The origin of war
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4 Biological and Ecological Theories of the Origin and Evolution of War

4.1 Introduction

In this chapter I shall review the ultimate-level explanations of primitive war, i.e., biological theories of the origin of warfare in human evolution. Biological theories are considered to be those which derive their main concepts from evolutionary biology, Darwinian psychology, ethology, socioecology, and related disciplines. Somewhat arbitrarily, I include in this chapter ecological-demographic, functionalist and materialist theories which propose the main ‘purpose’ of war to be a solution to environmental problems, mainly the Malthusian population/land ratio. Ecological theories are biological in the sense that the environment is the main selective agent in the Evolution-by means-of-Natural-Selection paradigm.

The theories reviewed range from the period of Social Darwinism to contemporary neoevolutionist anthropology and modern sociobiology. Most biological-evolutionary theories of the origin of war have their roots in Social-Darwinist thinking (although they are reluctant to acknowledge this heritage), so it seems only fair to begin with a tour d’horizon of Social Darwinism.

4.2 Social Darwinism

Social Darwinism may be regarded as a peculiar theory of sociocultural evolution flourishing in a distinct historical period ranging from about the middle of the 19th century to about the middle of the 20th, but this is rather uninformative. It is more interesting to regard Social Darwinism as a confluence of ideas, a syndrome of doctrines and recurrent themes, loosely connected by the Spencerian-Darwinian postulates of ‘survival of the fittest’ in the perpetual ‘struggle for existence’. As the main intellectual inputs of this syndrome we shall consider: racialism, evolutionism/selectionism, instinctivism, and (though more implicitly) functionalism.
In many people’s minds Social Darwinism is indissolubly associated with a particular brand of War Apology, eugenics, racism, imperialist policies in the political, and ruthless egotism and laissez-faire policies in the socio-economic domain. As the focus of this treatise is primarily on (the evolutionary
explanation of) war, these subjects (with the exception of the war-apologetic part) can only be tangentially touched, but, as far as possible, they will be placed in their historical contexts.

4.2.1 Racialism

During the era of Social Darwinism, Man definitely fell from his self-proclaimed Crown-of-Creation pedestal. Before that time the intellectual luggage concerning (non)human organisms included the idea of a *Scala Naturae* (with mankind - naturally - occupying the highest rung of the ladder), for all eternity created by a Benevolent and Infinitely Wise Demiurge or Providence; of fixed, static, permanent and immutable species, ancillary to mankind; and, within mankind, a steep hierarchy of human ‘races’, the more ‘inferior’ races commonly thought to have degenerated from a superior common stock (monogeny), or else to have been created separately (polygeny).

As increasingly more ‘primitive’ peoples were discovered and visited, and their appearance, languages, manners, and customs described, the idea that human history had been a progress from savagery to the superior perfection of western civilization, rather than a decline from original perfection took firm root. And as familiarity with racial types increased, a clamorous controversy arose between monogenists and polygenists, concerning the unity or diversity of the human species.

When the monogenists attempted to explain the formation of human races, they were ‘naturally’ inclined (given the assumptions of 18th-century biology) to view the process as one of degeneration from the primordial type of the species. Both Buffon (1707-1788) and Blumenbach (1752-1840) conceived the origin of racial types in this manner. According to Buffon, the peoples in the vicinity of the Caspian Sea were most perfect in form and feature, hence the progenitors of mankind must have lived there. To Blumenbach, too, this Caucasian type was the most beautiful and natural, the epitome and paragon of Man.

The writings of Buffon, Blumenbach, Maupertuis, and Kant provided Cuvier (1769-1832) with three different approaches to the problem of explaining how human races could be derived from a single stock: first, Buffon’s and Blumenbach’s theory of degeneration through direct environmental influence; second, Maupertuis’ (1698-1959) idea of random variation and the establishment of new types through the operation of some selective agency; and third, Kant’s conception of preformation and subsequent adaptive exspeciation. In the interim, moreover, Erasmus Darwin (1731-1802) and Lamarck (1744-1829) had propounded a general theory of evolution, postulating the development of new biological types through the adaptive response of organisms to the changing demands of the environment (Greene, 1959; Mayr, 1991).

But Cuvier was not much interested in the problem of racial origins. He recognized three main races - Caucasian (as whites are still called in the
U.S.A.), Mongolian, and Negroid - of which he considered the Caucasian the most beautiful, the most enterprising, and the most 'cultured'. The Negroes, he declared, constituted "the most degraded race among men, whose forms approach nearest to those of the inferior animals, and whose intellect has not yet arrived at the establishment of any regular form of government, nor at anything which has the least appearance of systematic knowledge" (Essay on the Theory of the Earth, 1818).

In this passage, the intellectual enterprise of racialism clearly shows the prodromal symptoms of unadulterated racism, in which it would ultimately culminate.

In Cuvier's hands anthropology had little to contribute to the development of evolutionary ideas. In other hands, however, the search for a key to the origin of human races produced hypotheses which foreshadowed Charles Darwin's theory of the origin of species.

In 1813, James Prichard (1786-1848) published the first edition of his Researches into the Physical History of Man. Prichard was well aware of the importance of artificial selection in producing varieties of domesticated animals, and it occurred to him that a kind of unconscious selection went on in human society, namely, the selection of mating partners according to esthetic preference (what Darwin would later call 'sexual selection'). Interestingly, Prichard applied the concept of evolution and progress to Man's physical as well as to his mental equipment. Like Lamarck, he faced the problem of accounting for a postulated evolutionary development and for the apparent exceptions to it, but, whereas Lamarck assumed the transmissibility of acquired characters, Prichard rejected this assumption and looked instead for some selective agency which could establish a variation. He recognized the importance of artificial selection in animal breeding and explored some of the implications of sexual selection among human beings, but he stopped short of the idea of natural selection through elimination of varieties poorly adapted to survive.

The application of the idea of natural selection to the problem of the origin of human races was the work of an Anglo-American, William Wells (1957-1817) (Two Essays, 1818). If Wells had been a zoologist and geologist as well as a physician, Greene (1959) conjectures, Charles Darwin's theory of the origin of species might have been anticipated by almost fifty years. All the elements of the theory were present in the scientific world by 1818.

The idea that Homo sapiens, as he had been named by Linnaeus, was a product of Special Creation ('in the image of God'), and that an insurmountable schism separated Man from the rest of Nature, was obvious to 19th-century Europeans, and not only in religious circles.

The tendency to place human evolution in a different class from prehuman evolution was also prominent in Alfred Russel Wallace's (co-founder of 'classical' evolution theory) writings on the origin of the human races. In an
article "The Origin of Human Races and the Antiquity of Man Deducded from the Theory of 'Natural Selection'” published in the Journal of the Anthropological Society of London in 1864, Wallace undertook to show that the theory of natural selection could bring to an end the long controversy between those who regarded all the races of Man as varieties of one species (monogenists) and those who considered each race a separate species (polygenists).

In brief, Wallace argued that natural selection could have acted on Man’s body in any marked degree only during the period before Man acquired the intellectual capacities which made him truly Man. As long as Man’s ancestors depended on mere animal strength, agility, and cunning to make their way in the world, their bodies must have been subject, like those of other animals, to the winnowing action of natural selection: "Thus arose those striking and special modifications which still distinguish the chief races of mankind".

At the same time this creature’s mental powers would be sharpened by natural selection. Eventually these would develop to the point where he could invent tools, fashion clothing, lay snares - in short, adapt to the environment by other means than hereditary variation. At that point, said Wallace, natural selection would cease to have much influence on his bodily form. From then on, his success or failure in the struggle for survival would depend on mental and moral qualities rather than on physical factors.

The various races of Man, already formed by natural selection in the period before Man became Man, would henceforth continue with very little physical modification except insofar as the development of intellectual capacity was reflected in the shape and size of the cranium. In the mental and moral sphere, however, there would be a severe competition resulting in the spread of the best endowed races and the gradual extinction of the less gifted ones. In this competition some races would "advance and become improved merely by the harsh discipline of a sterile soil and inclement seasons", while others, inhabiting tropical regions, would stagnate from lack of environmental challenge.

In Wallace’s opinion, the true ‘grandeur and dignity of Man’ lay in his unique ability to transcend the law of natural selection which ruled the fates of all lower animals.

Looking at the future, Wallace painted a dithyrambic picture of progressive cultural advance issuing from the steady predominance of 'the more intellectual and moral’ races over the 'lower and more degraded’ races in the conflict of cultures.

Wallace was the author of this purple passage, but the ideas were derived from Herbert Spencer, the self-educated philosopher who applied the idea of natural selection to the evolution of human races several years before Darwin and Wallace first published their views.

A devout believer in free, private enterprise unhampered by government regulation, Spencer had written his Social Statics in 1850 to show that the laissez faire policy in political and social matters was in keeping with nature’s
'stern discipline' for accomplishing progress in the biological realm. Just as nature insured the survival of the fittest races by subjecting them all to a harsh struggle for existence, so society should compel its members to develop self-reliance, thrift, foresight, and industry by exposing them to the rigors of economic competition. By this policy the elevation of Man from his original savage condition, in which he could be governed only by force and fear, to the perfect society, in which every individual would be free to do as he pleased but none would wish to harm any other, would be greatly accelerated. The discipline of economic competition, seconding the stronger discipline of racial conflict, would develop a higher breed of Man capable of living without government. So ran Spencer’s argument in *Social Statics*, the book which suggested to Wallace the general idea of his article and some of its particular applications (Greene, 1959; Peel, 1972).

At the end of the 18th and the beginning of the 19th century, a number of philologists and historians (Schlegel, Klaproth, Grimm, Müller, a.o.) launched the theory of Aryanism (with subsequent variants such as Teutonism and Nordicism). Though some of these theorists understood that the Aryans were a hypothetical linguistic group, nevertheless they often mixed it with the 'Aryan race' (because of an alleged mystic union of language and 'blood'), Sorokin (1928) explains, and in this way facilitated the appearance of a purely racial interpretation of history (For the origin and history of the 'Aryan Myth', and its ultimate degeneration into anti-Semitism, see also: Poliakov, 1974). The most influential were the racial theories of Gobineau, Gumplovicz, and Chamberlain.

The French race theorist Arthur de Gobineau's main thesis was that the racial question was the key to all problems of history, and that the "inequality of races is sufficient to explain the entire enchainment of the destinies of peoples" (*Essay on the Inequality of the Human Races* (1853-5)).

There are the inferior and the superior races, and only the latter are able to attain true civilization. Historical degeneration was the effect of racial miscegenation - the increasing impurity of a race's blood - and war was the moment where the weakness of the diluted race was exposed. Vigorous invasion and the annihilation of the defeated were to be understood as the ineluctable and natural triumph of the racially strong on the one side, the necessary capitulation of the degenerate stock on the other: "Societies perish because they are degenerate... The word degenerate when applied to a people means... that the people has no longer the same intrinsic value as it had before, because it has no longer the same blood in its veins, continual adulterations having gradually affected the quality of that blood".

The sole fundamental reason for social degeneration and military defeat is racial decay resulting from the vitiating mixture of superior and inferior races. The enigma and the tragedy of civilization lies in the inevitable dilution of Aryan with other bloods. Collective demise, it seemed to Gobineau, was as
inevitable a fate as individual death (Pick, 1993; Sorokin, 1928). Chamberlain (Grundlagen des neunzehnten Jahrhunderts, 1899) added little to this scheme, except by popularizing the view that the most superior race is the white, particularly the Aryan ‘race’. His work had a deleterious influence on 20th-century racist doctrines. According to Gumplovicz (Der Rassenkampf, 1883), mankind has a polygenist origin: each race comes from a distinct stock. Consequently, antagonism and hatred have always existed among the human races, and will continue to divide them till the end of time. "The perpetual struggle of the races is the law of history", Gumplovicz concludes, "while perpetual peace is nothing but the dream of the idealists".

In Britain these ideas had already been anticipated by the theories of Robert Knox (1850). Knox believed that "Race is everything". Harris (1968) comments: "No one can read Knox without sensing the imminence of Darwin, for Knox’s interpretation of history involved a physical and cultural evolutionary progression, produced by a life and death struggle between the dark and light races of mankind. The dark races had evolved first, but the whites were destined to surpass them and to bring about their extinction. In this fashion Knox anticipated both Spencer and Darwin as far as natural selection applied to human evolution was concerned. Knox also proposed an evolutionary view of the origin of all other species, postulating an order of emergence through mollusks, fish, birds, quadrupeds, and man".

The principles of Gumplovicz’s theory are as follows: First, the theory of polygenesis, or the multiple origin of mankind, developed by Gobineau thirty years before. Second, the assumption of an inherent and lethal hatred and animosity in the relationship of one racial group to another, resulting in an inevitable and deadly struggle or war between the races (Rassenkampf). Third, the assumption that only through such a struggle has any enlargement of the social group, or any consolidation of two or more groups into one social body, been possible. Fourth, the victorious group, having conquered its victim, pitilessly exploits it, turning it into either slaves or subjects. For the sake of successfully controlling them, it enacts laws, and in this way we have the explanation of (1) the origin of the state, (2) the origin of law, and (3) the origin of stratification and inequality (Sorokin, 1928). Once the means of warfare became developed, it was only natural that war would be a constant feature of humanity. With war comes the possibility of the conquest of one group by another and the development of a strong state to ensure a means for domination.

With the consolidation of larger political units through war and conquest, a greater differentiation develops within the society. From then on, the range of conflict increases within societies to add to that between societies as, in the words of Gumplovicz, "the life and death struggle between hordes anthropologically different becomes a contest between social groups, classes, estates and political parties".
Class conflict is an especially prominent feature in developed states. In origin the dominant class usually represents a conquering group, but over time new classes develop to complicate the power relationships. Primary elements in the formation of the class system are opposing economic interests as well as the formation of alignments necessary to allow effective domination by a ruling group. The desire for greater material welfare for one’s group and a drive toward domination over other groups provide the constant stimuli for further conflicts of class against class and nation against nation (Schellenberg, 1982). One can easily recognize this theory to be a special variant of the Überlagerungs-theory first formulated by Ibn Khaldun (See Ch. 1).

The most influential disciples and followers of Gumplowicz were, among others, Small (1905), Ward (1903), Oppenheimer (1908), de Savorgnan (1914), and Ratzenhofer (1893, 1908).

Ratzenhofer (1893) condensed the theory to a single proposition: "The contact of two hordes produces rage and terror. They throw themselves upon one another in a fight to exterminate, or else they avoid contact".

"Until now", Novikow (1912) commented in discussing these theories, "it was believed that men fought their fellows in order to obtain food, women, wealth, the profits derived from the possession of the government, or in order to impose a religion or a type of culture. In all these circumstances war is a means to an end. The new theorists proclaim that this is all wrong. Men must of necessity massacre one another because of polygeny. Savage carnage is a law of nature, operating through FATALITY".

He has three objections against the racialist doctrine:

(1) Until now there have been no race wars, for the simple reason that the races have not been conscious of their individuality.
(2) When the wars of political domination took place between two linguistic groups, they became race wars by chance.
(3) The Swedes, the Danes, and the Germans are Teutons. That has not prevented them from fighting one another furiously. While, reversely, on numerous occasions the first contact of two very different races has been peaceful (like that between Welsh and Tehuelche in Patagonia, 1865) (Novikow, 1912).

Note that this racialist intellectual input to Social Darwinism has very little to do with Darwin. The Zeitgeist was apparently such, however, that it could easily be incorporated into Social Darwinism proper. It might even be claimed that racialism was the cradle of Darwinism, as all the elements that constitute the theory of evolution by means of natural selection were 'discovered' during the search for an explanation of the diversity of the human 'races'.
Conflict and struggle were long ago declared a fundamental law of the universe, of organic life in general, and of Man's existence in particular; and the source of all change and progress. Even the theory of the 'survival of the fittest' was outlined as early as the 5th century BC (Empedocles, Heraclitus), and may also be found in the Zend-Avesta (Sorokin, 1928). In the 19th century a great impetus to the idea was given by Spencer, Darwin, Wallace and Huxley. Darwin (1859 et seq.) took the idea of a 'struggle for existence' from Malthus (and the term from Spencer), but hardly defined this basic concept. Later authors have interpreted it in their own way. Some authors talk of the struggle for existence among atoms, molecules, organisms, human beings, and societies (e.g., Novikow, 1896; Tarde, 1897). Others applied the term only to organisms, but in a very general and loose sense (e.g., Bagehot, 1884; Nicolai, 1919).

The essence of Malthus' (1798) doctrine - which catalyzed Darwin's theory of selection - is that a population tends to increase faster than the means of subsistence and that this increase is checked by wars, epidemics and famines, to which Malthus subsequently added 'moral restraint', meaning deferred marriage and sexual abstinence. He regarded warfare in the earlier ages of the world as "the great business of mankind", and as one of the first causes and most powerful impulses of war "undoubtedly an insufficiency of room and food; and greatly as the circumstances of mankind have changed since it first began, the same cause still continues to operate and to produce, though in smaller degree, the same effects".

Before Malthus, many authors had indicated the demographic factor (i.e., overpopulation) as one of the principal causes of war. Malthus, however, generalized the theories into a 'law' where war functions as one of the effective checks on population. Since that time, this idea has become quite common in various formulations (van der Dennen, 1975).

Malthus is moderately optimistic about warfare as a population check in modern society. It was conceivable to him that by means of elaboration and rationalization of the other preventive checks, war would eventually be abolished: "It might fairly be expected that war, that great pest of the human race, would, under such circumstances, soon cease to extend its ravages so widely and so frequently as it does at present".

Novikow (1896; 1912) distinguished four principal types in the evolution of the struggle for existence among human beings: the physiological, economic, political, and intellectual. According to Novikow, in the course of time the ruder forms of struggle are superseded by milder ones: "No grim fatality obliges us to massacre one another eternally like wild beasts... The Darwinian law in no wise prevents the whole of humanity from joining in a federation in
which peace will reign... All the theories based on that alleged fatality are pure phantasmagorias absolutely devoid of all positive reality" (Novikow, 1912). Also Vaccaro (1886 et seq.) envisioned a progress from ruthless extermination at the earliest stages of human evolution to the disappearance of war in the future. These ideas were welcomed by many authors such as Tarde (1899), Kropotkin (1902), Kovalevsky (1910), Ferri (1895), de Molinari (1898), Ferrero (1898), Nicolai (1919) and Sumner & Keller (1927), among many others. Steinmetz (1907; 1928) formulated "Das Gesetz der abnehmenden Kriegsverluste" (the law of diminishing war casualties - implying a gradual amelioration of the cruelty of war during mankind’s progress toward civilization)¹. Sorokin (1928) outlined the fallacies in this kind of reasoning.

The full title of Darwin’s famous book, *The Origin of Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life* (1859), clarifies the central importance of natural selection, as well as the grim Malthusian doctrine, in Darwin’s theory of evolution. In his introduction he summarizes this idea as follows: "As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and thus be naturally selected". In the hundreds of fact-filled pages that follow, the theory of biological evolution is systematically developed. Although natural selection is not presented as a total explanation, it is regarded as the most important factor in the origin and ‘transformation’, or ‘descent with modification’ (terms Darwin preferred over ‘evolution’) of species. "Thus", he says in his final paragraph,

[From the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved (Darwin, 1859)².

¹ These ideas also fitted nicely with other prevalent ideas about the future abolition of war in the course of social progress (Montesquieu, Kant, Saint-Simon, Comte, Jaurès, Spencer, Cobden, Angell, Constant, Nobel, Fourier, Bakunin, and many others).

² Pick (1993) seems to detect in this passage the first ‘biologically-inspired’ glorification of war: "One has only to turn to the last pages of Darwin's *The Origin of Species* (1859) to find a figurative conflation of the idea of war and the sublime”. See § 4.2.4.
In the *Origin* Darwin says next to nothing about the evolution of humans. He does suggest that "much light will be thrown" in the future by similar analyses concerning "the origin of Man and his history".

Twelve years later, in *The Descent of Man* (1871), he attempted to follow up on this direction of analysis. While still the central theme, natural selection is here joined by a suite of other ideas which were only briefly presented or hinted at in the *Origin of Species*.

"The sole object of this work", Darwin announced in his *The Descent of Man*, "is to consider, firstly, whether Man, like every other species, is descended from some pre-existing form; secondly, the manner of his development; and thirdly, the value of the differences between the so-called races of Man".

The anatomic peculiarities of Man (including rudimentary organs and vestiges) could be explained by assuming common descent with selective modification. But what about Man's mental, moral, and spiritual faculties, those aspects of human nature which naturalists from the time of Linnaeus had regarded as raising Man immeasurably above the level of brute creation? Here Darwin appealed to the principle of gradation. If it could be shown that the difference between Man and other animals in these respects was one of degree and not one of kind, it could then be argued that the more highly developed forms of intellect, esthetic sensitivity, group spirit and the like had, gradually, evolved from lower forms in the course of time.

So saying, Darwin proceeded to marshal the evidence he had been collecting for many years. A close observer of animals, he had been impressed by the range of their capacity for feeling and learning. In varying degrees he had found them capable, like Man, of pleasure and pain, happiness and misery, terror and shame, playfulness and boredom, courage and devotion, pride and jealousy. On the intellectual and esthetic side the higher animals exhibited a sense of wonder and curiosity, a capacity to learn by experience, an ability to communicate with each other by cries and sounds, and strong esthetic preferences. These qualities in animals should be compared, said Darwin, not with the highest manifestations of human art and intellect but with the attitudes, emotions, and thought processes of the 'crudest savages'. He who had seen the naked Fuegians gathering limpets and mussels in the cold rain or squatting in their wretched shelters 'conversing' in hoarse grunts, he who had seen one of their chiefs dash his own child against the rocks for dropping a basket of sea-urchins, would not be inclined to exaggerate the difference between the lowest Man and the highest animals or reject as preposterous the suggestion that both might be descended from common ancestors.

Having prepared his reader to entertain the possibility that Man's ancestry was brutish, Darwin proceeded to investigate the genealogy of Man more fully. Like Thomas Huxley (1863) before him, he traced Man's line of...
descent to the progenitor of the Old World monkeys, possibly some lemur-like creature from whom both the Old World and the New World monkeys had sprung (Greene, 1959).

Having thus given Man a pedigree "of prodigious length, but not, it may be said, of noble quality", Darwin next undertook to show the manner of Man’s development from his apelike ancestor. The principles of organic evolution expounded in the *Origin of Species* were as applicable to Man as to other animals, he declared. The variability of the human constitution was well known, though its causes were still uncertain. The tendency of human populations to press continually on the food supply had been noted by Malthus long ago. It followed that there must have been a struggle for existence from time to time in the long course of human history, especially at that remote period "before Man had arrived at the dignity of Manhood".

*The Descent of Man* includes attention to, as factors in evolution, the inheritance of acquired characteristics, special accidents of heredity, what Darwin calls 'correlated variation' (features which are not themselves adaptive but happen to be developed along with those which are), and differential fertility. Especially emphasized is 'sexual selection' or the long-run genetic effects of esthetic preference in the choice of mates. In fact, the full title of the book is *The Descent of Man and Selection in Relation to Sex*, and a discussion of sexual selection actually constitutes most of the book. Sexual selection is invoked not only in explaining the differentiation of Man from his anthropoid cousins, but also, building on Prichard’s ideas, to explain the varieties ('races') in the human stock itself.

It is among higher animals that sexual selection becomes important in evolution: among lower animals "perceptive and intellectual faculties are not sufficiently advanced to allow of the feelings of love and jealousy, or of the exertion of choice". Sexual selection takes place in two kinds of 'sexual struggle' between rivals: one is typically between males who seek "to drive away or kill their rivals", while the other is a more subtle competition for the attentions and favors of the opposite sex (male or female). In both cases, we have the basis of a rivalry between individuals within a species in seeking to mate which is a more direct confrontation than is the impersonal competition of natural selection (Greene, 1959; Schellenberg, 1982; Richards, 1987; Cronin, 1991).

The phenomenon of 'sexual selection' augments 'natural selection' of the usual type. It refers to the fact that animals select mates according to physical attractiveness. This amplifies sexual dimorphism as each sex evolves those traits found most alluring by the other, and Darwin shows how at all levels, from reptile and insect to bird and mammal, this generates an extraordinary range of skin coloring, exuberant plumage (like the peacock’s flamboyant tail), horny excrecences and the like which serve to attract the opposite sex. Sometimes males compete for females, sometimes vice versa (In humans,
Darwin believed, it is the males who have the monopoly of choice. Why a feature should be found sexually attractive is often mysterious, though there might be a link with survival-relevant characteristics, thus large males might be more attractive than small ones. Nevertheless there is a high arbitrary component in esthetic preferences. It is this range of variability which Darwin uses to explain racial differences when he returns to Man in the last chapters of the book.

In the human species, Darwin conjectured, sexual selection had probably produced its greatest effects at a very early period, "when Man had only just attained to the rank of Manhood". Judging from the present social habits of Man, it was probable that he originally lived in small communities, "each with a single wife, or if powerful with several, whom he jealously guarded against all other men".

That the law of battle in the acquisition of choice females prevailed in those days was apparent, Darwin said, both from the practices of 'savage peoples' and from the occasional atavistic appearance in modern Man of canine teeth. The greater size and strength of man as compared to woman, he continued, his greater courage and pugnacity, his higher powers of imagination and reason - all these were undoubtedly due in large part to the struggle he had endured both in securing a mate and in the battle for life generally. These qualities would be transmitted chiefly to the male progeny, Darwin thought, but, as in mammals generally, there would be a tendency to transmit them to both sexes in some degree.

Typical feminine qualities and female morphological and behavioral features were probably also acquired through the advantage they conferred in the competition for male notice.

Sexual selection also provided Darwin with a clue to the origin of human races. Natural selection might explain Man's gradual triumph over other anthropoid creatures, but the characteristic traits of the various human races, such as skin color, hair type, skull form, and the like, seemed to confer little or no advantage in the struggle for survival. In the competition for mates, however, they had undoubtedly played an important role, especially at the dawn of human history (Greene, 1959; Richards, 1987).

The strongest and most vigorous men - those who could best defend and hunt for their families, who were provided with the best weapons and possessed the most property, such as a large number of dogs or other animals, - would succeed in rearing a greater average number of offspring than the weaker and poorer members of the same tribes. There can, also, be no doubt that such men would generally be able to select the more attractive women. At present the chiefs of nearly every tribe throughout the world succeed in obtaining more than one wife... We have seen that each race has its own style of beauty, and we know that it is natural to man to admire each characteristic point in his domestic animals, dress,
ornaments, and personal appearance, when carried a little beyond the average. If then the several foregoing propositions be admitted..., it would be an inexplicable circumstance if the selection of the more attractive women by the more powerful men of each tribe, who would rear on an average a greater number of children, did not after the lapse of many generations somewhat modify the character of the tribe (Darwin, 1871)

He concludes that the greater size, strength and pugnacity of males compared to females has arisen from contests between rival males for possession of females in 'primeval times' and has been 'subsequently augmented', while racial differences are due to sexual selection of the 'secondary sexual characteristics', i.e., features not functionally involved in reproduction but found sexually attractive (Richards, 1987; Cronin, 1991).

Like most social theorists of the nineteenth century, Darwin assumed that history was the record of Man's unilineal progress from savagery to civilization, and his theory of social progress was similar in many respects to Spencer's (Greene, 1959). That natural selection had played an important role in past progress Darwin was firmly convinced. It was natural selection which had produced Man's erect posture, bipedal gait and manual dexterity. Above all, it had acted to develop Man's mental and social character, for these attributes had been decisive in the struggle for existence. "I suppose you do not doubt that the intellectual powers are as important for the welfare of each being as corporeal structure", he wrote to Lyell in 1859; "if so, I can see no difficulty in the most intellectual individuals of a species being continually selected; and the intellect of the new species thus improved, aided probably by effects of inherited mental exercise, I look at this process as now going on with the races of Man; the less intellectual races being exterminated" (Life and Letters, II). The acquisition of tools, the use of fire, and the 'half-art and half-instinct' of language would have stimulated the development of the brain and of the 'social sentiments'. These, in turn, brought about group progress through imitation of the inventions and discoveries of the most gifted members of the group: "If the invention were an important one, the tribe would increase in number, spread, and supplant other tribes".

Meanwhile, social solidarity and common morality developed by a similar process of natural selection. To Darwin it seemed likely that any animal possessing strong social instincts would acquire a moral sense if its intellectual powers became developed to the point where it was conscious of a conflict between its immediate impulses and its enduring social instincts. There was no question, Darwin continued, that Man had strong social instincts, probably acquired at a very early period through the advantage they conferred on the tribes possessing them. Every advance in morality and social solidarity would have survival value for
the group in which it occurred, Darwin added:

It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children over the other men of the same tribe, yet that an increase in the number of well-endowed men and advancement in the standard of morality will certainly give an immense advantage to one tribe over another. A tribe including many members who, from possessing in a high degree the spirit of patriotism, fidelity, obedience, courage, and sympathy, were always ready to aid one another, and to sacrifice themselves for the common good, would be victorious over most other tribes; and this would be natural selection. At all times throughout the world tribes have supplanted other tribes; and as morality is one important element in their success, the standard of morality and the number of well-endowed men will thus everywhere tend to rise and increase (Darwin, 1871).

In deriving human morality from social instincts, Darwin proposes a model of what would now be termed 'group selection'; the advantages of altruism, self-sacrifice, etc. accrue not to the individual but to the group. But this raises the difficulty of understanding how, since such individuals will reproduce at a lower rate than their less noble companions, it is nevertheless their behavior which is selected. For he acknowledged that the bravest "would on average perish in larger numbers than other men". Clearly, natural selection cannot straightforwardly explain this and Darwin proceeds to explain altruism by: (a) the evolution of improved reasoning leading our ancestors to see that it is advantageous to help their fellows, such habits becoming inherited over many generations (i.e., the mechanism of 'intelligence into instinct'); and (b) love of praise and fear of shame. Tribes in which noble behavior was high would come to dominate those in which it was low, thus group selection would favor tribes of brave and self-sacrificing individuals over the selfish and cowardly, whose undiscipline and lack of moral fiber would result in their succumbing should the groups come into conflict (Richards, 1987; Cronin, 1991; Ch. 1).

Thus, for Darwin as for Spencer, human progress depended on the rise and spread of ever superior breeds of men. When Darwin talked about 'supplanting', 'elimination', 'extermination' and 'extinction' of tribes and races, he meant it quite literally. In discussing the problem of the causes of the decline and extinction of 'savage races', he states:

[T]he increase of each species and each race is constantly checked in various ways; so that if any new check, even a slight one, be superadded, the race will surely decrease in number; and decreasing numbers will sooner or later lead to extinction; the end, in most cases, being promptly determined by the inroads of conquering tribes (Darwin, 1871).
What Darwin had in mind was clearly a model of group selection (in the second meaning of the term we distinguished in Ch. 1), groups constantly being supplanted, conquered, incorporated or exterminated by other groups, the whole process being driven by intergroup competition.

As Alexander (1974 et seq.) suggested, humans are an excellent model for the kind of group selection Darwin envisioned. It is an appropriate model because, despite Darwin’s ignorance of the genetic materials, it would operate through the survival of alleles as a result of selection at the group level.

Other than in his extended discussion of sexual selection, Darwin had little to say about social or group factors in human evolution. He did briefly refer to the importance of ‘social instincts’ which higher animals have acquired gradually for the good of the community. Man, however, has "few or no special instincts": social motives in humans, said Darwin, are much more influenced by learning than is the case with other animals. Other than making such general points, Darwin himself contributed little to what has come to be called Social Darwinism (Schellenberg, 1982) - and what more aptly would be called Social (or Not-So-Social) Spencerism.

Other writers were far less reticent in tracing the implications of Darwinism for society. One whom Darwin cited with general approval was his fellow Englishman and cousin, Herbert Spencer (1820-1903), who was also influenced by Malthus. Spencer was an even more thoroughgoing evolutionist than Darwin, extending this idea to the far reaches of human society and, indeed, the whole universe. Spencer also talked about the importance of the ‘survival of the fittest’ (a phrase which Darwin borrowed from him) long before the *Origin of Species* appeared. Surprisingly, he also was a convinced Lamarckian, believing in the inheritance of acquired characteristics (which he probably needed to fit in with his ideas of sociocultural progress), and not until after Darwinism became popular did he himself accept the theory that natural selection was at least one of the causes of biological evolution. In his *First Principles*, published in 1862, Spencer set forth a universal law of evolution: "Evolution is an integration of matter and concomitant dissipation of motion, during which the matter passes from an indefinite, incoherent homogeneity to a definite, coherent heterogeneity, and during which the retained motion undergoes a parallel transformation" (This is, as Richerson [1995] remarks, the second law of thermodynamics backwards).

Such evolution Spencer viewed as a cosmic law of nature, applicable alike to the inorganic (physical), organic (biological), and superorganic (or sociocultural) realms. Human societies, for example, evolved from undifferentiated hordes, by means of increasing division of labor, into complex civilizations.

On the superorganic level, societies may be seen as significant integrations which continually increase in coherence and heterogeneity. This view of human society is parallel to the conception of biological organisms as emergent wholes. Societies, like individual organisms, develop their integrities or unities
through a struggle for survival, a struggle which in large parts pits society against society. Competition for survival is therefore characteristic of both individual organisms and societies, and in this struggle are forged the characteristic forms taken by animal species and human societies. Fear is endemic in the uncertainties of early forms of human society, which leads to religious and political forms of social control: "While the fear of the living becomes the root of the political control, the fear of the dead becomes the root of religious control" (Peel, 1972). Especially prominent is a military form of social organization. With the extending scope of social organization, however, more emphasis can be given to peaceful pursuits (Schellenberg, 1982; Cf. Hofstadter, 1955; Service, 1975).

Gradually, then, as the scope of human society expands, the plasticity of society increases and individual spontaneity and initiative assume more importance. Coercion becomes less and less necessary as a basis of social integration as more effective institutions of human cooperation prove their survival value. Spencer's view of the general evolution of society may thus be described as a transition from 'military' (or coercively controlled) to 'industrial' (or functionally cooperative) forms of social organization. As we move more and more toward an industrial society - that is, one of peaceful interdependence - obvious conflict becomes more muted. But, according to Spencer, competition is still going on indirectly, pitting individual against individual and institutional form against institutional form. This is nature’s way of discriminating between the more fit and less fit forms. And the less we consciously interfere with the process the better, for the most adaptive (and therefore best) forms are those which emerge gradually out of this long-term competition for survival. This, of course, led Spencer directly to the political position of laissez faire, arguing for a bare minimum of governmental regulation. This should allow, he believed, maximum room for the competitive process - the natural selection acting on variations in the population - which produces the survival of the best competitors, the extinction of the 'unfit', and thus the gradual improvement of human society (Schellenberg, 1982).

Class stratification was justified on the basis of 'natural' inequalities among individuals, for the control of property was considered to be correlated with superior and inherent moral attributes like industriousness, temperance, and frugality. Attempts to reform society would interfere with natural processes; unrestricted competition and defense of the status quo were in accord with biological selection. The poor were soon regarded as the 'unfit' and they should not be aided; and conversely, in the struggle for existence, wealth was considered to be a sign of success.

Spencer, even more outspoken than Wallace and Darwin, was the principal proponent of the group-selection thesis. In his The Study of Sociology (1873) he stated:
Warfare among men, like warfare among animals, has had a large share in raising their organizations to a higher stage. The following are some of the various ways in which it has worked. In the first place, it has had the effect of continually extirpating races which, for some reason or other, were least fitted to cope with the conditions of existence they were subject to. The killing-off of relatively feeble tribes, or tribes relatively wanting in endurance, or courage, or sagacity, or power of co-operation, must have tended ever to maintain, and occasionally to increase, the amounts of life-preserving powers possessed by men. Beyond this average advance caused by destruction of the least-developed races and the least-developed individuals, there has been an average advance caused by inheritance of those further developments due to functional activity... A no less important benefit bequeathed by war, has been the formation of large societies. By force alone were small nomadic hordes welded into large tribes; by force alone were large tribes welded into small nations; by force alone have small nations been welded into large nations (Spencer, 1873).

Elsewhere (Principles of Sociology, 1876), Spencer indicates the rationale behind this inexorable process: the antagonism between societies caused by the struggle for existence:

Excluding a few simple groups such as the Esquimaux, inhabiting places where they are safe from invasion, all societies, simple and compound, are occasionally or habitually in antagonism with other societies; and, as we have seen, tend to evolve structures for carrying on offensive and defensive actions... Already we have ample proof that centralized control is the primary trait acquired by every body of fighting men, be it horde of savages, groups of brigands, or mass of soldiers. And this centralized control, necessitated during war, characterizes the government during peace (Spencer, 1876, Vol. I).

What is more, Spencer already formulated what has virtually become an axiom among contemporary social scientists: 'Man’s Universal Belligerence' (van der Dennen, 1990): "Antagonism more or less constant with other societies, having been almost everywhere and always the condition of each society, a social structure fitted for offence and defence exists in nearly all cases, and disguises the structure which social sustentation alone otherwise originates".

Inter- and intra-group selection go on to the present day, but, Spencer asserts, in civilized warfare the intra-group selection has become negative and retrogressive, eliminating the best elements of the population. Furthermore, warfare is at variance with industrial development. As an institution it has become dysfunctional.

Spencer was also one of the first to discuss what we call today 'ethnocentrism'
or the phenomenon of ingroup-outgroup differentiation. In his *Principles of Ethics* (1892-3) he wrote: "Rude tribes and... civilized societies... have had continually to carry on an external self-defence and internal co-operation - external antagonism and internal friendship. Hence their members have acquired two different sets of sentiments and ideas, adjusted to these two kinds of activity". The theme of ethnocentrism was later elaborated by Sumner (1906; 1911), who also coined the term (See Ch. 6). Spencer was also the founder of functionalism in sociology and anthropology.

Two years after Darwin's *The Descent of Man* appeared the first significant work of biologically derived speculation to break Spencer's monopoly in that field: Bagehot's (1872) *Physics and Politics: Thoughts on the Application of the Principles of Natural Selection* and 'Inheritance' to Political Society. Bagehot - the first avowed Social-Darwinist according to Service (1975) - attempted to reconstruct the pattern of growth of political civilization in the manner of evolutionary ethnologists like Lubbock (1870) and Tylor (1865, 1871), from whom he drew some of his data. There is no doubt of the predominance of natural selection in early human history, Bagehot asserted: "The strongest killed out the weakest as they could". He felt that warlike competition among societies in early times would select for those with the best leadership and most obedient populace. Hence his much quoted adage: "The tamest are the strongest". Progress, habitually thought of as a normal fact in human society, is actually a rare occurrence among peoples. Of the existence of progress in the military art there can be no doubt, nor of its corollary that the most advanced will destroy the weaker, that the more compact will eliminate the scattered, and that the more civilized are the more compact (Hofstadter, 1955). In his *Social Statics*, Spencer (1851) had already voiced a similar conviction: "Evidently, therefore, from the very beginning, the conquest of one people over another has been, in the main, the conquest of the social man over the anti-social man; or, strictly speaking, of the more adapted over the less adapted" (Peel, 1972).

Continuing Spencer's functionalist line of thought was the American sociologist William Graham Sumner (1840-1910). "It is the competition of life" Sumner (1911) asserted, "which makes war, and that is why war always has existed and always will. It is the condition of human existence". The foundation of human society, said Sumner (1911; Sumner & Keller, 1927), is the man/land ratio. Conflict over the means of subsistence is the underlying fact which shapes the nature of human society. When population presses upon the land supply, earth-hunger arises, races of men move across the face of the world, militarism and imperialism flourish, and conflict rages. Where men are few and soil is abundant, the struggle for existence is less savage: "Wherever there is no war, there we find that there is no crowding". Sumner emphasized group factors (including the binding power of folkways
and mores) more strongly than did Spencer, and he was considerably less optimistic about the direction of evolutionary change (Hofstadter, 1955; Schellenberg, 1982).

Sumner expounded his firm belief in *laissez faire*, individual liberty, and the innate inequalities among men. As a devout Social Darwinist he viewed competition for property and social status as resulting in a beneficial elimination of the ill-adapted and the preservation of racial ‘soundness’ and cultural vigor. Governmental attempts to alter this situation through welfare measures would, he felt, impede progress.

### 4.2.3 Ignoble Savages

Why, when and how did the 18th-century Rousseauian image of the ‘noble savage’, uncorrupted by the evils of civilization, change into the image of the ‘brutal, violent, ape-like savage’?

First of all, the new conflict-model of nature and human society, introduced by Darwinian, Spencerian and Haeckelian thinking, also introduced the slogans of ‘struggle for life’ and ‘survival of the fittest’, which were taken quite literally, and soon became interpreted in terms of selection for the strongest and most violently aggressive individuals, groups, classes, ethnicities, peoples, races and nations: the Agent of Progress. These notions combined with the pre-19th-century idea of a *Scala Naturae* (or Great Chain of Being), a natural, fixed and linear hierarchy of species with Man, the Crown of Creation, at the top, and of races with the white, Caucasian race superior to all others and the final, ultimate stage of evolution and civilization. These views were translated in the new evolutionary framework as orthogenesis toward predetermined goals.

Secondly, by the same logic, preliterate cultures and primitive peoples were considered to be at the lowest rung of the orthogenetic ladder, and by implication living fossils: wild, brutal, savage, base, crude, low, backward, uncivilized, and intellectually, morally, and technologically inferior. In short, our ‘contemporary ancestors’, as they were called, were contemptible creatures, to be civilized by the White Man’s pacifying mission. Similarly, the simians (monkeys and apes) were considered to be everything We, the Civilized and Superior were not: debased, despicable, ferocious, voracious, shamelessly promiscuous, lewd and lascivious creatures.

Thirdly, if primitive peoples were our contemporary ancestors, would not their appearance and conduct, in turn, be similar to our real Paleolithic ancestors, the ‘missing link’ between Man and the apes: the apeman, whose fossil remains were slowly but gradually to be uncovered?

One of the first to describe Man’s alleged ancestors as violent, ferocious and bloodthirsty creatures was Friedrich Albert Lange in 1866. He depicted them as prehistorical brutes who bashed each other’s skulls with clubs in order to devour the raw brains of their hapless competitors (Corbey, 1988).

The authoritative and influential French archaeologist, Gabriel de Mortillet,
completes the now-stereotypical and well-known image of the ‘missing link’,
which was to dominate the thinking about our origins till far into the 20th
century, and which was revived by the sanguinary slaughterhouse phantas-
magorias of Dart and Ardrey and their disciples.
The apeman, de Mortillet writes in 1883 in his *Le Préhistorique - origine et
antiquité de l’homme*, was "colère, violent et bataillard": a savage brute, prone
to fits of violent, furious and uncontrolled rage, without the faculty of speech,
naked, still a semi-animal with apelike features and morally and intellectually a
moron or worse.
In this same tradition developed the explanation by the biocriminologist *avant
la lettre*, Cesare Lombroso, of the criminal as a living atavism, a remnant from
prehistorical times when we were still violent, bestial, brutal and barbarian
semi-apes (See also Corbey, 1988 for more examples).
Interestingly, Blainey (1988) provides casual evidence that the turn-over
interval that preluded the Decline of the Noble Savage may be dated even
earlier. He writes:

As pride increased in European civilisation, the simpler cultures were dis-
missed. I recently found an obscure article written on the East Indies in
1865 by Alfred R. Wallace, who was co-discoverer with Charles Darwin
of the theory of biological evolution; and in Wallace's eyes the villages in
the Celebes were abject until the Dutch arrived with their cleanliness, hard
work, education, law and order, and Christianity. 'Thirty years ago', wrote
Wallace, 'the country was a wilderness, the people naked savages
garnishing their rude houses with human heads'. The people, he said, had
been constantly at war, primitive in their farming, and living in poverty on
top of luxuriant soil...
Sympathy towards the Aboriginales of Australia also fell. Writers and
painters began to depict them with contempt. The sixth edition of the
*Encyclopaedia Britannica*, published between 1815 and 1824, announced
that there were no ferocious animals in Australia and New Zealand, with
one striking exception: 'Man only in Australasia is an animal of prey; and
more ferocious than the lynx, the leopard, or the hyena, he devours his
own species'. Thus the Aboriginal was dismissed as an aggressive
cannibal...
It was increasingly believed that modern Man, unlike the ancient savage,
was peaceful and would remain so. John Ferguson McLennan, the
combative Scottish sociologist and lawyer who died in 1881, put the argu-
ment emphatically; 'Lay out the map of the world, and wherever you find
populations unrestrained by the strong hand of government, there you will
find perpetual feud, tribe against tribe, and family against family'.
Likewise the world's authority on ancient law, Sir Henry Maine, saw
tribal war as a frequent occurrence. The new emphasis on the warlike
activities of simple societies was as much a reflection of Europe's
heightened pride in itself as of new evidence of barbarism in distant lands...

Clearly, the meaning of the noun 'savage' had slipped, and it was now sliding quickly towards its present meaning of barbarous and brutal...

[Originally the term 'savage', being derived from Italian-Latin 'silvagio', simply and neutrally means wood-dweller].

In the last chapter of The Descent of Man, published in 1871, Charles Darwin recalled that the first time he had seen primitive people was on a wild shore in Tierra del Fuego. They were naked: worse, they were 'absolutely naked'. Their hair was tangled, their expression was wild and startled, and they excitedly frothed at the mouth. They had no government and they had barely any arts; 'like wild animals' they lived on what they hunted; and they were merciless to members of other tribes. They even stood, in Darwin's view, on a slightly lower level of civilisation than the Australians. Darwin hoped that civilised man, having already advanced far above his barbarian ancestors, would attain 'a still higher destiny in the distant future'. In that mental picture the once-noble savage had been reduced to little more than a twitching fossil (Blainey, 1988).

From this chronology one might conclude that the founding fathers of evolutionary theory did not demolish the idea of the noble savage; they merely delivered the coup de grâce to an already moribund imagery.

4.2.4 Social Selectionism and Degenerationism

In Darwin's (and Spencer's) view, the extinction of the 'inferior' tribes and races signified the upward progress of Mankind as a whole through the triumph of the 'higher' over the 'lower' varieties of the human species. In general, progress seemed to result from the competition of individuals, tribes, and races. Unfortunately, however, in civilized societies the weak and sickly members are allowed to propagate their kind, and "No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man. It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race; but excepting in the case of man himself, hardly any one is so ignorant as to allow his worst animals to breed" (Darwin, 1871).

Thus Darwin joined Spencer, Wallace, Francis Galton and other prophets of doom in warning against policies which might endanger social progress by diminishing the competitive struggle which was its basic prerequisite:

Man, like every other animal, has no doubt advanced to his present high condition through a struggle for existence consequent on his rapid multiplication; and if he is to advance still higher, it is to be feared that he must remain subject to a severe struggle. Otherwise he would sink into
indolence, and the more gifted men would not be more successful in the battle of life than the less gifted. Hence our natural rate of increase, though leading to many and obvious evils, must not be greatly diminished by any means. There should be open competition for all men; and the most able should not be prevented by laws or customs from succeeding best and rearing the largest number of offspring (Darwin, 1871).

In such passages, Darwin seemed to subscribe heart and soul to Spencer’s ‘every-man-for-himself-and-the-Devil-take-the-hindmost’ social philosophy\(^3\). But he was not consistent in this view. Deep in his character there was a warm humanitarianism and a strong holdover of the Christian ethic in which he had been trained: "What a book a devil’s champlain might write on the clumsy, wasteful, blundering, low, and horribly cruel works of nature!" he wrote - in a mood of despair? - in a letter to his friend Joseph Hooker in 1856 (Greene, 1959).

Like the economist Richard Cobden before him, Spencer had argued that war had been (or at least ought to have been) transcended in the progress of history. He acknowledged that primitive societies were founded on the war ideal, but claimed that this was eventually surpassed: "In rude societies all adult males are warriors; consequently, the army is the mobilized community, and the community is the army at rest" (1876, Vol. II).

Industrial society - in essence opposed to war - progressively evolved from the militant-type society. He witnessed many signs of relapse from 'industrial' to 'militant' society, however, and by 1882, when the second volume of The Principles of Sociology appeared, he had evidently come to doubt the natural inevitability of peaceful development upon which his social philosophy had hitherto been based (Pick, 1993).

Following Spencer’s suggestion, Larroque (1856), de Lapouge (1896 et seq.), and Letourneau (1895) contended that the selection caused by war and other

\(^3\) "The latter part of Chapter 5 [of The Descent of Man] also provided the basis for what Galton was later to develop as Eugenics, with its doubts about the effects of civilization on the quality of the human stock: ‘... the weaker members of civilised societies propagate their kind... this must be highly injurious to the race of man’ (p. 296). The 'reckless and degraded' apparently increase more rapidly than the 'provident and generally virtuous', though their higher mortality rate to some extent checks the effects of this. With side-swipes at the deleterious effects of celibacy in the Catholic Church and the selective culling of the intelligent by the Spanish Inquisition, he brings the topic to a close. Whilst Darwin cannot be held responsible for the later excesses of Social Darwinism, nor does he really share the associated terror of 'degeneration' which widely affected later European thought (e.g. Nordau, 1895), there is little doubt that in The Descent of Man an influential rationale for them can be discovered" (Richards, 1987). Galton’s and Pearson’s hereditarist school led to a huge eugenics movement, especially in the Anglosaxon countries (Sorokin, 1928; Hofstadter, 1955).
forms of social (intragroup) selection had become essentially negative and deleterious. This led de Lapouge to the formulation of his 'law of the quicker destruction of the more perfect racial elements'. Ammon (1893 et seq.) agreed in essence with this 'law of decay', as did Vaccaro (1886), Ferrero (1898), de Molinari (1898), Jordan (1907 et seq.), Novikow (1912), Nicolai (1919), and many others. The argument runs as follows: Armies, as a general rule, are composed of the 'best blood' of the population. During a war, it is the army which suffers losses most. This means that war exterminates the 'best blood' of a nation in greater proportion than its 'poorer blood' (Sorokin, 1928). Also the removal of the vast majority of soldiers from marriage and reproduction even in times of peace was a cause of the proliferation of the weaker elements in the population, as Larroque (De la guerre, 1856) argued.

"Military selection is necessarily retrograde since it exposes the flower of the species to death and disease... physical deterioration inevitably ensues from this reverse selection" claimed Letourneau in his La guerre dans les diverses races humaines (1895). And Jordan (The Human Harvest: A Study of the Decay of Races through the Survival of the Unfit, 1907) warned that "the decline of a people can have but one cause, the decline in the type from which it draws its sires".

All in all, the social selectionists claimed, this means that militarism and war facilitate a survival of the unfit, favor a propagation of the poorer blood and in this way they are necessarily dysgenic: factors of negative selection, racial degeneration, and evolutionary regression into savagery.

Vaccaro (1886) emphasized another variant of this claim: The Roman rule "parcere subjectes et debellare superbos" (spare the submissive and demolish the proud) has been a general rule of almost all wars. Therefore: "Since the submissive, to the exclusion of the brave and upright men, beget children, the traits of baseness and servility become fixed in the race". In this way war selection has exterminated millions of the best individuals, leaving a degraded and debased population to breed.

Hundreds of studies were dedicated to the problem whether selection due to war was negative, neutral, or positive. Some of the authors went so far in an evaluation of the negative selection of war that they made it responsible for the decay of nations and empires (Seeck, 1910; Jordan, 1907).

Ironically, the diametrically opposing view - arguing that war and struggle were indispensable to progress by exterminating the inferior 'races' (an intergroup selection argument), and claiming that intragroup peacetime selection was even more negative and retrogressive than the selection due to war - also invoked their arguments from the new theories of organic (and sociocultural) evolution. Both peace and war arguments were increasingly to be grounded in the authority of evolutionary biology.

A number of authors indicated that, even at that present time, war's selection is far from being as negative as supposed. After all, "the great fact remains that
somehow Man has evolved, and he has fought, presumably, half of the time. If warfare is so deleterious it may be asked: How did he get where he is?" (Woods & Baltzly, 1915; Cf. Sumner, 1911).

Gini (1921) and de Savorgnan (1926) added to these considerations a new one. If, in regard to men, war's negative selection is true, its harm is compensated for through the positive selection of females due to war. Steinmetz (1907; 1929) brings out two reasons in his endeavor to show that even if war selection is in some degree negative, this harm is by far counterbalanced by war's positive effects. Following the opinion of Plutarch, Polybius, Aristotle, Machiavelli, Vico, and of many others, he claims that the peacetime selection is negative also. Peace leads to vice, decadence, debauchery, apathy, effeminacy and loss of virility, and to a survival of the people who are far from being the best blood of the nation. Peaceful competition leads to a regressive selection, too. Therefore it is questionable which of these two negative selections is more harmful and retrogressive: "War that shatters her slain / And peace that grinds them as grain". Above all, war is the supreme instrument of group-selection. It is the only test serving this purpose, and the only test which is adequate because it tests at once all forces of the belligerent groups: their physical power, their intelligence, their sociality, and their morality. Victory is the result of a mobilization of all the forces of a nation. Steinmetz vigorously claims that war will not disappear in human history - if war has been the agent of progress in the past, abolition of war clearly would result in evolutionary stagnation, and abolition of war would not only be stupid but absolutely immoral - and this Dutch sociologist has gone into history as one of the most prominent and vigorous 'scientific' apologists of war. He also endorsed the Hegelian dictum: "Die Weltgeschichte ist das Weltgericht".

Steinmetz asserted that war is the usual business of primitive tribes; that the 'savages', probably from the very first stage of hominization, were bloodthirsty, and that they waged their wars in the most cruel fashion and with horrible losses of life and numbers of casualties (Steinmetz, 1907). From a biological point of view, he continues, aggressiveness has been a condition necessary for progress. Without it, Man could not have emerged from his animal state, because he would have been exterminated by other species. Without war an upward movement within humanity itself would not be possible, because any means of finding out which social group is superior and which is inferior would be absent. A long or eternal peace would make Man an exclusively egotistical creature, without virility, courage, altruism, or bravery. Such a man would be entirely effeminated, and corrupted to the very heart of his nature (Sorokin, 1928).

The controversy remained unsolved. The 'decay' argument for peace was formulated in particularly vehement degenerationist terms in Nicolai's The Biology of War (1919), in which he claims that war constitutes a tragic biological degeneration. The fighting of the First World War, he warns,
ensures that the 'unfittest', the 'physically inferior', survive: "Children and old men are protected by Government, but besides them the blind, deaf and dumb, idiots, hunchbacks, scrofulous and impotent persons, imbeciles, paralytics, epileptics, dwarfs and abortions - all this human riff-raff and dross need have no anxiety, for no bullets will come hissing against them, and they can stay at home and dress their ulcers while the brave, strong young men are rotting on the battle-field" (Nicolai, 1919).

These 'stay-at-homes', the 'idiotic and sickly indigenous race' are 'producing the generation to come' with disastrous long-term effects. To be thus aware of the war's dysgenic results, he argues, is to lose all romantic illusions about the slaughter. It is true, Nicolai confesses, that war emanates from a deep human desire, stirring us "to the very depths of our being" and awakening "primitive and hallowed sentiments which we collectively call patriotism"; yet war is "wrong, harmful and needless" for the healthy nation. Whatever the robustness of the desires embedded in the drive to fight, wars in fact constitute the spasm of the degenerate, "the last great carouse of which even a degenerate nation can dream" (quoted in Pick, 1993).

4.2.5 The Moral Majesty of War

As we saw, evolutionary theory was increasingly to be invoked in later 19th-century accounts of the necessity of war (whether or not in the context of racial inequality and Rassenkampf). As Pick (1993) states: "Inter-state conflict, it seemed, was the brutal but necessary social equivalent to the 'natural struggle', the indispensable method for sorting the weak from the strong. Moreover, war was often cast as the guarantor of a certain natural, biological or even racial progress".

But Social Darwinism, in effect, did little more than adding evolutionarily-derived arguments to long-existing war-apologetic sentiments: It was the final crescendo in a time-honored tradition of the justification and apology of war in the history of western civilization.

Many people in Germany seem to have welcomed, hailed, adored and glorified the First World War on the eve of its outbreak in 1914 (Stillman & Pfaff, 1964; Tuchman, 1967). The German cardiologist Georg F. Nicolai (we already met him before) observed a tidal wave of race-centered nationalism in his country, a furor teutonicus washing over Germany, and he abhorred it. He wondered how this national mass sentiment of Kriegsbegeisterung (war enthusiasm bordering on thanatic euphoria) could have arisen, considering that, as he states in his book The Biology of War (1919), "War had been hated for thousands of years past".

The appropriateness of Nicolai's contention that war had always been hated is questionable, since, as will be demonstrated, it is not a general disapproval of the institution of war which emerges from the literature on the subject. On the
contrary, it appears that the justification, and, in its wake, the apology of war has a long, recurrent, and time-honored scholarly tradition in European history. Universal and perpetual peace has not always been held in great respect, or even been felt desirable.

The attempt by Nicolai to demonstrate the absurdity of the mass-hysterical glorification of war in his country can hardly be admired enough, especially taking into consideration that he sacrificed his professional position and risked his life (Ike, 1987). Nevertheless, his selection of anti-war quotations, which often range back to the Ancients, is rather heavily biased by what he wishes to prove. For the apology of war actually has been a constant undercurrent in European thought, periodically even surfacing to a full-blown panegyric. Nicolai’s observation that no thoughtful person has ever had anything favorable to say about war does not obviate the fact that there have been many thinking individuals who have extolled war. These persons we call the Apologists of War.

The Apologists of War range from the fatalistic on the one hand, such as Thomas de Quincey (1896) who saw the necessity of war rooted in a sad overruling principle which it is in vain to fight against, to the positively glorifying on the other hand, such as the German geopolitician Ratzel, founder of the Lebensraum doctrine, who exclaimed: "Schade daß es nicht mehr Kriege gibt" [What a pity that there are not more wars]. Characteristic for the Apologists of War is the idea that peace is unfavorable, hence undesirable, and even pathological; and, conversely, that war therefore is desirable, positively functional, inevitable and ineluctable. In its most exalted manifestation war is glorified ["... warre, which is the greatest and most glorious of all humane actions" (Michel de Montaigne, 1580)], and, as will be seen, sometimes even sacralized and deified.

Associated with this metaphysical tradition is the popular medieval conception of war as a periodic, inescapable catastrophe, an 'Act of God', as inevitable as an epidemic of bubonic plague. It is this 'Cataclysmic Theory of War', which, some centuries later, found an eloquent advocate in Tolstoy (1896). When infused with apocalyptic and chiliastic thinking, and the religious doctrine of Original Sin, the cataclysmic idea of war is easily transformed into the conception of war as penitence for divine punishment and castigation for Man's sinfulness: the Scourge of God.

Among the War Apologists, a number of variant traditions or schools can be distinguished: (a) the Metaphysical or Mystico-sentimental variant, (b) the Mercantilist variant, (c) the Etatistic variant, (d) the Eschatological variant, and (e) the biosocial or Social Darwinist variant (cf. Juganaru, 1933). Each of these variants will be briefly introduced. They may be envisaged as tributaries, all cumulatively adding their contents to the mainstream of apologist philosophy, culminating in Social Darwinist doctrines of war as the Agent of Progress.
Within this constellation of ideas, war enthusiasm could bud, grow and flourish.

(a) *The Metaphysical Variant*

The metaphysical tradition of war apology is insolubly related to the Judaeo-Christian religious tradition in European thought. The origin of war, according to its 14th century codifier Honoré Bonet, lay in Lucifer's war against God, and therefore "it is no great marvel if in this world there arise wars and battles since these existed first in heaven" (Bonet, *ca* 1385; quoted in Tuchman, 1978).

The metaphysical apology of war dates back to biblical times when the Chosen People, under the direct supervision of their God of Wrath, eliminated the 'inferior peoples'. Since then, as Ecclesiasticus (3:8) says, there is "... a time of war and a time of peace". And God approved to this state of affairs, as did later Church Fathers, such as St. Augustine, and scholastic thinkers who contemplated the concept of the *bellum iustum*, the just war, which to all practical purposes proved to be a codified and sacrosanct justification of war. These patristic and scholastic thinkers could, in addition to the Old and New Testaments, refer to classical Greek and Roman philosophers and historiographers, who had considered war to be a perfectly natural state of affairs, often unvarnishedly justified with an appeal to the right of the stronger, or to human nature. On the eve of the Crusades, the transition from just war to holy war appeared to be just a tiny step⁴.

The metaphysical variant of apologist thinking reached a provisional climax in the Elizabethan Alarmists (about 1600), who had inherited the patristic diffidence in an all-too-perfect harmony in this Valley of Tears, where mortal life was supposed to be struggle and sin - and sin flourished especially in times of peace. Peace, the Alarmists proclaimed in innumerable sermons and tractates, leads to abject idleness, luxury, decadence, corruption, effeminacy, adultery, and moral decay: a sordid and deplorable state of affairs, to be cured only by a sound portion of the therapeutic Tonic, Roborant, and Purgator of Bellicosity (the function of war as an aphrodisiac was already known for longer).

When the Lord meaneth to plague a wicked nation for sinne and to translate them to the power and sceptre of another nation, then He filleth them with the fatnessse of the earth, and geeveth them peace that they wax

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⁴ For the classical period see especially Loenen (1953), Garlan (1975), van der Dennen (1977), and Henssen (1978). For the early Christian period see Faunce (1918), Cadoux (1919), Heering (1928), Bainton (1960), Windass (1964), Deschner (1966), Wells (1967), and Russell (1975). Many other authors have noted the Christian preoccupation, if not obsession, with war, violence, sadomasochism (and sex). Also the Faustian character ascribed to Occidental culture adumbrates this schizoid aspect. Why it is that the great monotheistic religions (also Islam has its *jihad* or holy war) produced the concept of 'holy war' I have to leave to the specialists. See Aho's (1982) *Religious Mythology and the Art of War* for a valiant attempt.
rotten in idleness, and become of dulle wittes, and slow of courage, weak handed, and feeble kneede (Geoffrey Gates, 1579).

In such a graphic, suggestive way and with so much morbid fantasy were the malaise and maladies of peace diagnosed, that peace virtually became a synonym of disease, a pathological condition: "[A] swelling soer, that festers sowndest mynd and so bursts owtt in bylls, in botch or ulcerrs greatt..." (Thomas Churchyard, 1578). Such a disgusting abscess could only be drained by war. The notion of war as therapy was a perfectly logical conclusion, given their premises.

Secular Renaissance writers generally advocated a cyclical theory of war and peace, which was expressed thus by Thomas Fenne (1590):

Warre bringeth ruine, ruine bringeth poverty, poverty procureth peace, and peace in time increaseth riches, riches causeth statelinesse, statelinesse increaseth envie, envie in the end procureth deadly malice, mortall malice proclaimeth open warre and bataille, and from warre again as before is rehearsed (Thomas Fenne, 1590).

The Church fathers and clergy, however, had little sympathy for such a mechanistic and causal cyclicity which left little room for Divine Providence. For them, war had only one function: it was a "Divine Scourge for Sinne" (For this period see also Jorgensen, 1956)5.

The deification of war by Joseph de Maistre (1822) can be considered to be the final apotheosis of the exalted mystico-sentimental conception of war, in which cataclysmic and masochistically-colored apocalyptic thinking, spiritualistic mystagogy, and war panegyric converge and concur. Not only is, in this grandiose scheme, human blood the fertilizer for the plant called human genius, but war is in essence divine. De Maistre refers to the "Loi occulte et terrible" of the bloody destruction of all creation. The globe, soaked with blood for all eternity, is nothing else but an immense slaughter-altar on which all living creatures must be sacrificed without end, without limit, and without relaxation, until Evil itself is extinguished and Death itself is dead. War is immanently divine for it is the law of nature. In war Divine Revenge on

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5 Francis Bacon, Barnabie Barnes, Thomas Barnes, Robert Barret, Richard Bernard, Thomas Churchyard, William Cornwallis, Roger Cotton, Samuel Daniel, Dudley Digges, Earl of Essex, Thomas Fenne, C.G., George Gascoigne, Geoffrey Gates, Stephen Gosson, Fulke Greville, Edmond Harris, John Norden, Thomas Nun, Thomas Procter, Barnaby Rich, John Smythe, John Stockwood, John Udall, and William Yanger left their sermons and tractates to prosperity. Many of the views of these Alarmists are to be found in the works of Shakespeare, who had a keen ear for the fads and fashions of his time.
mankind is accomplished. War is immanently divine because it purifies and regenerates mankind; "castigat pugnando mores".

The only work approaching de Maistre’s thanatical status orgasticus is perhaps Proudhon’s La Guerre et la Paix (1861), in which war is attributed with a sacred character. War presents itself as a divine fact. It is immanently moral, necessary, just, virtuous, holy. War is a symbol of the ‘grandeur’ of mankind. Peace only degrades mankind. War, for Proudhon, is not only sacred, it is, above all, "indispensable au developpement de l'humanité". War is the Great Creator of religion, ethics, the State, law and justice, even esthetics. War is also the Great Disciplinarian of mankind.

Little less sacred is war in John Ruskin's (1819-1900) moral exhortation:

I found, in brief, that all great nations learned their truth of word and strength of thought in war; that they were nourished in war and wasted in peace; taught in war and deceived by peace; trained by war and betrayed by peace - in a word, they were born in war and expired in peace (Ruskin, 1903).

(b) The Mercantilist Variant

For the Mercantilists, a school of thought of political economy flourishing roughly from the 16th to the 19th century, the inevitability of war was rooted in the conception of trade and commerce as offensive and predatory warfare, and the notion of economic relations as a zero-sum conflict: enrichment of the one party implied the impoverishment of the other. "Ogni Nazione cerca d'arrichirsi coll'impoverimento dell'altr... Il commercio esterno in sostanza non è, che una tacita, ma legittima guerra d'industria" (Paolini, 1785). Who would deny Mont-chrétien's (1615) dictum - paraphrasing Cicero - 'Pecunia nervus belli'? The Mercantilists found important instruments for their policies in consciously manipulated ethnocentrism and xenophobia, nationalism and, especially, the 'export' of internal conflict in order to unite a nation, riddled and torn apart by internal conflicts, behind one war banner against a common external enemy (Cf. Silberner, 1957). In Shakespeare's Henry IV the king advises his son: "Be it thy course to busy giddy minds / With foreign quarrels". "Le prince sage calme son peuple enragé en le menant à la guerre" (Botero, 1588). Forge enemies if there are none, advises Bodin (1576).6

A further benefit of war, in their eyes, was that war led to 'demographic relaxation'; the soldiers killed in battle were only "the very scomme, theeves, and roges of England and the Realme (being so full of people) is very well ridde of them" (John Smythe, 1590).

6 Other Mercantilists were Bacon, Child, Colbert, Dutot, Mun, La Noue, Raleigh, and Temple. The most thorough account of this school of thought, as well as its influence on later romantic' political economists, is presented by Silberner (1939, 1957).
(c) The Eстатistic Variant

With Machiavelli (Il Principe, 1513) Realpolitik made its entry in European history. It included a treatise on the art of war in the service of the Raison d'Etat, a tradition which in India had already existed some 20 centuries before Machiavelli (Kautilya, Arthasastra). On Machiavelli, Nicolai states that

In times past, premature war-advocates were only very occasionally to be found. Machiavelli was an instance of one such. In his Prince he praises or excuses murder and bad faith, treachery and brutality, everything, in short, which may lead a man to power. Thus he praises and excuses war, and even if he does not go to such lengths as men to-day and insists upon the advantages of war, still he glosses over its evils with the infamous grace of a pupil of the Borgias. But although Machiavelli extolled war, he was, after all, alone in doing so, and... not until the second half of the nineteenth century did any one venture openly to side with Machiavelli (Nicolai, 1919).

Here, Nicolai, anxious and overzealous to prove his point, makes not only somewhat of a caricature of Machiavelli’s thought, but he also is plainly wrong in regarding him as exceptional.

The absolute amorality of the State had been considered by others long before the second half of the nineteenth century. Bodin (1606) and Hobbes (1651), for example, had contemplated on this absolute amorality of the state and added absolute sovereignty to it. In the first formulations of international law, war as an instrument of politics for reasons of state was explicitly acknowledged as founded in natural law. Moreover, states were exempt from sanctions for waging war (e.g., Grotius, 1625).

It was Hegel (1770-1831), the Prussian philosopher (or windbag and obscurantist, as Fichte called him), who formulated the most consistent and totalitarian etatistic apology of war. The State, for Hegel, is the Divine Idea as it exists on earth. The State is "vollendete Sittlichkeit" (Hegel, 1821). The deeper significance of war is identified thus: War is like the motion of the wind on the seas, preventing a foulness which a constant calm would otherwise produce. By means of war the State is born, and by means of war mankind escapes from intellectual and moral stagnation, degeneration, materialism, decadence, apathy, effeminacy, and other vices of peace. Furthermore, war has the character of a Divine Ordeal, for "Die Weltgeschichte ist das Weltgericht". Max Scheler (1915) summarizes in one sentence the quintessence of the etatistic apology of war: "Der kriegsführende Staat ist der Staat in der höchsten Aktualität seines Daseins".

7 Popper (1950) detects a direct link between the 'pompous’ Hegelian metaphysics and the more malignant ideas of Hitler cum suis (Blut und Boden, the Führer-principle, history as Weltgericht, der frische, fröhliche Krieg, etc.).
It is not to be wondered that the most fervent apologists of war, who blended the metaphysical and Hegelian etatistic elements, were Christian theologians and prelates. Entirely within the spirit of this Christian doctrine, the Prussian field marshall Helmuth von Moltke wrote in a letter to Bluntschli (1880):

Perpetual peace is a dream, and not even a beautiful dream, and war is a link in God’s universal ordinance. In war, Man’s noblest qualities are developed. Without war the world would become swamped in materialism (von Moltke, 1880).

Renan (1823-1892) was another war-apologist exemplifying so many of his generation:

If the result of the folly, negligence, idleness and want of forethought of States were not to bring about wars between them, it is hard to say to what depths of degradation the human race might sink. War is thus one of the conditions of progress, that touch of the whip which prevents a country from falling asleep by forcing self-satisfied mediocrity out of its apathy. Man lives only by effort and struggle... and the day when mankind became a great, peaceful Roman Empire, with no more enemies abroad, would be the day when morality and intelligence would run the greatest dangers (Renan, 1871).

Several of the views exposed above have been called 'Social Vitamin’ theories of war (May, 1943), because they regard war as vital for the growth, vigor and vitality of states, as vitamins are for individuals. Furthermore, war offers for the individual an escape from debilitating tedium and existential boredom, a glorious alternative to the banality of everyday life and work, and appeals to Man’s needs for excitement, adventure, stimulation, sensation, spectacle, and his craving for power, grandeur, and self-esteem.

(d) The Eschatological Variant: Shortcuts to the Millennium
The idea that war, on the contemporaneous level of social and cultural evolution, has lost its original function as agent of progress, or has made itself superfluous, or, as Emerson optimistically stated, is just a "childhood disease of mankind" - an idea that was nourished by several 19th century ideologies and doctrines - can be found in various disguises among the apologists of the eschatological school. But - and here is the joker in the sleeve - only on the condition that first the 'Proletarian Paradise’, 'Utopia’, the 'New Society’ or the '1000-Year Reich’ has been realized; or the State has been abolished; or capitalism has collapsed; or the war to end all wars has been fought; or some totalitarian ideology has become victorious. In the meantime, in the waiting room of ineluctable history, class-struggle and war still are instrumental, functional, and necessary to accelerate the advent of the messianistic, utopian,
or chiliastic ideal. In the meantime "Our task is terrible, total, universal and merciless destruction" as Nechayev wrote in his *Revolutionary Catechism*. "For is not violence the midwife of every old society pregnant with a new one?" (Marx & Engels, 1848).

(e) The Social-Darwinist Variant

To these long-existing apologetic sentiments, still more fuel was added by the Social-Darwinist apology of war. A brief recapitulation:

Gobineau and Chamberlain interpreted the history of human civilization in terms of superior and inferior races and their contamination and degradation caused by interbreeding, which later was to be translated in the ideal of 'racial purity', and the racist distinction between *Übermenschen* and *Untermenschen*. Gumplowicz (*Der Rassenkampf*, 1883) explained history as the product of an eternal and lethal race-antagonism and -struggle, providing the essential motive force behind the evolution of the human species and its cultural institutions. Bagehot (1872), Spencer (1873) and Steinmetz (1899 et seq.) translated these *Rassenkampf* interpretations in more neutral biological terms of intergroup selection. War was envisaged as an instrument of evolution and an Agent of Progress by eliminating the weaker or otherwise 'inferior' peoples. As Spencer stated: "Warfare... had had the effect of continually extirpating races which, for some reason or other, were least fitted to cope with the conditions of existence they were subject to".

Bagehot felt that warlike competition among human societies in early times would have selected for those with the best leadership and most obedient populace ("The tamest are the strongest"). More than by anyone else, the biological *ultima ratio* aspects of war were advocated by Steinmetz who envisaged war as the motive force behind the perfection of the race, of culture in general, the creation of the State, moral and intellectual progress, etc.: the Agent of Progress. Once again the now familiar litany of the vices and social diseases of peace is presented by Steinmetz with great fervor, calling war "an institution of God, Who is weighing the nations in His scales".

Following Spencer, most of the selectionists, however, agreed that in modern times war selection (i.e., intragroup selection) had been negative and retrogressive by eliminating the 'best elements' from the belligerent societies (i.e., the young, healthy and brave males). For Steinmetz, on the contrary, the natural and social selection during times of peace was even more deleterious and retrogressive, so that even in this respect the abolition of war would be not only a grave error and stupidity, but a Capital Sin.

Although racialism, which later on degenerated into unadulterated racism, originated outside Social Darwinism proper, its intellectual impact was...
evidently such that it could easily be incorporated into the mainstream of ‘Zeitgeistiges’ thinking. The selectionist theories would have been impossible without formulas like ‘struggle for existence’ and ‘survival of the fittest’. These ideas were already in essence conceived by the classical Greek philosophers Heraclitus and Empedocles. Heraclitus called war, struggle and conflict the father of all things ("Προμηθεία ἐφιέμενα") and looked upon it as the motive force that kept the world going. These ideas came to full bloom in the works of Darwin, Wallace, Huxley, and Spencer, where they became the fundamental principles of the biological evolution of species. It is an ironical and frivolous whim of fate that the social interpretations of the ‘struggle for existence’ were eventually to be known as Social Darwinism instead of ‘Spencerism’, not in the least because Darwin was very reluctant in applying his ideas to the human realm, and had warned not to regard organisms in terms of higher and lower (Falger, 1994). Spencer, on the other hand, was a ‘progressionist’ pur sang. Evolution to him was a progression from simplicity to complexity, from bacterium to primate, resulting in Man, the "apotheosis of the evolutionary climb".

The Zeitgeist apparently was such that the ‘struggle’ was translated in terms of ‘the law of the jungle’ and "nature red in tooth and claw" (Tennyson); the ‘fittest’ in terms of ‘the most violent and egoistic’; and ‘selection’ in terms of bloody elimination of the weakest in a permanent state of war (as Hobbes had envisaged the state of nature to be: a "bellum omnium contra omnes").

Soon after Darwin’s *Origin of Species* (1859), and especially Spencer’s works on societal evolution (which were, by the way, more Lamarckian than Darwinian), the principle of struggle was declared a fundamental and universal principle valid for both abiotic and biotic nature, and war a fundamental and universal law of nature: the Agent of Progress, the Motor of Evolution, the Creator of Civilization.

In the work of the German General von Bernhardi, self-made disciple of Fichte, Hegel and Darwin, we find tortuous Hegelianism and Social Darwinist thinking almost idealtypically intertwined, while the martial tones of "Deutschland über Alles" already are to be heard in the background:

> War is a biological necessity of the first importance, a regulative element in the life of mankind which cannot be dispensed with, since without it an unhealthy development will follow, which excludes every advancement of the race, and therefore all real civilization. War is the father of all things. The sages of antiquity long before Darwin recognized this... war is not only a biological necessity, it is also in certain cases a moral obligation, and, as such, an indispensable factor of civilization. The desire for peace has rendered most civilized nations anaemic, and marks a decay of spirit and political courage such as often has been shown by a race of Epigoni (von Bernhardi, 1914).
Abolition of war, he maintains, would be absolutely immoral. War, "Stahlbad der Seele", is not only a moral obligation, it is also a civilizing force. To seek to abolish war is a 'mutilation of human nature' as Heinrich von Treitschke put it tersely. "The grandeur of history lies in the perpetual conflict of nations, and it is simply foolish to desire the suppression of their rivalry" (Politics, 1916, Vol. I).9

As we know Germany's civilizing mission blessed Europe twice; and already Nicolai's comment on this sort of language is colored by regrets, an air of hopelessness and perhaps even foresight.
The corrupted ideas of a God-given racial superiority, 'racial hygiene', 'Lebensraum', 'Blut und Boden', the historic and charismatic Leader, and war as the motor of progress, began to get a pernicious influence in Germany (to be accurate: all over Europe) around the fin-de-siècle, which would ultimately result in the gigantic organized genocide of the Nazi Vernichtungslager.10

9 Von Bernhardi, von Treitschke, Ludendorff and von Moltke are the much-quoted paragons and 'cheerleaders of war' in every textbook on the subject, but the biological necessity of war for reasons of racial, cultural and/or moral progress was advocated by hundreds of ideologues, poets, clergymen, military men, philosophers and scientists bien étonnés de se trouver ensemble. The following is only a selection of the better-known authors: Ancillon, d'Annunzio, Arndt, Banse, Bardin-Salières, Barrèt, Baudin, Baudrillard, Bergson, Bluntschli, de Boguslawski, de Bonald, Bonnal, Bonnard, Bosanquet, Brinton, Cherfils, Choppin, Cosentini, Cousin, Croce, Le Dantec, Dragomirof, Faquet, Anatole France, Gasparotto, Gentile, Geslin de Bourgogne, von Gierke, Gomperz, de Heysman, Hitler, von Humboldt, de Iglesia, von Ihering, Ioulet, Jähns, Jung, Jünger, Kiessling, Kipling, Kjellèn, Lange, Lasson, Lea, Lenz, Leer, Mabille, De Maezru, Mahan, Marselli, McKay, Médine, Mussolini, Nietzsche, Picht, Portalis, Proudhon, Psicharí, Quinton, Ratzel, Ratzenhofer, Reimer, Renan, Rey, Rocco, Roosevelt, Rosenberg, Ruskin, Santayana, Scheler, Schmitt, Segur, Sorel, Spann, Spengler, Stein, Steinmetz, von Stengel, Sumner, Tschirmer, Valbert, Valois, Visscher, de Voguïé, Klaus Wagner, Wellhausen, Xénopol, von Zareba-Wolf, Zimmermann, Zola. See Juganaru (1933), Hofstadter (1955), Wesseling (1969), van der Dennen (1977). On Social Darwinism in the context of the history of ideas see also: Wells et al. (1907), Spiller (1914), Chalmers (1916), Poliakov (1951 et seq.), Himmelfarb (1959), Gasman (1971), Jäckel (1972), Zmarſzlick (1972), Koch (1972, 1973), Beyerchen (1977), Cohn (1981), Kaye (1986) and Stein (1987).

10 'Racial hygiene', Aryan and Teutonic mystique, paganism, Nordicism and rabid anti-Semitism - this curious blend of ideas was propagated in the writings of Ahlwardt, Ammon, Boeckel, Clasz, Darré, Dühring, Fritsch, Gerke, Göbbels, Gödsche, Gross, Günther, Haeckel, Haier, Hauser, Hentschel, Hildegard, de Lagarde, Langbehn, Lange, Lanz von Liebenfels, Lenz, von List, Luenger, Marr, Ploetz, Rohling, Rosenberg, Schallmayer, von Schönérer, Streicher, Schulé, Tille, Wagner, among many others and besides the hundreds of anonymous pamphleteers. See e.g., Poliakov (1951 et seq.), Gasman (1971), and Stein (1987). Stein states that it is now an academic commonplace to observe that national socialism was a crude Social Darwinism. "National socialist 'biopolicy', a policy based on a mystical/biological belief in racial inequality, a monistic, anti-transcendent moral nihilism based on the eternal struggle for existence and the survival of the fittest as the law of nature, and the consequent use of state power for a public policy of natural selection, is what national socialism is all about (Jäckel, 1972). National socialism, whatever else it may have been (for example a revolt of the petty bourgeoisie, etc.) was...
At that same period, on the eve of World War I, the "relentless war of extermination of inferior individuals and nations" had acquired the status of Natural Law: "There has always been constant and deadly war in the vegetable as well as in the animal kingdom, indeed, ever since the conditions of this planet permitted the existence of the lowest forms of organic life, and it has only been by war that from these humble beginnings it has been possible by evolution and natural selection to develop so comparatively perfect a creature as man" ("A vindication of war", 1911) states Brigadier-General Sir Reginald Clare Hart, echoing, in a kind of parodied travesty, Darwin's words. Also representatives of the eugenics movement (Pearson, 1911; Melville, 1911) did not tire to spell out the advantages of war in checking the fertility of inferior stock.

Paradoxically, when Eternal Truths and Natural Laws are being invoked, God is never far around the corner: "War has been the instrument, the surgical instrument as it were, which has cut the living flesh free from the dead flesh. Without war, a putrefaction would have set in and with it a creeping paralysis embracing in its chilly arms not only society and politics, but science and industry... War is a God-appointed instrument to teach wisdom to the foolish and righteousness to the evil-minded" states Major-General J.F.C. Fuller in his study *War and Western Civilization* (1932).

Perhaps it was Quinton, in his *Maximes sur la guerre* (1930), who formulated, in one lapidary maxim, the quintessence of what was understood to be Darwinism's *ultima ratio*: "La femelle propage l'espèce, le mâle, par sa mort, la sélectionne".

What Spencer, Bagehot and Sumner were for Anglosaxon Social Darwinism, Ernst Haeckel was for the peculiar German offshoot of this syncretistic ideology-cum-pseudoscience.

Ernst Haeckel (1834-1919) was the man who brought *Darwinismus* into German intellectual life. Not only did he succeed in establishing his interpretation of the strictly scientific aspects of Darwin as the correct view for a generation of scholars, but he went far beyond science to establish a unique German form of social Darwinism (Gasman, 1971). This social Darwinism combined an almost mystical, religious belief in the forces of nature (i.e. natural selection as the fundamental law of life) with a literal, and not analogical, transfer of the laws of biology to the social and political arena. It was, in essence, a romantic folkism synthesised with scientific evolutionism. It included the standard functionally and metaphorically. And so it was claimed) with the scientific facts of the Darwinian revolution" (Stein, 1987).
Darwinian ideas of struggle (*Kampf*) and competition as the foundation for natural, and therefore social law, with a curious ‘religion’ of nature which implied a small place for rationalism, the lack of free will, and happiness as submission to the eternal laws of nature. *Blut und Boden* were the reality of human existence (Stein, 1987).

Haeckel also revived for German consumption Gobineau’s ideas about Aryan - especially Teutonic - superiority, with its logical sequel: The utter inferiority of the ‘lower races’, which, naturally, were at the disposal of the *Herrenvolk*. In Haeckel’s (and later Schallmayer’s and dozens of other racial hygienists’) writings the German eugenics program turned into an intra-racial euthanasia policy. The deformed, the sickly, the lunatics, the incurable, the mentally degenerate, the degraded criminals, the alien elements - all these ‘utterly useless’ human beings would only pollute the breeding pool of the superior race, and they should be eliminated before they could transmit their injurious and deleterious non-qualities to the community. Thus the universal process of interracial natural selection would be aided by intraracial artificial selection.

There was nothing in Darwinism, as Hofstadter (1955) points out, that inevitably made it an apology for competition or force. Kropotkin’s interpretation of Darwinism was as logical as Sumner’s. After the Franco-Prussian War Darwinism was for the first time invoked as an explanation of the facts of battle. "The greatest authority of all the advocates of war is Darwin", explained Max Nordau in the *North American Review* in 1889: "Since the theory of evolution has been promulgated, they can cover their natural barbarism with the name of Darwin and proclaim the sanguinary instincts of their inmost hearts as the last word of science".

It would nevertheless be easy to exaggerate the significance of Darwin for race theory or militarism, as Hofstadter observes. Neither the philosophy of force nor doctrines of *Machtpolitik* had to wait upon Darwin to make their appearance. Nor was racism strictly a post-Darwinian phenomenon (as Gobineau testifies). Still, Darwinism was put in the service of the imperial urge. Although Darwinism was not the primary source of the belligerent ideology and dogmatic racism of the late 19th century, it did become a new instrument in the hands of theorists of race and struggle. The likeness of the Darwinian portrait of nature as a field of battle appealed to the prevailing conceptions of a militant age (Hofstadter, 1955), in which the ‘struggle for existence’ was translated as permanent and bloody war, ‘nature’ was conceived of as ‘red in tooth and claw’ (Tennyson), and in which ‘selection’ was interpreted as violent elimination of the weak. In the public’s mind, by the turn of the century, Darwin’s term ‘fitness’ had already lost its biological meaning of reproductive success, and gradually came to imply physical strength or vigor or aggressiveness. If ‘fitness’ is incorrectly interpreted to mean strength, then ‘survival of the fittest’ means ‘survival of the strongest’ rather than ‘propagation
of those genes which confer the most adaptive advantage’ (Barash & Lipton, 1985).

Nasmyth (1916) and Perry (1918) launched a formidable assault upon Social Darwinism and all its works.

Perry’s *Present Conflict of Ideals* was the most substantial of all the refutations of the Darwinized ethics and sociology that had culminated in the monstrosities attributed to von Bernhardi and Nietzsche. The whole evolutionary dogma, the Darwin-Spencer legacy of progress, the glib optimism of John Fiske, the warnings of Benjamin Kidd, the natural-selection economics of Thomas Nixon Carver - all fell under Professor Perry’s axe (Hofstadter, 1955).

Like William James before him, Perry pointed out the essential circularity of the Darwinian sociology, in which power and strength are defined in terms of survival, and survival is in turn explained by power and strength.

### 4.2.6 Instinctivism

Instinctivism was a relative latecomer in the intellectual inputs that constitute the syndrome of Social Darwinism. Darwin (1872) in *The Expression of the Emotions in Man and Animals* had suggested an evolutionary interpretation of human emotions, which led many to base them on Man’s inheritance from his animal ancestry. This phylogenetic theory led to the preparation of numerous catalogues of (sometimes thousands of) human instincts (e.g., Bernard, 1924). In his *Principles of Psychology* (1890), and his later essay, *The Moral Equivalent of War* (1910), the psychologist and philosopher William James formulated the first Darwinistically-inspired instinctivist explanations of human belligerence.

The ‘instinct of pugnacity’ has been bred into the modern human being, in Lamarckian fashion, through the inheritance of the acquired characteristic of cruelty. "[M]odern man inherits all the innate pugnacity and all love of glory of his ancestors... Our ancestors have bred pugnacity into our bone and marrow, and thousands of years of peace won’t breed it out of us. The popular imagination fairly fattens on the thought of wars". Pacifism, he contends, cannot compete with the inspiring ‘mystical’ impulse manifest in militarist writing (which, in principle, he accepts as valid): War was (and is) considered as a sort of sacrament. Its profits are to the vanquished as well as to the victor; and quite apart from any question of profit, it is an absolute good, we are told, for it is human nature at its highest dynamic. Its ‘horrors’ are a cheap price to pay for rescue from the only alternative supposed, of a world of clerks and teachers, of co-education and zoophilia, of ‘consumers’ leagues’ and ‘associated charities’, of industrialism unlimited, and
feminism unabashed. No scorn, no hardness, no valor any more! Fie upon such a cattleyard of a planet! (James, 1910).

James quotes from Homer Lea’s *Valor of Ignorance* (1909), in which Lea defends the social necessity of war with the contemporarily fashionable ‘organic’ metaphor (complementing the ‘Social Vitamin’ [May, 1943] metaphors and metaphysical war apologies [see van der Dennen, 1977]). Like organisms, nations either have to grow or wither away. The growth of tribes, nations, civilizations always coincided, according to Lea, with a strong military apparatus and an expansionistic, aggressive policy, while the phase of withering, descent and degeneracy has historically been characterized by pacifism, the weakening of the military, and luxury, sophistication, effeminacy and decadence. James points out that

The military party denies neither the bestiality nor the horror, nor the expense; it only says that these things tell but half the story. It only says that war is ‘worth’ them; that, taking human nature as a whole, its wars are its last protection against its weaker and more cowardly self, and that mankind cannot afford to adopt a peace economy... Militarism is the great preserver of our ideals of hardihood, and human life with no use for hardihood would be contemptible. Without risks or prizes for the darer, history would be insipid indeed; and there is a type of military character which every one feels that the race should never cease to breed, for every one is sensitive to its superiority (James, 1910).

James here touches upon a real psychological problem: the universal (?) human (or only male?) ambivalence toward violence and war, the secret mystique of violence, its plain attractiveness, its *klammheimliche Freude*, its fascination - sometimes bordering on the obsessive - and deep emotional appeal; and simultaneous appall and disgust by too-concrete and too-nearby manifestations of it. The abhorrence and the fascination are two sides of the same medal; indeed, the horrors make the fascination. "[A] pallid world sicklied o’er with the pale cast of thought" (Hamlet) has never had universal appeal to mankind. Or in Lasswell’s (1935) words: "All the constitutive myths of history have promised something besides pale peace to their devotees".

McDougall (1908, 1915, 1927), following James, admitted that his ‘instinct of pugnacity’ did not conform to his general definition of instinct, since it had no specific stimulus to set it off. Consequently, he assumed that the inhibition of the exercise of any other instinctive impulse arouses the fighting instinct to action (the first formulation, by the way, of the Frustration-Aggression theory). It is, however, by no means essential that there should be some object worth fighting for in order to provoke the activity of this fighting instinct: People will fight for the sake of self-expression alone if they have no other motive (Indeed,
he regards the absence of material motives as the most convincing evidence for his theory. The instinct of pugnacity is not merely destructive in its operation: "The instinct of pugnacity has played a part second to none in the evolution of social organization". McDougall assumes that the "races of men certainly differ greatly in respect to the innate strength of this instinct", which may be directed from one's fellow villagers to members of other villages: "The replacement of individual by collective pugnacity is most clearly illustrated by barbarous peoples living in small, strongly organized communities. Within such communities individual combat and even expression of personal anger may be almost completely suppressed, while the pugnacious instinct finds its vent in perpetual warfare between communities whose relations remain subject to no law".

McDougall had been studying the headhunting tribes of Borneo, and in that context he states:

This perpetual warfare, like the squabbles of a roomful of quarrelsome children, seems to be almost wholly and directly due to the uncomplicated operation of the instinct of pugnacity. No material benefits are sought; a few heads, and sometimes a slave or two, are the only trophies gained; and, if one asks of an intelligent chief why he keeps up this senseless practice of going on the warpath, the best reason he can give is that unless he does so his neighbors will not respect him and his people, and will fall upon them and exterminate them. How shall we begin to understand the prevalence of such a state of affairs, if we regard man as a rational creature guided only by intelligent self-interest, and if we neglect to take account of his instincts?

And it is not among barbarous or savage peoples only that the instinct of pugnacity works in this way. The history of Christendom is largely the history of devastating wars from which few individuals or societies have reaped any immediate benefit, and in the causation of which the instinct of pugnacity of the rulers, or of the masses of the peoples, has played a leading part (McDougall, 1915)

Intergroup warfare selected men not only for their pugnacity, but also for their 'moral qualities' Those groups that had warriors who, because of a 'more developed self-consciousness', obeyed the commands of leaders were the groups successful in war. Thus the instinct of pugnacity impelled primitive societies to war, which in turn led to the defeat of those societies whose warriors were deficient in 'fundamental social attributes'.

Basing himself on the work The Primal Law by Atkinson (1903), McDougall proceeds to show the socializing influence of the instinct of pugnacity among primitive men. His theory is virtually identical to Freud’s Primal Horde speculation in Totem and Taboo (1913).
James and McDougall were soon followed by Reinach (1913) (*l'instinct de combattivitée et de destruction*) Marshall (1915), Crile (1915) (*phylogenetic action pattern of killing*), Nussbaum (1916) (*angeborener Kampfinstinkt*), Knabenhans (1917) (*rein instinktmäßige Kampflust*), Santayana (1922), Bovet (1923) (*l'instinct combatif*), Ross (1923), Quinton (1930), Bergson (1932) (*l'instinct guerrier*), Nickerson (1933) (*fighting instinct*), among many others. The 'war instinct' was sometimes regarded as being similar to the 'fighting instinct' (in contemporary terms: a kind of aggressive drive), as in the writings of Nicolai (1919), but in other cases the two were regarded as something quite different (e.g., Woods & Baltzly, 1915).

Some sociologists indicate a 'herd instinct' as indirectly responsible for the existence of war (Trotter, 1916; MacCurdy, 1918), or a 'tribal instinct' (Nicolai, 1919), or a sexual 'androgenic instinct' (van Bemmelen, 1928): "[D]ie erste Veranlassung zum Kriege bei den Menschen... beruht auf der Existenz eines androgenen Instinktes, der die Männer dazu treibt sich durch Kampf mit Nebenbuhlern in den Augen der weibliche Sexe hervorzutun, und sich infolgedessen in den Besitz weiblicher Gefährten zu setzen" [The first inducement to war in humans... is rooted in an androgenic instinct, that urges the men to distinguish themselves in the eyes of the female sex by means of fights with rivals, in order to secure thereby the possession of female companions].

Weule (1916) envisaged "rein physiologischen Kraftüberschüß" as the root cause of war. Other formulations are more or less variations on the themes of 'Man's ineradicable warlike urges' or 'combativeness' or 'bellicosity', etc. Even relatively recent writers as Richardson (1960) and Falls (1961) use such instinctivist terminology. Thus Freud's formulation of the externalized 'Todestrieb' or 'Thanatos' underlying war already had an instinctivist context. Many psychoanalysts still believe in the existence of 'destructive instincts' underlying war. As Strachey (1957), for example, says: "[I]t must be remembered that the destructive instincts which, when all is said and done, are the greatest single cause of war, are instincts and that they are impossible to eradicate altogether, greatly though they may be modified". A similar view seems to underlie Durbin & Bowlby's (1939) theory of war. They state: "War occurs because fighting is a fundamental tendency in human things".

Sociologists and psychologists like Steinmetz (1907; 1929), Thorndike (1913), Eltinge (1915), Patrick (1915), Conway (1916), LeBon (1916), Russell (1917), Hall (1919), White (1919), Rivers (1921), Park & Burgess (1924), and others indicated several varied instincts, drives, or fundamental motives responsible for war. Prominent among these are the view of war as an outcome of the escape from ennui and insignificance, a form of relaxation from those conventional rules which, through their drudgery and monotony tend to turn man into an automaton and repress the source of life itself; or as an outlet for the satisfaction of the innate drives of anger, 'Wanderlust', the military spirit, courage, rejuvenation, the spirit of adventure, 'Grausamkeit', 'Uraggressivität', etc.
and so forth and so on (Sorokin, 1928; van der Dennen, 1979).

The postulate of a war instinct, or an instinct of pugnacity lends itself rather easily to the justification of predatory and imperialistic wars. And indeed, it has been used as such. In general, however, instinctivism never received such a worldwide approval as did the other developments within Social Darwinism. 'Instinct' explanations of warfare lost their appeal in the 1930's (presumably under the influence of cultural relativism in anthropology and behaviorism in psychology, schools of thought which emphasized the plasticity and environmental determination of human behavior, and were more in accordance with the prevailing ideas of the time). They were revived by Lorenz (1963), Ardrey (1961 et seq.), Alcock (1972), and others (cf. Flügel, 1955; Malmberg, 1980). Until today wars are attributed to some kind of combative (pugnacious, aggressive, etc.) instinct, though the exaltedly romantic, metaphysical, Hegelian and Social-Darwinist versions of war apology (and too blatant racism) gradually faded away around and after World War II.

4.2.7 Epilogue

Historically war has been valued, evaluated and valorized in very different ways. The Greek philosopher Gorgias, a contemporary of Hippocrates, compared war to disease and peace to health, whereas the Elizabethan Alarmists held the exact opposite position since for them peace was synonymous with disease. People have looked upon war as an 'act of God', a tragedy of fate beyond the power, range of influence, and scope of vision of the individual - comparable to health and disease, similarly incomprehensible and elusive. Nevertheless, apart from reconciling themselves to the intangibility of war, people through the ages have also sanctioned war by pleading from all kinds of philosophical reflections, religious persuasions, and political ideologies. Some such schools of thought have been briefly reviewed.

Myths play a crucial part in the apologetics of war. The 'blood and soil' mythology, the motherland and the fatherland, the 'honor of the flag', the deification of the Führer, etc., derive directly from the ancient urge of regarding inanimate group symbols as living entities and the living group symbols as gods. Parts of our self-images still derive from supra-individual group structures and symbols, and this inevitably involves the possibility of indoctrination to kill or to be killed for cause and country: Pro patria mori dulce et decorum est, fully in accordance with the arguments of ancient apologetic traditions (Ike & van der Dennen, 1989).

It is not astonishing that the academic studies of war, especially primitive war, which appeared during the heydays of Social Darwinism, such as Jerusalem (Der Krieg im Lichte der Gesellschaftslehre, 1915), Weule (Der Krieg in den
Tiefen der Menschheit, 1916), and Knabenhans (Der Krieg bei den Naturvölkern, 1917), among others, were firmly rooted in Social Darwinist thought. More surprising is that the studies by Davie (1929) and Steinmetz (1929) were still imbued with Spencer’s and Sumner’s legacy. Even as late as 1954, Andreski recapitulates the arguments presented by Sumner in his own idiosyncratic terminology. Schmitthenner (1930) and Mühlmann (1940), in Germany, were able to avoid the pitfalls of Social Darwinism and travel their own course. After World War II, the studies by Turney-High (1949), and Meyer (1977) represent the nouvelle vague in the analysis of the origin and evolution of primitive war. "Idealism and peace-through-law ideas after the First World War" Falger (1994) observes were in many respects direct reactions to the deterministic vulgarities of social-Darwinism. Those in the Interbellum period who still believed in the social usefulness of biology were often defenders of racial superiority, providing political justification for the extermination of 'inferior' races (e.g., Gasman, 1971; Stein, 1987). Small wonder that biology did not take the first place in delivering theoretical foundations for the emerging social sciences after the second World War. This does not mean, however, that biology disappeared completely from political science and international relations. Two classic examples of biologically influenced international relations authors are Hans Morgenthau and Quincy Wright (Falger, 1994).

The universal struggle for power, Morgenthau states in his Politics among Nations (1958) - the most influential realist classic since Machiavelli's Il Principe (1513) and Hobbes' Leviathan (1651) - is the resultant of certain basic bio-psychological drives: "The drives to live, to propagate, and to dominate are common to all men", and, presumably, to all organisms. And Quincy Wright (1955), whose monumental work on war we already encountered, holds that "No deduction from what is known of human nature and human motivations support the anticipation of harmony among all men, any more than that the lion will peacefully lie down with the lamb".

The universal law of the struggle for existence was revived by biopolitical theory: Relationships between states "are treated as an inevitable outcome of the 'struggle for survival' to which all living organisms are presumably condemned" (Somit, 1972).

Only with the recent (inter)disciplines of sociobiology and Darwinian psychology, 'human nature' has once more become an appropriate subject of inquiry, but never more, one may hope, for facile appeals in the service of the apology and glorification of war.
4.3 The True Heirs of Malthus (and Hobbes)

"Land and women are the roots of war" (Maori proverb)

The ecological approach to the study of war has a long history. The main idea of many earlier works was that the geographical environment directly determines the policy of nations and tribal societies, and consequently conflicts and wars. Men were compelled to strive for the best environment possible, but in the process, the environment indirectly moulded their character and affected their will to act (Lider, 1977; van der Dennen, 1983b).

For example, Marett (1936) attempted to relate the belligerence of the steppe dwellers to endocrinological characteristics resulting from the abundance of carbon, sodium, and phosphorus in the diet provided by their environment. Ecological ideas have sometimes been borrowed by representatives of other disciplines and approaches as arguments in their theories of social evolution. Toynbee’s (1950) view of history as a cyclic pattern of challenge and response is one example: civilizations are born and grow in response to challenges posed by the environment.

As was shown in § 4.2.2., Spencer, Sumner, and Sumner & Keller founded the functionalist ecological orientation in sociology and anthropology. The foundation of human society, Sumner - following Malthus - asserted, is the man/land ratio.

In his classical study on the evolution of primitive war, Davie (1929) lists population growth as one of the basic causes of the competition of life which makes war. He states: "Since war is so fundamental a phenomenon, its explanation must be sought in the basic conditions of life. One such life condition is land, for it is from the land that all means of subsistence are ultimately drawn. Man has had to struggle for a living, however, for there is no 'boon of nature' or 'banquet of life'". However, the 'standard of living' (= the level of sociocultural evolution) is a factor which must be considered in the relation of population to land. This relation Davie formulates into a law which reads as follows: Human population tends to increase up to the limit of the supporting power of the environment (land), on a given stage of the arts, and for a given standard of living. Increase of population varies directly with the stage of the arts and inversely with the standard of living.

Also Bernard (1944) acknowledged overpopulation or population pressure as the "only one very significant biological cause of war in a general and fundamental sense". Of course, he explains, population pressure is not one and the same thing at all stages of social development. It is not a uniform and absolute fact under all conditions. One of the variables is the natural productiveness of
the area. The second is the stage of development of the arts (i.e., technology).
A third one is the degree to which a country is unified around a militaristic organization and policy. War, according to Bernard, is also a social invention, for which most peoples have models which they can imitate and for which all peoples have abundant materials (The notion of human war as a social or cultural invention will be elaborated in Ch. 5). Any people that has reached the hunting stage of development possesses the weapons at hand with which to enter upon war. The early warriors were hunters who merely turned the weapons of the chase against other men and used the tactics of hunting game in ambushing and slaughtering human beings. It was easier for them to kill and rob than to find new ways of procuring a new food supply by peaceful means when nature could no longer furnish their growing populations with what they required.

Peaceable peoples, in Bernard’s view, were either gatherers, without weapons even for the chase, or hunting peoples and primitive agriculturists in isolated localities where they did not have to compete with other tribes for a chance to exist (Cf. Mühlmann, 1940). It seems that war on anything like a conspicuous or an institutionalized scale began only after the hunting economy was well under way and the supply of game in proportion to the growing population of tribes had begun to decline. Such warfare probably began in occasional desultory conflicts of wandering rival hunting parties who found themselves chasing the same game. To the hostility which appears to have characterized all primitive peoples as strangers was added that of tired and hungry hunters seeking the same prizes. It should not be surprising if they fell to fighting one another while the game escaped, nor need we wonder if sometimes the conquerors satisfied their hunger with the human kill when the hunted animals fled. This may have been at least one of the origins of cannibalism.

We know also, Bernard continues, that in the course of time, as rivalry for hunting grounds and fishing waters increased, most hunting and fishing tribes marked off for themselves certain territories which they regarded as their own and which they defended against invasion by other tribes. It was when this development of collective pre-emption and ownership arrived that warfare probably ceased to be merely accidental and began to be preceded by a considerable degree of preparation and expectancy. The possessors prepared to repel invasion and the invaders got ready for conquest. The coming of agriculture and the consequent settled mode of existence seems to have brought with it warfare as a regular and recurrent social phenomenon.

Andreski's (1954 et seq.) most general assumption, based on Hobbes' (1651) views of human nature, is the recognition of the fact that the struggle for wealth, power, prestige and glory (for invidious values, i.e., desirable things of life) is the constant feature of the life of humanity. The admission of the omnipresence of struggle does not imply the denial of the existence of other - more peaceful - socio-cultural processes. The struggle, moreover, does not
always need to be violent or to preclude any compromise and adjustment of interests. The irreducible residuum of it is the constant tendency of groups and individuals to acquire as much wealth, power and prestige as they can; and as these 'invidious values' are limited, struggle must result. But forms of struggle can be regulated; certain rules of the game may be imposed and the outcome decided without resort to the *ultima ratio* of naked violence.

But why do men fight for the necessities and values of life? Why can they not just share them and live quietly? The answer to this has been given by Malthus: "Killing one another could not have remained one of the chief occupations of men if there was no surplus of men available. And it was the natural tendency of the population to grow beyond the means of subsistence that assured the permanence of bloody struggle" (Andreski, 1954).

The recognition of this fact enables him to advance a hypothesis about the origin of war. As nothing of that sort exists among the mammals, Andreski states (anticipating Alexander's, Slurink's and van der Dennen's 'ecological dominance' argument: See Ch. 8), this institution must be a creation of culture. It probably came into existence when the advance in material culture enabled man to defend himself better against the beasts which preyed on him, and thus to disturb the natural balance which keeps the numbers of any species stationary in the long run. After the predators had been subdued, another man became the chief obstacle in the search for food, and mutual killing began (Andreski, 1954). In a later version (Andreski, 1964), he succinctly states that "Given the propensities of human nature, the tendency of the population to grow beyond the resources has ensured the ubiquity of wars, although not every single instance of war had this factor as an immediate cause".

Although Bouthoul (1951 et seq.) developed his demographic-relaxation theory of war as an explanation of contemporary wars, several components of the theory may also be valid for primitive warfare (and anticipate in several respects the Harris-Divale theory of § 4.4.1). Bouthoul identifies one (covert or latent) function of warfare as 'delayed infanticide'. He regards the demographic factor as one of the structural constituents of collective aggressiveness: *une structure belligène*. A disproportional or irregular population increase or devasted population cohorts - what he calls *deséquilibres démo-économiques* - may contribute more to the problem of war, than population increase *per se*. He asserts that there is a clear correlation between a disequilibrated demographic constellation, for instance a surplus of young adult (dispensable) males, and a society's bellicosity. This represents a *structure explosive*, for there will be a tendency for this category of people to seek refuge in war; anything, including the exaltation of a war adventure, being better than debilitating tedium and prospectless ennui (As Andreski (1954) observed: "For a vigorous man, war may appear very attractive as an alternative to exhausting, monotonous work and grinding poverty"). Furthermore, the plethora of young males constitutes a disturbing force within the society, tending to augment
delinquency and threatening the economic, hierarchical, social and sexual privileges of the older male generations, who then may be tempted to "chercher à canaliser cette turbulence dans une aventure collective: la guerre". The explosive structure, produced by a surplus of young men, is not, however, the determining cause of war, but simply a predisposing element that reinforces other causes; it simply sets in operation the destructive, eliminative institutions of which war is the extreme example and the most blatantly institutionalized (Cf. Fornari, 1974; See Ch. 5). The invariant of war is that people are killed; the massive elimination and destruction of human beings. The direct and indirect losses arrest or at least temporarily interrupt the numerical expansion of the populations involved. This is what Bouthoul calls 'demographic relaxation'.

4.4 Ecological-Demographic Theories

The neoevolutionist school of American cultural anthropology founded by White (1949), was primarily interested in the ecological relationships of man and environment, and originally emphasized the level of socioeconomic development necessary before organized warfare can be conducted. White himself viewed warfare as a consequence rather than a cause of evolutionary development (cf. also Gorer, 1938; Newcomb, 1960). Other proponents of this school, however, more or less agree that "Wherever it exists, warfare serves a cultural adaptive purpose in that it results in a more advantageous relationship between people and their cultural ecology" (Chagnon, 1968; See also Gjessing, 1950; 1967; Otterbein, 1970; Corning, 1975; Nettleship, 1975; and Lider, 1977).

Naroll (1964) presents the case of the "survival-of-the-warlike" school (as Lider [1977] called it) in an explicit propositional form: "A number of traits, many associated with social evolution, make for success in warfare; societies with traits making for success in warfare tend for this reason to displace those which lack such traits". Such displacing societies tend technologically to be more complex. Thus, another key aspect of neoevolutionist theory is that "high-energy societies replace low-energy societies", and "long range trends toward higher levels of productivity are related to intergroup hostility" (Harris, 1971; 1975), and that "Primitive warfare arose as part of a complex system that prevented human populations from exceeding the carrying capacity of their habitats" (Harris, 1972).

Carneiro (1961; 1970) hypothesized (as did many before him; see especially the review by Holsti [1913] for the Social-Darwinist period) that warfare played a central role in the evolution of the state. However, warfare is viewed by Carneiro as itself only an intervening variable - as the catalyst and
instrument of the state-formation process. More fundamental in the chain of causation are demographic and ecological variables - the pressure of increasing population densities in ecologically constricted habitats. Chagnon (1968) later added the concept of 'social circumscription'. In short: population pressure on land - if the land has sufficient productive potential - encourages social evolution. "Warfare is likely to result where land is scarce, no matter how productive it is, and this leads to increased social complexity".

4.4.1 The Savage Solution to the Malthusian Dilemma

While bands and villages do not generally conquer each other’s land the way states do, Harris (1978) theorizes, they nonetheless destroy settlements and rout each other from portions of the habitat that they would otherwise jointly exploit. Raids, routs, and the destruction of settlements tend to increase the average distance between settlements and thereby lower the overall regional density of populations. One of the most important benefits of this dispersion - a benefit shared by both victor and vanquished - is the creation of 'no man's lands' or buffer zones (first proposed by Hickerson, 1965) in areas normally providing game animals, fish, wild fruits, firewood, and other resources. Because the threat of ambush renders them too dangerous for such purposes, these 'no man's lands' play an important role in the overall ecosystem as preserves of plant and animal species that might otherwise be permanently depleted by human activity. The dispersal of populations and the creation of ecologically vital 'no man's lands' are, in Harris' view, very considerable benefits which derive from intergroup hostilities among band and village peoples despite the costs of combat. With one proviso: Having dispersed the enemy camps and settlements, the victors cannot allow the population of their camps and settlements to increase to the point where game and other resources are threatened by their own population growth and intensification effort. Warfare under pre-state conditions cannot satisfy this proviso - at least not through the direct effect of combat deaths. How then is this effected? The answer provided by Harris is: By the practice of preferential female infanticide.

This theory of population control in primitive society, involving the effects of preferential female infanticide and warfare, has been developed by Divale (1970 et seq.), Harris (1971 et seq.), and Divale & Harris (1976). The theory holds that every human society must take steps to control population growth. This is especially the case in primitive societies because their simpler technology places greater limits on their ability to expand food energy production. The manner in which most primitive societies regulate their population is postulated as follows:

Infanticide is practiced on both males and females for a variety of reasons. However, since there is a general preference to have a boy as the first
child, and since the ratio of males and females at birth is almost equal, many more girl infants get killed. In terms of population control this is significant because excess females are eliminated before they reproduce. The effect of selective female infanticide is that many more boys reach maturity than do girls and a shortage of marriageable women exists among young adults. The women shortage leads to adultery, rape, and wife-stealing which in turn lead to frequent disputes over women. Deaths which result from these disputes lead to blood-revenge feuding and warfare in which the excess male population is eliminated. In the childhood generation boys greatly outnumber girls because of female infanticide. But in the adult generation the ratio between the sexes is balanced because males die in warfare. However, even though the adult ratio is about equal a relative women shortage still exists due to the practice of polygyny. The older and more influential males have several wives, leaving younger males wifeless. The constant warfare of these societies creates a constant need for warriors and it is this need which causes the cultural preference for a boy as the first child which begins the process in the first place.

The root of this entire system is a culturally produced women shortage. Female infanticide and polygyny create a shortage of women which leads to wars which in turn favor male infants, etc. The cycle is continuous and each generation creates conditions which perpetuate the process in succeeding generations. The next effect is the control of excess population (Divale, 1974).

There seems, according to Divale, to be a direct correlation between population density and the forms of violence (feuding, raiding, open battle) that occur. Bands of very low population densities practice mostly feuding. Among tribes with a higher population density than bands, feuding is still important, but takes a second place to the raiding or war party type of warfare. Among the more densely populated fully tribal peoples, such as in highland New Guinea, raids and battles play the major role.

It is, as these theorists stipulate, not suggested that war caused female infanticide, or that the practice of female infanticide caused war. Rather, it is proposed "that without reproductive pressure neither warfare nor female infanticide would have become widespread and that the conjunction of the two represents a savage but uniquely effective solution to the Malthusian dilemma" (Harris, 1978).

Furthermore, warfare functions in this system to sustain the so-called male supremacist complex (a cultural complex of social practices such as patrilocality, polygyny, marriage by capture, brideprice, postmarital sex restrictions on women, sexual hierarchy with female subordination, sexual privileges for fierce warriors, male machismo, masculine displays, dangerous
and competitive sports and martial skills, militancy, the warrior cult; and in
general war-linked, male-centered institutions, prerogatives and ideologies - all
because the survival of the group is contingent upon the rearing of fierce and
combat-ready males) and thereby provide the practical exigencies and
ideological imperatives for postpartum cultural selection against female infants
(Divale & Harris, 1976). The (young) males have a price to pay for all this;
they constitute the bulk of the victims of warfare in primitive societies (Harris,
1975).
The theory explains, it is claimed, that peoples like the Yanomamö, Dani,
Maring, and Maori attribute their wars to disputes over women. Although,
Harris (1975) warns, such explanations cannot be accepted at face value; the
belligerents who lose their lives in armed combat - Harris asserts - seldom
accurately understand why they do so. "Excessive warfare is an ecological trap
into which humanity has probably fallen again and again" (Harris, 1975). It is
concluded that "war has been part of an adaptive strategy associated with
particular technological, demographic, and ecological conditions", but that this
does not require us to "invoke imaginary killer instincts or inscrutable or
capricious motives to understand why armed combat has been so common in
human history" (Harris, 1974).

There remains the question of how men are to be trained to be fierce and
aggressive so that they will risk their lives in combat. Since the preference for
rearing males over females means that there will be a shortage of women as
marriage partners, one way to insure that men will be aggressive in combat is
to make sex and marriage contingent on being a fierce warrior. Logically, one
might suppose that the solution to the problem of a shortage of women would
be to have several men share a wife, but actually polyandry is extremely rare.
Indeed, just the opposite occurs: In prestate societies practicing warfare there is
a strong tendency for men to take several wives, that is, to be polygynous.
Thus, instead of sharing women, men compete for them, and the shortage of
women is made even more severe by the fact that some men have two or three
wives. This leads to much jealousy, adultery, and sexually charged antagonism
between men and women, as well as hostility between men and men, especially
junior 'have nones' and senior 'have severals' (Harris, 1980; Divale & Harris,
1976; 1978a,b; Divale et al., 1978; Cf. Howe, 1978; Lancaster & Lancaster,
The theory relates the intensity of the preindustrial male supremacist complex
to the intensity of warfare and the intensity of reproductive pressures. It
predicts that wherever the intensity of warfare and reproductive pressure are
low, the male supremacist complex will be weak or virtually absent. This
prediction conforms to the widely held view that many hunter-gatherer band
societies had both low levels of warfare and high sexual parity or sexual
autonomy, and that both warfare and sexual inequality increased with the
development of agriculture and the state.
However, it also accounts for the reported occurrences of strong male supremacist complexes in warlike hunter-gatherer band societies. Not all band societies confronted similar ecological conditions and similar degrees of reproductive pressure (Leacock, 1978). In short, wherever there is intense preindustrial warfare, groups that develop the male supremacist complex are likely to rout and displace groups that do not (Harris, 1980).

The above explanation actually reverses the causal arrows in Freudian explanations of warfare, Harris (1980) explains. Freud regarded the aggressivity and sexual jealousy of males to be instinctual. He saw both war and the Oedipus complex as products of this aggressive instinct. There is much evidence, however, to indicate that the aggressive and sexually jealous male personality is itself caused by warfare (See Ch. 2), whereas warfare itself is caused by ecological and political-economic stresses.

Similarly, the Oedipus complex itself can be seen not as the cause of warfare, but as the consequence of having to train males to risk their lives in combat. Wherever the objective of child-rearing institutions is to produce aggressive, manipulative, fearless, virile, and dominant males, some form of sexually charged hostility between the junior and senior males is inevitable. But this does not mean that the Oedipus complex is an inevitable expression of human nature. Rather, it is a predictable outcome of training males to be combative and 'masculine' (Harris, 1980).

Whiting (1969) and his associates have developed an interesting theory to account for variations in the severity of male puberty rites. These rites are defined as severe when they involve circumcision or other forms of mutilation, prolonged seclusion, beatings, and trials of courage and stamina. Whiting has shown that statistical correlations exist between such rites and seven other factors: (1) protein scarcities, (2) nursing of children for one or more years, (3) prohibition on sex relations between husband and wife for one or more years after the birth of their child, (4) polygyny, (5) domestic sleeping arrangements in which mother and child sleep together and father sleeps elsewhere, (6) child training by women, and (7) patrilocality.

"Following our model, the following chain develops: Low protein availability and the risk of Kwashiorkor (a protein deficiency disease) were correlated with an extended postpartum sex taboo to allow the mother time to nurse the infant through the critical stage before becoming pregnant again. The postpartum sex taboo was significantly correlated with the institution of polygyny, providing alternate sexual outlets to the male. Polygyny, in turn, is associated with mother-child households, child training by women, resultant cross-sex identity, and where patrilocality is also present, with initiation rites to resolve the conflict and properly inculcate male identity" (Harrington & Whiting, 1972).

'Cross-sex identity' refers to the psychodynamic process by which boys who are reared exclusively by their mothers and older women identify themselves with their mothers and other women. Where patrilocality is present, Whiting
reasons, functional consistency demands that adult males must make a strong identification with their fathers and other males. Hence there is a conflict between what the male must do and think as an adult and what he is trained to do and think as an infant. Severe male initiation ceremonies are thus required to resolve this conflict by breaking the prepubescent identity. Much of this complex (for example, patrilocality, polygyny, men sleeping apart, and severe puberty rites) can be seen as part of the male supremacist warfare complex. Wherever primitive warfare is intense, one can expect that boys will have to undergo severe ordeals to test their manhood and to shock them into assuming their adult responsibilities as males and warriors.

4.4.2 Criticism

The assumption of the authors that the conjunction of warfare and preferential female infanticide constitutes a solution to the Malthusian dilemma is ingenious but probably unwarranted. Alternative interpretations of preferential female infanticide have been proposed by Alexander (1974) and Dickemann (1979). The supporting evidence for the Harris-Divale argument consists of sex-ratio statistics and census data from indigenous bands and tribal societies around the world. The validity of their statistical material and tests has been severely challenged by Hirschfeld, Howe & Levin (1972); Harrison (1973); Bates & Lees (1979); Chagnon, Flinn & Melancon (1979); Fjellman (1979); Kang, Horan & Reis (1979); and Dow (1983) among others. "There is no reason to conclude that population regulation itself requires warfare, which would be an extremely costly and risky means of promoting female infanticide" (Bates & Lees, 1979). "It does not appear that we can accept Divale's infanticide-marriage alliance-polygyny-warfare syndrome as having as universal an applicability as his data suggests might be the case" (Harrison, 1973). Harris and Divale assume that overbreeding is endemic to primitive populations, which seems unsupported by ethnographical evidence: Not all or even most primitive societies are or were expanding (Nettleship, Givens & Nettleship, 1975). Furthermore, these authors wonder, how could it be that "warfare began as part of an ecologically adaptive system of population control if the people fighting fought for prestige, or - more troublesome - for brides with whom to breed more children to add to the crowding?". According to the analysis of Netting (1973), the immediate result of armed conflict among the Kofyar of Northern Nigeria was to heighten population pressure rather than to relieve it; and also a study by Stauder (1972) of feuding and ecology among the Majangir of Ethiopia actually reverses the population-pressure theory (Cf. Koch, 1974).

As a factor in primitive warfare, Shaw & Wong (1987) argue, the male supremacist complex lacks credibility. Where female-male sex ratios are low and warfare is active (a correlation does exist), Shaw & Wong interpret raiding and capture of females as an attempt to avoid inbreeding depression. It is when
the ratio of reproductive partners becomes undesirable and inbreeding depression threatens that raiding of females through primitive warfare will gain added impetus.

All in all, as Dow (1983) points out, Divale & Harris do not present any evidence that (a) preferential female infanticide actually regulates population, (b) that it is a response to environmental degradation, or (c) that it has led to a stable population in any of the societies they consider. Bates & Lees (1979) make the additional point that because primitive human groups were often in competition, the obvious advantage in most circumstances would lie with expanding populations, not stable ones.

Finally, Divale & Harris have been taken to task on many additional points concerning the adequacy of their sample, statistical techniques, empirical measures (which poorly reflect their theoretical constructs), and so on (Hirschfeld et al., 1978; Lancaster & Lancaster, 1978; Norton, 1978).

4.5 Functionalist and Multifunctionalist Theories

Vayda (1961 et seq.) challenged the popular view of warfare as a 'safety-valve' institution (as proposed by Wedgwood, 1930; Q.Wright, 1942; Whiting, 1944; Murphy, 1957 et seq.; among many others: See Ch. 5), and argued that the adaptive value of warfare is not limited to the promotion of ingroup solidarity. Vayda suggests that different predictions must be made for expanding and nonexpanding populations. For expanding populations, warfare is hypothesized to serve the function not only of reallocating resources but also of killing enough people to reduce population pressure on resources. He speculates that in nonexpanding populations warfare might serve other purposes no less important ecologically, for example, dispersal of groups in finite territories to optimally exploit the ecological niche, or the capture of women and children in small populations with unbalanced sex ratios. Most of these other adaptive functions do not require large-scale killing or even particularly lethal warfare.

In accordance with this expectation, several evolutionary anthropologists have sought ecological functions for warfare in populations that occupy certain types of ecological niches. Sweet (1965), for example, has described such a pattern of low-level warfare (camel raiding) for the North Arabian Bedouin, and argued that it is a mechanism of ecological adaptation, supporting not only the Bedouin economy but also Bedouin political dominance over other peoples in the region and even "the whole network of social and ideological relations of Bedouin life".

Studies attempting to show that warfare serves an adaptive purpose, or is ecologically functional, or both, abound nowadays (e.g., Wedgwood, 1930; Newcomb, 1950; Vayda, 1961 et seq.; Lathrap, 1962 et seq.; Leeds, 1964; Rappaport, 1967; Krapf-Askari, 1972; Harrison, 1973; Graham, 1975; Morey
In a subsequent article, Vayda (1967) proposed that the functions of primitive war may be the maintaining of one or more variables (e.g., the man/land ratio) or activities in a certain state or within a certain range of states. He grossly designates these variables as psychological, socio-political, economic, and demographic.

- Functions in the regulation of psychological variables: The notion that primitive war may operate so as to keep such variables as anxiety, tension, and hostility from exceeding certain limits is implicit in the statements of anthropologists who speak of primitive wars as 'safety-valve' institution (serving to divert intrasocietal hostility onto substitute objects), as 'flight-from-grief' devices (Turney-High, 1949), or as "enabling a people to give expression to anger caused by a disturbance of the internal harmony" (Wedgwood, 1930).

- Functions in the regulation of socio-political variables: A characteristic hypothesis about stateless societies that lack a central government with penal jurisdiction over the separate local groups is the familiar hypothesis of deterrence or 'preventive war'. According to this hypothesis, warfare undertaken by a group to avenge an insult, theft, non-payment of bride price, abduction, rape, poaching, trespass, wounding, killing, or some other offense committed against its members deters members of other groups from committing further offenses. Putting it in more explicitly functional terms: "[W]hen some such variables as the number, frequency, or magnitude of the offenses committed against a group exceeds a certain value, then the group goes to war and thereafter, at least temporarily, the number, frequency, or magnitude of offenses committed declines".

- Functions in the regulation of economic and demographic variables: According to hypotheses presented by various writers, war breaks out when the inequalities between groups in their possession of or access to certain economic goods or resources reach a certain magnitude. Such hypotheses are 'functional' ones if they go on to state that the effect of warfare is to reduce the inequalities to a point where they do not exceed a proper or acceptable level. Similar to these hypotheses are those about the regulation of demographic variables. In this case, the 'resources' redistributed as a result of war are human beings. The redistribution of land as a result of primitive war can, of course, equally be seen as a redistribution of people upon the land, a process involving a victorious group's movement into a vanquished and dispossessed enemy's former territory. Should there be no place to which the vanquished can flee, the answer to problems of local population pressure may be heavy battle mortality.
A comparable multifunctional theory has been provided by Leeds (1963). Leeds distinguishes three phases in the institution called war: war prelude, war proper, and war cadence. He further distinguishes the adaptive functions of warfare as internal and external. As internal adaptive functions he mentions: consolidation of internal power; establishment of institutions of community coordination and control, and the creation of community consensus; sloughing off of antiquated or rigidified norms and structures; revitalization of norms and values; technological innovations; and resolution or intensification of social conflicts. Warfare also substantially reorders the allocation of rewards and prestige, statuses and roles within the society, and results in a redistribution of labor. As external adaptive functions of war Leeds identifies:

- War may serve as the tool for reordering intersystemic relationships, where peaceful change cannot be accomplished: territorial hegemonies, trade routes, exchangeable goods, mutual rights and obligations, and so on, may be reallocated in terms of new exigencies.
- Ecologically, war may create no man's lands or buffer zones, and augment the resources accessible as is clearly the case in territorial aggrandizement.
- Resources may be used more intensively during and after wars, or warfare may lead to exploitation of new resources or of old resources in new ways. Where culture is regarded as an allocation of symbols and values, warfare may be understood as a distributional institution.
- Another functional consequence of almost all warfare has been cultural diffusion.
- War may lead to genetic redistribution, a tendency towards panmixia and the elimination of local breeding populations, and tends to bring about demographic changes.
- Finally, a common effect of warfare is the dispersion of populations, their spacing out for wider resource use and greater exposure to variant ecological niches. As a highly multifunctional institution, war has a high probability of persistence (Leeds, 1963; Cf. also Vayda & Leeds, 1961; Leeds & Vayda, 1965).

Leeds asserts that individual motivations in war are irrelevant to the socio-cultural demands (what he calls the 'social motivations'): "The motivations would quite possibly be almost as varied as the number of people affected by each function. The motivations demanded are institutional and conventionalized ones ('fight for freedom'), the responses largely institutionalized (fighting), but motivational states are exceedingly diverse (fighting with or out of fear, anger, hate, love, apathy, etc.) and not determined by social 'motivations'".
Tsembaga Maring warfare is described by Rappaport (1967) as an integral feature of a complex ritual cycle of religious practices which culminate in ceremonial pig slaughter ('kaiko'), and which are believed to regulate the relationship between Maring social groups and their environment. Rappaport (1967) has suggested that the ritual cycle acts as both a transducer and homeostat in the cybernetics of interaction between the 'local subsystem' (Tsembaga relations with their immediate physical environment) and the "regional subsystem" (Tsembaga relations with neighboring social groups). Among other functions, the ritual cycle "helps to maintain an undergraded environment, limits fighting to frequencies which do not endanger the existence of the regional population, adjusts man/land ratios, facilitates trade, distributes local surpluses of pig throughout the regional population in the form of pork, and assures people of high quality protein when they are most in need of it" (Rappaport, 1967). Rappaport is quick to add that the 'cognized' Tsembaga interpretation of their behavior (namely to appease the spirits) is very different from his own 'operational' model (Durham, 1976).

4.5.1 Multiphase War Process

In a number of recent anthropological studies of warfare, different grades of violence have been distinguished, separate causes have been sought for fighting at each grade, and, in some cases, escalations from grade to grade have been noted (e.g., Warner, 1930; Otterbein, 1968; Chagnon, 1967 et seq.). Vayda (1971; 1974) describes a multiphase war process operating among the Maring of eastern New Guinea. The significant features of this process include the following: (1) The later phases of the process, that involves heavy mortality and sometimes leads to territorial conquests, cannot occur unless preceded by periods of weeks or months marked by rather ritualized hostilities in which mortality is low; (2) Escalations from phase to phase in the war process are not inevitable; (3) The causes of entry into war are not the same as the causes of escalation from one phase to another of the war process. Evidence from case studies (Vayda, 1970; 1971) raises serious questions about the validity of cross-cultural or cross-societal studies that depend on the fixed assignment of the warfare of various societies to one or another of a limited number of such categories as 'revenge warfare'. The case studies point to the possibility that the ethnographic reports on which the assignments to the categories are based may be describing the causes of only the first phases of war processes; fighting for blood revenge, magical trophies, or sacrificial victims can become something else if there is escalation to the later phases.
4.5.2 Criticism

The insight that relatively ritualized agonistic war may escalate into instrumental or even genocidal war is Vayda's most valuable contribution. A war of callisthenics may escalate into a war of coercion or a war of carnage, in a process of constant assessment and testing of disparities between the belligerents.

Regarding Vayda's (multi)functionalism, however, Hallpike (1973) a.o. has pointed out that Vayda's claims do sometimes not seem to be supported even by his own data. The obvious fact that warfare among the Maring patently did not have any noticeable effect in redistributing land drives Vayda to state that even so, their system of warfare might have had such effects if things had been different. All that Vayda establishes is that "in some cases warfare may be the means by which groups which are short of primary forest for new gardens may acquire other people's. No one would suggest that in some cases, people may not fight over land, or anything else which they fancy and which is in short supply, but this does not explain why the Marings fought" (Hallpike, 1973). This comment points to the general weakness of functionalist theories: "To say that the function of primitive warfare is to limit population sounds almost as odd as saying that the function of hot weather is to increase beer consumption or that we have famines to keep population down", Howell (1975) remarks, and he adds that a great deal of the confusion in these arguments could be eliminated by consistently distinguishing 'effect' and 'purpose' instead of ambiguously employing the term 'function'.

Vayda, Leeds, Harris and other functionalists are prone to reify adaptive systems and to express them in equilibrating functional terminology. For example, Vayda explains the complex system of pre-contact Maori fighting as a system of population growth, dispersal, and access to resources which, "while they did not know about the system, the Maori were still motivated to follow. It is implied that the 'motivation' somehow stemmed from the functional nature of the system" (Nettleship, Givens & Nettleship, 1975).

During the late 1970s and early 1980s, there was a growing dissatisfaction with the ahistorical nature of functional logic. The self-regulating functionalist models were criticized for "the fallacy of misplaced teleology [that] occurs when purpose is attributed to a unit of organization on which no creative process is known to operate" (Richerson, 1977).

"The main objection raised against the ecological approach" according to Lider (1977) "is that rapid evolutionary changes have occurred in the absence of warlike activity; on the other hand, it has not been proved that war always contributed beneficially to human evolution or to human adaptation to the environment". Ferguson (1989) presents evidence that wherever war seems to
have beneficial consequences, these can also occur without war, and/or are of dubious ecological importance. People are not in a better relationship to their natural environment because of war. "War may produce a fit between population and resources, but it is a bad fit. Life is worse for war". For example, the Yanomamö of the area studied by Chagnon are growing at a fairly rapid pace (Chagnon et al., 1979; Harris, 1977; Lizot, 1977). Given the extraordinary intensity of warfare among the Yanomamö, this growth rate should dispel any idea that combat deaths and related mortality lead to an ecological balance.

Furthermore, by far the greater number of wars recorded in historical and ethnographic literature do not appear to be related to population pressure even in the weakest sense. "It was the better organized, or the better armed, who behaved most aggressively, not those who were most hungry" (Hulse, 1961; cf. Hoebel, 1958).

Sometimes, careful reanalysis of historical data may provide a refutation of eco-explanations (e.g., Kroeber & Fontana, 1987, on Quechan [Yuma] warfare).

There is little doubt that what is described by Rappaport (1967) as the Tsembaga Maring regulatory system does indeed perform many 'functions'. However, as Durham (1976) warns, we should be very cautious in ascribing to each one an 'adaptive' significance. In many cases, what we interpret as 'system-regulating functions' and 'control mechanisms' may be no more than the aggregate consequences of individuals behaving in a genotypically selfish fashion. If indeed the maintenance of the ecosystem is but a consequence of (a) behavior which has evolved maximizing the long-term propagation of individuals' genes, and (b) selective retention most commonly maintains traits of advantage to individuals, it is unlikely that primitive warfare is a common adaptation for population control or "an ecological trap into which primitive man has fallen again and again" (Harris, 1971).

The main postulate of functionalist theories is, as we saw, demographic regulation: Maintaining the man/land ratio by killing off human beings (One will seldom find words like 'killing off' or 'extermination' in these bloodless theories, yet this is exactly what is meant). Is demographic relaxation a fact in warfare?

If contemporary wars are considered, population pressure, population dynamics and other demographic variables do not seem to play an important role, while combat losses, or even total war casualties (1-3%), tend to be negligible from a demographic point of view (e.g., Sorokin, 1928; Q.Wright, 1942; Vincent, 1947; Richardson, 1960; Sauvy, 1969; Singer & Small, 1972; Choucri, 1974). Contemporary warfare could not have had much effect on the ongoing evolution of man (Livingstone, 1968).

In contrast to modern warfare, however, the continuous feuding among many
primitive peoples seems to have accounted for a much greater proportion of the deaths and thus could have been a major factor controlling the size of populations, and an agent of natural selection (Livingstone, 1968; Cf. Davie, 1929; Q.Wright, 1942).

Estimates of the mortality resulting from primitive war and/or feuding range from < 1% to 33% of adult male deaths from all causes, with an average of about 20% (for war-infested areas such as Amazonia and Highland New Guinea), and < 1% to about 7% of adult female deaths from all causes. Among the Achuarä Jivaro studied by Ross (1984), even 59% of adult male and 27% of adult female deaths were caused by feuding. These are astounding figures for these relatively small populations. The following table lists a number of these studies (The figures may be skewed by overrepresentation of highly warlike New Guinea societies):

Table 4.5.2: Lethality of war/feuding in a number of contemporary tribal societies

<table>
<thead>
<tr>
<th>Society</th>
<th>% of adult male deaths</th>
<th>Rate per 100,000</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murngin</td>
<td>28</td>
<td></td>
<td>Warner, 1930</td>
</tr>
<tr>
<td>New Guinea gen.</td>
<td>25 (est.)</td>
<td></td>
<td>Hayano, 1974</td>
</tr>
<tr>
<td>Chimbu (NG)</td>
<td>20 (est.)</td>
<td></td>
<td>P.Brown, 1982</td>
</tr>
<tr>
<td>Fore (NG)</td>
<td>14</td>
<td></td>
<td>Bennett et al., 1959</td>
</tr>
<tr>
<td>Huli (NG)</td>
<td>13</td>
<td></td>
<td>Glass, 1968</td>
</tr>
<tr>
<td>Mae Enga (NG)</td>
<td>25</td>
<td></td>
<td>Meggitt, 1958</td>
</tr>
<tr>
<td>Dani (NG)</td>
<td>29</td>
<td></td>
<td>Matthiesen, 1962; Heider, 1972</td>
</tr>
<tr>
<td>Eipo (NG)</td>
<td>24</td>
<td></td>
<td>Schiefenhövel, 1980, p.c.</td>
</tr>
<tr>
<td>Tsembaga (NG)</td>
<td>20 (est.)</td>
<td></td>
<td>Rappaport, 1968</td>
</tr>
<tr>
<td>Kapauku (NG)</td>
<td>20 (est.)</td>
<td></td>
<td>Pospisil, 1958</td>
</tr>
<tr>
<td>Marind Anim (NG)</td>
<td>20 (est.)</td>
<td></td>
<td>van Baal, 1966</td>
</tr>
<tr>
<td>!Kung San</td>
<td>29.3*</td>
<td></td>
<td>Several sources</td>
</tr>
<tr>
<td>Yanomamö</td>
<td>33</td>
<td>165.9*</td>
<td>Chagnon, 1968</td>
</tr>
<tr>
<td>Bellona Isl.</td>
<td>295.6*</td>
<td></td>
<td>Kuschel, 1988</td>
</tr>
<tr>
<td>Gebusi (NG)</td>
<td>35</td>
<td>683.0*</td>
<td>Knauf, 1985, 1987</td>
</tr>
<tr>
<td>Hewa (NG)</td>
<td>778.0*</td>
<td></td>
<td>Steadman, 1971</td>
</tr>
<tr>
<td>Nalumin (NG)</td>
<td>1/1000/yr</td>
<td></td>
<td>Schiefenhövel, p.c.</td>
</tr>
<tr>
<td>Kunimaipa (NG)</td>
<td>5/1000/yr</td>
<td></td>
<td>McArthur, 1971</td>
</tr>
<tr>
<td>Etoro (NG)</td>
<td>10/1000/yr</td>
<td></td>
<td>Kelly, 1977</td>
</tr>
<tr>
<td>Piegan</td>
<td>25**</td>
<td></td>
<td>Ewers, 1955</td>
</tr>
<tr>
<td>Buin (Solomon Isl.)</td>
<td>0.7***</td>
<td></td>
<td>Thurnwald, 1936</td>
</tr>
</tbody>
</table>

** per generation
*** of total population per annum

Sometimes comparably high casualty figures have resulted from spectacular battles (e.g., after a pitched battle of allied Plains tribes at the end of the last century, thousands of dead and wounded braves were left on the battlefield),
raids (e.g., a relatively small raiding party of Chippewa warriors once returned with 335 Dakota scalps [Warren, 1885; Ritzenthaler, 1978]), campaigns (e.g., the Zulu and Dahomean conquests literally obliterated many tribes; the Adirondack, Atikamec and Erie were almost totally annihilated by the Iroquois), or revenge massacres (such as the Beothuks massacring Micmacs in the late 17th century [Jukes, 1842; Reynolds, 1978]). More often than not, however, it is the incessant nature of the hostilities which produces low but cumulative casualty figures (see also: Westergaard, 1923; Davie, 1929; Steinmetz, 1929; Krzywicki, 1934; Q.Wright, 1942; Livingstone, 1968)\(^{11}\).

4.5.3 General Criticism of Functionalist Theories

The most devastating criticism of functionalist theories of primitive warfare has been provided by Hallpike (1973, 1979), from which the following is epitomized (Though he did not deliver the final *coup de grâce* to the functionalist theories, I do not want to deprive the reader of the enjoyable sarcasm in his argumentation):

- By its very nature, functionalist analysis cannot explain the genesis or emergence of primitive warfare. As Vayda (1968) himself states, the object of functional analysis is a "demonstration of how things work rather than an explanation of why they exist or how they have come to be".
- The concept of 'function' is used to mean almost everything from 'operation' to 'effect' and 'purpose'. It is also often confused with 'adaptation', 'social cohesion', 'equilibrium', etc. An adaptive institution may be dysfunctional, while a functional institution may be quite maladaptive.

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\(^{11}\) Circumstantial and anecdotal evidence of the dramatic and devastating destructiveness of tribal warfare in terms of human lives may be deduced from the following accounts: Loskiel (1789) and Hodge (1910) on precolombian North America; Morgan (1851) on the Iroquois; Charlevoix (1744) on the Algonquians; Nelson (1899) on the Bering Strait Eskimo; Jones (1914) on the Tlingit; Tout (1904) on the British Columbian tribes; Bancroft (1875), Biart (1900) and Cook (1946) on the Meso-American tribes; Markham (1895) on the Shipibo, Mundurucu, Macu and Botocudo; Simson (1880) on the Jivaros; Latcham (1909) on the Araucans; Simson (1878) on the Zaparos; Paulitschke (1893) on the Galla; Koettlitz (1900) on the Abyssinians; Roth (1887) on Central African tribes; Johnston (1902) on the Hima; Hobley (1903) on the Masais; Dundas (1910) on the Suk; Shooter (1857), Macdonald (1900), Stigand (1907, 1909), Johnston (1913) on southern African tribes; Holub (1881) on the Zulu; Gottschling (1905) on the Venda; Torday & Joyce (1905, 1906) on the Mbales and Huanas; Ellis (1890) on the Dahomeans; Peal (1874), Watt (1887), Godden (1897) and Furness (1902) on the Nagas; Carey & Tuck (1896) on the Chin Hill tribes; Hose (1894) on the Kayans; Hose & Shelford (1906) on the Dyaks; d'Albertis (1881) on New Guinea tribes generally; Krieger (1889) on the Tugeri; Seligman (1910) on the Binandere; Hunt (1899) on the Murray Islanders; Somerville (1897), Ribbe (1903), Hardy & Elkington (1907), and Woodford (1909) on the Solomon Islanders; Turner (1884) on the Samoans; Calder (1874) and de Quatrefages (1884) on the Tasmanians; Roth (1887) on the Maoris; etc. etc.
Functionalist arguments often depend upon the arbitrary selection of a particular organizational level, or group, in the society, with reference to which warfare or any other practice can then be said to be functional. By shifting one’s definition of the group for which violence is said to be advantageous to suit the case, one can, of course, always prove that it is advantageous to someone, ending with the extreme case of the functional value of murder for the killer, because it removes his inner tensions, and makes him feel that he is a fine fellow. A case in point is Chagnon’s (1967) hypothesis: "The hypothesis I put forward here is that a militant ideology and the warfare it entails function to preserve the sovereignty of independent villages in a milieu of chronic warfare". Now, disregarding the essential circularity of the hypothesis, while it can be argued that it is adaptive for any one village to engage in warfare, and be generally ferocious, in a situation where everyone else is equally ferocious, it does not follow that it is adaptive for that group of villages to engage in constant raiding and feuding among themselves - they would be much better off in terms of material prosperity if they lived at peace. The Yanomamö, like the Tauade, and other acephalous societies, engage in warfare because among other reasons they cannot stop, not because they necessarily as a culture derive any benefit from fighting. In the absence of any central authority they are condemned to fight forever, other conditions remaining the same, since for any group to cease defending itself would be suicidal.

Functional analysis may be conducive to (more or less arrogantly) dismissing the motives of the individuals concerned as irrelevant. Rappoport (1967), for example, thinks that his interpretation of Tsembaga Maring reality is far superior to the Maring interpretation of their own reality. "Warfare", White (1947) claimed, "is a struggle between social organisms, not individuals. Its explanation is therefore social or cultural, not psychological". Following White’s lead, Newcomb (1950) claimed that all warfare is "motivated by economic need, and the biological competition of societies". Now the claim that all warfare is always motivated by economic need is, in terms of the consensus of ethnographic facts, merely ridiculous, and needs no special refutation here. It turns out, however, that what Newcomb means by 'motivated' is not what most people would take the word to mean. In this way Newcomb can dismiss all the evidence of ethnographers of Plains Indian warfare upon the reasons why the Indians valued warfare so highly, on the grounds that "The motivation of the individual is not the cause of warfare, it is rather the method by which a cultural irritation or need is satisfied" (Newcomb, 1950).

One feels inclined to ask at this point if a culture can scratch itself. For Newcomb, Plains "men were warlike because their socio-cultural systems obliged them to be". The causes of this sociocultural imperative
were "powerful economic and historic forces", above and beyond the consciousness of individual actors. Economic rationality was still at the heart of the matter, but now it is to be calculated on a level above that of "economic man". Newcomb later (1960) elaborated on this point, arguing that wars usually are fought over some economic good, but the need for this good is determined by social forces. One cannot even discover the underlying economic drive by talking to participants, he continued, because it will be overlain by cultural values, distorted by rationalizations, and, at least in hierarchical societies, complicated by divergent interests and obscured by deliberate mystification. Newcomb was part of a trend away from 'psychological explanations' in materialist studies, and he started a controversy (the so-called emic/etic controversy) which reverberates down to today.

Newcomb and White are both in a philosophical muddle, which leads them to suppose that a social system can have needs, motives and frustrations unknown to its members. When Newcomb claims therefore that all warfare is economically motivated, he means that the motives or real people are irrelevant, and that warfare is "a function of socio-cultural systems, and individuals are... no more than the means through which these systems attain their ends... It does not matter for what reason the individual thinks he is fighting, and dying, as long as he is satisfying the needs and imperatives of his culture" (Newcomb, 1950). Leeds (1963) and Harris (1975) have made similar claims. Of course, the claim that a culture is an integrated kind of Being with distinct needs which have to be satisfied is to indulge in fantasy. When one reads such vain attempts to explain primitive warfare by appeals to its ecological effects or functions, one realizes that 'function' has frequently the covert significance of "What a twentieth-century materialist rationalist intellectual from Europe or America thinks is a sensible allocation of labor and resources". When such a person encounters primitive societies, he is baffled by their indifference to his criteria of what is sensible, and therefore casts about for some hidden reason which will be the real explanation for their behavior. This is especially likely to be the case with that form of behavior which particularly horrifies intellectuals - warfare. In consequence, many such functionalist explanations of primitive warfare have a strong ethnocentric bias. In short, functionalism opens the possibility to invent and attribute all kinds of 'functions', latent or manifest, direct or remote, to primitive societies, while simply ignoring or arrogantly dismissing their own 'cognitive model'. That primitive peoples could have genuine, even if sometimes mistaken or inadequate, reasons for these beliefs and behaviors is dismissed as the fallacy of taking native explanations at face value.

Many functionalists in their determination to show that even such social institutions as warfare are adaptive, have adopted a view of natural
selection which is more extreme in its rigidity than many biologists would claim for it in the study of animal populations.

Finally, functionalists are almost always able to show that everything which people do has some advantageous aspects for someone, so that diametrically opposite situations will be described as adaptively - or functionally - advantageous. For example, if a group of tribes habitually lives at peace, it will be shown that there are certain conditions which make this possible, whose function will then have been demonstrated to contribute to the maintenance of peace. But, should the tribes concerned habitually have lived in a state of chronic anarchy and violence, the functionalist is not discouraged. He may either say that each tribe is a separate society, and that warfare contributes to the solidarity of each so-called society, or, that it eliminates weaklings and contributes to the vigor of the group, besides keeping down the surplus population, and supplying protein if they are cannibals.

Remarkably, virtually none of the functionalist theories discussed above address the 'function' or 'adaptiveness' of peace, even though, as Kroeber & Fontana (1987) observed, a comprehensive theory of the origin(s) and motivations of war must also account for the absence of war. In Ch. 7 it will be argued that war is not the 'normal' state of affairs among primitive peoples - claims to the contrary notwithstanding - no more than it is among contemporary nation-states.

4.6 Materialist Theories

Lately, theorists of (cultural) ecological, ethological, sociobiological, and Marxist perspectives and/or signature have found themselves happily united, bien étonnés de se trouver ensemble, in a common emphasis on primitive war as a strategy to secure scarce and vital or strategic resources, such as land, protein, women, etc. Simply Cherchez la ressource and you will find the basic cause/deeper reason/ultimate explanation/the in-the-last-analysis rationale of that war. Though not all these scholars would call themselves such, I will, for the sake of convenience, call them the materialists or the school of materialism. Materialist theories are generally wider in scope than ecological and functionalist theories.

The following account is based on Ferguson’s (1984) eloquent exposition of the basic tenets and history of the materialist school in relation to the explanation of primitive war. The materialist approach to war focuses on war’s relation to the practical problems of maintaining life and living standards.

The roots of the materialist school sprouted in the 1940s when Hunt (1940), Mishkin (1940), Wagner (1940), Lewis (1942), Swadesh (1948), and Newcomb (1950) reanalyzed and reinterpreted Plains Indian, Iroquoian, and
Zulu warfare in thoroughly economic terms, i.e., as conscious, deliberate and violent struggles over material resources. In the case of the Iroquois, Hunt argued that their belligerence was based on attempts to control the fur trade (for reviews see Otterbein, 1973; Gramby, 1977; Trigger, 1978; Biolsi, 1984; and Ferguson, 1984b; 1990a).

Previously, economic motives were thought to underlie war only in state-level societies, or societies approaching that level. Lowie (1935) and Linton (1935) (on Plains warfare), and Malinowski (1941), Q. Wright (1942) and Turney-High (1949) (on primitive war in general) converged on this opinion, although exceptions to this rule were recognized. Generally, material gain was not believed to be an important motivating force in the wars of primitive societies, or if it was, it was only one of many types of motives. Sport, revenge, or prestige were thought to be at least as important (See § 5.3).

4.6.1 Land and Game

Materialist studies of primitive war have focused mainly on two issues: land and game (or protein).

One issue is the significance of land shortage, or scarcity of certain types of agricultural lands, in the war patterns of the western Pacific and parts of Southeast Asia. Many authors claim that war over land is common in those areas (Brookfield & Brown, 1963; Brown & Brookfield, 1959; Ember, 1982; Meggitt, 1972, 1977; Peoples, 1982; Rappaport, 1968, 1979; Sahlin, 1961; Vayda, 1969a,b, 1976, 1979; see also Bayliss-Smith & Feache, 1977). Others dismiss or downgrade land as an important factor in war (Hallpike, 1973, 1977; Koch, 1974a,b; Sillitoe, 1977, 1978; P.Brown, 1978, 1982).

A scarcity of agricultural land also was suggested as the basis of South American warfare, especially the fertile riverine lands (Lathrap, 1968, 1970; Morey & Marwitt, 1975; Roosevelt, 1980), but the proposition lost support for the interriverine areas after Chagnon (1967, 1977) documented an abundance of land for the Yanomamö (see also Carneiro, 1964; Murphy, 1970). Evaluation of these opposed views is difficult because of the distinction between land acquisition as a goal of war and its acquisition as a consequence of war (Ferguson, 1984).

The limited amount of game and other sources of animal protein in the Amazon region had been noted by several researchers (e.g., Carneiro, 1964; Denevan, 1970; Harner, 1972; Lathrap, 1968). Hickerson (1965) was the first to propose that war creates buffer zones that act as game preserves for hunted animals. Protein (or game) scarcity soon was cited as the limited resource underlying several South American war complexes (e.g., Durham, 1976; Gross, 1975; Harris, 1974, 1977, 1980; E.Ross, 1978, 1979; J.Ross, 1971; Siskind, 1973; see also A.Johnson, 1982). Not unexpectedly, this view was challenged by others who claimed that the protein-game scarcity did not exist and/or could not
explain warfare (e.g., Beckerman, 1979; Chagnon, 1972, 1977; 1983; Chagnon & Hames, 1979; Hames, 1979; Lizot, 1977, 1979; Nugent, 1981).

Scarcities of good agricultural land and animal protein sources have been implicated as sufficiently general considerations in war patterns to warrant broader testing of their significance. However, as Ferguson (1984) notes, the focus on land and game has created an oversimplified picture of ecological explanations. Whatever significance environmental phenomena have is a result of their interaction with a society of a given form. The salient environmental condition in any case may be something other than a scarce resource, as Morren (1984) in particular emphasizes. Nevertheless, competition for scarce resources very often is the basis of war. What type of resource may be involved will vary from one war pattern to another, and resources may be scarce due to many processes besides population numbers pressing on absolute supplies, as in cases when demand is affected by trade, contact circumstances, or political and economic differentiation. With higher levels of conflict and political development, actual scarcities of resources may be only one of several factors contributing to war.

The idea that war forces people from densely settled areas into less hospitable population 'sinks' has been argued, in varying formulations for the New Guinea Highlands (e.g., Meggitt, 1972) and for Amazonia, initially by Steward but especially by Lathrap (1970). The Steward-Lathrap hypothesis, succinctly, states that population growth in areas of high productivity ultimately stimulates warfare, which pumps population to progressively less productive areas, and people pushed into these marginal areas undergo a forced devolution to simpler, band forms of organization. Neither Steward nor Lathrap discuss the population effects of this 'population pump and sink'. Ferguson (1989) suggests that (1) forced population displacement, and the breakdown of complex forms of social organization, would be accompanied by major population losses; and (2) that the end points of these displacements, the areas of marginal productivity, may act as demographic sinks, with long-term population decline.

4.6.2 The Theoretical Basis of Materialism

The basic tenets of materialism have been exposed by Ferguson (1984 et seq.) as follows. People depend on resources from the natural environment to survive and live at traditionally acceptable standards. With a given economy - including technology, etc. - there will be finite amounts of some resources in a given area. This is not simply a matter of their presence, but also of their availability. Any change that increases demand for or decreases supply of a critical resource in a situation in which demand already is near the effective limit of that resource, can result in problems such as diminished per capita consumption, or depletion and degradation of the resource base.

Under these circumstances, a people can opt for one or a combination of three
basic alternatives to alleviate the problems. (1) They can intensify application of existing production techniques (with potentially adverse consequences such as depletion). (2) They can shift to a new economic organization (often involving substantial risks). (3) They can acquire more of the scarce resource from outside their original territory. Trade sometimes can succeed in this, or migration to uninhabited areas might relieve all pressure. But when trade in the needed resources is not feasible, and neighboring areas are not vacant, but populated by groups in similar circumstances, then acquiring more of a resource may mean going to war. War to gain territory or tribute, despite all its hazards, may be the most viable of the alternatives. The circumstance of resource scarcity seems common enough, and so does war. The absence of war is expected, on the other hand, in the absence of challenges to material well-being.

This materialist view contrasts with theories that explain war as generated by certain values, social structures, and so forth, in the absence of any material rationale. Such factors do effect the conduct of war and thresholds of violence. But a materialist theory directed at explaining the occurrence of war must hold these factors to be secondary, and not regularly capable of generating and sustaining war patterns in themselves.

In 1990 Ferguson presented a more sophisticated reformulation of his earlier version of cultural materialist theory, based on three mutually reinforcing premises. The first premise is the causal primacy of the infrastructure (demography, resource base) vis-à-vis socioeconomic and political structure and ideological superstructure. The second premise is that there may be competition between and selection among groups, and that behaviors affecting military ability can be made uniform in a region as groups with less effective military patterns are eliminated. Warfare can result in the elimination of local groups by death, dispersion, or absorption. If their elimination is due to some cultural pattern related to the practice of war, it is likely that other local groups will take appropriate steps to avoid a similar fate, even if that requires that individual interests and tendencies be overruled (see Alexander & Borgia, 1978).

The third and final materialist premise concerns motivation. All explanations of war are premised on some assumptions about human psychology, although these are usually not made explicit. The motivational assumption of materialism is that non-material goals will not regularly lead to war unless they accompany material objectives or incentives. That is because war itself typically involves major costs. This must be emphasized: war costs lives, health, resources, and effort. So, if the motivational premise is correct, we should expect peace if the probable costs of war are not outweighed by potential benefits.

This perspective is also applicable to understanding transitions from one phase of war to another. It is compatible with a perspective which stresses the role of
purposeful decisions made by thinking cultural beings, but contradicts the view that war is in some sense normal, and it is peace which requires explanation (e.g., Gregor, 1990; See Ch. 7).

The motivational premise can be expressed in one general proposition: Wars occur when those who make the decision to fight estimate that it is in their material interests to do so. This is a more precise and correct formulation than statements made previously (Ferguson, 1984) that wars are conflicts over scarce resources. The material interests of decision-makers can take the form of six strategic objectives of war: (1) to increase access to fixed resources; (2) to capture movable valuables; (3) to impose an exploitative relationship on another independent group; (4) to conquer and incorporate another group; (5) to use external conflict as a means of enhancing the decision-makers’ position within their own society; and (6) to forestall attacks by others. Objective (6) suggests an important clarification. A ‘material interests’ perspective does not imply that war is always deliberately chosen and planned. It may be so, or it may be an unplanned and unwanted last resort, the outcome of a ‘prisoner’s dilemma’ brought about as a result of previous self-interested strategic decisions. Even in such a situation, however, decision-makers will continue to act in accord with their perceived material interests.

These three complementary materialist premises form a base for a structure of explanation extending through various areas of social life. The model can be summarized as follows:

(1) **Infrastructural factors explain why war occurs.** In the absence of a pressing scarcity of some essential material resource(s), or when an existing scarcity can be addressed by alternatives less costly than war (e.g., intensification of production, trade, migration, etc.), the model indicates a low likelihood of war. The infrastructure also accounts for basic parameters of how warfare is actually practiced, and that in turn affects all other dimensions of war.

(2) **Structural factors explain the social patterning of war.** Kinship affects how people are grouped to fight. Economics translates resource scarcity into hostile relations between groups. Politics is the means through which antagonistic interests become purposeful, violent, group action. Generally, structural factors do not generate war in themselves. They do largely determine such matters as why a particular war starts just where and when it does.

(3) **Superstructural patterns shape the way individuals perceive and act on conditions related to war.** Calculation of material loss and gain necessarily must consider relevant properties of the existing social universe, and that includes the values and rules by which individuals are expected to live. But independent of infrastructural and structural patterns conducive to war, superstructural elements have a very limited effect.

The rules, values, and attitudes affect how war is practiced and thresholds of violence, but generally, they alone do not cause war (Koch, 1979). They may reinforce the resolve of warriors (Whitehead, 1990). The decision to fight
might be made according to material interest, but those ultimate benefits may seem to pale as men march toward possible death. The rules, values, and attitudes give an added and more immediate incentive. They are hammered into boys from an early age, sometimes accompanied by severe punishment for failure to learn them. Individual military accomplishment may be a prerequisite for achieving adulthood; and is reinforced for adults by shame for cowards, and prestige for accomplished warriors (Fadiman, 1982; Heider, 1970; Voget, 1964). Shame and prestige do not stand alone, however. They often have very tangible correlates, in marriages, in resources, and in influence (Chagnon, 1990; Meggitt, 1977; Turney-High, 1949; Zegwaard, 1959). All these within-group reinforcements will be backed up by the threat that war will ‘select out’ groups which have not sufficiently motivated their fighters. Consideration of all these means of reinforcing the resolve of warriors should eliminate any notion of war being the result of an ‘aggressive instinct’.

Ferguson then goes on to reconsider some common proximate-level explanations of war (such as revenge) within his materialist framework. Proximate-level explanations and theories of primitive war, and Ferguson’s relevant comments, will be considered in Ch. 5.

4.6.3 Criticism

Ferguson’s version of materialism is a very reasonable one. According to him, "War is never a simple function of the natural environment" (Ferguson, 1984). Materialism apparently is a powerful paradigm. There is, however, an inherent tendency of this school toward ‘vulgar’ materialism. War, any war, whether primitive or modern, is waged for the sake of securing material resources: Territory, protein, women, pigs, cattle, mineral deposits, oil, etc., and that is all there is to it (e.g., Eibl-Eibesfeldt, 1986).

Can competition for prestige, power, glory or even strategic interests be considered material resources? Is the equation of realistic conflict with materialist conflict a valid one? Not even the political realists (the Morgenthau school) define interests as only material ones. Security, for example, may be one of such ‘superordinate’ interests.

Brodie (1973) offers some devastating criticisms of materialist theories of contemporary wars. "Greed", he says, "is something we can all understand, though it is something we always attribute to others". Materialism at least has the advantage of dispelling any ‘killer instinct’ or ‘innate aggressiveness’ or similar constructs and quasi-explanations of primitive war; yet, at the same time, it points to another prime culprit of war: human greed, cupidity, acquisitiveness, pleonexia. So maybe we can expect the whole hilarious or acrimonious debate all over again: Is greed innate or acquired?, nature or nurture?; the frustration-greediness hypothesis; the learned acquisitiveness versus the innatist greed advocates; "Greed, the so-called-evil".
The focus on material causes leaves little room for consideration of human decision-making, and such concerns are often explicitly disavowed (Harris, 1964, 1974; Ross, 1980; Price, 1982). Such disclaimers notwithstanding, any theory of human behavior must necessarily presuppose a theory of motivation. It must at least incorporate some assumptions about why people behave at all.

The motivational premise of materialism has been questioned in a most caustic criticism by Robarchek (1990). In most materialistic approaches the motivational theory is straightforward: Human motivation is maximization of material interests. More is better, and more of everything is always sought, whether land, meat, or women. If such striving results in conflict with others, the material 'ends' are its 'cause' (Durham, 1976; Chagnon & Bugos, 1979; Biolsi, 1984; Price, 1984; Ferguson, 1984 et seq.; cf. also Barnett, 1983).

Robarchek contrasts this view with the following, which emphasizes the subjective and social meanings of people's actions. People are conceived of by him "as active participants in their own destinies, goal-directed decision makers in pursuit of particular goals and objectives. They pick their ways through fields of options and constraints, many of which are indeed biologically and environmentally conditioned". Motivation, thus, involves all the forces, factors, options, and constraints, both intrinsic and extrinsic, that influence the choices people make. What these conflicting paradigms boil down to is a conflict over the anthropological axioms, the implicit Menschenbild. On the one hand, man as a puppet on the strings of evolutionary or environmental forces, however conceptualized; on the other hand, man as an active and conscious actor creating his own drama (which is not always a tragedy).

Both terms of the 'material cause' equation, Robarchek (1990) argues, are open to serious question. Are material causes, in fact, 'material'? And are they 'causal'? That is, even if people specifically reason together and decide to go to war to acquire more wives, or more buffalo horses, or a better salmon stream, does the ultimate cause of the behavior lie in the 'material' end to be served? Or is it to be found in the cultural values that put a premium on salmon over other foods, or on buffalo horses as sources of status, or on multiple wives as symbols of virility or success? If we put aside the assumption of an innate drive to maximize material good, is greed a material cause? Put another way, if I own a Volkswagen and I steal a Mercedes, is the cause of my behavior 'material'? (Robarchek, 1990).

Can the need for security (which Ferguson lists as "to forestall attacks by others") really be classified as a material need?12

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12 The basic fallacy of materialism may simply be its conflation of the dimensions material (vs non-material), rational (vs non-rational) and realistic (vs non-realistic). It implicitly presupposes that only conflicts for material resources are rational and realistic, and, conversely, that rational actors only come into (realistic) conflict over material resources. Security, which Ferguson is
Robarchek also questions the proposition that only material factors are relevant to the explanation of behavior. From there, he says, the ontological assumption is made that only material causes are 'real', thereby banishing human intentionality from the realm of science. Marvin Harris, a leading theorist of materialist anthropology, for example, argues that assumptions that the human actor knows the purpose or goal or meaning of his behavior "are totally alien to the spirit of science" (Harris, 1964).

It might be worth noting that behaviorism rested on precisely this same transformation; the behaviorists reasoned that since only observable behavior was measurable and objectively verifiable, all else was irrelevant, leading academic psychology to spend half a century digging itself into a hole from which it has only recently begun to emerge (Robarchek, 1990; see also Fromm, 1973).

Perhaps as a consequence of the difficulties inherent in teleological functionalism, some materialist approaches, while still seeing the ultimate explanation (cause) of warfare in the final state toward which it progresses (acquisition of territory, control of trade, etc.), stress initial material conditions. Climatic change, new trade opportunities, and so on, are seen as the material determinants of warfare. There are a number of problems with this approach, the most important of which is the mechanistic and deterministic assumption which underlies it. This assumption is that having identified even a necessary condition for human behavior is to have explained the behavior by virtue of some (never specified) mechanical linkage through which the material condition automatically generates the behavior. Both initial and final cause arguments are usually based on the demonstrated (or assumed) co-occurrence or correlation of material events or conditions with warfare: climatic change, population growth, annexation of territory, numbers of offspring, etc. A correlation is, of course, only an empirical generalization about the co-occurrence of events which, in itself, tells us nothing about causation. Causal statements require the postulation of processes connecting the correlated variables. Noting the correlation between swidden gardening and malaria, for example, tells us nothing, in the absence of intervening processes, about the efficient causes of the disease. The generalization will, in fact, make such understanding impossible if we assume, as do most materialist analyses (on the presumption of the primacy of material causes) that the correlation already describes the causal process: climatic change causes warfare; protein shortage causes warfare; resource competition causes

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eager to categorize as a material resource, is actually of quite a different order. It can neither be possessed nor exchanged. Its only similarity with material resources is that it always seems to be in short supply, necessitating a never-ending quest, which by its very nature reduces the 'volume' of security for all actors involved (security-dilemma; See Ch. 7).
warfare, and so on (Robarchek, 1990).

The most common solution to the problem of linking material 'cause' with behavioral 'effect', Robarchek argues, has been to relegate the intentionality to Culture, reifying and ascribing purposes to it, to "make society and culture think for the people" (Nadel, 1953). Somehow, the 'correct' (in terms of inclusive fitness or ecological efficiency) decisions were institutionalized as part of the culture and individuals thereafter do not have to make decisions, they simply obey the dictates of their cultures. This sort of 'solution' to the problem of motivation is obviously also unsatisfactory. It simply pushes the decisions back into the past where the analyst does not have to deal with the processes involved. More seriously, it entails a degree of cultural reification and a level of cultural determinism that cannot be taken seriously.

The shared sets of values, beliefs, meanings, and assumptions, i.e., culture must be an indispensable part of any explanation of any human behavior, including warfare. Cultural traditions certainly do define certain options as more desirable than others, and certain methods as legitimate and others as illegitimate means to those ends.

Thus, for example, like the Yanomamö, most Semai men would probably like to have sex with more women than they do. Yet no Semai man ever gets up one morning, turns to his brother-in-law and says, "Let's get a bunch of the guys together and go raid the next valley and see if we can kill some people and steal some women". For Semai, murder and rape are simply not legitimate means to any ends, no matter how 'objectively' desirable.

However, while culture provides us with at least a partial answer to our questions about the basis for choices among options, considered as a determinant it, too, is unacceptable. The existence of a culturally institutionalized pattern of behavior (such as Yanomamö warfare) is at most a necessary, and not a sufficient condition for its performance. (It is not, in fact, even a necessary condition; if it were, culture change would be impossible). Ever since the Kinsey report, for example, it would be difficult to argue that marital infidelity is not an important component of the American cultural-behavioral inventory. That does not mean, however, that we are all constantly occupied every day in cheating on our spouses. Nor do the Yanomamö, even with their culture of war, fight, rape and kill every day, or every week, or every month, or even every year. That is to say that the individuals and groups must consciously decide whether or not to put their culturally-legitimized behavioral potentiality into action (Robarchek, 1990).

When the subject is human behavior, materialist explanation must at least acknowledge (even if it does not address) the question of how the posited
A harsh criticism of materialism and related approaches may be that it is irrefutable or nearly so. One can always invoke a limiting resource, be it land, protein, or something else again, in any conflict. It seems so trivial a pursuit: *Cherchez la ressource*. It also tends to obscure the fact that it is human beings, in certain cultures and with that culture's idiosyncratic notions, cognitions and constructions of reality, under certain circumstances, in certain political constellations and facing certain deprivations or certain forms of the security dilemma, who perceive and define what is a vital resource and decide whether or not it is worth fighting for: "To put it briefly, people don't fight for resources but for ideas of resources. Some of these ideas are closer to the 'real' importance of these resources in terms of metabolic needs, others are more distant from such realistic assessment... a culturalist notion of resources emphasizes the necessity of mental processing of resources or any other objects of human striving" (Meyer, 1987).

For example, in the endemic stage of primitive war cultural ideas and definitions of resources are mainly metaphysical, magico-religious, or animistic notions of power (sometimes residing in heads or other trophies), or restauration of a threatened universe or restauration of the legitimate *status quo ante* (e.g., the Anggor of New Guinea: Huber, 1975). What strikes most researchers of primitive war is the virtually total absence of any 'economic' motivation at this stage. One fairly recent example may suffice: Kuschel (1988) describes in unparalleled detail the way of life and the all-powerful code of honor which dictated the absolute necessity of revenge in blood among the inhabitants of Bellona (Solomon Islands). Almost all of these killings on Bellona took place purely in revenge for a loss of honor, and seldom had any social or economic advantage for the murderers, who often led a life filled with isolation, hunger and fear in the jungle after the attack. Furthermore, women and small children were not killed or harmed, for the same all-powerful code of honor also contained the admonishment that the gods looked upon attacks on women and children as shameful, and not worthy of an honorable man.

It may be objected that the preceding theories (especially functionalism and materialism) are more proximate-level theories, i.e., theories about the possible causes of individual wars, and not so much theories about the evolutionary origin of war (the ultimate-level problem). As we saw, functionalist theories are even inherently incapable of addressing the question of evolution. These theories have been discussed in this chapter because of their theoretical coherence with the ecological theories and common emphasis on land and (material) resources in relation to (cultural) survival. The following suite of theories, however, do attempt to explain the evolutionary origin of human warfare more or less explicitly, and more or less successfully.
4.7 Group Territoriality and the Evolution of War

In the ethological theory of the 1960s and 70s, ‘aggression’, as Pettman (1975) noted, is inextricably interwoven with the concept of ‘territoriality’. In anthropology, territorial divisions of human groups have been claimed to be virtually universal (Carr-Saunders, 1922; Malinowski, 1941; Wynne-Edwards, 1962; Murdock, 1963). Small wonder that it was an ethologist to propose territoriality as an explanation of (the origin of) human warfare. "In order to understand what makes us go to war", Tinbergen (1968) contends, "we have to recognize that man behaves very much like a group-territorial species". As a social, hunting primate, Man must originally have been organized on the principle of group territories. Having thus implicated group-territoriality in the evolution of human warfare, Tinbergen goes on to delineate other preconditions: The upsetting of the balance between aggression and fear (to which he adds the somewhat arcane assertion: "and this is what causes war"), is due to at least three other consequences of cultural evolution: the invention of long-range weapons which make killing easy, sophisticated indoctrination, increased population pressure, and other factors. In a later article (Tinbergen, 1976) he contends: "For a long time the step towards actual killing must have been prevented by the evolution of protective, cultural codes. But modern man, i.e., man from at least 10,000 years ago, has taken the disastrous step to war by using his unique capacity for foresight and experience, and recognising that under certain circumstances killing does pay, because a dead man will not return to fight again". In order to account for this transition, he discusses what might be called a process of ‘emancipation of violence’, i.e., ‘aggressive behavior’ in the service of a number of different functional and motivational systems; and he introduces the concept of ‘super-motivation’. Man is the only mammal to blur the sharp dividing line between intraspecific aggression and interspecific predation: "[T]he enemy is to the warrior not merely another human being; he is at the same time a dangerous predator, a parasite, and/or an obstacle to be removed". Thus, war, insofar as the enemy is dehumanized, becomes interspecific killing. Tinbergen points out that interspecific forms of agonistic behavior, in contrast to intraspecific forms, have either very weak inhibitory mechanisms or none at all.

Subsequently (Tinbergen, 1981), he develops his thesis of group territoriality as the root of war more fully, and he identifies a number of decisive and facilitating factors that have played a part in changing the initially useful system of group territoriality into the forceful, direct competition called war. As the decisive factors he mentions: (1) The insight that it is more practical to kill enemies than to scare them off; (2) Man’s long-term foresight made him realize the potential of planned conquest; (3) The ‘super-motivation’ discussed
above.
As war-facilitating factors he sees: increasing dependence on land; development of long-range weapons; increased population density; improved communication; fear and distrust between nations; etc. And he concludes: "War, then, has its origins in group territoriality, a system of indirect massive killing of surplus individuals in the interest of the well-being of the victors".

Territoriality had been singled out as a root cause of war even before Tinbergen’s writings by Bates (1955) who stated: "[M]an’s ferocity to man does have one clear biological counterpart in territoriality. If war has any innate, ‘instinctive’ basis, it may most likely be found to be a derivative of the reactions associated with defense of territory, so widely characteristic of the vertebrates" (Bates, 1955; cf. also Eyles, 1971; Malmberg, 1980). Reynolds (1966) also relates warfare to territoriality, though he regards territoriality as a relatively recent phenomenon, from the time that Man became sedentary: "[N]ow that communities were attached to particular territories as an ecological necessity, the advent of other tribes, still nomadic, on their land would be viewed with hostility; or, when a community grew too large for its land, a subcommunity might break off and search for new land on which to hunt or to cultivate or to graze its domestic animals. In these circumstances territoriality and inter-group aggression began". This appears to be a popular view in the literature on the subject; Cf. Carneiro, 1970; van Sommers, 1972; Galtung, 1973; Vine, 1973; Harris, 1975; among many others.

Ardrey (1969) set out to demonstrate that Man defends territory by ‘instinct’ (the so-called *Territorial Imperative*). Territory, he admits, does not cause war as such, but those who would transgress territorial boundaries must weigh thereby the strong possibility that war will occur. By animal example, he identifies two basic kinds of human society: (a) the nation, isolating itself through outward antagonism, and (b) the *noyau* held together by inward antagonism and mutual animosity.

Another example of more or less naïve biologism is Alcock's (1972) proposition: "War is an overt action resulting from man's innate aggressiveness. Like other social animals, groups of men defend their home territories and aggressively seek to own or control larger territories".
4.7.1 Criticism

Ardrey’s formulations have been criticized as loose, unscholarly and based on selective, or nonexistent evidence, especially since Man’s collateral relatives among the apes are "singularly lacking in simple territorial behavior" (Crook, 1968; Cf. Reynolds, 1966; Elms, 1972; King, 1976; Note that this was written before the discovery of the warfare between chimpanzee territorial groups). Furthermore, "His definitions have been assailed as flimsy concertina constructs that disintegrate on touch, and his use of the term 'territory' is one of these" (Pettman, 1975).

According to E.O. Wilson (1975), it is reasonable to conclude that territoriality, in the broad sense of any area occupied more or less exclusively by an animal or group of animals through overt defense or advertisement, is a general trait of hunter-gatherer societies. In a review of the evidence, Wilmsen (1973) found that these relatively primitive societies do not differ basically in their strategy of land tenure from many mammalian species. Wilson points to tribalism, ethnocentrism and xenophobia in producing fear and hostility among territorial groups. Subsequently (Wilson, 1978), after discussing the economic-defendability model of territoriality, he asserts that "We know that bands of hunter-gatherers around the world are commonly aggressive in their defense of land that contains a reliable food resource", referring to the research of Dyson-Hudson & Smith (1978). This finding could, however, not be confirmed by Cashdan (1983), who studied four Bushman groups. The most territorial of these groups were found where resources were scarcest and most variable.

One might well object that Tinbergen’s theory is not really about 'group territoriality' (it does not seem to play a large role in his theory, either as a necessary or as a sufficient condition), rather his theory is a modest psychological one, which specifies some psychological preconditions of the origin of predatory warfare. Furthermore, it is not only territorial defense which has to be explained - obviously territorial defense itself does not constitute war (it takes two to tango) - but the reasons and motives of territorial transgressions and violations, territorial conquest, etc. Territorial defense is immaterial without its correlative: offense.

What evidence do we have? In a quantitative survey of 50 primitive societies, Naroll (1966) found that territorial change is almost always brought about by warfare and has a strong positive correlation with frequency of war. Otterbein (1970) found the level of military sophistication to be the major cultural element in the tendency of a society to expand its territory. Russell (1973), however, indicates that the psychocultural element of 'ferocity' is even more strongly related to territorial expansion. A high level of ferocity may lead to internal fighting and disintegration. It has to be controlled by authoritarian measures in order to produce territorial expansion (Cf. also Eckhardt, 1974;
Territoriality as a causal factor in primitive warfare and feuding has been described for hundreds of peoples (extensive reviews by Holsti, 1913; Davie, 1929; and King, 1976; among others). King (1976) concludes his review: "[A] number of hunter-gatherers are known to have regarded the violation of their land and/or resources as an occasion for violence. A few accounts suggest that violence sometimes occurred on a relatively large scale". Yet, most studies of primitive peoples indicate that "Effective conquest, as the term is understood in civilized warfare, is practically unknown among primitive peoples, since, owing to their mode of living, they rarely desire territory for permanent use, and since they lack the political development necessary to extend their dominion" (Davie, 1929), and that the conception of rigidly bounded territory as inviolable property to be strictly defended was lacking in the early human hunters (Fritsch, 1872; de Quatrefages, 1884; Curr, 1886; Ellis, 1890; Gardiner, 1898; Keller, 1906; Torday & Joyce, 1906; Tylor, 1909; Sumner, 1913; Havemeyer & Keller, 1917; van der Bij, 1929; Davie, 1929; Q. Wright, 1942; Service, 1966; 1968; Steward, 1966; Turnbull, 1968; Anderson, 1968; Birdsell, 1970; Keith, 1972; Vine, 1973; Shepard, 1973; Meyer, 1977; Melotti, 1984 et seq.; Campbell, 1985; Dyer, 1985; Gellner, 1989; Tiger, 1990; a.o). Q. Wright's (1942) conclusion that "Wars seldom have the object of territorial aggression or defense until the pastoral or agricultural stages of culture are reached, when they become a major cause of war" may still be considered valid.

In an early review Vine (1973) concluded: "[T]he genetic basis for the strict group territoriality which agricultural man has shown in certain cultural contexts and ecological situations is likely to be very slight, and to be little implicated in the basic causation of human aggression". As Chagnon (1968) and Carneiro (1968) have noted, the causes of warfare in Amazonia are not associated with economics, and successful warfare does not result in reassignment of resources or territorial conquest (contradicted, however, by Morey & Marwitt, 1975; see also Ferguson, 1984). Also in New Guinea, territorial adjustments are a possible but not inevitable outcome of war (Paula Brown, 1982).

Regarding early Man's alleged group territoriality, probably Schaller & Lowther's (1969) apt remarks are closer to the truth: "If the early hominids relied predominantly on hunting for subsistence, they obviously had a choice of systems open to them. They could be resident, either territorial or nonterritorial... Or they could be migratory, following the herds as the wild dogs do. Or they could be resident for part of the time and nomadic for the rest, depending on the season. We believe that all these systems were used, that each species and population within a species adapted itself to local circumstances just as the wolf and lion do". Also Vallois (1961), on the basis of Paleolithic skeletal evidence, concluded that "All evidence suggests that the Paleolithic bands were not territorial units, that they were capable of large
migrations, and that sexual relations must have existed between them"

Finally, Van den Berghe (1974) argued that since endemic warfare between human bands has probably been universal or nearly so for hundreds or thousands if not millions of years, it is quite possible that territoriality at the band level developed as a means of regulating inter-band aggression. Territoriality became a way to avoid continuous warfare.

In contemporary warfare, on the other hand, territorial disputes have been perhaps the most important single cause of war between states in the last 2 or 3 centuries (See Ch. 8 in which territoriality as an evolved strategy in hominid/human evolution, in relation to economic defendability, will be more fully discussed.

4.8 Hunting and Warfare: 'Carnivorous Psychology' Theory

The earlier men were hunting men, and to hunt a neighbouring tribe, kill the males, loot the village, and possess the females was the most profitable, as well as the most exciting way of living. Thus were the more martial tribes selected, and in chiefs and peoples a pure pugnacity and love of glory came to mingle with the more fundamental appetite for plunder... Modern man inherits all the innate pugnacity and all the love of glory of his ancestors.

William James (1910)

Hunting, according to 'carnivorous psychology' theory, is considered to be the master behavior pattern of the human species. Man - so the argument goes - evolved as a hunter, he spent over 99% of his species history as a hunter, and he spread over the entire habitable area of the world as a hunter (e.g., Laughlin, 1968; Lee & DeVore, 1968; Freeman, 1973; Nelson, 1974; Tooby & DeVore, 1987; Barkow, Cosmides & Tooby, 1992). The 'predatory adaptation' achieved by the Australopithecinae probably involved "a behavioral transition from a retreating to an attacking pattern" (Freedman & Roe, 1958), and to related changes of a phylogenetic kind, integrating the morphological, physiological, genetic, and intellectual aspects of the human organism and the populations; during which, as Freeman (1973) contends, "carnivorous curiosity and aggression have been added to the inquisitiveness and dominance striving of the ape".

With these considerations in mind, Washburn and his associates (Washburn, 1959; Hamburg, 1963; Washburn & Avis, 1958; Washburn & Howell, 1960; Washburn & DeVore, 1961; Washburn & Hamburg, 1968; Washburn & Lancaster, 1968) postulate a special learning disposition in the human animal for hunting and killing, with its own intrinsic source of satisfaction, pleasure and lust. This learning disposition would have been selected for during the - very long, in evolutionary terms - period during which the protohominids as
well as *Homo sapiens* lived as nomadic hunters in small tribal communities. The hunting and killing of prey animals facilitated, in this view, the transposition to the hunting and killing of conspecifics - and even torture and the (vicarious) enjoyment of cruelty. Crook (1968) holds that the emergence of human territoriality involved shifts in social traditions in relation to ranging and an acquired lowering of the threshold for aggression towards outgroups as a result of repetitive experiences of hunger and ultimately an intellectual appreciation of its cause. Aggression itself would have become increasingly complex in manifestation and often separated in time from the events that lowered the threshold for its expression. The hunter’s pleasure in killing prey, Crook argues, may also have arisen at this time and the ‘cruelty’ inflicted on the game animals subsequently became available for "translocation into a social agonistic context". Washburn and his associates also point to the popularity of war: "[U]ntil recently war was viewed in much the same way as hunting. Other human beings were simply the most dangerous game. War has been far too important in human history for it to be other than pleasurable for the males involved" (Washburn & Lancaster, 1968). This complex of factors the authors call Man’s ‘Carnivorous Psychology’.

The situation relative to human aggression can be briefly stated under three headings: First, man has been a predator for a long time and his nature is such that he easily learns to enjoy killing other animals. Hunting is still considered a sport, and millions of dollars are spent annually to provide birds, mammals, and fish to be killed for the amusement of sportsmen. In many cultures, animals are killed for the amusement of human observers (in bullfighting, cockfighting, bear baiting, and so forth). Second, man easily learns to enjoy torturing and killing other human beings. Whether one considers the Roman arena, public tortures and executions, or the sport of boxing, it is clear that humans have developed means to enjoy the sight of others being subjected to punishment. Third, war has been regarded as glorious and, whether one considers recent data from tribes in New Guinea or the behavior of the most civilized nations, until very recently war was a normal instrument of national policy and there was no revulsion from the events of victorious warfare, no matter how destructive. Aggression between man and animals, between man and man, and between groups of men has been encouraged by custom, learned in play, and rewarded by society (Washburn & Hamburg, 1968).

The Carnivorous Psychology theory proposed by Washburn and associates was already anticipated by William James in his *Principles of Psychology* (1890) and *The Moral Equivalent of War* (1910), and by Frobenius (1914) who
formulated the hypothesis that war originated from the man-hunt. "If evolution and the survival of the fittest be true at all", James (1890) wrote, "the destruction of prey and human rivals must have been among the most important of man’s primitive functions, the fighting and the chasing instincts must have become ingrained... It is just because human bloodthirstiness is such a primitive part of us that it is hard to eradicate, especially where a fight or a hunt is promised as part of the fun". In a similar vein, Pfeiffer (1972), referring to Southwick, Beg & Siddiqi's (1965) description of group violence among rhesus temple monkeys, writes: "Even though war like language is uniquely human, it has its roots at the subhuman level. Indeed the case of the temple monkeys suggests how war may have arisen as an established institution among men. As long as man lived in the wilderness, the excitement and glamour of the hunt had meaning in the context of survival, in promoting aggression against prey and predators. Man deprived of hunting as a major source of prestige, deprived of wild species as a major focus of aggression, began playing the most dangerous game of all. Men began to go after other men as if their peers were the only creatures clever enough to make hunting really interesting. So war, the crudest and most elaborate and most human form of hunting, became one of the most appealing ways of expressing aggression".

Lenski & Lenski (1987) present the rather unconvincing idea that in horticultural societies warfare serves as a psychic substitute for the excitement, challenge and rewards which hunting previously provided.

4.8.1 The 'Killer Ape' Hypothesis

In 1924 Raymond Dart discovered Australopithecus (literally, 'Southern Ape') in South Africa. In a series of 39 papers published between 1949 and 1965, Dart reviewed the archaeological evidence of our hominid-becoming-carnivore ancestors found at Makapansgat. On the basis of fractured skulls and bone fragments of baboons and Australopithecines, Dart, in an article entitled "The predatory transition from Ape to Man" (1953) concluded that "[M]an's predecessors differed from living apes in being confirmed killers". Killers, that is, of both prey animals and conspecifics, in spite of the fact that their brains were still relatively small (ca. 400-500 cc). Yet, Dart asserts,

This microcephalic mental equipment was demonstrably more than adequate for their crude, omnivorous, cannibalistic, bone-club wielding, jaw-bone clieving, Samsonian phase of human emergence... [the so-called 'osteodontokeratic culture']... The loathsome cruelty of mankind to man forms one of his inescapable, characteristic and differentiative features; it is explicable only in terms of his cannibalistic origins (Dart, 1953).

Dart finds it only too easy to fit this primordial mark of Cain to Man’s
evolutionary origin:

"The blood-bespattered, slaughter-gutted archives of human history from the earliest Egyptian and Sumerian records to the most recent atrocities of the second World War accord with early universal cannibalism, with animal and human sacrificial practices or their substitutes in formalized religions and with the worldwide scalping, headhunting, body-mutilating and necrophiliac practices of mankind in proclaiming this common bloodlust differentiator, this mark of Cain that separates man dietetically from his anthropoidal relatives and allies him rather with the deadliest of Carnivora" (Dart, 1953).

In a later book, *Adventures with the Missing Link* (1959), Dart analyzed an Australopithecine jaw and concluded that it was "bashed in by a formidable blow from the front and delivered with great accuracy just to the left of the point of the jaw". The weapon, he believed, was an antelope humerus. Australopithecines were in his view definitely nasty creatures: "They were murderers and flesh hunters; their favourite tool was a bludgeon of bone, usually the thighbone or armbone of an antelope".

Dart’s ‘killer ape’ hypothesis is, as E.O. Wilson (1975) aptly remarked, "very dubious anthropology, ethology, and genetics". Conceivably the issues raised by Dart about Man’s ‘genetic drive to kill’, Ferrill (1985) says, might have remained in the obscurity of academic books and journals had it not been for his enthusiastic disciple, Robert Ardrey.

Dart’s views inspired the first of Ardrey’s series of popular books. The basic tenet of Ardrey’s (1961) *African Genesis* is that contemporary Man is a descendant of a race of "terrestrial, flesh-eating killer apes", and that this fact *an sich* explains the aggressiveness and warlikeness of modern *Homo s. sapiens*: Man is a predator, with all the pleasure and lust in killing springing from his predatory nature. Australopithecus, the African ancestor of modern humans, was a rather primitive primate, who, out of sheer physical weakness - not being equipped by nature with claws, fangs, hooves, horns, or agility in locomotion - began to use weapons. In Ardrey’s line of thought tools are identified with weapons, and these weapons - indeed, all human culture - result from Man’s predatory nature. Culture is a product of the use of weapons.
4.8.2 A Reformulation of the Redirection Hypothesis

Humans emerged, according to Melotti (1984, 1986), from their anthropoid background because, among other things, they began to use weapons. Yet, they did not evolve beyond the anthropoid level for this same reason, as Dart (1953, 1959) suggested and Ardrey (1961) emphasized by stating that "man has not fathered the weapon, but the weapon has fathered man". Human destructive aggression is not, however, the outcome of an incoercible instinct to kill, dating back to our ancestral 'wild heritage', as Dart and Ardrey and other scholars (e.g., Carrighar, 1965) have maintained. It is, rather, the consequence of some relatively recent developments in our evolutionary history which have entailed a hiatus between our phylogenetic inheritance (not so different from our close cousins, the great apes) and our newly-acquired capacity to make war. Archeological findings do not support the assumption of important warlike activities among Paleolithic bands and tribes. Moreover, very low population density, together with the small size of the groups involved, their loose social organization, and their dispersal over very large areas, made lethal conflicts rather unlikely or at least infrequent. In fact, the development of human destructiveness seems to be related to the growth of complex societies, i.e., societies with a hierarchical division of labor, social classes, and state-like organization. Nevertheless, intraspecific intergroup aggression could have been instigated in Paleolithic times by competition for some critical resources, such as drinking water, big game, and vegetable food (Bigelow, 1969; Eibl-Eibesfeldt, 1975), or even for women, the highly strategic 'good' that could convert the other resources controlled by the males into offspring (Borgia, 1980).

However, Paleolithic bands and tribes very probably practised exogamy (Melotti, 1979), which entails gene exchange among groups. This seems to rule out any hypothesis of continual wars between them. Actually, a population could hardly survive if its constituent groups (usually bands among hunter-gatherers, or clans or moieties among horticulturalists) tried to exterminate each other regardless of the fact that they, to a considerable extent, shared the same gene pool13.

13 In a subsequent contribution (Melotti, 1987), he expands upon the effects of exogamous and endogamous rules on intergroup conflict — a theme that has been almost completely overlooked, he claims, by recent research on the biological bases of peace and war. This is a rather strange fact, since the relevance of this custom for peace and war in primitive peoples had already been pointed out by one of the founding fathers of cultural anthropology, Edward B. Tylor (1889). Exogamy, according to him, was an extraordinary factor of peace, for it developed a bond of solidarity between the groups by making them dependent on each other for wives and children. For primitive men, who generally had no ties of other sorts outside of their groups, the choice was, as Tylor emphasized, "between marrying out and being killed out". Far from being only an 'exchange of women', as it is usually defined by social and cultural anthropologists, exogamy is also, and basically, an exchange of genes. Therefore, it does not serve
Melotti’s (1986) interpretation of the evolutionary origins of human aggressiveness is the following: Owing to their original lack of disposition for interspecific aggression, our hominid ancestors, in their transition from anthropoid life to systematic hunting, were obliged to derive the biological basis necessary for the new way of life from the potential for intraspecific aggressiveness that is common to all primates. In effect, human hunting (like hunting behavior in chimpanzees) appears to be much more aggressive than the predation practised by carnivores, and this seems to confirm the idea that human interspecific aggression is the result of the redirection of an originally intraspecific disposition against extraspecific targets. Middle and Upper Paleolithic hunting probably selected for increasingly aggressive individuals: for, to face big mammals, such a vulnerable being as Man needed a great endowment of aggressiveness. When, at the end of the last glacial era (about 10,000 years ago), big-game hunting became impossible in a large part of the then inhabited world, Man lost the main interspecific outlet for his increased aggressiveness. Thus, this drive, which was already intraspecific at its origins, was again directed at its former target: Fellow members of the human species.

a merely economic function, as some well-known anthropologists have suggested (e.g., Frazer, 1918, Lévi-Strauss, 1949, 1955, and Fox, 1967, who maintain that in exogamy women are treated only as a kind of exchange goods), but it also serves a primary biological function.
4.8.3 The 'Fear-Biter' Hypothesis

Diametrically opposed to the foregoing theories, Scott (1974 et seq.; Cf. also Simeons, 1960) proposed a picture of early Man as essentially a timid, relatively unaggressive 'fear-biter'. Scott holds that early Man was not basically adapted as a predator, and that he has only become one secondarily by the use of tools. Early men and women must have been few in numbers and relatively weak and defenseless; they may have been able to survive only by being extremely timid and wary of danger and, secondarily, by pretending to be brave. "We therefore arrive at a picture of primitive man, not as a fierce, dangerous, and constantly aggressive individual but rather as a relatively small, slight, and fearful being, finding safety only in groups, sometimes being called upon to act bravely, but actually inflicting damage only when extremely fearful... People become violent when they are afraid, when they are trapped, and when they are overwhelmed by circumstances. Under these conditions they often act like cornered rats or fear-biting dogs, without regard to either the amount of injury which they may inflict or the risk to their own lives" (Scott, 1976). In short, instead of the picture of early Man as a bloodthirsty savage or cannibalistic killer ape, Scott suggests the alternate picture of the timid fear-biter. In a later article (Scott, 1981), he adds: "Once tools were developed for hunting prey animals, it must have been quickly obvious that the same tools could be used against other humans... It must also have occurred to early humans, as it does to rhesus monkeys, that two weaker individuals can overcome one strong one by combining an attack. Such cooperative agonistic behavior could easily develop into war, a supertool whose rapid cultural evolution has been documented since the dawn of history".

Scott (1980) contemplated on the relationship between hunting, predation and agonistic behavior. Group hunting contains elements of at least two behavioral systems: allelomimetic behavior whose primary function is probably providing safety, and defense against injury (from the prey animal). Also involved in a successful hunt is a food reward and social approval. Group attacks against an individual or against another group involve many of the same motivational and emotional elements. Thus there is a possibility that group hunting and group agonistic behavior have similar underlying emotional components. The other obvious connection between human hunting and agonistic behavior is that the same tools can be used in each. Finally, however, Scott issues a warning: "We know almost nothing about the neurophysiological bases of either group hunting or warfare, although enough is known about the latter to indicate that it is entirely different from that involved in interindividual combat".
4.8.4 Criticism

Apart from the fact that Carnivorous Psychology theory is marred by confusion among the concepts 'predatory', 'carnivorous' and 'hunting', what is the evidence to substantiate its claims?

First, as Fromm (1973) emphasized, the idea that hunting produces pleasure in cruelty and torture is unsubstantiated and most implausible. Hunting, as practised by primitive hunter-gatherers at least, is not an aggressive activity at all (e.g., Turnbull, 1965). There is also no evidence for the assumption that primitive hunters were motivated by destructive, or even sadistic, impulses. On the contrary, there is evidence that they had an affectionate feeling for the killed animals and possibly a feeling of guilt for the kill (Mahringer, 1952; Lewinsohn, 1954; Rensberger, 1977; Howell & Willis, 1989), as was already noted by Frazer in the 19th century.

Fromm especially criticizes the assertion that Man has a drive for and pleasure in killing, although, as Nelson (1974) remarks, "Fromm's interpretation that the pleasure was not in the killing but in the development of hunting skills is no more compelling than Washburn's". Yet, when we examine the actual motives of killers in our contemporary society, Claiborne (1974) explained, we find that 'love of killing' as such is irrelevant to nearly all of them. Even trained combat soldiers are for the most part not trigger-happy killers (Stouffer et al., 1949/50; van der Dennen, 1980; 1983).

Finally, what body of information we have about contemporary primitive hunter-gatherers does not indicate that hunting is conducive to destructiveness, cruelty, or warfare (Fromm, 1973; Sahlins, 1960; Turnbull, 1965; Service, 1966; among many others).

Furthermore, in the last decade or so, it has become apparent that hunting may not have been so important to the survival of our hominid ancestors as was previously thought. Anthropologists began to realize that, in the hunting-gathering societies that still exist, it is the women, not the men, who provide most of the food. The vegetable foods that the women gather account for something like 80% of the total caloric intake. Furthermore, hunting is not the only activity that adds animal protein to the diet. The women gatherers collect not only plants, but also such foods as frogs and birds’ eggs (e.g., Morris, 1984; See also Ch. 8).

The notion of an aggressive drive, envisaged by Melotti to be some kind of energetic reservoir to tap from, is probably not warranted. There is no evidence whatsoever that big-game hunting requires specifically aggression as a prime motive or even co-motivation. The hypothesis that Paleolithic hunting selected for increasing aggression is therefore very dubious. Finally, the aggression-warfare linkage itself is highly problematic (van der Dennen, 1986). The redirection hypothesis advanced by Melotti thus seems to have a very weak
Scott’s view of the fear-biter early hominids accords rather well with modern ethological models of fear and aggression in mammals as provided by Archer (1976), Rasa (1981), Scott (e.g., 1981), and van der Molen & van der Dennen (1982; See also Ch. 5); and with human neuropathological evidence (van der Dennen, 1983a). Furthermore, Scott’s view is well in accordance with the analysis of causes and motives of primitive warfare as presented by many earlier anthropologists (e.g., Whiffen, 1915), contemporary anthropologists (e.g., Chagnon's [1977] analysis of the Yanomamö 'show of ferocity'), and most recently by Meyer (1977 et seq.) who states that the causes of the permanent mutual threat of the societies in the 'primitive' stage are neither to be found in some primordial aggressiveness permanently urging to express itself, nor in some economic motive transcending all cultural boundaries. Rather, the most general cause seems to be fear\[14\].

It has also become apparent by now that Dart's and Ardrey's sanguinary and phantasmagoric slaughterhouse imaginations have more (horror-)literary than scientific qualities. "First, the question of the incidence of interpersonal violence among australopithecines remains an open one. Second, it would appear that the Makapansgat fossils are not the tools and weapons of an ancient culture, but the leftovers of many carnivore meals" (Leakey, 1981). Furthermore, that the 'killer' prehominid Australopithecus africanus was a 'ferocious carnivore' and that this fact accounts for modern Man's aggressiveness is far from convincing. There is hardly any evidence that carnivores exhibit more, or more intense, intraspecific aggression than other mammalian orders. Herbivores, too, have it in their behavioral repertoire, as two fighting bulls demonstrate (Eibl-Eibesfeldt, 1963; Rapoport, 1965). "Today the vast majority of experts familiar with the fossil evidence agree that while man's ancestors appear to have been hunters who killed animals and consumed quantities of meat, there is no suggestion that they were driven by a blood lust any more than any other predator. More important, there is certainly no hint that they killed each other more than does any animal species known today" (Rensberger, 1977). Ardrey's 'killer apes' may not even be Man's ancestors at all, "but rather an unsuccessful side branch in the line of human evolution" (Nelson, 1974; Cf. Rensberger, 1977; Wood, 1992b).

In a recent and extensive review of the evidence of ancestral human hunting, Trinkaus (1987) concludes that hunting is a rather recent phenomenon in human evolution (See § 3.10). A conclusion, by the way, which seems to cast...
severe doubts on the view that hunting has been the ‘master pattern’ during hominid/human evolution.
Finally, of course, if such biological freaks as ‘killer apes’ had ever existed, they would have exterminated each other long before they would have given rise to modern humans.

4.9 The Balance-of-Power Hypothesis

Alexander (1974 et seq.) has pointed out that there is no automatic or universal benefit from group living. Indeed, the opposite is true; there are automatic and universal detriments, namely, increased intensity of competition for resources, including mates, and increased likelihood of disease and parasite transmission. What, then, are the benefits of group living that offset its automatic detriments? Only three: (1) susceptibility to predation may be lowered; (2) the nature of food sources may make splintering off unprofitable; (3) there may be an extreme localization of some resource. To explain primate and hominid groups only the causative factor of predation remains. And once predation from other species relaxed (when humans crossed the ecological dominance barrier; see Ch. 8), early Man became his own predator: "When man developed his weapons, culture and population sizes to levels that essentially erased the significance of predators of other species, he simultaneously created a new predator: groups and coalitions within his own species" (Alexander, 1974).

In subsequent publications, Alexander (1979; 1987) proposed the so-called ‘balance-of-power’ hypothesis. This hypothesis contends that at some early point in our history the actual function of human groups - their significance for their individual members - was protection from the predatory effects of other human groups. "No other sexual organisms compete in groups as extensively, fluidly, and complexly as human do. No other organisms at all play competitively group-against-group. Most importantly, so far as we know, in no other species do social groups have as their main jeopardy other social groups of the same species - therefore, the unending selective race toward greater social complexity, intelligence, and cleverness in dealing with one another" (Alexander, 1987).

The premise is that the necessary and sufficient forces to explain the maintenance of every kind and size of human group above the nuclear family, extant today and throughout all but the earliest portions of human history, were (a) war, or intergroup competition and aggression, and (b) the maintenance of balances of power between such groups. This argument would divide early human history into three periods of sociality, roughly as follows:

1. Small, polygynous, probably multi-male bands that stayed together for protection against large predators.
2. Small, polygynous, multi-male bands that stayed together both for protec-
tion against large predators (probably through aggressive defense) and in order to bring down large game.

3. Increasingly large polygynous, multi-male bands that stayed together largely or entirely because of the threat of other, similar, nearby groups of humans.

Eaton (1978) suggests that early humans may have spent a very long time during which their social behavior was largely structured by both defense against predators and competition with them. The complex behaviors required for such activities could have 'primed' or preadapted humans for their later evolution in hostile intranspecific groups.

Balances-of-power depend to some extent on physiographic and other extrinsic environmental circumstances, and they may as well exist between tiny New Guinea tribes as between nuclear powers. Moreover, aspects of intergroup conflict among tribal peoples, which are commonly referred to as ceremonial or ritualistic, may actually reflect the importance of balances of power as exemplified by elaborate bluffing and the intensity of concern with avenging each death. Finally, the modern large nation is the result of power-balancing. "If, for whatever reasons, recurring imbalances are not possible through one-sided expansions of first one group, then the other, or through alternations of superiority in weapons or other regards, then the balance-of-power races leading to large nations may never appear".

Willhoite (1980) has shown how the balance-of-power hypothesis can explain the progressive evolution of hominids through the stages of the band, the sovereign village, the chiefdom, and finally the early state. At each level, as communities expand to include more distant kin or nonrelated kin-groups, the role of coercive institutions also expanded (Masters, 1983; see Ch. 5).

Andreski (1954), and Lorenz (1966), the principal proponent of the instinct-cum-selection thesis, had already advocated a similar notion: "[I]t is more than probable that the destructive intensity of the aggression drive, still a hereditary evil of mankind, is the consequence of a process of intranspecific selection which worked on our forefathers for roughly forty thousand years, that is, throughout the Early Stone Age. When man had reached the stage of having weapons, clothing, and social organization, so overcoming the dangers of starving, freezing, and being eaten by wild animals, and these dangers ceased to be the essential factors influencing selection, an evil intranspecific selection must have set in. The factor influencing selection was now the wars waged between hostile neighboring tribes" (Lorenz, 1966).

Lorenz thus postulates warfare as a selective force operating in human evolution, and the warrior virtues as a product of this selection process. There is, however, a 'quantum jump' from aggression (even if considered to be instinctive) to warfare which is not adequately accounted for.

Basing himself on the by-now classic hydraulic model of aggression (Ch. 5),
Lorenz regards human hypertrophied aggression as an anomaly compared to other species. Indeed, Man seems unusually murderous, for his development of weapons came so fast that he has not yet evolved the biological mechanisms of restraint, the built-in inhibitions so common, he supposes, in the ritualized aggression of other species. There was no selective pressure, it seems, to develop innate constraints against killing conspecifics; while at the same time weapons created the geographical and psychological distance between attacker and attacked.

Lorenz also identifies *Militant enthusiasm*, which, he says, originally evolved as a form of, and in the service of, communal defense, as an easily appealed to and easily surfacing psychological constellation in modern Man (see Ch. 6).

### 4.9.1 Criticism

Lorenz and his generation of ethologists were apparently unaware of the ubiquity of animal violence, and thus they had to regard the human being as an anomaly among other species. Regarding the 'innate inhibitions' which Lorenz attributed to nonhuman animals, his often-quoted case of apparent restraint of aggression in wolves turns out to be misleadingly idealized: "[A]mong strangers, 'wolf-wars' are common, often resulting in death. The oft-reported cease-fire signal in which the loser bares its jugular vein and the winner refrains from finishing the victim off, apparently does not work with strangers" (Barash & Lipton, 1985).

Hostile neighboring 'hordes' may well be, as Montagu (1974) suggests, "the invention of nineteenth century antiquarians and their modern counterparts". And he continues: "As for the allegation of hostility between neighboring prehistoric populations, there is not the least evidence of anything of the sort having existed. This by no means rules out the possibility that such hostilities may occasionally have occurred. If such hostilities did occur, it is extremely unlikely that they were frequent. Neighboring populations in prehistoric times would have been few and far between, and when they met it is no more likely that they greeted each other with hostility than do gatherer-hunter peoples today" (Montagu, 1974; Cf. Shepard, 1973).

Referring to contemporary hunter-gatherers, Service (1966) states: "The birth-death ratio in hunting-gathering societies is such that it would be rare for population pressure to cause some part of the population to fight others for territorial acquisition. Even if such a circumstance occurred it would not lead to much of a battle. The stronger, more numerous, group would simply prevail, probably even without a battle, if hunting rights or rights to some gathering spot were demanded" (See also § 4.7.1).

Alexander (1979) counters with the objection that there is not an iota of evidence to support the idea that aggression and competition have *not* been central in human evolution (See also Ch. 3). He states:
Those who reject arguments like those given here also point to what they interpret as relatively nonaggressive behavior on the parts of the hunting and gathering societies that remain today in a few places like the Australian and African deserts, and the Arctic. They argue that for 99 percent of their history our ancestors lived as these people do. But such people survive today only in marginal impoverished habitats that support only the lowest of all densities of human population and also represent physical extremes that by themselves require cooperation among families for mere survival; moreover, hunter-gatherers survive today only because even the most advanced technological societies have found no way to use their homelands that would make it profitable to overrun or seize them by force. In other words, they are restricted by aggression, or its threat, to the localities where they exist now. Nevertheless, social competition, aggression, murder, and intergroup conflict are not by any means unknown among hunter-gatherers (Ember, 1978). I suggest that the ordinary interpretation may be precisely wrong, and that rather than all humans having spent 99 percent of their existence living as Eskimos and Bushmen do today, the ancestors of Eskimos and Bushmen more likely spent most of their existence in richer habitats where higher densities of population, more complex social structure, and less harsh physical environments led to both more complex and extensive cooperativeness and more complex and extensive social competition than now exists (Alexander, 1979).

Alexander’s thesis is mainly or largely based on the argument of uniqueness; the unique evolutionary trajectory of the human species is related to an allegedly unique phenomenon during the course of hominid/human evolution: (Intra-group cooperation for the mutual advantages of) intergroup competition. Intergroup competition, even violent intergroup competition, however, has been far from unique in, or limited to hominid/human, evolution. "At the simplest level of comparison, the phenomenon of cooperation during competition, far from being primarily a human trait, occurs in a wide array of animal societies. Groups of Amazonian Indians, African lions, and Arizona ants compete with one another, and in all, individuals within groups cooperate in the conflict... Contrary to Alexander, therefore, lethal intergroup conflict is not uniquely, or even primarily, a characteristic of humans, and humans are not alone in experiencing conspecifics in the form of other groups as ‘the principle hostile force of nature’” (Harcourt & de Waal, 1992).

It may be argued that the balance-of-power concept actually weakens Alexander’s theoretical edifice because of its inherent ambiguity, if not actual lack of meaning. The term may be invoked to ‘explain’ each and every, peaceful or warlike, interaction between groups (which can always be construed as
some balance-of-power maneuver), and is apt to become the same theoretical anodyne and ‘catch-all’ phrase as it is in contemporary International Relations theory (e.g., Vasquez, 1993). One might even go one step further, and assert that the balance-of-power hypothesis is in principle irrefutable, and therefore belongs to the domain of metaphysical constructs and doctrines. In a more moderate form, it may be argued that the balance-of-power hypothesis remains a rather gratuitous statement until it is specified what would count as counter-evidence.

4.10 Human Brain Evolution and Warfare

The idea that warfare influenced human brain evolution was proposed by Darwin (if not before) and again by Keith (1947). They meant, however, warfare in historical times and saw the effects of warfare in terms of refinements of the human brain. Bigelow (1969 et seq.), Alexander & Tinkle (1968) and Alexander (1971) were the first to propose that the evolution of the novel substance of the hominid brain may have been driven by warfare. Bigelow (1969 et seq.) presented the most comprehensive case. In a famous book *The Dawn Warriors: Man’s Evolution towards Peace*, Bigelow argued that the trebling in volume of the modern human brain since his emergence from his ape-australopithecine ancestors could have been caused only by a very powerful, very relentless, and very constant natural selection pressure in favor of brains endowed with more intelligence, permitting better communication and more effective cooperation between the individuals in social groups. The selection pressure could have been maintained only if these groups were increasingly at war with each other. Cooperation within the group is cooperation for the conflict against other groups. The course of history - and this explains Bigelow’s subtitle - shows the expansion to clan, tribe, nation, and superpower bloc as the expanding realm of the group in which men cooperate.

Most studies associate increased brain size with the growing importance of tool making, hunting, and food sharing within the context of complex interpersonal and intergroup behavior (e.g., Isaac, 1980). Blumenberg (1983), however, argues convincingly that neither in isolation nor in combination can these behaviors account for the appearance of the advanced hominid brain. Bigelow’s hypothesis receives a measure of indirect support from Blumenberg’s study. Pitt (1978) reexamined the arguments and evidence of the brain evolution-warfare linkage. The hypothesis that warfare was the selective force behind hominid brain evolution carries the advent of warfare back at least to the beginning of the Pleistocene, probably as much as four million years. Alexander & Tinkle make a credible case that warfare could have commenced in early hominid times: Warfare is a selective force that would act strongly,
would focus on intelligence, and could be exerted continually over long periods of time e.g., millions of years. However, they do not address the questions what sort of intellectual activities are necessary for waging true war, and whether these would be within the capability of hominids; what circumstances could lead hominids to the potentially suicidal step of frequently killing their own conspecifics. Nor do they give a satisfactory reason why hominid groups should not have coexisted fairly peaceably. Nevertheless, the warfare hypothesis is highly attractive for a reason they do not expound, namely, it is the only evolutionary pressure so far described that could make unlimited demands upon intelligence, and (assuming some linear relation between intelligence and brain volume) could lead to the remarkable human brain (Pitt, 1978).

Bigelow (1969 et seq.) covers much of the ground of Alexander & Tinkle, showing how the needs of warfare would foster the duality of Man’s nature, and how well it accounts for the evolution of intelligence and the trebling in volume of Man’s brain. Warfare need not be a continuous series of year-in, year-out skirmishes in order to exert a strong selective pressure. A war once a generation can radically alter gene frequencies, especially if the losing females are incorporated into the victors’ group and propagate the victors’ genes. Human warfare, Bigelow emphasizes, is an organized activity. Success in war has always been due primarily to cooperation. Cooperation requires communication and efficient brains, emotional restraint as well as intelligence. Since success in intergroup competition was determined mainly by capacities for cooperation and intelligent self-control, the result of the selective process was definitely not an increasingly uncontrollable ‘aggression instinct’ (Bigelow, 1972). What Bigelow does not adequately explain is why warfare should have evolved at such an early date, even though he remarks that it is most unlikely that intelligent human groups would have starved peacefully while the other groups were getting the game first.

According to Pitt (1978), "Warfare was the logical culmination of escalating territorial competition between groups as population densities increased. The turning point from uneasy peace to war probably came at moments when a natural calamity, such as drought, caused starvation to become a serious threat to some of the groups". Hominid populations must have reached critical densities at fairly frequent intervals through the Pleistocene, and perhaps the late Pliocene. Several scenarios can be pictured in such a situation:

(a) peaceful coexistence of the groups;
(b) peaceful competition between groups with the losers starving;
(c) violent conflict between individuals;
(d) scrambling competition between groups; and
(e) violent group conflict, i.e., warfare.

Warfare would be the best alternative for the group that practiced it
successfully, assuming it to have been within their biological reach. Assuming that different groups tended towards one or another of these strategies, in varying degrees, it is easy to see that the warmongers would be the most successful, and could indeed overrun any group attempting to practice one of the other strategies (See also next paragraph). Plainly, it will be the warmongers whose genes are represented in the next generation. Indeed, the only possible competitive strategy for survival in competition with a group practising warfare, is warfare itself, either defensive or offensive. Thus, warfare would be an evolutionary successful strategy, and would tend to spread itself, *if it once began.*

It is interesting to note that Pitt is one of the few evolutionary theorists who does not agree with the underlying assumption of other theorists that the principal characteristic which an organism needs to carry it over the threshold of warfare is an unusual degree of aggression; or more to the point, he does not think that 'aggression' is particularly helpful in understanding the nature of warfare. Also Young (1975) states: "War is not a maladaptive human trait arising out of a previously adaptive animal instinct of aggression. It is a highly evolved aspect of human political organization which has proved its viability by becoming more highly organized and more murderous as cultural evolution has advanced. It is not derived from the day-to-day aggression balanced by submission that serves an adaptive role in the societies of nonhuman primates. Its source has been the previously untapped potentialities resident in the norm of reaction of the human genotype. Among these potentialities has been the aggressive potential characteristic of all animal species, but this potential has no more forced the evolution of war than some mythical killer instinct has".

In order to adopt warfare as a normal, rather than aberrant behavior in certain circumstances, a group must overcome the deterrent the individual faces, namely the risk of serious damage to his ability to reproduce and raise his offspring. Pitt suggests that a solution to the deterrent problem might be the ancient concept of the 'noble warrior', or when not in reach of the simple early hominids, there is still a simpler solution: Tools as weapons. The use of tools as weapons has three characteristics beyond the obvious, distinguishing it from the actions of the claws, teeth, horns and poisons of other animals: Weapons can act at a distance; they may take time to deploy (only moments perhaps; an unarmed hominid may need a few moments to grab a club to defend himself); and most notably, one well directed blow can incapacitate by stunning or killing. Thus, an armed hominid can, by the exercise of tactical ingenuity, especially to exploit the advantage of surprise, swing the odds in a one-to-one battle to give himself a substantial chance of success with a low risk of serious injury. And, more pertinently, he may readily persuade himself that, because of his superior skills and ingenuity, he faces little risk. The deterrent has been overcome and warfare becomes, in the right circumstances, a favored behavioral strategy, success in which is sensitive to tactical ingenuity, and
therefore to intelligence. Moreover, this relatively simple approach to the
development of warfare would not seem to require too much intelligence for its
initiation, and should have been well within the capabilities of the early
hominids (Pitt, 1978).

4.11 Weapons, Intelligence, and Warfare

One does not necessarily need the Freudian phallic symbolism to acknowledge
that the males of the human species are fascinated by weapons. Andreski
(1954), and Tinbergen (1976) pointed out that lethal weapons fostered the
concept that it is advantageous to kill the enemy, since a dead enemy does not
return to fight again. Baer & McEachron (1982) and McEachron & Baer
(1982) made it clear that the development of weapons lowered the costs of
attacking while increasing the costs of being attacked. Thus, there was a
selection pressure to develop pre-emptive strike or attack-before-being-
attacked behavior.

There is a long-standing principle in evolution that the greatest natural
competitor of any animal is another member of the same species. This is
because conspecifics share almost exactly the same requirements and, when
resources are limited, must compete for the same resources. Within groups, the
dominance system and genetic interrelatedness (kinship) tend to control and
modulate aggressive competition. Between conspecific groups, it is quite a
different story. When one group encounters another over a limited resource,
each group has a number of options. If troop A is using a limited resource and
troop B arrives, troop A can (1) avoid troop B by retreating, (2) try to ignore
troop B, (3) cooperate with troop B, or (4) compete with troop B. If the
resource is easily available, it might pay troop A to retreat and avoid any
possibility of conflict. However, in the long evolutionary run, this is a self-
defeating strategy.

Sharing a resource (options 2 and 3) is likely to occur when it is not very
limited or extremely difficult to defend. If the resource is really limited, sharing
is very unlikely. When A and B share a resource, this is equivalent to creating a
larger group, AB, which automatically creates problems. First, the resource
would have to be divided among more group members, thus lowering the
inclusive fitness of every member in both groups. The reason, of course, is that
individuals in group B are unlikely to be related to those of group A. Thus,
sharing leads to a decrease in inclusive fitness of everyone involved. Second,
there is the problem of social structure; group AB does not have one, it has two
distinct organizations since no individual in group A has any rank in group B
and vice versa. If exploiting the resource requires any kind of organization, it is
likely that there will be rank-order conflicts to determine the appropriate
structures.
If conflict is inevitable, it makes better evolutionary sense for the troops to determine ownership of the resources as groups, rather than having both conflict and decreased inclusive fitness. Once started, selection for conflict and weapons technology rapidly gained momentum by leading into a positive feedback system: Better weapons led to increased levels of group conflict. Conflict selected for (among other things) enhanced mental capacity in the form of increased learning capacity, improved communications, the emergence of the ability to plan, have foresight, improve technology etc. This increased mental capacity in turn not only created better weapons through an improving technology, but made the group a better fighting unit, and thus a more dangerous adversary. These factors in turn increased the selective pressure for conflict - and the cycle began again. The feedback system would have had other effects as well. Conflict tends to select e.g., for better organized and/or larger groups. Baer & McEachron (1982) further propose that the evolution of weapons had the effect of making unrelated individuals far more dangerous to one another, and that this, in turn, reduced intergroup transfer of individuals and made nucleus ethnic groups much more closed. Weapons would have altered the costs and benefits of armed violence since they could be developed faster than physiological protection against them would evolve. Weapons could also be thrown, thereby removing the need for the attacker to be in close proximity to the attacked. Thus, the development of arms would have lowered the cost of attacking while increasing the costs of being attacked. In doing so, xenophobia and antagonism toward strangers would likely have increased as well. This enmity would work to reduce intergroup transfer of individuals, which, in turn, would reinforce out-group enmity. Alexander (1971) proposed that intergroup conflict would select for greatly increased capacity to recognize relatives, friends and enemies. According to McEachron & Baer, the xenophobic attitude would remain, in the form of emotional tendencies and reinforcement, even after intergroup conflict ceased to be selective. These emotional tendencies would then initiate conflicts on their own (See further Ch. 6).

The thrust of Baer & McEachron’s hypothesis is that one of the first evolutionary steps taken, as weapons developed, was to severely restrict individuals from changing groups. From an inclusive fitness point of view, the refused admission of an extragroup conspecific would have resulted in two beneficial effects for in-group members. First, because of the increased tendency of males to remain in their natal group, the genetic relatedness among the adult males, and the group as a whole, would increase. This would have increased solidarity among group members and, thus, cohesion of the group per se. It would also work to reduce within-group aggression, and thus genetic loss through injury or death from in-group fighting.

Second, the new high costs of within-group aggression would act to change the character of the dominance system. Insofar as dominant individuals could not afford to be injured in rank-order fighting, there would be an increased
selection for social skills in attaining and maintaining status, and decreased emphasis on overt aggression. These would combine to produce a more effective internal ordering of power relations to the extent that groups could be more quickly mobilized to meet challenges from outsiders. In the process, intergroup conflict would select for greatly increased human capacity to establish and accept group hierarchy as well as to recognize enemies versus relatives and friends.

According to Hamilton (1971), warfare was a natural and adaptive development from the evolutionary trends taking place in the hominid stock. He finds it only too easy to imagine that the genes that reared cruelty out of the primate’s aggressive drive have been favored by natural selection in the hominid line. Subsequently, Hamilton (1975) presented a ‘stepping-stone’ model of hominid intergroup conflict. In his model, he proposed that a hominid group could expand into the territories of defeated neighboring groups, enlarge in size and consolidate its position and then expand again and so on. This model points out two other interesting aspects of intergroup warfare. First, warfare may gain the victorious group territory and resources that may in themselves have selective value. This would promote conflict in addition to and somewhat independent of the positive feedback system proposed by Baer & McEachron. Second, the capture and integration of a limited number of enemy females might be used to prevent inbreeding depression in the now-closed hominid groups, providing yet a third possible adaptive value for warfare (McEachron & Baer, 1982).

4.11.1 Criticism

The only weak spot in the theory advanced by Baer & McEachron and McEachron & Baer is the weapon technology part. In primitive societies there is hardly any evidence of improvement of weapons used in warfare - mainly the spear and bow-and-arrows - as a dynamic concomitant of warfare, as these authors seem to envisage. New Guinea communities, for example, may have been in a state of war for centuries without any indication that the weapons used then and the weapons used now are different to any significant degree in either construction or lethality. At least in this respect, war has never been much of an ‘Agent of Progress’. Only when war transcends the endemic phase, weapon technology and warfare aspire to new spirals of mutually increasing destructiveness.
4.12  Level-of-Selection and the Evolution of Warfare

4.12.1  Group Selection

According to contemporary evolutionary theory (for reasons expounded in Ch. 1), so-called 'group selection' is not typically expected to occur in nature. There are, however, some restricted circumstances in which the individualistic calculus of (kin)reciprocity does not hold, and 'group selection' (in the first meaning of the term distinguished in Ch. 1) may indeed occur. Where a number of small populations of extended kin are relatively isolated from each other, conflicts between groups can and will occur if resources are insufficient to support all of them. In that case, a behavior that benefits the group - even at a cost to the actor - can be favored by natural selection whenever competition within the group is harmful to both the individual’s 'inclusive fitness' and the group's 'collective interest'. Under these circumstances (which Alexander [1978] describes as a balance-of-power between competing bands of extended kin), group selection would expand the sphere of social cooperation. As Benjamin Franklin put it "We must all hang together, or assuredly we shall all hang separately" (Masters, 1983). Furthermore, in such situations (when individuals live in discrete family groups as early humans probably did), kin selection might virtually encompass the group, and selection between groups might amount to a special case of kin selection (Corning, 1975).

To the extent that intelligence, cooperation, tool use, bipedalism, inventiveness, physical stamina, and aggressiveness all enhanced the chances of success between warring groups, Corning (1975, 1983) argued, intergroup selection would have served to reinforce selection pressures already at work with respect to big-game hunting and other aspects of protohominid social life. Rather than opposing genic and kin selection, war-based group selection might merely have accelerated the trend. Though kin and group selection are theoretically quite different processes, in human evolution both may have worked together in a synergistic way.

The possibility that endemic warfare and genetic usurpation could be an effective force in group selection was clearly recognized by Darwin (1871). He envisioned some of the 'noblest traits' of mankind, such as altruism, as the genetic product of intergroup competition. By adding the additional postulate

of a threshold effect, according to E.O. Wilson (1975) it is possible to explain why the process has operated exclusively in human evolution: The capacity to consciously ponder the significance of adjacent social groups and to deal with them in an intelligent, organized fashion.

The only combinations of genes able to confer superior fitness in contention with genocidal aggressors would be those that produce either a more effective technique of aggression or else the capacity to preempt genocide by some form of pacific maneuvering. Either probably entails mental and cultural advances. In addition to being autocatalytic, such evolution has the interesting property of requiring a selection episode only very occasionally in order to proceed as swiftly as individual-level selection. By current theory, genocide or genosorption strongly favoring the aggressor need take place only once every few generations to direct evolution. This alone could push truly altruistic genes to a high frequency within the bands. Furthermore, it is to be expected that some isolated cultures will escape the process for generations at a time, in effect reverting temporarily to what ethnographers classify as a pacific state (E.O. Wilson, 1975).

The evolution of warfare was an autocatalytic reaction that could not be halted by any people, because to attempt to reverse the process unilaterally was to fall victim. A new mode of natural selection was operating at the level of entire societies. Van den Berghe (1978) similarly argued:

Human coercion (and aggression) is a group enterprise, a conscious, premeditated one. The same intelligence that enabled humans to evolve complex systems of reciprocity as a means of extending the scope of our sociality beyond the confines of kin selection also gave us the capacity to use reciprocity for purposes of coercion and thus to evolve warfare and intraspecific parasitism. Once our species had become clever enough to cooperate on the basis of reciprocity for the purpose of garnering resources such as game, the development of intergroup aggression to eliminate competitors and steal women was around the evolutionary corner. Group coercion is reciprocity for purposes of intraspecific aggression and parasitism. In a species where coalitions for reciprocal benefit can be easily formed, it is inevitable that they will be formed against conspecifics. Plunder is always tempting if I can call on enough of my partners to ensure a cheap victory over my competitors. The incidence of warfare and other forms of aggression is therefore a function of the ease with which balances of power can be disrupted. The latter can be done either through better organization or through better technology (van den Berghe, 1978).
But, he adds, this should not be interpreted as constant carnage, because for all but the last few thousand years of hominid/human evolution, intergroup aggression was a modest, small-scale affair. Bands of hunters clashed with each other, but ecological constraints on population density were such that numbers were small and, what is more, fairly evenly balanced. Given an approximately equal level of technology and group size, the odds for success were roughly even, and therefore aggression was only moderately attractive. If, to those limiting conditions, one adds the absence of stored resources worth stealing, other than human meat and women, the attraction of plunder was also limited. One only came to blows if a particularly good opportunity for a quick kill with minimum risk of retribution arose, but such occasions were probably not common.

4.12.2 Genic/Individual Selection

Durham (1976) parts company with the ‘group selectionists’ and reverts to the level of genic/individual selection. Ideally, according to Durham, the adaptiveness of primitive warfare would be ascertained by a rigorous test of three competing hypotheses:

1. Cultural traditions of warfare in primitive societies evolved independently of the ability of human beings to survive and reproduce;
2. Cultural traditions of primitive warfare evolved by the selective retention of traits that enhance the inclusive fitness of individual human beings;
3. Cultural traditions of primitive warfare evolved by some process of group selection which commonly favored the altruistic tendencies of some warriors.

Durham then develops a model, based on the assumption of genotypic selfishness, which predicts the occurrence of ‘intergroup aggression’ (Durham’s equivalent of ‘warfare’) both defensive and offensive, under certain well-defined conditions. Theoretically, direct intergroup aggression would exist as a cultural tradition only where the participating individuals each derive net intrademic fitness advantages. Thus, warfare would exist as a cultural tradition only where social and environmental conditions result in continuous or recurrent net benefits to the aggressors. A cultural pattern of direct intergroup aggression could be the result of selection in at least three instances: (1) vengeance, (2) failure of reciprocity, and (3) resource competition. Durham focuses on resource competition. He emphasizes at the start that even where we may attribute human aggression to resource competition, relations of kinship and friendship may have an important effect on that behavior. It may well be that the human ability to recognize - and therefore avoid harming - kin and friends is what has allowed the evolution
of deadly conflict.

In principle, there are two ways in which participation in group aggression can have net individual fitness benefits. First, when human groups compete for limited resources, successful warriors may themselves directly benefit from the fitness value of resources defended or acquired. The requirements here are two: (1) the spoils must not be shared throughout the deme but must be shared within the group or subgroup of aggressors, so that (2) the fitness-value of resources gained by each participant must exceed his or her accumulated costs. Secondly, intergroup aggressiveness can evolve by Selection (Selection with a capital S here means biological plus cultural selection) even when all of the warriors do not derive direct resource benefits from the conflict, so long as their fitness costs are more than compensated by other benefits from within the group. The requirements here are (1) at least one important figure in the group must secure resource benefits, and (2) the benefactor(s) must provide other goods or services (or both) on which the other participants’ fitnesses depend. In theory, direct aggressiveness is therefore only to be expected in habitats where dependable or predictable high quality resources are in short supply.

In contrast, more peaceful relations between groups are expected where (1) the resource demands show little overlap; (2) the combined demand for any common resource(s) is regulated below the levels of supply by other factors (disease, predation, or parasitism, for example); or (3) the spatial and temporal distribution of a scarce resource favors either high mobility (precluding high frequency contact of distinct groups) or reciprocal sharing of unpredictable patches. In environments where an alternative (if somewhat less desirable) supply of a scarce resource is available, the process of selective retention could actually favor reduced competition between groups, either through specialization of the techniques of resource harvest (cultural ‘character displacement’) or migration. For instance, in many arctic areas, the absence of intergroup warfare appears to correlate with high regional variability in food supply.

Durham’s model, he submits, has several important theoretical implications. First, it counters the view that primitive warfare constitutes a "theoretical embarrassment to a discipline [i.e., anthropology] which has tended to believe that human societies are functionally integrated systems, well adapted to their environments" (Hallpike, 1973). The model describes conditions in which intergroup aggression can be highly adaptive in terms of basic survival and reproduction. Second, it challenges a common presumption that primitive war has always evolved for some transcendent group-level function requiring individual sacrifice (as suggested, for example, by Harris, 1971; 1972; 1974; and Divale, 1973). At least in circumstances of resource competition, it is possible for aggressive intergroup behavior to have real benefits for participating individuals. Furthermore, Selection can favor widespread member participation in collective aggression even though each individual behaves in his or her own, distinct, genetic self-interest. Finally, the general model has several implications for the dynamics of intergroup aggression. Selection would mold
a warfare strategy that maximizes the participants’ net gains. These considerations may also explain some aspects of the multiphase war process in primitive war as outlined by Vayda (1971, 1974; § 4.5.1). First, Selection may favor the use of low-cost ‘assessment’ tactics in the early phases of war. This strategy would allow the participants to assess the capability and motivation of their opponents without an immediate risk of large losses. Second, it explains why escalation is not inevitable and why war is not an inescapable playing-out of forces set in motion at the outset. Escalation would be expected where earlier, less costly tactics seem insufficient to ensure net gain or where increased belligerence is necessary to prevent large losses to an escalating opponent. Third, belligerents may actually be able to redefine and expand their potential resource benefits in the course of conflict. Thus, Durham’s modest conclusion is that at least some cases of ‘intergroup aggression’ can be seen as a behavioral adaptation to conditions of competition for limiting resources.

4.12.3 Criticism

Warfare is viewed by authors discussed as a significant general factor in human evolution. Anthropologists and historians, however, have not shown any consensus in support of such an interpretation. For example, Montagu (1976) counters with the view that "up to some twelve thousand years ago war played an insignificant role" in evolution, and that in the last 12,000 years war has become either biologically irrelevant or dysgenic.

Durham’s reasoning assumes that warfare is simply aggression writ large. Basing himself on models of the evolution of individual aggressive behavior, Durham is almost forced to regard warfare as ‘intergroup aggression’ which is unfortunate terminology (van der Dennen, 1986), while the adoption of a ‘realistic conflict’ paradigm leads him somewhat astray. Most primitive warfare seems, at least in our Western eyes, rather ‘pointless’. It is this conspicuous absence of ‘economic motives’ that ought to be explained. In many cases the total losses exceed whatever benefits could possibly be gained. In other words, there is a discrepancy between Durham’s ‘ultimate’ explanation and the ‘proximate’ motives of primitive peoples. Furthermore, it is not clear from Durham’s model why virtually only human beings make war, or why ‘group aggression’ is not more widespread in the animal world. Nor does it explain why warfare is predominantly a male business, or why disculpation ritual (indicating a profound ambivalence of the warrior vis-à-vis his victims) is so universal. This latter question is addressed by the next author.
4.13 Cultural Filter Superimposition and Preadaptations

According to Eibl-Eibesfeldt (1975 et seq.), humans, like other organisms, have inhibitions against killing conspecifics as part of a biological filter of norms. Yet he kills conspecifics on a large scale. How is this possible?

Man tends to form closed groups. Cultural peculiarities tend to diverge rapidly, and the varieties of culture behave as if they were different species (Erikson’s [1966] ’pseudospeciation’). Others are not considered to count as full members of mankind, or even as human beings at all. By cultural definition, intraspecific aggression gets shifted to the level of interspecific aggression, which is destructive in the animal kingdom as well. Facilitated by communicational barriers and by armament which kills quickly, and often at a distance, Man shuts himself off against all appeals normally releasing the fighting inhibitions which are subjectively experienced as pity. Thus, upon the biological filter of norms which inhibits killing, is superimposed a cultural filter of norms commanding killing of the enemy. This leads to a conflict of norms, bad conscience, guilt and ambivalence, as already noted by Freud (1913). It takes, Eibl-Eibesfeldt asserts, quite a lot of indoctrination and coercion to bring people to fight each other. Unfortunately, war had functions to fulfill, it is not to be considered an evolutionary cul de sac or pathology: "Es handelt sich nicht um eine funktionlose Entgleisung, sondern um eine spezifisch menschliche Form der Zwischengruppen-Aggression mit deren Hilfe Menschengruppen um Land und Naturgüter konkurrieren" [It is not to be considered a mere functionless derailment, but rather a specific human form of intergroup aggression by means of which human groups compete for land and natural resources] (Eibl-Eibesfeldt, 1975).

War is not, he emphasizes, explained by invoking an innate aggressive drive. It is the result of cultural evolution, which is superimposed on, and a continuation of, phylogenetic evolution. In the process of cultural pseudospeciation human groups isolated themselves as if they were representing different species. The innate aggression inhibitions, ameliorating intraspecific aggression just as they do in animals, fail to operate at the level of intergroup conflict. Intergroup conflict developed traits reminiscent of interspecific animal conflict, it became destructive. War, Eibl-Eibesfeldt holds, has surely selected for aggressiveness.

War has, at least for a long period of human history, favored the selection of belligerence and aggression. But intergroup competition did not only select for human belligerence, but also - as Bigelow (1970; 1971) emphasized - for the ability to cooperate and for intelligence16.

16 "Den Krieg schließlich erklären wir keineswegs aus einem uns angeborenen Aggressionstrieb. Er ist das Ergebnis der kulturellen Evolution, die allerdings durchaus auf der stammesgeschichtlichen Evolution aufbaut und diese weiterführt... Im Prozeß der kulturellen
In later publications (Eibl-Eibesfeldt, 1978; 1979; 1980; 1982; 1984; 1986; 1988), he argued that different levels of selection are discernible in Man, and that the group is indeed an important unit of selection for *Homo sapiens*. He identifies a number of preadaptations which evolved by individual selection, but which make group selection feasible:

1. Maternal care and the individualized bond, leading to xenophobia; and
2. mechanisms of individual bonding (giving, sharing, requesting and the norm of property; strategies of agonistic buffering; behavioral mechanisms serving to maintain group harmony; and mechanisms promoting conformity).

Eibl-Eibesfeldt suggests that human indoctrinability and the inclination to polarize values are specific traits difficult to explain via selection at the level of the individual. The emotional basis of this response has its roots in family defense, but cultural evolution leads to the development of warfare ethics which cause individuals to act against their self-interest. At the tribal level, the costs for the young individual male are extremely high. Thus in nonliterate tribal cultures, indoctrination of heroic virtues creates a readiness for self-sacrifice in favor of the group. This often goes hand in hand with the training for obedience.

The evolutionary vicissitudes of human indoctrinability are also discussed by Campbell (1972), in a revision of an earlier paper (Campbell, 1965). Freud’s view of the pervasively counter-hedonic content of culture is accepted and given a functional explanation: "Rather than a death-instinct, modern evolutionary genetics points to something closer to Freudian narcissism: self-serving aggressiveness in competition with coworkers for food, space, and mates; self-serving cowardice in war, self-serving dishonesty to fellow ingroup members: cheating, greed, disobedience, etc.". The survival value of complex social coordination has been achieved in Man as a social-evolutionary product which has had to inculcate behavioral dispositions directly counter to the selfish tendencies being produced by genetic selection: "I now believe that these self-sacrificial dispositions, including especially the willingness to risk death in warfare, are in man a product of social indoctrination, which is counter
to rather than supported by genetically transmitted behavioral dispositions". However, if there were genetic differences in indoctrinability, and if warfare were the main selective system operating, then there would be genetic selection against indoctrinability. Probably, Campbell argues, the overall adaptive advantage for indoctrinability, group identification, and fear of ostracism is strong enough to overweigh the negative selection produced when the most indoctrinable incur greater fatality rates in wartime. There is probably positive selection for heroic bluff that persists as long as successful but turns into cowardly retreat when the odds become overwhelming.

Also E.O. Wilson (1975) discusses the possible evolutionary pathways of human indoctrinability. Humans, he thinks, just beg to be indoctrinated.

4.13.1 Criticism

Vogel (1989) has argued against the existence of a ‘biological filter of norms’, which seems to undermine the very fundament of Eibl-Eibesfeldt’s theory. Vogel states that as primates we have never possessed an ‘innate inhibition against killing conspecifics’, a ‘biological filter of norms prohibiting killing’ has never been part of our natural history, and for interindividual killing - whether in war or in other circumstances - the human being does not need indoctrination which dehumanizes the enemy. If anything, Vogel asserts, it is the cultural human being we have to turn to for an effective counterbalance, not the natural human being.

This last statement effectively reverses Eibl-Eibesfeldt’s argument. But even if he denies the existence of ‘innate inhibitions’ against killing conspecifics, Vogel acknowledges the existence of facilitating factors in the process, such as anonymity and alienness of the ‘enemy’, moral disculpation and the suspension of responsibility.

4.14 A Biocultural Approach to Human Nastiness

In this chapter, we have encountered attempts to base Man’s inhumanity to Man on some evolved behavioral predisposition (e.g., Hamilton’s ‘cruelty’, Lorenz’s ‘militant enthusiasm’, Ardrey’s ‘Territorial Imperative’, etc.). One author, in particular, has elaborated such an approach - which he calls ‘biocultural’ - in an attempt to explain general human nastiness.

Lopreato (1984) subsumes primitive war and other forms of violence under the evolved behavioral predispositions of self-enhancement. These encompass a.o. the struggle for dominance or power; territoriality; the Urge to Victimize; and the Need for Vengeance.

One criterion of a behavioral predisposition is that it can flower into hypertrophic expressions and manifestations that have little or nothing in common with its original adaptive function.

The basic tenet of Lopreato’s biocultural approach is: "Fitness-enhancing sociocultural behaviors are favorably selected, and then react on natural selection by influencing the distribution of genetic material and the distribution of sociocultural behaviors that are associated with it".

Lopreato regards territoriality as subject to behavioral scaling and therefore not universal in manifestation, but the territorial predisposition may well be universal (as is the striving for dominance); he therefore tends to agree with van den Bergh’s (1974) formulation that "Man is not only highly territorial, but he is territorial at practically every level of social organization", and with Dyson-Hudson & Smith’s (1978) economic-defendability model of human group territoriality.

Individuals and groups may be observed enhancing, or attempting to enhance, their life chances, and thus their reproductive fitness, by sacrificing the wealth, the freedom or altogether the life of others. Lopreato hypothesizes that such behavior flows from a predisposition that may be termed the Urge (or drive, impulse, etc.) to Victimize - or, more conveniently, merely ‘Victimization’, and that it is one of the most effective forces of self-enhancement. This urge is generally exploitative, exploitation being the gratuitous and sustained appropriation of the resources of another for one’s own benefit, whereby the action tends to increase the exploiter’s genetic fitness at the expense of the exploited. Victimization, as envisaged by Lopreato, embraces slavery, human sacrifice, headhunting or war raids, cannibalism, and genocide (See Ch. 5).

The last evolved predisposition of self-enhancement in Lopreato’s framework is the Need for Vengeance, which he regards as an extreme form of the tendency to seek reparation when an act of beneficence toward others fails to induce beneficent reciprocation: "In a general sense we are dealing with a force that impels humans - and other animals as well - to return harm for harm received". The predisposition for vengeance recalls the eye-for-an-eye principle of the Old Testament.

Lopreato quotes the surprisingly ‘modern’ explanation of this phenomenon by Durkheim (1893): "It is an error to believe that vengeance is but useless cruelty. It is very possible that, in itself, it consists of a mechanical and aimless reaction, in an emotional and irrational movement, in an unintelligent need to destroy; but, in fact, what it tends to destroy was a menace to us. It consists, then, in a veritable act of defense, although an instinctive and unreflective one. We avenge ourselves only upon what has done us evil, and what has done us evil is always dangerous. The instinct of vengeance is, in sum, only the instinct
of conservation exacerbated by peril". See further Ch. 5, where revenge as a proximate motive for warfare is examined.

4.15 From *Cherchez la ressource* to *Cherchez la femme*

In the preceding paragraphs, the concepts of kin selection and sexual selection have been repeatedly encountered. In the remainder of this chapter I shall summarize the theories in which sexual selection in relation to the origin of war, and the idea of females as the ‘ultimate’ reproductive resource of males, are the central themes. In chapter 6 kin selection and its sequelae, implications and consequences - such as ethnocentrism and xenophobia - will be explored in depth. Kin selection is the principal *explanans* in the *Genetic Seeds of Warfare* theory (Shaw & Wong, 1989), and its merits and demerits will therefore be treated more extensively in that context.

4.15.1 Blood Revenge, Women and Warfare

In his 1988 article on Yanomamö feuding and warfare, Chagnon attempts to show how several forms of violence in a tribal society are interrelated, and he describes his theory of violent conflict among primitive peoples in which homicide, blood revenge, and warfare are manifestations of individual conflicts of interest over material and reproductive resources. Chagnon observes that many anthropologists tend to treat warfare as a phenomenon that occurs independently of other forms of violence in the same group. As a result many scholars restrict the search for the causes of war to issues over which whole groups might contest such as access to rich land, productive hunting regions, and scarce resources, and, hence, view primitive warfare as reducible solely to contests over scarce or dwindling material resources. Such views fail to take into account the developmental sequences of conflicts and the multiplicity of causes, especially sexual jealousy, accusations of sorcery, and revenge killing, in each step of conflict escalation: Duels may lead to deaths which, in turn, may lead to community fissioning and then to retaliatory killings by members of the two now-independent communities.

Chagnon heavily draws on several key insights from modern evolutionary thought, specifically,

1. the mechanisms that constitute organisms were designed by selection to promote survival and reproduction in the environments of evolutionary adaptedness. This implies that organisms living in such environments can be generally expected to act in ways that promote survival and reproduc-
tion, i.e., their inclusive fitness. For humans, these mechanisms include learning and mimicking successful social strategies.

2. Conflicts of interest between individuals are inevitable because the nature of some of life’s resources ensure that individuals can achieve certain goals only at the expense of other individuals.

3. Organisms expend two kinds of effort during their lifetimes: Somatic effort, relevant to their survival, and reproductive effort in the interests of inclusive fitness. This often entails competition for both material and reproductive resources (i.e., mating partners).

4. It is to be expected that individuals (or groups of closely related individuals) will attempt to appropriate both material and reproductive resources from neighbors whenever the probable costs are less than the benefits. While conflicts thus initiated need not take violent forms, they might be expected to do so when violence on average advances individual interests.

Chagnon does not assume that humans consciously strive to increase or maximize their inclusive fitness, but he does assume that humans strive for goals that their cultural tradition deems as valued and esteemed. In many societies, achieving cultural success appears to lead to biological (genetic) success.

Chagnon focuses on revenge killing among the Yanomamö Indians of southern Venezuela and adjacent portions of northern Brazil. Blood revenge is one of the most commonly cited causes of violence and warfare in primitive societies, and it has persisted in many state-organized societies as well. Most fights among the Yanomamö begin over sexual issues: Infidelity and suspicion of infidelity, attempts to seduce another man's wife, sexual jealousy, forcible appropriation of women from visiting groups, failure to give a promised girl in marriage, and (rarely) rape.

Yanomamö intragroup conflicts constitute a graded sequence of increasing seriousness and potential lethality: Shouting matches, chest pounding duels, side slapping duels, club fights, fights with axes and machetes, and, finally, shooting with bows and arrows with the intent to kill.

In all but the last case, fights are not intended to, and generally do not lead to, mortalities. Nevertheless, many fights lead to killings both within and between villages. If killing occurs within the village, the village fissions and the principals of the two new groups then begin raiding each other. The most common explanation given for this raiding type of warfare is revenge for a previous killing, and the most common explanation for the initial cause of the fighting is 'women'.

Revenge is also sought for the deaths of individuals who are alleged to have died as a consequence of harmful magic practiced by shamans in enemy villages. As is widely found in other primitive societies, an astonishing large fraction of deaths are considered to have been the result of human malevolence, i.e., sorcery in the form of stealing souls, blowing lethal charms, etc. Few
deaths are considered to be natural. Infant mortality is high and invariably attributed to enemy shamans. Long, bitter wars can be initiated when a visitor from a suspected village is killed by the bereaved of the dead infant. At first glance, raids motivated by revenge seem counterproductive. Raiders may inflict deaths on their enemies, but by so doing make themselves and kin prime targets for retaliation. But ethnographic evidence suggests that revenge has an underlying rationality: Swift retaliation in kind serves as a deterrent over the long run. War motivated by revenge seems to be a tit-for-tat strategy in which the participants’ score might best be measured in terms of minimizing losses rather than in terms of maximizing gains.

If gain is associated with revenge killing in the primitive world, what is gained and precisely who gains? Casting these questions into evolutionary terms, where gain (benefit) is discussed in terms of individual differences in inclusive fitness, might shed new light on the problem.

Losing a close genetic relative (for example, a parent, sibling, or child) potentially constitutes a significant loss to one’s inclusive fitness. Anything that counterbalances these losses would be advantageous. Yanomamö data suggest two possibilities.

First, kinship groups that retaliate swiftly and demonstrate their resolve to avenge deaths acquire reputations for ferocity that deter the violent designs of their neighbors. The Yanomamö explain that a group with a reputation for swift retaliation is attacked less frequently and thus suffers a lower rate of mortality. They also note that other forms of predation, such as the abduction of women, are thwarted by adopting an aggressive stance. Aggressive groups coerce nubile females from less aggressive groups whenever the opportunity arises. Many appear to calculate the costs and benefits of forcibly appropriating or coercing females from groups that are perceived to be weak.

The Yanomamö village is composed of large kin groups; people who are related to members of their own lineal descent group through male links and related to members of other lineal descent groups through consanguineal marriages and matrilateral ties. If someone in the village is killed, the probability is very high that he or she will have many bereaved close kin, including the village leader or leaders who have more kin than others; the leaders are the very individuals who decide whether killings will be revenged.

"If, as Clausewitz suggested, (modern) warfare is the conduct of politics by other means, in the tribal world warfare is ipso facto the extension of kinship obligations by violence because the political system is organized by kinship".

Second, men who demonstrate their willingness to act violently and to exact revenge for the deaths of kin may have higher marital and reproductive success. The higher reproductive success of unokais or 'killers' is mainly due to their greater success in finding mates, either by appropriating them forcibly from others, or by customary marriage alliance arrangements in which they
seem to be more attractive as mates than 'non-killers'. Among the Yanomamö, 'non-killers' might be willing to concede more reproductive opportunities to 'killers' in exchange for a life with fewer mortal risks and fewer reproductive advantages.

Raiding parties usually include 10 to 20 men, but not all men go on all raids and some men never go on raids. An enemy village might be as far as 4 or 5 days' march away. Many raiding parties turn back before reaching their destination, either because someone has a dream that portends disaster, or because the enemy group is not where it was believed to be. In all but the most determined raiding parties, a few men drop out for reasons such as being 'sick' or 'stepping on a thorn'. Chronic dropouts acquire a reputation for cowardice and often become the subject of frequent insult and ridicule, and their wives become targets of increased sexual attention from other men.

In a subsequent publication, Chagnon (1990) presents an addition to the traditional Carrying Capacity Model (the typically logistic population growth curve) in relation to his former distinction between somatic and reproductive effort. As a population enters a new niche, one that is free from conspecifics who might be competing for the same resources, the population begins to grow at a high rate; the curve climbs steeply. Over time, as resources become scarcer and/or more difficult or costly to obtain, and when 'hostile forces' (density dependent diseases and parasites) begin checking growth rates, fertility and mortality rates begin to converge. The population growth rate slows down and the population eventually approaches its theoretical upper limit: K, or 'carrying capacity'.

Chagnon modifies the traditional graphic expression of the carrying capacity model by indicating three possible 'phases' in a population's history in any particular niche. Phase one represents the early phase of the population's history in the niche. Growth rates are very high and it is presumed that the individuals are expending relatively more of their efforts at reproduction rather than in somatic efforts. Conflicts, if they occur, should be expected to be primarily over reproductive issues. In phase two, the population continues to grow, but is beginning, toward the end of the phase, to slow down. Here we can expect conflicts to be more or less equally distributed between reproductive and somatic issues. Finally, in phase three, the population is nearing carrying capacity and one should expect that conflicts will become increasingly dominated by somatic issues, although reproductive conflicts will also occur. In a word, individuals fight for mates when resources are abundant, and fight for the means to acquire mates when resources become scarce.

It cannot simply be assumed, as appears to be the case in many materialist works, that all human populations are in phase three of their history in any particular niche. The materialist preoccupation with explaining warfare in terms of scarcity of resources appears to be based on precisely this
assumption. At the same time there is an attempt to convey the message that this is the only 'scientific' way to explain warfare, particularly in band and village societies. If it is to be truly scientific, then its proponents should make the effort to empirically document that populations are at or near carrying capacity. Otherwise, we have simply an elaborate tautology: War is a contest over scarce material resources; evidence that resources are scarce is the existence of war (Chagnon, 1990).

4.15.2 Criticism

The theory advanced by Chagnon has been criticized by Ferguson (1989) on the following points:

(1) The idea that war is explainable as a sequence of revenge killings runs against the deterrence argument for somatic benefit. A violent attack will make a counter-attack either more likely (revenge) or less likely (deterrence), but it cannot do both at once. To the degree that deterrence is effective, it will act against the institutionalization of a pattern of strike and counter-strike. Vengeance is a motivation that is very real, but very malleable. The motive is harnessed in political decisions to retaliate, when retaliation is considered necessary to prevent future attacks. Chagnon's paper illustrates that revenge sometimes is taken, but sometimes is not; in fact the entire deterrence argument is based on the premise that revenge can be discouraged by expectable danger. So revenge raiding is not automatic, it does not drive the system. The decision to retaliate is a tactical one, a part of the process of war, rather than its cause.

(2) Chagnon's data do not establish that becoming a 'killer' is itself associated with having more children, for two reasons. First, in the study population, all headmen are 'killers'. It is a commonplace in Amazonian ethnography, at least since Lévi-Strauss' (1944) famous article, that headmen have more wives and more children, regardless of the presence or absence of war. The Yanomamö certainly follow this pattern, with one headman reportedly having 43 children by 11 wives. The greater number of offspring associated with headman status thus distorts the advantages attributable to 'killer' status by an unknown amount.

Second, the table on reproductive success presents data only on children whose fathers are/were still alive. This raises the question: What is the effect of becoming a 'killer' on life chances? Does the average 'killer' live and breed longer than the average 'non-killer'? Higher mortality associated with 'killer' status could easily offset a greater number of offspring for living 'killers'. Combine that with the unknown impact of the headman factor, and there is no basis at present to conclude that becoming a 'killer' is associated with greater lifetime reproductive success.

Furthermore, as Albert (1989) criticized, Chagnon takes the Yanomamö ritual category of unokai to be equivalent to the Western concept of 'killer'. Unokai, however, denotes a state of symbolic impurity that is said to result from the
supernatural incorporation by the killer of the blood and flesh of a slain enemy, whether this enemy was killed by an arrow, by shamanism, by sorcery, or by the killing of his animal alter ego.

Lastly, Ferguson goes on to argue, the argument that the reproductive success of the 44% of the male population aged 25 or older who are unokais is increased by their capacity to abduct women is not supported by any empirical evidence, according to Albert (1989). On the contrary, Lizot (1988) reports that of a total of 350 marriages in a large village cluster that he surveyed in 1975, 0.9% were by abduction of women from allied villages and 0.8% by capture of women from enemy villages. Chagnon further argues that the unokais achieve greater marital and reproductive success because "they seem to be more attractive as mates than non-unokais" in marriage alliance arrangements, but the only ethnographic support he offers is the anecdotal and misleading association of unokai and waiteri (‘fierce’) as equivalent qualities attributed to males supposed to be ‘valuable’.

4.15.3 Male Coalitional Psychology and the Evolution of War

Coalitional aggression (i.e., raiding and warfare) evolved, Tooby & Cosmides (1988) hypothesize, because it allowed participants in such coalitions to promote their fitness by gaining access to disputed reproduction enhancing resources that would otherwise be denied to them. It is understood that females are generally the limiting reproductive resource to males, as explained in Ch. 3. Far fewer species manifest coalitional aggression than would be expected on the basis of the actual distribution of social conditions that would favor its evolution. The exploitation of such opportunities depends on the solution by individuals of highly complex and specialized information processing problems of cooperation and social exchange, and the difficulty of evolving cognitive mechanisms capable of solving such complex computational tasks may account for the phylogenetic rarity of such multi-individual coalitions.

Tooby & Cosmides propose that humans and a few other cognitively pre-adapted species have evolved specialized Darwinian algorithms, cognitive programs, that govern coalitional behavior, and which constitute a distinctive coalitional psychology. An adaptive task analysis of what such algorithms need to accomplish, in the decisions regulating coalition formation, participation, cost and benefit allocation, allows the preliminary mapping of this coalitional psychology. Scrutiny of the adaptive features of coalitional aggression reveals some surprising characteristics, including that, under certain conditions, mortality rates do not negatively impact the fitness of males in the coalition, suggesting why warfare is so favored an activity, despite its risk to participating individuals’ welfare.

Tooby & Cosmides propose that the distinctive and frequently surprising features of war stem from an underemphasized dimension: Cooperation.
Although a fight is an aggressive conflict between two individuals, and involves no cooperation, a war is an aggressive conflict between two coalitions of individuals, and would not be possible unless each coalition were able to coalesce, function, and sustain itself as a group of cooperating individuals. They suggest that a detailed analysis of the evolutionary dynamics of cooperation in the context of coalitional aggression may explain: (1) Adaptive obstacles in the evolution of coalitional aggression, (2) why war is so rare among animal species, and (3) why, nevertheless, it is so easy to generate conditions in which human males find initiating warfare so psychologically appealing.

Recent theoretical and empirical advances in evolutionary biology and game theory (Axelrod, 1984; Axelrod & Hamilton, 1981; Trivers, 1971; Maynard Smith, 1982) have shown that, if cooperation (independent of kin selection) is to evolve and function stably, it must function in a particular and structured fashion:

1. Social or ecological conditions must create frequent and recurrent situations where there are enhanced payoffs to cooperation.
2. Cooperators must be able to identify when other participants are not reciprocally cooperating, and who these cheaters or defectors are.
3. Cooperators must be able to exclude cheaters (defectors) from taking the benefits of cooperation without having paid the costs, or failing that, they must be able to exclude cheaters from future cooperative interactions they could exploit.

These principles describe the narrow envelope of preconditions that allow cooperation to evolve among social organisms. Instances of such cooperation, while not common, occur with regularity among various animal species, including social primates. Moreover, not only is there cooperation in such activities as predator vigilance and foraging, but there is sometimes cooperation in aggressive competition as well (Packer, 1977; Packer & Pusey, 1982). However, it is a major puzzle why animals do not cooperate in aggressive conflicts far more often than they do. There frequently appear to be situations that would favor their doing so, but in which such cooperation is absent.

Presumably, in all situations where two or more males, who are excluded from reproduction, could physically cooperate to break another male’s reproductive monopoly, selection would favor the formation of aggressive coalitions. For example, among elephant seals (LeBoeuf, 1974) or Hanuman langurs (Hrdy, 1977), single males are often able to defend and monopolize groups of females against large numbers of male competitors. It is not clear why excluded males who cannot singly best the resident male do not form aggressive coalitions, and through cooperation gain access to reproductive opportunities otherwise denied to them. This set of conditions seems widespread, and yet far fewer species manifest coalitional aggression than would be expected on the basis of the
actual distribution of social conditions that would favor its evolution (The special selection pressures on social insects would require separate analysis).

When one restricts the focus to species where *multi-individual (or polyadic) coalitions* of males aggressively compete, reports are rarer still; only two species are known to exhibit warfare, defined in this fashion: Common chimpanzees (Ch. 3), and humans. Possibly, bottlenose dolphins (e.g., Connor, 1988; Connor, Smolker & Richards, 1992) also belong to this category. The phylogenetic distribution of these species suggests an answer to why coalitional aggression is so rare: Humans, common chimpanzees, and dolphins are arguably the most cognitively sophisticated social animals known. Tooby & Cosmides argue that the cognitive mechanisms regulating reciprocation and social exchange cannot simply be either culturally ‘learned’ or be the product of ‘general intelligence’, but must be adaptively designed information processing systems (termed *Darwinian algorithms*) specialized for these functions. It may be that the distribution of war in the animal kingdom is limited by the same factor that limits the emergence of the multi-individual cooperation on which war depends: The cognitive prerequisites necessary to exclude cheaters from benefiting from joint action as much as, or more than, genuine cooperators. It is suggested that, for example, elephant seals and langurs, despite the reproductive payoff implicit in their ecological situations, did not have the cognitive preadaptations necessary for the emergence even of enduring dyadic coalitions, which, for example, baboons are capable of orchestrating (Packer, 1977).

The elements that must be integrated into a model of coalitional aggression (and into psychological mechanisms regulating participation) include:

- The risk to each participant,
- the relative value of the actions of each participant to achieving the common goal,
- the probability of achieving success given a certain set of performances by the members of the coalition,
- the aggregate value of achieving the common goal, and
- how the aggregate benefits of victory are allocated to each participant.

Each coalition member has impact on the coalition (1) by regulating the level of his own direct participation in the joint action, and (2) by the actions he undertakes to enforce the risk contract on the other coalition members. These two dimensions of regulating direct participation and enforcement have important and sometimes surprising properties. For example, the optimum level of direct participation is extremely sensitive to the probability of success, and the relationship between these variables may help explain why males will engage so readily in warfare when they are confident of success. It can be shown that given (1) certainty of victory, (2) the assurance of a random distribution of risk of death among participants, (3) the
assurance of a relatively ‘fair’ allocation of the benefits of victory, and (4) efficiency in the utilization of reproductive resources on a zero-sum basis, selection will favor participation in the coalitional aggression regardless of the existence or even the level of mortality (within broad limits).

Within a polygynous system with certain formal properties (e.g., access to females being the limiting resource for male reproduction; and male labor being comparatively unimportant to female reproduction), the deaths of some members of a coalition will not decrease the average reproduction of the members of the coalition, because the reproductive resources and opportunities within the coalition, or gained as the result of victory, will simply be reallocated among the survivors. As long as the members of the coalition do not lose reproductive resources, the level of deaths among the males will not influence the average success of the coalition members. Each individual who dies loses, but each survivor gains to the same extent, and provided the participants do not know in advance who will live and who will die, but rather that the risk is distributed randomly, and provided they are assured of success (as in, for example, a much larger group attacking a much smaller one), the collective decision of the coalition to go to war will benefit its members (in the currency of fitness).

Natural selection weighs decisions on the basis of their average consequences to individuals, summed over evolutionary time; consequently, these factors explain why males can so easily be induced to go to war, despite its lethal effects on many of them.

In this analysis, war is thus not simply a response to resource scarcity; when times are good, and male (economic) productivity irrelevant (which applies especially to horticultural societies), war may be very advantageous. Coalitions of males, when they assess the relevant variables indicating that they are larger or more formidable than any local competing coalitions, should appear to manifest an eagerness and satisfaction in initiating warfare and an obliviousness or insensitivity to the risk they run as individuals, in terms of their individual somatic welfare, which should be reflected in psychological sex differences in attitudes towards coalition formation and coalition-based aggression.

However, it is important to bear in mind that this willingness to participate is directly dependent on the probability of success, and on the fact that the coalition members do not know which of them is going to suffer the costs of death or disability. Perception and belief in success play a crucial role in encouraging coalitions to initiate war.

For polyadic male coalitions to evolve, the requirement that ‘victory be assured’ or at least very likely, is not as stringent as it may seem. While modern history is full of surprises, primitive war between small coalitions may be more predictably related to relative size. Barring very large differentials in individual aggressive formidability, assembling a significantly larger coalition will
virtually guarantee victory. Such a consistent relationship between size and probability of victory leads to the balance-of-power races discussed by Alexander (1979) as being a prime mover in social evolution. Being a member of an identifiably small coalition, a ‘minority’, is a dangerous proposition: The persecution and expropriation of local ‘minorities’ is a relatively safe fitness-enhancing activity. Correspondingly, the most significant costs of mortality to males may be the risk that a high incidence of mortality in your coalition (e.g., a Pyrrhic victory) may weaken the local coalition so that it becomes smaller and weaker than neighboring coalitions, and itself subject to victimization.

The second dimension of coaltional aggression involves the enforcement of the risk contract. It is not sufficient for members simply to regulate the level of their own direct participation; for coalitions to stably evolve and function, the risk contract must be enforced by some or all of its members on any cheaters, defectors, or non-participants.

In situations where numbers are a key to success, exclusion as a punishment has direct costs to the coalition. Instead, enforced inclusion, coupled with punishment or retaliation for non-participation, is an alternative strategy that would be favored in conditions of intense coalitional competition.

Tooby & Cosmides feel that evolutionary processes creating specialized cognitive adaptations in the context of coalitional aggression can be straightforwardly explained using standard genic selection, without recourse to either group selection or gene-culture coevolution theories. However, it is easy to see how cultural processes and/or group selection may magnify and/or modify the process. See also § 3.8 for the explanation Tooby & Cosmides offer to account for the absence of female warriors.

4.15.4 Criticism

All the specifications listed by Tooby & Cosmides, which govern coalition formation and predispose to warfare, seem likely to be true for numerous other coalitions (e.g., hunting coalitions), Low (1990) criticized, and their argument thus does not lead to the deduction that humans and chimpanzees are unique in having the appropriate Darwinian algorithms for warfare.

Shaw & Wong (1989) have argued that humanity’s propensity for warfare is equally prevalent among women and men. That warfare is perpetuated only by males, they state, is a misconception based on superficial observation. Greater visibility of males in warfare can be attributed to division of labor whereby both males and females contribute to inclusive fitness (survival and reproduction) in different, though complementary ways. Males were selected for greater physical strength. Where warfare was involved, this strength was readily transferred to the battlefield. At the same time, however, women were armed as ‘protectors of the means of reproduction’. Though invisible on primitive battlefields, they contributed equally to inclusive fitness by (1)
assuming supportive or help-mate roles for their male, combative counterparts and (2) assuming defensive/protective roles for the group’s offspring and means of genetic reproduction.

Shaw & Wong may be right in the assertion that the propensity for war may be equally prevalent among women and men, the conduct of war in primitive societies, as well as in chimpanzees, is an exclusively male affair, the ultimate rationale of which is the asymmetry between the sexes in the reproductive benefits to be gained.

4.15.5 Reproductive Success, Sexual Selection, and Conflict

"Why would anyone be so stupid as to initiate a war?" was the question posed by Leda Cosmides at the Fifth Annual Meeting of the Human Behavior and Evolution Society (1993). Her answer: "To get women".

The reason Tooby & Cosmides think that the first warriors battled over women instead of food is that it is not worth the risk to die for fruit or land. If food was scarce and a group of men went after another group’s food stocks, they were taking a big chance: Their own offspring, already malnourished, could starve if the men were killed in the fighting and didn’t return to help scratch out a living.

But women, the researchers argue, are worth dying for. A group of men would benefit from initiating a battle to claim new women if they were flush with food and other resources. Then they would know that their existing mates and offspring could survive without them. In evolutionary terms, they don’t lose much by going to war for women even if many were to die, their offspring would survive to pass on their genes. And if the group won and gained new mates, the male coalition would bear more young on average, even if a few men lost their lives in the effort... "Why fight over bananas" asked Chagnon at the same conference, "when you can fight over women?" (Meeting Brief in Science, 261, August 20, 1993, 987-8).

Similar and comparable theories about the influence of sexual competition on the evolution of male behavior have been put forth by Alexander, Borgia, Manson & Wrangham, van den Berghe, Symons, Tiger, E.O. Wilson, Chagnon, and Low. The following is a summary of Low’s (1990) comprehensive account of sexual selection theory.

Whenever an evolutionary history exists of reproductive advantage to some behavior such as human lethal conflict, and conditions change, there is a possibility for behavior to be driven by proximate cues (that in the past correlated with reproductive advantage), even when the proximate cues are currently unhinged from the (past) functional advantage. This situation is most
common in the case of environmental changes that represent evolutionarily novel events, such as human technological changes.

Human war, Low holds (in contrast to Tooby & Cosmides) can become more complex and varied than intergroup aggression in other species, largely as a result of the development of technology (which itself is probably a product of intelligence, and probably a product specifically of Machiavellian intelligence; cf. Alexander, 1971; Humphrey, 1976, 1983; Byrne & Whiten, 1988; see also Ch. 8). The development of technology to currently lethal levels raises an important question: Is it analogous, if not identical, to runaway sexual selection, described by Fisher (1930)?

Fisher noted that "remarkable consequences" follow if females exert a strong preference for particular traits in males. As Fisher pointed out, in sexual selection, two influences are important: Initial advantages (which may be considerable) not due to female preference (e.g., the advantage of large antlers in combat for red deer); and any additional advantage conferred by any female preference. The intensity of preference itself will continue to increase through sexual selection, so long as the sons of females exerting the preference have any advantage over other males. Fisher (1930) noted:

"The importance of this situation lies in the fact that the further development [of the favored trait] will still proceed, by reason of the advantage gained in sexual selection, even after it has passed the point in development at which its advantage in Natural Selection has ceased" (See also Darwin, 1871; and Cronin, 1991).

Thus, in sexual selection, the immediate reproductive gains can be so great, and so powerfully selected for, that they outstrip the countering pressure of ordinary natural selection for survival, resulting in the development of lethal traits leading to extinction. When, as in the Yanomamö, warring skill results in a significant increase in the number of children produced, sexual selection can be very powerful. Even in modern industrialized societies, in which participation in wars, and risk-taking behaviors may be 'unhooked' from the advantages given by sexual preference, if sexual preference still is exerted for 'war heroes' or if there are other proximate rewards, previously linked to selective advantage, the behavior may still be common.

Aggression is usually related to the acquisition of resources. The significant aspect of a 'resource' in evolutionary perspective is its influence on survival and reproduction. Thus some biologists (e.g., Alexander, 1979) define as a resource anything giving relief from Darwin's 'Hostile Forces of Nature': Climate, weather, food shortages, predators, parasites, and so on. In this broad view, not only physical resources such as food and shelter, but also status, coalition allies, and members of the opposite sex (potential mates) become resources. Because environments are complex, the focal resource will differ for different kinds of individuals (old, young, male, female, solitary or group-living).
Resources have been shown to have an impact on reproduction even when only skill in resource acquisition, independent of social factors, is considered. For example, Ritchie (1990) has demonstrated that optimally foraging ground squirrels leave approximately six times as many offspring as non-optimal foragers.

Furthermore, in many species, there is a clear link between resource control or dominance status and reproductive success, at least for males. The distribution (specifically economic defendability), predictability, and richness of resources dictate the breeding system (Cf. Emlen & Oring, 1977; Clutton-Brock & Harvey, 1976; van Schaik & van Hooff, 1983; see Ch. 3). When resources are controllable by a single male, territorial systems are likely, and territorial males out-reproduce ‘bachelor’ disenfranchised males. In non-resource controlling systems, while no physical resource of value may be controlled, more dominant males tend to out-reproduce less dominant males (Dewsbury, 1982; Huntingford & Turner, 1987). Thus males may fight directly over mates, they may fight for dominance (if females choose dominant males), or they may fight over territory (if females choose good territories).

What is the role of resources in human reproduction? As in other mammals, a sexual dimorphism exists. Males appear to be able to use large amounts of resources as mating effort to gain sometimes extraordinary numbers of wives and children (e.g., Betzig, 1986, who reviews despotic societies in which rulers may have thousands of wives and concubines). Females use smaller amounts of resources as parental effort, to raise a more limited number of healthy thriving offspring.

Cross-culturally, men use resources to gain reproductively; in many societies men’s increase in reproductive success is accomplished through polygyny - the acquisition of additional wives. The majority (85% according to Murdock, 1967) of societies for which there are data are polygynous. When resource differentials are great, men, like other mammalian males, can use resources to increase their lifetime fertility to a much greater extent than can women. As in other species, status, skill, dominance and power can be ‘resources’, in addition to the things we commonly think of. Betzig’s (1986) work shows definitively that in a number of societies there are clear, formal reproductive rewards associated with status: High-ranking men have the right to more wives, and have significantly more children than others. White’s (1988) data on the Standard Cross-Cultural Sample reflect the fact that in a number of societies there are explicit rules granting more wives to political leaders, skilled hunters, shamans, and so forth. Even in societies like the Aché, in which there are no such formal rules, Hill & Kaplan (1988) found that skilled hunters have more wives, more children, and better-surviving children than other men.

In 10 of 12 societies reviewed by Hill (1984), resource control clearly enhanced reproductive success. The two exceptions were large, densely settled societies with socially-imposed monogamy. In most societies the relationship was quite straightforward: Richer men had more wives and more children than
poorer men (Turkmen: Irons, 1979; African Kipsigis: Borgerhoff Mulder, 1988). Even in societies such as the Yanomamö, in which few physical resources are owned, male kin for coalitions represent a resource, and men manipulate kinship terms in ways that make more women available for mates, and powerful men as partners (Chagnon, 1982), so that reproductive success is uneven for men.

The benefits of warfare to males in preindustrial societies include increased direct access to reproductive females, and increased material resources useful for the lineage and in contracting marriages (individual [including sexual] and kin selection), and the communal location of related males (kin selection) appears to enhance warring behavior.

Among preindustrial societies, ambush warfare by raiding parties of varying size (almost indistinguishable from ambushes by male chimpanzees), appears to have been the common pattern. The rewards, as in the individual or communal fighting of other species, were reproductive: Women as mates, and resources to purchase women as mates.

The transition from such warfare to the complex multi-national warfare discussed in treatises on military history seems almost unfathomable, but must be examined if we are to understand whether there has been any change in the function of war.

Recognition of the importance of reproductive interests in the evolution of lethal conflict, as Low proposes, makes some apparent discrepancies among earlier models of warfare rather trivial. If competition can be driven to lethal levels by reproductive conflicts, it is no longer important whether population growth (e.g., Carneiro, 1970 vs Wright, 1977; Webster, 1975) is demonstrated to precede warfare. Reproductive competition is the evolutionarily important selective force underlying lethal conflict; warfare is a principal mechanism, and may be waged in the name of women, revenge, agricultural lands, new territory, or any devised reason.

In evolutionary terms, warfare can only have evolved to be common in circumstances in which the net inclusive fitness of warriors has been enhanced. Reproductive costs and benefits, and conflicts of interest, are central. In an evolutionary sense, the ultimate causes of war, as of all lethal conflict, are sexual selection and kin selection. Throughout the animal kingdom, lethal risks are taken only when the reproductive stakes are high. Individuals and groups of individuals, principally males, fight over mates and resources important to reproduction. Sexual selection and kin selection are the driving forces creating the reproductive rewards that make the risk of death worthwhile; kinship and reciprocity are the principal binding forces among those who fight together.

It is almost certainly true that past correlations between a warrior's behavior and reproductive success no longer hold. Nonetheless several aspects of men's
behavior in wars, and of the organization of fighting forces, suggest that (1) *proximate* correlates of reproductive success due to risky and aggressive behavior still exist in modern wars, and (2) successful leaders organize field units in ways that play on past kinship structure of warring groups.

With the elaboration of war, and the increased pace of weapons development, selective outcomes became less tied to individual actions and characteristics. Those with the most to gain from warfare frequently suffered lower risks than those with little to gain. We may well have unhooked the reproductive rewards from the behavior, so that lethal conflict is now counter-selective, and driven only by proximate cues, but throughout the evolution of conflict in humans as well as other species, there have been reproductive profits associated with risks of lethal conflict.

4.15.6 Criticism

Low skips over, or hardly recognizes, the problem of group aggression. Given that reproductive competition underlies lethal conflict, this does not, in itself, explain why humans and chimpanzees compete in groups (have war), and virtually all other species do not. She fails to explain why warfare is limited to so few species. Although she criticizes Tooby & Cosmides’ reasoning, she presents no real alternative to their Darwinian algorithms and coalitional psychology.

Regarding the evidence: In some people like the Yanomamö there *may* be some correlation between participation in revenge raiding and reproductive success. The Yanomamö are a very interesting but also quite exceptional people, however, who cannot be considered to be representative of primitive peoples generally.

Among the highly militarized, pre-conquest Cheyenne, war chiefs favored celibacy and usually died young, either in battle or as a consequence of ritual suicide. In contrast, the peace chiefs, who eschewed warfare, were typically polygynous, long-lived, and fertile (J.H. Moore, 1990). So, in the Cheyenne case, the correlation between war participation and reproductive success is essentially negative and the reverse of that claimed by the sexual selection theorists. Probably more exceptions have to be acknowledged, related to different objectives and motives of warfare at different sociocultural levels. This is, for instance, what Carneiro (1990) writes about chieftain-level warfare in Fiji and the Cauca Valley (South America): "Warfare among the Fijians was all-out and bloody, with no respect shown for sex or age. Women and children were killed ruthlessly and indiscriminately. The Cauca Valley tribes also killed women, no matter how young or attractive they might be, and slaughtered children as well". This seems an odd way of increasing access to reproductive females. In the next chapter I shall revisit the sexual selection theory in the context of the motivational analysis of primitive war.