las IncurSIONes entre los Guaika. *Boletin Indigenista Venezolano* 7: 151–167.
- Biocca E (ed.) (1971) *Yanoama: The Narrative of a White Girl Kidnaped by Amazonian Indians*. New York: E.P. Dutton.
- Caballero Arias H (2014) *Desencuentros y Encuentros en el Alto Orinoco: IncurSIONes en Territorio Yanomami, Siglos XVIII–XIX*. Altos de Pipa, Venezuela: Ediciones IVIC Available at: http://www.academia.edu/11948019/Desencuentros_y_Encuentros_en_el_Alto_Orinoco._IncurSIONes_en_Territorio_Yanomami_siglos_XVIII-XIX (accessed 30 June 2015).
- Chagnon N (1966) *Yanomamo Warfare, Social Organization and Marriage Alliances* (PhD dissertation, University of Michigan). Ann Arbor, MI: University Microfilms.
- Chagnon N (1973) The culture-ecology of shifting (pioneering) cultivation among the Yanomamo Indians. In: Gross D (ed.) *Peoples and Cultures of Native South America*. Garden City, NY: The Natural History Press, pp. 126–142.
- Chagnon N (1974) *Studying the Yanomamo*. New York: Holt, Rinehart & Winston.
- Chagnon N (1977) *Yanomamo: The Fierce People, 2nd edition*. New York: Holt, Rinehart & Winston.
- Chagnon N (1983) *Yanomamo: The Fierce People, 3rd edition*. New York: Holt, Rinehart & Winston.
- Chagnon N (1988) Life histories, blood revenge, and warfare in a tribal population. *Science* 239: 985–992.

- Chagnon N (1989) Response to Ferguson. *American Ethnologist* 16: 565–570.
- Chagnon N (1990a) Reproductive and somatic conflicts of interest in the genesis of violence and warfare among tribesmen. In: Haas J (ed.) *The Anthropology of War*. Cambridge: Cambridge University Press, pp. 77–104.
- Chagnon N (1990b) On Yanomamo violence: Reply to Albert. *Current Anthropology* 31: 49–53.
- Chagnon N (1996) Review of ‘Yanomami Warfare: A Political History’. *American Anthropologist* 98: 670–672.
- Chagnon N (2013) *Noble Savages: My Life among Two Dangerous Tribes – the Yanomamo and the Anthropologists*. New York: Simon & Schuster.
- Chagnon N and Melancon T (1983) Epidemics in a tribal population. In: Kensinger K (ed.) *The Impact of Contact: Two Yanomamo Case Studies*. Cambridge: Cultural Survival, No. 11/Bennington, VT: Working Papers on South American Indians, No. 6.
- Chagnon N, Neel J, Weitkamp L, Gershowitz H and Ayres M (1970) The influence of cultural factors on the demography and pattern of gene flow from the Makiritare to the Yanomama Indians. *American Journal of Physical Anthropology* 32: 339–349.
- Chernela J (1993) *The Wanano Indians of the Brazilian Amazon: A Sense of Space*. Austin: University of Texas Press.
- Clastres P (1989) *Society against the State: Essays in Political Anthropology*. New York: Zone Books.
- Cocco PL (1972) *Iyewei-teri: Quince anos entre los Yanomamos*. Caracas: Libreria Editorial Salesiana.
- Dreger A (2015) *Galileo's Middle Finger: Heretics, Activists, and the Search for Justice in Science*. New York: Penguin.
- Early J and Peters J (1993) *The Population Dynamics of Mucajai Yanomama*. San Diego: Academic Press.
- Edge (2013) Napoleon Chagnon: Blood is their argument. Available at: www.edge.org/conversation/napoleon-chagnon-blood-is-their-argument (accessed 11 June 2013).
- Ferguson RB (1984a) Introduction: Studying war. In: Ferguson RB (ed.) *Warfare, Culture, and Environment*. Orlando, FL: Academic Press, pp. 1–81.
- Ferguson RB (1984b) A reexamination of the causes of Northwest Coast warfare. In: Ferguson RB (ed.) *Warfare, Culture, and Environment*. Orlando, FL: Academic Press, pp. 267–328.
- Ferguson RB (1988) War and the sexes in Amazonia. In: Randolph R, Schneider D and Diaz M (eds) *Dialectics and Gender: Anthropological Approaches*. Boulder, CO: Westview Press, pp. 136–154.
- Ferguson RB (1989) Do Yanomami killers have more kids? *American Ethnologist* 16: 564–565.
- Ferguson RB (1990) Blood of the Leviathan: Western contact and warfare in Amazonia. *American Ethnologist* 17: 237–257.
- Ferguson RB (1992) A savage encounter: Western contact and the Yanomamo war complex. In: Ferguson RB and Whitehead N (eds) *War in the Tribal Zone: Expanding States and Indigenous Warfare*. Santa Fe, NM: School of American Research Press, pp. 199–227.
- Ferguson RB (1995) *Yanomami Warfare: A Political History*. Santa Fe, NM: School of American Research Press.
- Ferguson RB (1998) Whatever happened to the Stone Age? Steel tools and Yanomami historical ecology. In: Balee W (ed.) *Advances in Historical Ecology*. New York: Columbia University Press, pp. 287–312.

- Ferguson RB (2001) Materialist, cultural and biological theories on why Yanomami make war. *Anthropological Theory* 1: 99–116.
- Ferguson RB (2011) Born to live: Challenging killer myths. In: Sussman R and Cloninger CR (eds) *Origins of Altruism and Cooperation*. New York: Springer, pp. 249–270.
- Ferguson RB (2013) Pinker's list: Exaggerating prehistoric war mortality. In: Fry D (ed.) *War, Peace, and Human Nature: The Convergence of Evolutionary and Cultural Views*. New York: Oxford University Press, pp. 112–131.
- Ferguson RB and Whitehead NL (eds) (1992) *War in the Tribal Zone: Expanding States and Indigenous Warfare*. Santa Fe, NM: School of American Research Press.
- Fry D (2006) *The Human Potential for Peace: An Anthropological Challenge to Assumptions about War and Violence*. New York: Oxford University Press.
- Fry D (2011) Anthropology, war, and peace: Hobbesian beliefs within science, scholarship, and society. In: McNamara L and Rubinstein R (eds) *Dangerous Liaisons: Anthropologists and the National Security State*. Santa Fe, NM: School for Advanced Research Press, pp. 185–201.
- Good K (1989) *Yanomami Hunting Patterns: Trekking and Garden Relocation as an Adaptation to Game Availability in Amazonia, Venezuela*. PhD dissertation, University of Florida.
- Good K with Chanoff D (1991) *Into the Heart: One Man's Pursuit of Love and Knowledge among the Yanomama*. New York: Simon & Schuster.
- Hames R (1983) The settlement pattern of a Yanomamo population bloc: A behavioral ecological interpretation. In: Hames R and Vickers W (eds) *Adaptive Responses of Native Amazonians*. New York: Academic Press, pp. 393–427.
- Hanson E (1933) Social regression in the Orinoco and Amazon basins: Notes on a journey in 1931 and 1932. *The Geographical Review* 23: 578–598.
- Harris M (1979) *Cultural Materialism: The Struggle for a Science of Culture*. New York: Random House.
- Hemming J (1978) *Red Gold: The Conquest of the Brazilian Indians*. Cambridge, MA: Harvard University Press.
- Hemming J (1987) *Amazon Frontier: The Defeat of the Brazilian Indians*. Cambridge, MA: Harvard University Press.
- Humboldt A von (1889) *Personal Narrative of the Travels to the Equatorial Regions of America during the Years 1799–1804, Vol. II*, trans. and ed. Ross T. London: George Dell & Sons.
- Junger S (2013) Noble savages [Letter to the Editor]. *The New York Times Sunday Book Review*, 3 March. Available at: http://www.nytimes.com/2013/03/10/books/review/noble-savages.html?_r=0 (accessed 2 September 2013).
- Kopwenawa D and Albert B (2013) *The Falling Sky: Words of a Yanomami Shaman*, trans. Elliot N. Cambridge, MA: Harvard University Press.
- Lizot J (1988) Los Yanomami, trans. Dart S. In: Coppens W with Escalante B (eds) *Los Aborígenes de Venezuela, Vol. 3*. Caracas: Fundación La Salle de Ciencias Naturales, 479–583.
- Lizot J (1994) On warfare: An answer to N.A. Chagnon. *American Ethnologist* 21: 845–862.
- Marwick M (ed.) (1970) *Witchcraft and Sorcery*. Baltimore: Penguin Books.
- Migliazza E (1972) *Yanomamo Grammar and Intelligibility* (PhD dissertation, Indiana University). Ann Arbor, MI: University Microfilms.
- Miklikowska M and Fry D (2012) Natural born nonkillers: A critique of the killers have more kids idea. In: Christie D and Pin JE (eds) *Nonkilling Psychology*. Honolulu: Center for Global Nonkilling, pp. 43–70.

- Peters JF (1973) *The Effect of Western Material Goods upon the Social Structure of the Family among the Shirishana* (PhD dissertation, Western Michigan University). Ann Arbor, MI: University Microfilms.
- Peters JF (1998) *Life among the Yanomami*. New York: Broadview Press.
- Ramos A (1972) *The Social System of the Sanuma of Northern Brazil* (PhD dissertation, University of Wisconsin). Ann Arbor, MI: University Microfilms.
- Ramos A (1979) On women's status in Yanoama societies. *Current Anthropology* 20: 185–187.
- Ramos A (1987) Reflecting on the Yanomami: Ethnographic images and the pursuit of the exotic. *Cultural Anthropology* 2: 284–304.
- Saffirio G (1985) *Ideal and Actual Kinship Terminology among the Yanomama Indians of the Catrimani River Basin (Brazil)* (PhD dissertation, University of Pittsburgh). Ann Arbor, MI: University Microfilms.
- Sahlins M (1972) *Stone Age Economics*. London: Tavistock Publications.
- Sharp L (1952) Steel axes for Stone Age Australians. *Human Organization* 11(2): 17–22.
- Smole W (1976) *The Yanoama Indians: A Cultural Geography*. Austin: University of Texas Press.
- Tierney P (2000) *Darkness in El Dorado: How Scientists and Journalists Devastated the Amazon*. New York: W.W. Norton.
- Tiffany S and Adams K (1994) Anthropology's 'fierce' Yanomami: Narratives of sexual politics in the Amazon. *NWSA Journal* 6: 169–196.
- Valero H (1984) *Yo Soy Napeyoma: Relato de una Mujer Raptada por los Indigenas Yanomami*. Caracas: Fundacion La Salle de Ciencias Naturales, No. 35.
- Wade N (2013) An anthropologist's war stories. *New York Times*, 18 February, D3.
- Whitehead N (1988) *Lords of the Tiger Spirit: A History of the Caribs in Colonial Venezuela and Guyana 1498–1820*. Providence: Foris Publications.
- Wright R (1981) *History and Religion of the Baniwa Peoples of the Upper Rio Negro Valley (2 volumes)* (PhD dissertation, Stanford University). Ann Arbor, MI: University Microfilms.

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