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## 1. Introduction

Evolutionary psychology is a discipline that has emerged relatively recently, with the focus of explaining human psychology based on biological evolution. It can be viewed as an intellectual offshoot from sociobiology, which focused its explanation of human behaviour on looking for social mechanisms in the non-human animal kingdom. Subsequently it engaged in applying the concepts created thusly onto humans, leading to a diverse array of critical reactions based on its scientific shortcomings as well as on the political implications it created.

Some of the same critics that had objections against sociobiology, perceive similar problems in evolutionary psychologist's approaches. For example, the American biologist Stephen Jay Gould (1941-2002) criticized the discipline on grounds of its scientific foundation:

“And, when evolutionary psychology wasn't being attacked on political grounds, it was easy to find critics dismissing evolutionary psychology for being built on a 'fatal flaw.' For example, the late palaeontologist Stephen Jay Gould disparaged evolutionary psychology as 'pseudoscience' and 'Darwinian fundamentalism.’”

(Buller 2005: 4)

Interestingly, the counter reactions by evolutionary psychologists seem to try reversing the accusations by accusing their critics of similar flaws: “All too often I found evolutionary psychologists dismissing their critics as 'antiscientific,' 'politically correct postmodernists,' or closet creationists.” (Buller 2005: 5)

This goes to show that evolutionary psychologist's self-perception can be characterized as adhering to the standard of the scientific method. They are thereby decidedly distancing themselves from idiographic approaches, especially in regard to politically or religiously motivated explanations of human phenomena. Thus, a defense is created, that subsumes all the critics into one of the according categories, ignoring alternative, scientifically based explanations.

## 2. History of science

In this chapter I will lay out parts of the history of science in regard to biology and psychology leading to sociobiology and eventually evolutionary psychology on the one hand, and on the other, I will give a brief overview on parallel movements in cultural and social anthropology as well as the social sciences, that are especially concerned with questions of evolution, human nature and hence the nature/nurture debate.

### 2.1. History of sociobiology

#### 2.1.1. The Modern Synthesis

The earliest applications of evolutionary mechanisms on explanations of human behaviour can already be seen in Charles Darwin's book "The Expression of the Emotions in Man and Animals" from 1872 (cf. Gaulin/McBurney 2004: 2). But a crucial turning point in biology that gave impetus to the establishment of new fields of inquiry, was what is now referred to as "Modern Synthesis", which is based on the discovery and integration of " ... Mendelian genetics, Darwinian theory, and newly developed approaches to statistics ... which in turn made possible a family of new sciences, from population genetics to behavioral ecology." (Barkow/Cosmides/Tooby 1992: 12)

The Modern Synthesis was also characterized by clearing false believes in biology, as for example the theory of French naturalist Jean-Baptiste Lamarck (1744-1829), that claimed the direct inheritance of acquired traits (cf. Buss 1999: 10). In the period between 1920 and 1950, key concepts of evolutionary biology such as that of "fitness" have been defined through the works of British biologists J.B.S. Haldane (1892-1964), R. A. Fisher (1890-1962), and American biologist Sewall Wright (1889-1988) (cf. Laland/Brown 2011: 37f.). In the 1960's, British biologist William D. Hamilton (1936-2000) came up with the theory of inclusive fitness, which has been further elaborated on by the American biologist George Williams (1926-2010), who used it to explain some aspects of altruism, thereby making the often criticised theory of group selection obsolete. Williams also contributed to the concept of adaptations, for the application of which he endorsed three criteria that they must fulfil.

They have to be reliable, meaning that they should be present in all members of a species, efficient, in that they serve to solve adaptive problems comparatively well, and thirdly, economically feasible, in the sense of them not imposing huge costs to the organism. The next direction giving influence on the field has been provided in the 1970`s by the American biologist Robert L. Trivers, when he wrote papers that contributed the theories of reciprocal altruism in non-kin, parental investment theory and explanations regarding parent-offspring conflicts (cf. Buss 1999: 12-16).

### 2.1.2. The emergence of ethology and theories of innate aggression

An important step towards sociobiology was the emergence of the field called ethology, which focused on the study of animal behaviour in an evolutionary context. It put emphasis on the existence of instinctive behaviours that occur in all members of a species under specific circumstances, called fixed action patterns. Also imprinting in critical life stages, early and famously observed in many bird species, was used as explanation of how humans and non-human animals internalize associations to specific stimuli (cf. Buss 1999: 11f.). The Austrian zoologist and one of the founding figures of ethology, Konrad Lorenz (1903-1989) wrote a book named *“On Aggression”* (1966), in which he argued that aggression is an inherent instinct in humans that is bottling up if not released. A similar point of view has been expressed in the works of Austrian ethologist Irenäus Eibl-Eibesfeldt, who also suggested that aggression can be released via sport or similar physically strenuous activities (cf. Eibl-Eibesfeldt 1970: 101). Hence – the line of argumentation goes – fighting and war is a direct consequence of this propensity and thus an inevitable and natural human phenomenon (cf. Laland/Brown 2011: 43).

What is also implied here is that the reason for the occurrence of war can be located in the individual, based on universal biological influences. This conclusion of Lorenz has been reached by superimposing observations of animal ethology on humans, thus constituting the starting point for a long enduring discourse.

“Critics objected to his extrapolation from animals to humans, many argued that aggressive behaviour was learned, and others drew the disturbing conclusion

that if aggression was the expression of an inescapable urge, then war is unavoidable (Salzen, 1996). The opposition and debate continued for more than 20 years.” (Laland/Brown 2011:44)

The so called “killer ape theory” or hypothesis was already brought into discourse in the 1950`s, by Australian anatomist and anthropologist Raymond Dart (1893-1988). He proposed that human ancestors distinguished themselves from other primates because of their innate tendencies towards aggression that have been correlated with hunting prey for food. Following this line of argumentation was the American writer Robert Ardrey (1908-1980), who had studied anthropology as well as behavioural sciences and has written a best-selling book in 1961, named “*African Genesis*”, being the first of his four-volume “Nature of Man” series. He proposed that a fundamental characteristic of human nature entails an instinct to kill with the use of weapons that has developed due to the practice of hunting. Additionally, he claimed that humans also have an instinct for territoriality and that war emerged as a consequence of the interaction between these two instincts in the individual human being (cf. Shanafelt/Pino 2014: 31; Ferguson 2011: 264).

Another highly controversial book has been written by the English zoologist, ethologist and painter Desmond Morris in 1967, with the title “*The Naked Ape: A Zoologist's Study of the Human Animal*” (cf. Ehrlich/Feldman 2003: 86). In it, he tries to explain human behaviour through biologically based mechanisms of evolution, stating that humans are basically hunting primates, and that typical behavioural patterns in the present were being formed during the time of our ancestors. His claims of an evolutionary determination of such diverse attributes as aggression, parental or sexual behaviour were unsupported (cf. Laland/Brown 2011: 45). Hence, the concept of a time and place that was inhabited by early humans, leading to the formation of universal propensities, was already being conceptualized:

“In the 1960s and early 1970s, there was a proliferation of popular books that, like Morris` writings, built on ethological arguments to postulate a human nature rooted in an earlier primate or hunter-gatherer existence and thereafter set out to explain a number of aspects of current social behaviour as reflections of our evolutionary past.” (Laland/Brown 2011: 46)



### 2.1.3. The rise of sociobiology

At the time, within biology, the field of ethology was about to be overshadowed by the rise of sociobiology, under which many of Morris' works also have been labelled. In the United States of America the shift from ethology to sociobiology was more pronounced and swift compared to Europe, owing its establishment most distinctly to the book written by biologist Edward O. Wilson in 1975, with the title "*Sociobiology: The New Synthesis*". Only in the last chapter of this book, Wilson expands his theories of the origin of behaviours to also encompass human nature. One of the ideas of sociobiology regarding humankind was the notion, that if behaviour of certain animals like ants could be explained by the methods of sociobiology, they could be extrapolated to human behaviour as well (cf. Wilson 1976: 547).

A year later, in 1976, the British biologist Richard Dawkins wrote "*The Selfish Gene*", which most pronouncedly promoted the so-called "gene's-eye view", basically meaning to look at evolution at the level of genes as the objects of selection. An important inspiration for this kind of thinking was William D. Hamilton's theory of inclusive fitness, that extends the actions of an individual to promote not only the passing on of its own genes, but also to actively enhance the reproductive success of its biological relatives (cf. Buss 1999: 13). The difference between ethology and sociobiology is found in specific concepts used by the latter, such as the gene's-eye view, kin selection, reciprocal altruism, optimality models, game theory and evolutionary stable strategies (cf. Laland/Brown 2011: 49ff.). The last term has been coined by British theoretical evolutionary biologist and geneticist John Maynard Smith (1920-2004), and describes behavioural strategies that have evolved for specific species due to their enhancing effects on differential reproduction (cf. Crook 1980: 26). What is implied by sociobiologists in the explanation of human social phenomena is that they are the product of self-propagating mechanisms, fundamentally aiming to multiply genes as frequently as possible:

"Scientific sociobiology is distinguished by a more rigorous and comprehensive attempt to place social behaviour on sound evolutionary principles, notably the principle of the self-maximization of the individual genotype, taken as the fundamental logic of natural selection." (Sahlins 1976: 4)

#### 2.1.4. Criticism of sociobiology

Criticism of sociobiology emerged instantaneously, stemming from diverse disciplines, basing their points of critique on many different aspects of interest according to the respective fields:

“Almost immediately, a vocal countermovement of hostile critics of human sociobiology sprung forth. Anthropologists, psychologists, sociologists, and some prominent biologists bitterly repudiated the sociobiologists` findings, lambasted their methods, and charged them with prejudicial storytelling.” (Laland/Brown 2011: 61)

The content of the field was actually not so much different from preceding biological concepts, being based largely on theories such as inclusive fitness, parental investment and sexual selection. But much of the critique of it was sparked by applying these concepts to humans without modification or reference to other scientific approaches. Quite to the contrary, sociobiologists were actually advocating a subsumption of scientific disciplines concerned with human phenomena, under the field of biology. On some level, Edward O. Wilson applied the same fundamental principles to explain phenomena of an incredible range of species, be it ants or humans, without basing his assertions on many scientific findings about the latter (cf. Buss 1999: 17).

“Despite Wilson`s grand claims for a new synthesis that would explain human nature, he had little empirical evidence on humans to support his views. The bulk of the scientific evidence came from nonhuman animals, many far removed phylogenetically from humans. Most social scientists could not see what ants and fruit flies had to do with people.” (Buss 1999: 17)

This led to such an open aversion to his theories, that E. O. Wilson had actually not only been attacked verbally during his talks, but once even a pitcher of water was poured over his head by members of the audience (cf. Buss 1999: 17).

Important points of critique on scientific grounds against the claims made by sociobiology were expressed by the biologists Gould, Lewontin and Kamin, who wrote a work openly criticising its inherent principles of reductionism and biological determinism, based on it reducing human behaviour to genes that determine their actions:

“The emergence in the 1970s of a new wave of evolutionary thinking about human nature, especially in the sociobiological theorizing of E. O. Wilson, stimulated a heated controversy that was as much political as scientific. In 1984 Steven Rose, Richard Lewontin, and Leon J. Kamin – professors at the Open University in England, at Harvard, and at Princeton respectively – jointly authored a book entitled *Not in Our Genes: Biology, Ideology and Human Nature*. In this they made a systematic assault on what they saw as the pernicious doctrines of reductionism and biological determinism.” (Stevenson 2000: 303)

## 2.2. History of evolutionary psychology

### 2.2.1. Darwin`s influence on psychology

There has been a remarkable influence of Darwinism on the thinking of early pioneers of psychology, especially in the 20<sup>th</sup> century, a trend that declined but was picked up again in recent times:

“... [I]nfluential early students of the human psyche from Francis Galton and William James to J. B. Watson and Edward Thorndike were avid Darwinians. As the 20th century progressed, however, psychological theory and research somehow lost its evolution-mindedness. ... Today, there are dozens of journals that at least occasionally publish human research citing both classic and contemporary evolutionary theory and testing psychological hypotheses derived therefrom.” (Daly/Wilson 1999: 510)

The psychoanalytical theories of Sigmund Freud (1856-1939) already show some influences of evolutionary explanations of human nature, especially when regarding his proposed

fundamental classes of instincts. They have been conceptualized to either serve as motivators for attending to needs that help to preserve one's life, or as functioning in order to regulate individual aspects of sexuality (cf. Wiehe 1998: 3). He postulated that neuroses are based on guilt which can be traced back to a conflict between basic biological drives, in contrast to being socially constructed (cf. Badcock 1998: 458). Another early and immensely influential psychologist even more pronouncedly influenced by Darwin's theory, was William James (1842-1910) (cf. Gaulin/McBurney 2004: 2).

In his works, instincts took an important part in the explanation of human behaviour. William James had claimed that humans possess many more instincts than other animals, even providing a catalogue ranging from ones that are already present at birth, such as for sucking and sobbing, up to instincts that are only expressed in later stages of life, allegedly regulating complex conceptions such as modesty, love and even hunting. An innateness of specific fears of animals like spiders or snakes, dark or high places, have also been proposed by James. His concept was that instincts are evolved adaptations, but that the interplay between them is complex and cannot be seen as being strictly isolated or deterministic. The impact of James' theory regarding this Darwinian approach to humans – presented as having adaptive and innate propensities – on the field of evolutionary psychology seems quite obvious, because, as will be seen, this is one of the main arguments proposed by evolutionary psychologists when explaining the human psyche (cf. Buss 1999: 23f.).

In the early 20th century there has been a development in psychology towards studying behaviour on a quantifiable basis. The founding figure of this school of thought, termed behaviourism, was the American psychologist John Watson (1878 - 1958), who thought that learning instead of inherited traits should be the focus for psychology to explain human behaviour. A movement in Russia, built upon the works of Russian physiologist Ivan Petrovich Pavlov (1849-1936) followed a similar approach that entailed the discovery of classical conditioning (cf. Laland/Brown 2011: 37f.). Watson discounted the idea of a diversity of instincts innately present in humans, instead focussing more on the concept of the ability to learn, as explaining the complexity of human activities (cf. Vicedo 2013: 45). Thus, the attention was directed towards the impact of the outer environment to a higher degree than that of inside influences.

This tendency was further elaborated upon by American psychologist Burrhus Frederic Skinner (1904-1990), who gave the impetus for a so-called “radical behaviourism” that positioned the mechanism of operant conditioning – which explains the execution or suppression of behaviour on the basis of it being either reinforced or punished respectively – at the core of all expressed behaviours. This theory, contrary to the “instinctivism” proposed by John Watson, disregarded the existence of many innate human propensities, instead claiming that the ability to learn suffices to account for the generation of any observable behaviour. The behaviourist’s perspective has been endorsed by many psychologists, giving direction to the field for a substantial part of the 20<sup>th</sup> century, thereby shifting the view of human nature from being seen as determined by many diverse and inherent instincts to being profoundly malleable (cf. Buss 1999: 24f.).

### 2.2.2. From sociobiology to evolutionary psychology

Evolutionary psychology is regarded by many as an intellectual continuation of sociobiology, in respect to referring the explanation of human social behaviour on other social species:

“Evolutionary psychology emerged from within the sociobiological paradigm. Human sociobiology sought to draw upon the study of other social animals to create accounts of human social conduct.” (Hamilton 2007: 106)

The Canadian psychologist couple Martin Daly and Margo Wilson label disciplines or subfields that engage in evolutionary explanations of current human phenomena as “human evolutionary psychology” (short HEP), encompassing fields of human behavioural ecology, sociobiology and evolutionary psychology. They emphasize that the adherents of these fields often originally stem from animal behavioural research, claiming that the contribution from these researchers is essential for the insights made in these various fields:

“ ... [M]uch of the best work is conducted by animal behaviourists who treat *H. sapiens* as 'just another animal'... Many prominent contributors to the development of HEP came to the subject from backgrounds in nonhuman animal

## 2.2. History of evolutionary psychology

behaviour, ecology, and evolutionary biology. Such founders of human ethology as Nicholas Blurton Jones, Irenäus Eibl-Eibesfeldt, Robert Hinde and Niko Tinbergen published major works on the behaviour of other vertebrates before turning to the human animal.” (Daly/Wilson 1999: 509f.)

One of the main inspirations for advocates of evolutionary psychology like Steven Pinker or David Buss was the release of the essay collection “*The Adapted Mind: Evolutionary Psychology and the Generation of Culture*”, which will be among the primary literature to be analysed in this thesis (cf. Derksen 2007: 192). Their work was of utmost importance in the creation of the discipline and is still frequently referred to by evolutionary psychologists (cf. Panksepp/Panksepp 2000: 109). “What has become the *locus classicus* of the field is the book’s opening essay by Cosmides and Tooby: 'The Psychological Foundations of Culture,' a systematic, counterrevolutionary manifesto that established the terms and issues of subsequent discourse in this arena.” (Fromm 2003: 92)

The definition that American biological anthropologist John Tooby and psychologist Leda Cosmides provide for their newly conceptualized field termed evolutionary psychology is that it “ ... is psychology informed by the fact that the inherited architecture of the human mind is the product of the evolutionary process.” (Barkow/Cosmides/Tooby 1992: 7)

The previous quote illustrates the biological determinism underlying all aspects of evolutionary psychology, resting on the assumption that a specific structure present in all human brains evolved due to an adaption to selective pressures (cf. Wells 1998: 235). It borrows essential concepts from diverse sub-disciplines of biology and applies them to explain proximate psychological phenomena on an ultimate causal basis. This is exemplified by American evolutionary psychologist David Buss, stating that the “ ... theory of inclusive fitness has profound consequences for how we think about the psychology of the family, altruism, helping, the formation of groups, and even aggression ... ” (Buss 1999: 14)

Other evolutionary psychologists define the discipline by its theoretical fundament, referring explanations of all psychological phenomena back to the process of biological evolution (cf. Gaulin/McBurney 2004: 1).

### 2.2.3. The Santa Barbara School of evolutionary psychology

The “Center for Evolutionary Psychology” that was co-founded by Tooby and Cosmides, as well as being directed by them, is associated with the University of Santa Barbara in California. It was also there that Steven Pinker spent a year being a fellow, a period during which he was heavily inspired by the two founders, according to his own statement (cf. Pinker 1997: x). As a reaction to the abundance of critique and arguments directed against evolutionary psychology, there have been internal developments in the field addressing these criticisms, by distancing themselves from this so labelled “Santa Barbara school of Evolutionary Psychology” (cf. Bolhuis et al. 2011: 2). By attacking the core tenets of evolutionary psychology, these psychologists engage in an inadvertent attempt of dissolving the entire discipline.

It is important to acknowledge that evolutionary psychology is a field of much academic and also public interest, exerting considerable impact on an epistemological but also political basis, thus making a critical analysis of its principle flaws a somewhat valuable and meaningful endeavour. Following is a list of universities that provide study programs for evolutionary psychology as of now, just in order to demonstrate how flourishing this field is, at least in institutes of Western academia: University of Santa Barbara, Austin, Pennsylvania, Arizona, Michigan, Los Angeles, Boulder, Miami, Cambridge, Queensland, Oregon, Minnesota, Washington, Reading, East London, Harvard University, Stanford University, Michigan State University, Georgetown University, Arizona State University, McMaster University, Lakehead University, The New School and the Max Planck Institute for Human Development (URL1). The Human Behavior and Evolution Society (short HBES), which held its 27<sup>th</sup> conference in 2015, is a collective that focuses on the evolution of human behaviour, having many proponents of evolutionary psychology amongst its members.

Also, evolutionary psychology is covered as a topic in most introductory textbooks of psychology, sometimes more critically reflected than other times, during which its findings are depicted as positively verified and thus being considered as factual knowledge (cf. Confer et al. 2010: 123). The general acceptance of a field with so much scientifically and philosophically based criticism agglomerated against it has been problematized in diverse

papers. Concerns have been expressed in many instances similar to the following statement, concluding that “ ... evolutionary psychology is empirically unwarranted and conceptually incoherent to such an extent that it is a matter of professional sociological concern why it has come to achieve such a degree of popularity.” (Hamilton 2008: 105)

### **2.3. History of cultural anthropology**

#### **2.3.1. Margaret Mead versus Derek Freeman**

Shortly after the rise of behaviourism there has also been a reaction against views based on instincts and the propagation of traits in humans occurring within the school of American anthropology led by Franz Boas. This school has subsequently been further elaborated upon by his students Margaret Mead and Ruth Benedict, amongst others. Thus, in the 1930s of the United States of America, a transition from hereditarianism to the emphasis on environmental influences took place in the scientific thinking at large (cf. Laland/Brown 2011: 43). Mead's studies of Samoan culture, especially her investigation of common sexual practices and the mindsets commonly held by youths living then and there, led to the proposition that concepts like jealousy and competition are an effect imposed partly by the mechanisms of capitalism constituting specific Western values, and not representing human universals. Mead viewed culture as the determining factor in the constitution of gender roles, with biology only playing a minor part in the equation (cf. Peterson/Wrangham 1996: 279).

The New Zealand anthropologist Derek Freeman who had also worked with Samoan islanders in the 1940s, claimed a falsehood of Mead's research data and the conclusions derived therefrom. Contrary to the claims made by Mead he stated to have observed high amounts of competitive behaviour and sexual jealousy amongst them (cf. Gaulin/McBurney 2004: 16f.). This led to a considerable controversy in the field, not only on a scientific but also on a personal basis, including allegations on both sides. Mead was primarily being accused of having been misled by her informants, while Freeman was being criticized on grounds of ignoring the changes that have been brought on by outside influences on Samoan culture, in the time period between his and her fieldwork. Theoretically, Freeman was a



proponent of a view that endorsed biological as well as psychological universals in human beings, and so, to no one's surprise, evolutionary psychologists use Freeman's account of Samoan culture to emphasize the existence of universal traits in humans. This has been done especially in regard to the domain of propensities towards jealousy and violent behaviour, particularly in males (cf. Buss 1999: 26; cf. Gaulin/McBurney 2004: 16). In their jointly authored book titled "*Demonic Males: Apes and the Origins of Human Violence*", writer Dale Peterson and primatologist Richard Wrangham noted that Mead actually presented evidence for three societies in New Guinea that exhibited institutionalized sex roles where violence in males is manifest. They have been using this information to substantiate their argument, that like in chimps, human males are biologically prone to engage in violent behaviour (cf. Peterson/Wrangham 1997: 281).

### 2.3.2. Implications of evolutionary thinking for cultural anthropology

The influence of theories referring to evolution in cultural anthropology was high in the beginnings of the field, but gradually declined and practically vanished through the influential power wielded by Boas. This led to a failure to factor evolutionary explanations of culture into the considerations provided by the discipline without much further reflection:

"For most of the twentieth century evolutionism has been virtually absent from British and American cultural anthropology. After an auspicious beginning in the late nineteenth century in the work of Spencer, Morgan, and Tylor, it was vigorously combated in succeeding decades by Franz Boas and his early students. It seemed for a long time that Boas had demolished evolutionism – it was 'effectively exploded,' one commentator put it – and since then anthropologists have not been so much actively antievolutionary as they have been indifferent, passively nonevolutionary." (Sahlins/Service 1960: 1)

The direction of Boas' work and his opposition to evolutionary theories was influenced and largely built upon his idealistic and political views. Because evolutionary theories of culture have often been abused to arbitrarily create different levels of value on claims of an alleged superiority of some peoples over others, it is understandable that this can lead to a rejection

of such approaches altogether by worrying that they could effectively substantiate increased inequality, by theoretically constituting a hierarchical order. This, amongst other developments, led to the formulation of Boas` cultural relativism, which emphasizes the specific influence that diverse forms of enculturation have in the construction of individual persons and the values they hold:

“Boas and his followers openly opposed discrimination and prejudice and, since these practices were rationalized and justified by theories that rested on an evolutionary metaphor, they mounted a systematic attack against all forms of evolutionary thinking. The need for an alternative theory to replace evolutionism resulted in the formulation of cultural relativism with its emphasis on culture as learned and changeable.” (Greenfield 2001: 37)

Cultural Materialists like Marvin Harris (1927-2001), Robert Carneiro and Brian Ferguson have been following the tradition of Julian Steward (1902-1972) and Leslie White (1900-1975), who had been influential in denouncing Boas` cultural relativism. Their theories can be traced back to the impetus of Herbert Spencer`s work, who had influenced the social sciences fundamentally. Amongst other things, he has done so by pointing towards the restrictions entailed by explaining human mass phenomena via extrapolating from individual psychological inclinations, or his emphasis of seeking nomothetically based explanations accounting for societal mechanisms.

Spencer, as British anthropologist Sir Edward Burnett Tylor (1832-1917) already had proposed, engaged in creating an ethnographic database with his approach of `descriptive sociology`, which eventually led to its current form represented in the Human Relations Area Files (HRAF). This compilation of ethnographic data was founded by Amber and Amber from Yale University and is used by many scholars nowadays to engage in worldwide cross-cultural comparisons, also functioning as a substitution for the lack of the possibility for laboratory experiments in cultural anthropology. The Standard Cross Cultural Sample (SCCS) provides data and eases the exposure to recurrent statistical problems like `Galton`s problem`. American anthropologist Robert Leonard Carneiro emphasizes the importance of the “Comparative Method”, which was in use already before the emergence of cultural

anthropology, being applied to theoretically reconstruct entire organisms or languages, based on fragmentary findings. This method was an essential achievement not only for anthropology concerned with evolution, but for diverse branches of science in general (cf. Carneiro 2003: 10f.).

## 3. Philosophy of science

### 3.1. Basic categorization of principles

At the most basic level every approach of explaining a phenomenon can be defined according to its underlying principles, which can be separated into epistemological, ontological, methodological and theoretical principles.

The entities which are referred to by scientists to explain specific phenomena are depending on the methodological principles used. For example, methodological holism explains socio-cultural phenomena not on the basis of the summed actions of the individuals it is composed of, but instead acknowledges emergent properties that cannot be reduced to the individual level, also by paying attention to the interactions of its component parts. The opposing principle would be methodological individualism, which bases an explanation of society on the psychological inclinations of its individual members. This can be seen as an underlying proposition in the cultural relativism held by Franz Boas (1858-1952) and his disciples Ruth Benedict (1887-1948) and Margaret Mead (1901-1978). In this case, the methodological principle is also conflated with an idealism that is contrasted by the materialistic view, which states that external impetuses yield more weight in the explanation of how societies function compared to internal ones (cf. Gibbon 1984: 403).

Epistemological principles like the scientific one are coupled with specific explanatory basics, as in this case the mechanics of cause and effect, nomothetic explanations and the aim of verification, or better yet, falsification, to sort out hypotheses that have been proven wrong. For example, both, sociobiology and cultural materialism, utilize the general epistemological principles of science, but the former – in contrast to the latter – relies on reductionist principles to explain human sociocultural phenomena (cf. Harris 2001: 119).

### 3.1.1. The range of theories and their generation

Robert K. Merton (1910-2003) defined the term “middle range theory” in 1962, which describes theories that are characterized by being empirically verifiable, but always only in the context of a specific time and space. Contrasting these are theories of high complexity, or “grand theories”, which are also valid if taken out of this narrow context and can be applied to explain more general or universal phenomena (cf. Merton 2007: 448). Theories with a high level of abstraction, as for example explanations based on mechanisms of evolution, would be placed under the latter category. The former could describe theories that are neither of such a narrow range as to only account for one specific case, nor so large as leading to the formulation of universally valid laws. So called “ad-hoc” theories are based only on weak empirical evidence and in strong relation to the spatial and temporal situation, and therefore could be placed way on the other side of the spectrum, implying a low level of abstraction.

According to Marvin Harris, middle range theories can run the risk of becoming eclectic in the sense that they draw explanations arbitrarily from diverse theories. Thereby, they are not relating to a single paradigm, but to many different epistemological and theoretical principles instead, which actually could be mutually exclusive, thus making their integration impossible (cf. Ferguson 1995: 29).

The generation of theories can be based on deductive-nomothetic models utilizing a top-down approach, or on statistic-inductive models using a bottom-up procedure of explanation. In either case, they should rely on the rules of logic as well as those of verification and falsification, also taking in account the difference between correlation and causation. The criterion of objectivity should be met, or at the least approximated, for example by inter-observer reliability testing. Additionally, the distinction between levels of explanations regarding specific phenomena should be considered, researching them either from a micro- or macro scope. In other words, you could focus on the smaller parts of their composition, with the risk of engaging in some form of reductionism, or, on the other hand, look at the larger implications and interconnections, with the possibility of neglecting the individual properties and interactions of their constituent components.

## **3.2. Main principles of evolutionary psychology**

In this chapter I will explain the main principles of evolutionary psychology and also relate them back to their origin in sociobiology. Specific critique from diverse actors and disciplines will be provided regarding their individual aspects and claims.

### **3.2.1. Standard Social Science Model vs. Integrated Causal Model**

In the book *“The Adapted Mind: Evolutionary Psychology and the generation of culture”*, Tooby and Cosmides criticize what they term the “Standard Social Science Model”, posited by them as opposite to their own proposed concept, termed the “Integrated Causal Model”. They characterize the “Standard Social Science Model” (from here on out referred to as SSSM) as prevalent theoretical principle utilized in the humanities, the foundation of which lies in the notion that human minds are predominantly influenced by environmental factors, instead of innate ones (cf. Derksen 2007: 191). The basis for this concept was famously proposed by Èmile Durkheim (1858-1917), who emphasized that the human individual is formed via social effects (cf. Fromm 2003: 93). But the idea of humans as being determined from the outside rather than the inside goes back further, having already been elaborated in detail by the British philosopher and physician John Locke (1632-1704) in the 17<sup>th</sup> century. He termed the initial point of being as “tabula rasa” or “blank slate”, which is characterized as being unaffected by innate ideas (cf. Gaulin/McBurney 2004: 3). This dichotomy is also represented by the doctrine of innate ideas proposed by French philosopher René Descartes (1596-1650), which is axiomatically opposed by the empiricist’s emphasis on undifferentiated properties of an uninfluenced initial state (cf. Fodor 1983: 3). The late American anthropologist Clifford Geertz (1926-2006) has been singled out by Tooby and Cosmides as an example of a recent proponent of the SSSM (cf. Tooby/Cosmides 1992: 25).

#### ***3.2.1.1. Fundamental attributes of the SSSM***

This proposed capacity for malleability and absence of predetermination in humans lies at the core of the SSSM concept:

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“Tooby and Cosmides (1992), two of the leading evolutionary psychologists, make a powerful critique of what they call the Standard Social Science Model (SSSM), especially familiar to social anthropologists. This claims, in particular, that there is no human nature that provides us with innate cognitive or behavioural dispositions: on the contrary, we are basically blank slates, totally malleable. All human thought and behaviour are therefore learned, conditioned by the unique culture in which we have grown up, but our culture itself is not influenced by any innate human psychology.” (Hallpike 2011: 214)

Tooby and Cosmides claim, quite to the contrary, that the human mind is based on an innate psychology, composed out of evolved, specialized, function- and even content-providing mental modules that in consequence pose a structure, eliciting specific behaviours under certain circumstances (cf. Panksepp/Panksepp 2000: 108). This is exemplified by the way they criticize the explanatory weight ascribed to external influences as determining factor in accounting for individual development, that acts as a main proposition of the SSSM: “ ... [T]he central logic of the Standard Social Science Model has been to direct the quest for the ultimate cause or generator of significant mental and social organization outward away from the rich computational architecture of the human mind.” (Tooby/Cosmides 1992: 46)

This perspective of a biologically determined mind is endorsed by evolutionary psychologists in general, for example Daly and Wilson, who stated that:

“Those who derive explicit inspiration from Darwinism usually expect the evolved mechanisms of the human mind to be numerous and specialized, while most social theorists seem to believe that the complexity of human thought and action can be accounted for by a relatively small number of processes or mechanisms, such as 'learning,' that are somehow both sophisticated and extremely general in their domains of action or purposes.” (Daly/Wilson 2003: 571)

### 3.2.1.2. *The Integrated Causal Model*

Instead, evolutionary psychologists' "Integrated Causal Model" puts emphasis on the way in which the proposed mental modules act as a source for structures of human conduct, reaching as far as providing the creation and maintenance of culture itself:

"In contrast, proponents of the Integrated Causal Model accept that, in addition to whatever content-independent mechanisms our psychological architecture may contain, it also contains content-specific devices, including those computationally responsible for the generation and regulation of human cultural and social phenomena." (Tooby/Cosmides 1992: 49)

This pre-programmed set of contents leads to what they term "metaculture", a universal basis that is inherent in all humans and acts as fundament on which the diversification of all cultures is built upon (cf. Tooby/Cosmides 1992: 121).

Another fundamental point of Tooby and Cosmides' critique of the SSSM lies in its rejection of using the epistemological principles of science, thereby even after hundred years of existence allegedly not having produced any useful results. According to them, this is based on its ontologically singling out humans from being objects of investigation by the natural sciences, giving them their special position in the humanities: "This is accompanied by a growing malaise, so that the single largest trend is toward rejecting the scientific enterprise as it applies to humans." (Tooby/Cosmides 1992: 23)

A similar critique has been formulated by the American psychologist and anthropologist Laura Betzig, pointing to a lack of the early SSSM to contribute models that have predictive power (cf. Betzig 1998: 269). This leads to the difficulty of integrating findings provided by the model into larger systems of causality, thereby separating itself from the elementary enterprise of science (cf. Gaulin/McBurney 2004: 14). "The single most far-reaching consequence of the Standard Social Science Model has been to intellectually divorce the social sciences from the natural sciences, with the result that they cannot speak to each other about much of substance." (Tooby/Cosmides 1992: 24)

### 3.2.1.3. *Fundamental attributes of the Integrated Causal Model*

The Integrated Causal Model on the other hand aims to connect the social sciences to the rest of science by claiming that the brain is a composition of information processing mechanisms that evolved as adaptations and are structured in a content specific way. Many of these mechanisms are functionally specialized to produce behaviour that solves particular adaptive problems. Concrete examples provided by Tooby and Cosmides are phenomena such as mate selection, language acquisition, family relations and cooperation in general. Another important aspect of this models' assumption is the claim that these content specific information-processing mechanisms even generate some of the particular content of human culture, including certain behaviours, artefacts, and linguistically transmitted representations (cf. Tooby/Cosmides 1992: 24).

“On this view, culture is the manufactured product of evolved psychological mechanisms situated in individuals living in groups. Culture and human social behaviour is complexly variable, but not because the human mind is a social product, a blank slate, or an externally programmed general-purpose computer, lacking a richly defined evolved structure.” (Tooby/Cosmides 1992: 24)

The previous statement is important as it illustrates the principle of methodological individualism in evolutionary psychology, explicitly establishing a theoretical but supposedly causal connection of the individual human mind to the emergence of culture. Furthermore, the principle of reductionism is applied in the sense that all humans are portrayed as being composed of a defining physiological structure that evolved because of reoccurring problems posed by the environment of the past, but is now acting as the basic mechanism of emerging social phenomena:

“Just as a blank piece of paper plays no causal role in determining the content that is inscribed on it, the blank-slate view of the mind rationalizes the belief that the evolved organization of the mind plays little causal role in generating the content of human social and mental life. ... Hence, according to the standard model, the social and cultural phenomena studied by the social sciences are



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autonomous and disconnected from any nontrivial causal patterning originating in our evolved psychological mechanisms.” (Cosmides/Tooby 2005: 6)

The only aspect of the SSSM that the authors carry over unchanged into their Integrated Causal Model, is its proposition of the “psychic unity of mankind”. It basically states that there exists a common potential that is inherent in all “normal” human beings, and also that the most variation exists within the whole population and across individuals, but not between specific populations. Thus, differences between groups as well as similarities within groups cannot be explained by their underlying genetic variation. This point of view has already been adopted by anthropologists from the early 19<sup>th</sup> century, for example Tylor, Morgan and Frazer all emphasized that the minds of humans are fundamentally similar. Sadly, this view had changed in some of the early proponents later on, leading to the creation of differential scales of value (cf. Carneiro 2003:17f.). Interestingly enough though, the reason evolutionary psychologists state for this phenomenon to exist is proposed to be found in our inherent, evolved psychological mechanisms: “Why it turns out to be true, however, depends on the existence of complex evolved psychological and physiological adaptations – something explicitly or implicitly denied by adherents of the SSSM.” (Tooby/Cosmides 1992: 25)

#### *3.2.1.4. Subordination of sciences under the realm of biology*

One underlying aim of the Integrated Causal Model is to unify all the sciences on a common ground, a venture that is reminiscent of the earlier approach of sociobiology, especially E. O. Wilson’s endeavour to merge the social sciences with biology in the so called “new synthesis” (cf. Wilson 1977: 138). Evolutionary psychologists criticize the SSSM on the basis of its assumption that nurture trumps nature, or more specifically, that it allegedly creates a false dichotomy of nature and nurture, which, according to them, cannot be investigated separately. Thereby they are conceptualizing an all-encompassing biology in the form of programs that are innate in all human beings and triggered in certain environments as well as during specific life stages (cf. Gaulin/McBurney 2004: 9). Tooby, Cosmides and other evolutionary psychologists thus subsume even human culture into the realm of biology: “Human minds, human behaviour, human artifacts, and human culture are all biological

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phenomena – aspects of the phenotypes of humans and their relationships with one another.” (Tooby/Cosmides 1992: 21)

This perspective of the social sciences being only a part of the biological disciplines has also been held by evolutionary psychologists Martin Daly and Margo Wilson (cf. Daly/Wilson 2003: 572). Derksen points to diverse disciplines that evolutionary psychology tries to merge together thereby regressing their individual developments to a state of unison. This is reminiscent of the early 20<sup>th</sup> century, during which the diversification of disciplines was only beginning: “Evolutionary psychology presents itself as the foundation of an integrated social science, tying sociology, anthropology, economics and other disciplines to the anchor of biology, from which they have been drifting away since the 1920’s.” (Derksen 2007: 189)

Another point of critique in this vein, directed at the social sciences, is that through the SSSM they engage in what Tooby and Cosmides term a doctrine of intellectual isolationism, meaning that they refrain from explaining human beings using the epistemology of science, thus keeping themselves from the aforementioned integration. They refer to definitions of culture by Durkheim, Kroeber, Boas, Murdock and Lowie, which are describing it as something that can only be explained by its own terms, thus being independent of biological and psychological influences. The claim is that this ontological stance leads to a certain arbitrariness in the explanation of human phenomena by the humanities, thus not being able to even approximate objectivity (cf. Tooby/Cosmides 1992: 21f.). Many evolutionary psychologists criticise this approach on the ground that it fails to explain cultural variation on a causal basis, offering hypothesis of evolved psychological adaptations as an alternative (cf. Buss 1998: 427). The proposed aim lies in submerging all disciplines under the umbrella of science, meaning that they all rely on the same epistemological principles that in sum constitute the scientific method (cf. Gaulin/McBurney 2004: 12).

#### *3.2.1.5. Critique of the SSSM by anthropologists*

There are some aspects of the critique of the SSSM that are shared by anthropologists, primarily adherents from the school of cultural materialism, who also use the scientific method to conduct their research. For example, British and Canadian anthropologist

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Christopher Robert Hallpike senses similar shortcomings in the approach of some paradigms of anthropology, but still emphasizes that evolutionary psychology does not hold the key to valid explanations of human activities. Quite to the contrary, Hallpike states that:

“Some years previously (Hallpike 1976a, 1979a), I had also criticised the SSSM in rather similar terms to those of Tooby and Cosmides, and to this extent I therefore agree with their critique of its many absurdities. Unfortunately, the cure which they advocate, evolutionary psychology, merely substitutes a new set of fallacies ... “ (Hallpike 2011: 214)

Carneiro points out that the first approaches to explain mankind in its entirety have been based on ideas of divine intervention, but in the tradition of evolutionist theories, early anthropology sought to explain it as based on natural causes. “Consequently, they felt that its development was subject to explanation in terms of scientific laws and principles.” (Carneiro 2003: 11)

It is interesting that the majority of anthropologists strayed away from this approach, especially in the last century, instead leaning towards principles that explain human phenomena in their own terms and embracing the uniqueness and separation provided thereby. In this vein, it could be argued that the concept of free will that has emerged since the enlightenment somewhat replaced, or at least diminished the influence of an external force like god in the way of thinking, shifting its unpredictable nature inside the individual (cf. Jansz 2004: 17; Gray 2007: 4). Even though the movement has been marked by a secular, rational and mechanistic view of nature, free will was perceived as unforeseeable element of human beings, thereby making efforts to find regularities that can be explained on a nomothetic basis, by referring to natural laws, an impossible undertaking. Carneiro traces these insights already to works from the 19<sup>th</sup> century, such as of the historian James Anthony Froude (1818-1894) and the philosopher John Stuart Mill (1806-1873), but with the emergence of sociology as a field, prompted by such thinkers as Auguste Comte (1798-1857), the idea of a science of man has been given new impetus. This way of thinking took a high point in the works of Edward Burnett Tylor (1832-1870), who is acknowledged by many as the founding figure of cultural anthropology. Tylor defined cultural anthropology as an

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inductive science that is based on cause and effect, eventually formulating and utilizing universally valid laws not unlike other scientific fields. This viewpoint consequently influenced subsequent works of scholars such as Herbert Spencer (1820-1903) or James G. Frazer (1854-1941) (cf. Carneiro 2003: 12f.).

### 3.2.2. Modularity of the mind

The most fundamental concept underlying evolutionary psychology is the assumption that the human mind and that of every other animal can be broken down into systems that evolved into definite forms over a long period of time. They have been providing advantages for survival by eliciting reactions in a predefined and reliable manner when confronted with specific situations (cf. Tooby/Cosmides 1992: 24). That the brain has evolved into a form containing diverse modules which are specialized in accomplishing specific tasks, due to the reoccurrence of situations that posed adaptive problems for our ancestors, also is the basis for how evolutionary psychologists explain psychological universalities (cf. Wells 1998: 236; Peters 2013: 305). The necessary prerequisite for this proposition to work is that these specific designs of the brain are genetically based and passed on to subsequent generations (cf. Malamuth/Heilman 1998: 516, Peters 2013: 307; Panksepp/Panksepp 2000: 108).

According to this logic, it makes sense that these modules are thought to be specialized in reacting to the problems that were occurring most frequently during the phase in which the modern human was shaped (cf. Mithen 2013: 218). This also means that they are tailored to suit the circumstances that were highly prevalent in the past:

“Evolutionary psychology is an attempt to explain human culture as the product of human psychology, but it also asserts that the properties of the human brain itself have been determined by a series of adaptations, over millions of years, to the conditions of the Pleistocene in East Africa.” (Hallpike 2011: 214)

The extent of modulation proposed by differing theories about modularity of the mind can be subsumed into three main categories: The mind is viewed either as being massively modular, meaning that it is entirely comprised of such modules, or that it is moderately

modular, which means that its composition is mostly based on modules. Finally, the opposing view holds that the mind is non-modular, which would imply domain-generality and also ascribe a high degree of procedural flexibility to it. Although there is no general agreement in evolutionary psychology about the degree of modularity of the mind, for the most part they assume either the first category or an in-between of massive and moderate modularity. Also, the way in which these modules are believed to be communicating or are viewed as being entirely separated is not commonly agreed upon (cf. Peters 2013: 306f.).

### *3.2.2.1. The brain as information processing device*

As a basic prerequisite for this view to hold up, evolutionary psychologists assume that the brain is functioning similar to a computer, drawing from computation theory and hence equating psychological mechanisms as information processing devices (cf. Wells 1998: 235; Peters 2013: 306; Fodor 1983: 32). These tessellated psychological mechanisms or modules are specialized to be sensitive to certain kinds of input, which is subsequently processed according to schemata that have been consolidated over the course of evolution. This concept of the brain and mind as a specialized device is usually contrasted by the view that the brain works by utilizing a broad, all-encompassing and more dynamic process of assessment:

“By 'innate psychological mechanisms' they meant that the human (and every other) brain is basically a computer, a computer being a device that processes information according to precisely specified rules in order to produce solutions to definable problems. It is not a general-purpose problem-solving device, but divided into different specialized departments or 'modules', each dedicated to different kinds of problems, such as tool-use, social exchange, child-care, and so on.” (Hallpike 2011: 214)

The fact Hallpike mentions at the beginning of the previous citation demonstrates how essentially similar the human brain is conceptualized compared to other animals, in the sense that all psychological modules have evolved to serve a function in enhancing the propagation of genes and vice versa. Evolutionary psychologists tend to extrapolate this idea

to claim the existence of modules that evolved via the process of natural selection and regulate diverse aspects of human life, such as acquiring mates, dealing with rivals or raising children (cf. Gross 2010: 451).

The direct opposite view, still in accordance with computational conceptions of brain mechanisms, deems the mind as a general information processor that works dynamically, without any innate content or structures that would elicit reactions based on specific input (cf. Malamuth/Heilman 1998: 517; Gaulin/McBurney 2004: 4).

### *3.2.2.2. A module for everything*

The usual definition of a module describes it as a structure of the brain that is responsible for processing specific information, which is reserved exclusively for that module. Thus, it is a unique and separate entity, due to it being the smallest part regarding the interaction with a certain kind of input:

“Domain specific means that it handles only one type of data; the rules for processing this are innate, not learned; they are associated with specific neural structures in the brain; the module does not share resources with other cognitive systems (it is autonomous); and it is not put together from a stock of more elementary sub-processes.” (Hallpike 2011: 232)

This definition is dubious in the sense that the input a module is reacting to can be constructed arbitrarily by the researchers, making it possible for them to claim a module specified for almost any imaginable situation, no matter how complex. In order to even react to a certain kind of input, there would have to be some innate factor inside the module for recognizing something as meaningful (cf. Peters 2013: 307f.). The American cognitive scientist and philosopher Jerry Alan Fodor already proposed the existence of modules in the modularity theory of his 1983 book called *“The Modularity of Mind”*, but with the important difference that they are, simplified, responsible for processing only a very specialized and limited set of information, as for example specific stimulations of the visual system (cf. Fodor 1983: 38). According to Fodor, more sophisticated and interconnected processes are

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engaged in by the brain when confronted with problems that require a conscious participation of the mind:

“... [E]volutionary psychologists, proposed that, contrary to the Fodorian view that only 'peripheral' systems such as vision are modular, many or most information-processing systems in the mind might be modular as well. These included what Fodor would have called 'central' processes, such as those underlying reasoning, judgment, and decision making (Cosmides & Tooby, 1994; Pinker, 1997; Sperber, 1994; Symons, 1987; Tooby & Cosmides, 1992).”  
(Barrett/Kurzban 2006: 628)

So, for Tooby and Cosmides, modules are not only specialized to give the brain possibilities for perceiving basic external information, but to actually guide the processing of this information according to specific patterns that have been hardwired due to the evolutionary process of adaptation:

“The world is full of longenduring structure, and the mind appears to be full of corresponding mechanisms that use these structural features to solve a diverse array of adaptive problems ... The structure of the world is reflected in the nature of behaviour regulating systems as well because the long-term statistical structure of the world systematically creates relationships between choices and adaptive consequences.” (Tooby/Cosmides 1992: 72)

Some examples of what these universal mental modules are proclaimed to govern or elicit are a fear of spiders and snakes, aesthetic preferences that influence habitat choice, a relative unwillingness of adults to have sex with long-time co-residing people during childhood, violent passions when catching infidelity of a sexual partner and cheater detection (cf. Tooby/Cosmides 1992: 72).

The American anthropologist Donald E. Brown, who rather fittingly worked at the University of California in Santa Barbara, proposed a list of traits that are reported to occur in all humans, amongst others including universalities of the mind such as dichotomous thinking

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or the so often mentioned innate fear of snakes (cf. Brown 2004: 47; Peters 2013: 307). An influential claim regarding specific modules, most famously uttered by American linguist Noam Chomsky but also Fodor and others, is the proposition of the existence of a modularized language faculty that is innate and universal across all human beings, based on the ability of children to generate novel statements that are still grammatically correct (cf. Hallpike 2011: 231f.).

Not only are these modules said to be sensitive towards specific circumstances, hence leading to reactions in a pre-determined way, but also, to be providing knowledge about situations and observations, adhering meaning to them even if never experienced before. This is also proclaimed for the abilities to read social gestures, to see things from the perspective of others or to acknowledge the feelings of others:

“... [H]uman architectures are `pre-equipped` (that is, reliably develop) specialized mechanisms that `know` many things about humans, social relations, emotions and facial expressions, the meaning of situations to others, the underlying organization of contingent social actions such as threats and exchanges, language, motivation and so on.” (Tooby/Cosmides 1992: 89)

### *3.2.2.3. The evolution of mental modules*

For evolutionary psychologists, the mind is something that evolved because of the solution of recurrent adaptive problems, thus providing reactions when encountering them nowadays:

“This functional organization in the organism – its set of adaptations – is designed to exploit the enduring properties of the environment in which it evolved (termed its environment of evolutionary adaptedness, or EEA) and to solve the recurring problems posed by that environment. Adaptations evolve so that they mesh with the recurring structural features of the environment in such a way that reproduction is promoted in the organism or its kin.”  
(Tooby/Cosmides 1992: 69)



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In this view, these basic fundamental psychological modules continue to elicit behaviours, emotions and even thoughts under specific circumstances, because they directly or indirectly increased the differential reproductive success of our ancestors (cf. Malamuth/Heilman 1998: 516). This of course poses the problem of evaluating and accounting for the adaptive benefit that certain traits provided in an empirically unobservable past. Hence, the use of theoretically constructed optimality models that predict reproductive success, based on assumed selective pressures, have to be utilized, leading to only imprecise assessments (cf. Betzig 1998: 268f.).

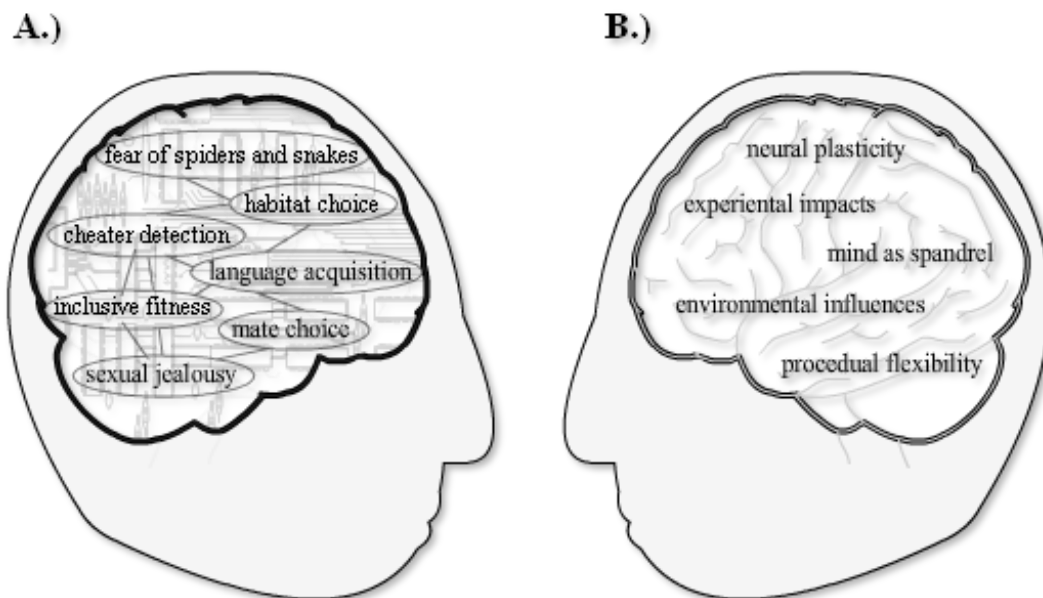
Following this concept of the mind as being fractioned and compartmentally specialized, British archaeologist Steven Mithen proposed in his “cathedral model” that this view is more appropriate in describing the mind of earlier human species. For example, *Homo heidelbergensis* or *H. neanderthalensis* seemingly lacked creative thought, but on the other hand, displayed highly sophisticated behaviours in other respects such as tool-making. According to his theory, only due to the integration across these modules, a cognitive fluidity emerged that was necessary for modern human cognitive creativity to have evolved. The concept is explained by referring to an analogy of modules of the early mind, being represented as isolated chapels of a complex church, the walls of which have been knocked down in the course of history and the mind of modern humans has evolved in this integrative direction.

Mithen has been inspired by the theory of multiple intelligences by American developmental psychologist Howard E. Gardner, viewing these different kinds as bundles of modules, resembling those described by Tooby and Cosmides. But, he has made the additional proposition that in early humans, these specialized “chapels” were isolated in contrast to them being connected as they are in modern humans. Mithen sees evidence for this in the relative stability and stagnation of innovation for more than a million years, regarding material culture as well as behavioural activities, especially concerning symbolic actions. He criticises evolutionary psychologists like Tooby, Cosmides and Pinker for a lack of reference to actual archaeological findings or fossil records when making claims about the evolution of human cognition (cf. Mithen 2013: 218ff.).

3.2.2.4. *Criticism regarding a specialized modularisation of the mind*

The contrasting stance to this idea of a modularity of the mind emphasizes that the brain has not evolved to be perfectly adapted to evolutionary challenges, but as a sort of by-product, which is best explained by Gould's metaphor of "spandrels": "Mustn't the ever cascading spandrels of the human brain be more weighty than the putative primary adaptations of ancient African hunter-gatherer ancestors in setting the outlines of what we now call 'human nature'?" (Gould 1997: 10754)

**Figure 1:** Depiction of two different models of the mind



A: Domain specific modularity of the mind  
(innately evolved psychological mechanisms act as computational devices to specific input and provide content)

B: Domain general, non-modular mind  
(brain seen as spandrel that is shaped by environment and can act dynamically according to specific experiences)

Reverse engineering, being the process of reproducing design properties based on extractable information, is an important method used by evolutionary psychologists for explaining the human mind. The analysis of observed psychological phenomena in modern humans is used as evidence for them having evolved physiologically, by presenting the solution to a specific adaptive problem our ancestors were confronted with in the past. This, of course, raises questions about the possibility of falsification in testing the hypotheses formulated by evolutionary psychologists, because alternative explanations that would

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provide equal efficiency in clarifying the observed phenomena are often sidestepped. Reasons for this to be possible can, for one, be found in the already established and biased assumptions of evolved modulation held by the researchers. Also, they do not engage in proving the underlying deep level of neural mechanisms involved in producing the proclaimed effects for observed behaviours, leading to argumentations that are often showing inconsistencies with actual neurobiological findings (cf. Peters 2013: 315). Similarly, it has been argued that “[w]ithout a strong linkage to neuroscientific research, evolutionary psychology has no credible way of determining whether its hypotheses reflect biological realities or only heuristics that permit provocative statistical predictions.” (Panksepp/Panksepp 2000: 108)

The reliance on the premise that every aspect of the organism evolved only by serving an increased rate of survival and reproduction is also termed “adaptationism” (cf. Daly/Wilson 2003: 570). But because we have only limited knowledge about the physical and to a much lesser extent the socio-cultural environment our ancestors lived in, let alone their individual psychologies in the past, it is impossible to draw conclusions that are not of a speculative nature. Nonetheless, evolutionary psychologists claim, that because the modules of the mind served an adaptive function it is indeed possible to create testable hypotheses, by correlating functional demands with specific designs. To support their argument, they often make a comparison to other fields that also engage in reverse engineering, for example referencing the physiological layout of fossils that are used to inform about the diet of an organism, based on the structure and composition of its teeth (cf. Daly/Wilson 2003: 570f.). “It may not be obvious what the purpose of some psychological structure or process might be, but scientific progress in understanding has generally followed from assuming that the entity under consideration accomplishes something for its possessor.” (Daly/Wilson 2003: 571)

Hallpike makes an illuminating analogy to the Acheulian handaxe, a stone tool that archaeologists found in abundant quantities on various sites around the globe and in a diverse range of sizes, but the utilization of which is still a mystery that could not be solved via reverse-engineering. Theories about the use of this ancient tool reach from it serving for scraping, skinning to digging up roots, but the fact that it does not provide a good grip

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supports alternative explanations, such as it having been used as a symbol of status, as projectile, or as a mounted, stationary cutting device (cf. Hallpike 2011: 218-222).

“The obvious conclusion is that reverse-engineering is only possible if we already have a very good understanding of ‘the form of life’ from which an artefact comes, which is certainly not the case with the EEA. But if we can’t reverse-engineer something as well-defined as a hand axe, and identify the adaptive problems it was intended to solve, how likely is it that we shall succeed with the much more nebulous manifestations of the early human mind and patterns of behaviour?” (Hallpike 2011: 211f.)

The human brain appears to be partially structured in a modular way, but this holds primarily true in respect to aspects of it that are specialized for straightforward perception:

“It is not hard to see why our perceptual systems, in particular, should be modular. They each deal with distinct forms of data, in very large quantities that must be processed with great speed, by precise and complex computational rules that are appropriate to one sort of data, and produce outputs that are basically right. There has also been an enormous amount of time for natural selection to operate in constructing these modules, since the laws of optics, acoustics, gravity, chemistry, and so on have never changed. The function of these modules is to deliver information in a usable form to central, general cognitive processes such as reasoning and memory, but the actual modular processes themselves are encapsulated, and are not accessible to our conscious thought.” (Hallpike 2011: 232)

A powerful example of how the modularity of the mind is argued to be on a level above cultural meaning is presented by Daly and Wilson, who state that these adaptive structures are responsive even to the impact of experience. They quote studies that point to differential physiological reactions according to specific cultural environments, e.g. the rise in testosterone in men that have recently been insulted, but only if they have a history of living in the southern part of the United States of America. The claim is, that the psyche

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evolved to respond to cultural influences because it served an adaptive function that allowed an increased differential reproductive success in a social environment that is highly flexible. Thereby the impact of culture is proposed to be connected to the structural formation of modules that elicit reactions depending on the social context and life history. In other words, the reason why meaning influences bodily reactions of individuals is located in an innate structure that developed universally because it served a function in deep time and now acts by channelling specific input into somewhat determined output (cf. Daly/Wilson 2003: 572f.).

The Estonian-born American psychologist and neuroscientist Jaak Panksepp argues, that even though recent findings show that the brain is not entirely a “massive general purpose learning machine”, there has yet to be found empirical evidence in support of the argument that genetically determined areas of the neocortex do exist, which are linked to the generation of specific and context dependent psychological strategies (cf. Panksepp/Panksepp 2000: 108). The American psychologist Michael L. Anderson emphasizes the emergence of recently developed theories concerning the functional structure of the brain, called “neural reuse theories”, putting the idea of structural regions that are determined to regulate cognitive domains into question. They do so, on grounds of newly found evidence pointing not only at the plasticity of neural tissue, but more specifically, showing that neurons can be seen as dynamic exaptations, in the sense that they can acquire new functions after having been established for working in a specific way, while still maintaining their original properties. This aspect of change in neuron function does not require the rebuilding of damaged brain tissue, but is proposed to be a normal mechanism in the developmental paths of healthy individual organisms during their life histories (cf. M. Anderson 2010: 245f.).

### 3.2.3. Methodological individualism

Methodological individualism is characterized by its approach to explain social phenomena on the basis of individual actions, thereby holding a reductionist point of view that is blind to the emergent effects resulting by processes of accumulation, thus functioning on a higher level. The opposite position is methodological holism or collectivism, which emphasizes on

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exactly those properties that seem relatively independent from the individual (cf. Gibbon 1984: 405f.). The realization of this fact has already been elaborated on by Spencer:

“You need but to look at the changes going on around, or observe social organization in its leading peculiarities, to see that these are neither supernatural, nor are determined by the wills of individual men, as by implications historians commonly teach, but are consequent on general natural causes. The one case of the division of labour suffices to show this.” (Spencer 1860: 54)

What is neglected in approaches of methodological individualism is the fact that some things cannot be explained on the basis of the properties of their elements. Instead, the interaction between them also has to be considered, thus leading to unique attributes that cannot be reduced sensibly: “Wholes are composed of units whose properties may be described, but the interaction of these units in the construction of the wholes generates complexities that result in products qualitatively different from the component parts.” (Stevenson 2000: 312)

#### *3.2.3.1. Methodological individualism in diverse disciplines*

Evolutionary psychology is inherently linked to methodological individualism, since one of its basic premises is that biological evolution influenced the human brain and mind, thereby having a profound effect on the psychology of individuals, which, according to them, is causally linked to the generation of culture (cf. Barkow/Cosmides/Tooby 1992: 4). This methodological individualism also was, and still is, a fundamental principle of sociobiologists explanations of how societal systems are structured. As put forward by Hallpike, this way of thinking is held by “ ... some psychologists and socio-biologists, who suppose that it is possible to deduce the structure of society from the simple aggregation of individual motives and actions alone.” (Hallpike 1986: 28)

As always, there are exceptions of evolutionary psychologists committing to this fallacy, for example Daly and Wilson who acknowledge that “ ... group-level properties are emergent and distinct from those of their constituent individuals.” (Daly/Wilson 2003: 573)

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Not only in biology, but also in the social sciences some researchers put more emphasis on the importance of holistic considerations than others:

“Biological and sociological conceptions of structure will therefore share certain important assumptions about wholes, so that in biology one finds an important tradition arguing, on structural principles, against genetic reductionism (e.g. D`Arcy Thompson 1917, von Bertalanffy 1971, Webster and Goodwin 1982), as well as a current orthodoxy in favour of it (an extreme position being Dawkins 1978); and a somewhat analogous division of opinion exists in the social sciences between functionalists and individualists, though the balance of opinion in this case is more in favour of holism.” (Hallpike 1986: 24f.)

Hallpike emphasizes the importance of a Holism in regard to the application of biological concepts of evolution to the explanation of societal evolution:

“ ... [I]t would be idle to deny that when, for example, systems theorists or sociological functionalists talk of the distinctive properties of structures, of wholes being more than the sum of their parts, and of the impossibility of understanding a part in isolation from the whole, they do have in mind a particular concept of structure, of a kind that is often referred to as `holistic`. This concept of structure is obviously highly relevant in the case of `goal-seeking` entities such as organisms, or of purposefully designed machines or of social systems.” (Hallpike 1986: 24)

It is important to realize that the acknowledgement of the existence of emergent properties entails that a feedback loop can be set in motion. This happens when the systems own properties influence the individuals and their ways of interaction, which again influence the characteristics that therefore are inherent in the system:

“The properties of individual human beings do not exist in isolation but arise as a consequence of social life, yet the nature of that social life is a consequence of our being human and not, say, plants. It follows, then, that dialectical

explanation contrasts with cultural or dualistic modes of explanation that separate the world into different types of phenomena-culture and biology, mind and body which are to be explained in quite different and nonoverlapping ways.”

(Stevenson 2000: 312)

### 3.2.4. Ultimate and proximate explanations

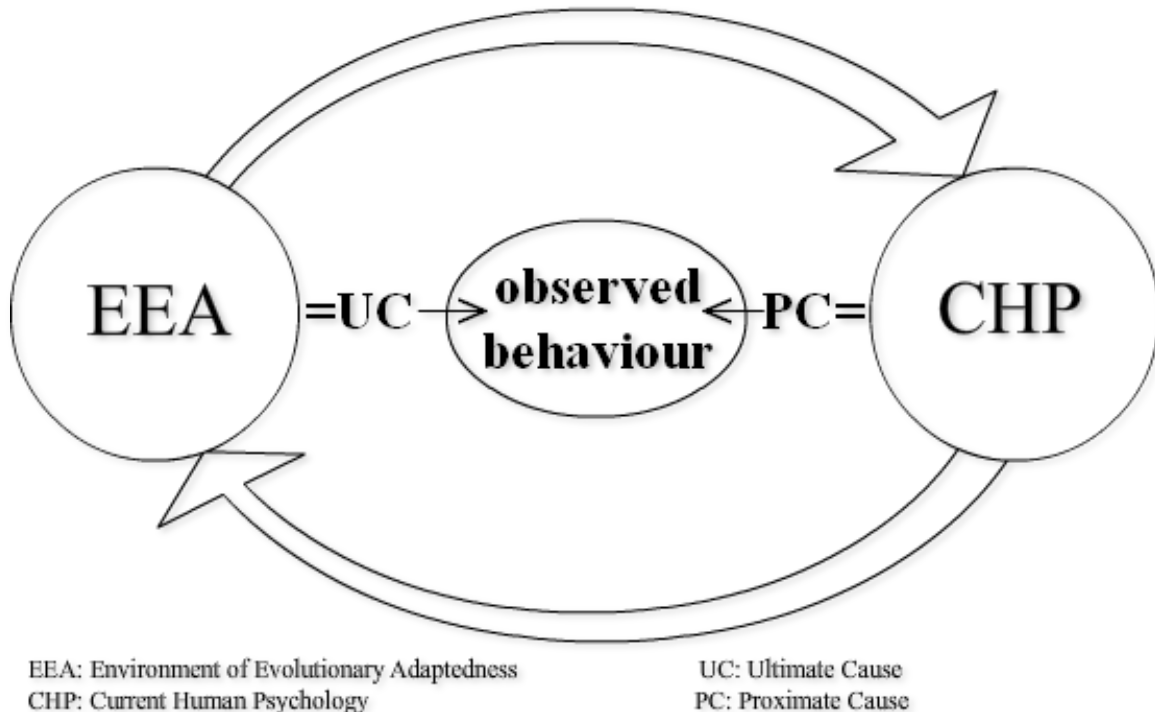
As has been established, the explanatory power of evolution as the basis of individual minds is prominent in evolutionary psychology. This reference to the impact of deep time has been made in biology early on, and posed an important point of interest in understanding observed behavior ever since, being contrasted by explanations based on present influences. The former can be termed “ultimate causes” (why a species evolved specific structures) and the latter “proximate causes” (how an organism's structure is functioning), a theoretical dichotomy made famous in the middle of the 20<sup>th</sup> century by the Dutch ornithologist Nikolaas Tinbergen (1907-1988), posing a fundamental concept in the understanding of behaviour. He based this theory on what British biologist Thomas Henry Huxley (1825-1895) termed the three major problems of biology. The first is the direct causation of behaviour, the second the survival value it provides and third is the evolutionary basis underlying it, to which Tinbergen added a fourth one, being concerned with the development of organisms during their lifetime (cf. Tinbergen 1963: 411).

These came to be known as Tinbergen`s four questions, sometimes rephrased as “phylogeny”, being the evolutionary cause for behaviour, the function for survival it served is termed as its “adaptation”, its development is called “ontogeny” and its direct causation being the “mechanism” by which it is triggered. The first two explanations can be defined as being ultimate causes, whereas the last two act as proximate causes (cf. Gaulin/McBurney 2004: 15). This way of analyzing observed behaviour has provided a huge impact in the field of biology, also being used as a basis for sociobiology and its theoretical “cousin”, evolutionary psychology (cf. Buss 1999: 11f.).



**Figure 2:** Circular reasoning inherent in explanatory models of observed behaviour by EP

Circular reasoning by theoretically constructing an environment of the past based upon empirical evidence of modern psychology, which in turn is used as an explanation for the evolutionary development of said psyche



As depicted in the figure above, the usual approach of evolutionary psychologists to create explanatory models of observed behaviour lies in seeking explanations of both, proximate and ultimate causes, that act universally and in complementary ways to account for the phenomenon to be researched and explained (cf. Malamuth/Heilman 1998: 539). The presupposition of a specific “Environment of Evolutionary Adaptedness” (from here on out referred to as EEA) is the foundation for the ultimate causation that is then used to explain proximate causation.

This entails circular reasoning, because you can only explain them in relation and not independently of each other. An example of this could be, that for an ultimate cause it is asserted that humans have a propensity towards territorialism, which is used as *explanans* to explain the *explanandum* of why war emerges. Thereby, alternative proximate causations, that are probably more important in reaching a truthful conclusion when regarding this complex phenomenon, are ignored.

### *3.2.4.1. After the fact*

One of the methods typically employed by evolutionary psychologists is to theorize about ultimate causes by looking at the proximate phenomenon and extrapolate its origin, explaining its basis as an adaptation. “Once one understands the nature of the problem, one can then generate very specific, empirically testable hypotheses about the structure of the information-processing mechanisms that evolved to solve it.” (Barkow/Cosmides/Tooby 1992: 11)

This procedure spurred on the often uttered critique of post-hoc, after the fact “story-telling”, because it theoretically posits the way in which the human mind works presently in relation to its evolution towards this stage. Because of – oftentimes only speculative or arbitrarily constructed – challenges the mind of humans had been confronted with in the past in a more or less constant frequency, it was formed into the way it is structured nowadays.

Interestingly enough, some authors claim that this procedure is exactly what counters or cancels out the before mentioned critique, because the mechanisms are also conceptualized by assuming an evolutionary problem that would lead to the formation of specific modules. When subsequently evaluating their existence and finding empirical support for them, they are claiming, the other way around, that the pre-established hypothesis has indeed been verified. “One virtue of this approach is that it is immune to the usual (but often vacuous) accusation of post hoc storytelling: The researcher has predicted in advance the properties of the mechanism.” (Barkow/Cosmides/Tooby 1992: 11)

The question remains if presently established methods even allow for providing unambiguous data about these mechanisms on a material basis, falsifying all alternative explanations that could account for the observed phenomenon and not only claiming the existence of mental structures based on the measured effects that allegedly are caused by them.

### *3.2.4.2. Different approaches to account for the human condition*

The dichotomy of claiming humans to be determined in their entirety either by biology or by culture alone, is put into question by many thinkers, emphasizing the complex relationship and interconnection of both factors:

“ ... [B]iology is indeed relevant to the human condition, although the form and extent of its relevance is far less obvious than the pretensions of biological determinism imply. The antithesis often presented as an opposition to biological determinism is that biology stops at birth, and from then on culture supervenes. This antithesis is a type of cultural determinism we would reject, for the cultural determinists identify narrow (and exclusive) causal chains in society which are in their own way reductionist well. Humanity cannot be cut adrift from its own biology, but neither is it enchained by it.” (Stevenson 2000: 311)

A similar stance is expressed in the notion that only a scientific perspective, taking in knowledge created by observations of different aspects, can create truthful explanations of human phenomena, showing that determinism should be founded not solely on biological, psychological or sociological constraints. “Only an integrated bio-psycho-social approach can avoid such regrettable errors as biological or social determinism, and the counterproductive, politicized debates they lead to.” (Derksen 2007: 190)

It would be a mistake to rely either on biological determinism or on social determinism alone, when engaging in explanations of human phenomena. Specific cases may need a combination of them in order to acknowledge different factors that contribute to them, so that a valid conclusion regarding their cause can be reached. Historically, different periods in time show tendencies toward relying more heavily on one or on the other in trying to conceptualize human nature:

“The post-1968 New Left in Britain and the United States has shown a tendency to see human nature as almost infinitely plastic, to deny biology and acknowledge only social construction. The helplessness of childhood, the

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existential pain of madness, the frailties of old age were all transmuted to mere labels reflecting disparities in power. But this denial of biology is so contrary to actual lived experience that it has rendered people the more ideologically vulnerable to the `commonsense` appeal of reemerging biological determinism. Indeed, we argue ... that such cultural determinism can be as oppressive in obfuscating real knowledge about the complexity of the world we live in as is biological determinism.” (Stevenson 2000: 311)

### *3.2.4.3. Consciousness as a factor*

A typical example in evolutionary psychology literature of how ultimate and proximate causes are interlinked in human behaviour and psychology, is the refutation that we consciously act in a way to increase Darwinian fitness (cf. Malamuth/Heilman 1998:516). In no species, the conscious aim is present to maximize Darwinian fitness directly, but humans obviously do not try to reproduce let us say “at all costs”, which is made apparent by the use of contraceptives or wilful chastity by a large quantity of the world population (cf. Buss 1999:21). The claim is that our psychological makeup evolved in a form to make us try to achieve other goals, which are themselves linked to enhanced procreation:

“However, genetic posterity is not a psychological goal. Rather, the organism`s immediate goals are end states such as a full belly, safety from predators, warmth, self-esteem, happiness, and respect. Genetic prosperity has been the consequence by which the mechanisms serving these goals and end states have been shaped over evolutionary time.” (Daly/Wilson 2003: 571)

It is interesting to note that the first triplet of the goals that are listed here by Daly and Wilson are more strongly connected to physiological needs, whereas the ones from the latter triplet are far more dependent on social influences. This is a point which evolutionary psychologists would probably contest by referring to the adaptive utility, the fulfilment of such motivational ends served. But considering the enormous diversity on an individual as well as a societal level of what it means to be happy, gain respect and have self-esteem, it is highly doubtful that much of the way to achieve these goals could be influenced by

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psychological modules that are specialized strictly in ways that aid in the acquisition of such states. Buss formulates the concept of evolved modules for goal attendance that indirectly lead to an enhanced propagation of genes in a similar manner:

“Humans are collections of mechanisms, each one of which was forged over evolutionary time by the process of selection. The products of this process tend to be problem specific – keep warm, avoid predators, get food, find a mate, have sex, socialize children, help kin in need, and so on. The product of the evolutionary process is not, and cannot be, the goal of maximal gene propagation.” (Buss 1999: 22)

An analogical notion has already been put forward in sociobiology, stating that the strength of emotions like pain or pleasure that are being evoked by encountering specific stimuli, is based on their evolutionary impact on reproductive success (cf. Badcock 1991: 98). This goes as far as claiming that the human unconscious evolved because it presented a benefit, for example by making the act of deceiving others easier when being unaware of one`s own actions. As a consequence, it is argued, that human consciousness came into existence in order to allow for detecting such dishonesty in others and for being able to reflect on one`s own unconscious motives. In this regard, language is seen as playing an important part, because it permits the ability to transmit information as well as misinformation. So, sociobiologists see the evolution of consciousness as a result of a biological arms race, which is tightly interwoven with mechanisms involved in deception, regarding oneself and the motives of others, as well as the perception of them (cf. Badcock 1991: 102-105).

### **3.2.5. Biological determinism**

#### ***3.2.5.1. Constraints posited by and implications of biologically based thinking***

The basic concept underlying the principle of biological determinism is the idea that a particular action of a subject is based on and can be explained by its biological makeup:

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“Biological determinists ask, in essence, why are individuals as they are? Why do they do what they do? And they answer that human lives and actions are inevitable consequences of the biochemical properties of the cells that make up the individual; and these characteristics are in turn uniquely determined by the constituents of the genes possessed by each individual. Ultimately, all human behaviour – hence all human society – is governed by a chain of determinants that runs from the gene to the individual to the sum of the behaviours of all individuals. The determinists would have it then, that human nature is fixed by our genes.” (Stevenson 2000: 307)

This line of argumentation can vary enormously in regard to which phenomena are to be explicated, as well as the degree of determination proclaimed. Through this, a range of interpretations gives room for arguing that particular traits are inevitably bound to the physiological structure, which is itself fixed and hence not malleable. Following such an argumentation, understandably, critique by diverse disciplines has emerged, pointing out that this neglect of acknowledging or investigating alternative explanations – that would, in contrast, permit the possibility of change – is negated by placing the cause for diverse traits on an inevitable and predefined set of bio-psychological properties (cf. Ehrlich/Feldman 2003: 86).

Derksen formulates this morally relevant constraint of human nature on culture, which he terms as the naturalising of ethics, eloquently:

“Evolutionary psychologists, in their effort to naturalize culture, have put great emphasis on the evolutionary history of human morality, on its universality, and on the impotence of politics or cultural fads to change its basic norms. Free love and common ownership of the means of production may have seemed good ideas at one time, but they were bound to succumb to the forces of human nature. Our evolutionary history constrains the norms we can live by.” (Derksen 2007: 200)

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It seems that the arbitrariness in the selection and proposition of traits to be explained in such a fashion is ultimately at the mercy of the scientists' imagination and the reaction of his or her critics. This has political implications and is intricately connected to upholding certain power structures and relations: "Biological determinist ideas are part of the attempt to preserve the inequalities of our society and to shape human nature in their own image." (Stevenson 2000: 315)

### *3.2.5.2. A brief history of biological determinism*

Historically, such a perspective of biological determinism goes back as far as to some of the Greek philosophers, but has been most famously promoted by British philosopher Thomas Hobbes (1588-1679) in the middle of the 17<sup>th</sup> century:

"Philosophically this view of human nature is very old; it goes back to the emergence of bourgeois society in the seventeenth century and to Hobbes's view of human existence as a bellum omnium contra omnes, a war of all against all, leading to a state of human relations manifesting competitiveness, mutual fear, and the desire for glory. For Hobbes, it followed that the purpose of social organization was merely to regulate these inevitable features of the human condition. And Hobbes's view of the human condition derived from his understanding of human biology; it was biological inevitability that made humans what they were." (Stevenson 2000: 306)

As mentioned earlier, in the 60s of the 20<sup>th</sup> century, the claim for biological determination of human behaviour was increasingly emphasized in the literature, also exemplified in the highly controversial works by American psychologist Arthur Jensen (1923-2012), who directly related many human traits – most prominently the measurement of IQ – to a heritable, genetic basis. Stephen Jay Gould specifically criticised the misuse of the heritability concept, pointing to the ignorance in regard to the impact the environment poses for individual development. He does so by drawing an analogy between how nutrition can influence the highly heritable trait for body height, for example people being smaller on grounds of food

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deprivation, with how a good educational environment can influence the development of a high IQ (cf. Gould 1996: 369).

Gould also has provided an extensive critique of the book *“The Bell Curve: Intelligence and Class Structure in American Life”* by American psychologist Richard J. Herrnstein (1930-1994) and American political scientist Charles Murray. It is regarding the entire concept of the possibility to reduce and represent intelligence, as it is done in the measurement of IQ, captured in the “general factor of intelligence” referred to as “*g*” (cf. Gould 1996: 372). He rebutted their claims, according to which differences in IQ can be related to the genetic basis of ethnic group differences, stating that for the purpose of making their argument the “... authors omit facts, misuse statistical methods, and seem unwilling to admit the consequences of their own words.” (Gould 1996: 370)

Such approaches of biological determinism influenced similar kinds of argumentations up to the present day, as can be illustrated by the work of famous author Nicholas Wade, who was a former writer for the science section of *“The New York Times”* magazine (cf. Ehrlich/Feldman 2003: 86). He has been criticised by biologists on similar terms, but has found support by E.O. Wilson. Wade himself has spoken out in favour of Napoleon Chagnon, claiming that the American Anthropological Association had mistreated him.

Also more recent works, as for example the book *“Straw Dogs”* by British philosopher John Nicholas Gray, put forward the view that the human animal is deemed to engage in destructive acts against others and the environment, because it has an intrinsic inclination to do so. In his case, human nature is presented as being unchangeable and inherently harmful, based on the biological evolution that has shaped it, regardless of technological advances or an increased consciousness and mindfulness: “For though human knowledge will very likely continue to grow and with it human power, the human animal will stay the same: a highly inventive species that is also one of the most predatory and destructive.” (Gray 2007: 4)

Current evidence from hunter-gatherer societies provides data showing that the view of an intrinsically violent human nature is not factually supported. Contrary to the view that a natural state of war is an inevitable part of human nature perpetuated since Hobbes,



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findings suggest that, in general, humans have lived without the need for centralized authority. Reportedly, settling disputes by resorting to violence constitutes an exception rather than being the general case and historically it seems that humans have lived in relative harmony not only with each other, but also with the environment. The Canadian anthropologists Richard Borshay Lee and Richard Daly argue that even though today's modern, westernized societies have access to vast technological advances and material surplus, they can on average still be characterized by hierarchical divisions, leading to profound individual and group based inequalities. They are also destroying the environment disproportionately compared to the impact of the typically observed hunter and gatherer lifestyles (cf. Lee/Daly 1999: 1).

### *3.2.5.3. Relations between biological and social determinism*

At the latest and ever since the paradigm of sociobiology erupted, there has been a tendency to reduce at least some aspects of individual behaviour, which is also believed to have an influence on culture, to the level of genes: "Although the genes have given away most of their sovereignty, they maintain a certain amount of influence in at least the behavioural qualities that underlie variations between cultures." (Wilson 1975: 550)

In evolutionary psychology, this line of thinking has been transposed from observable actions to the mechanisms of the mind, which are again responsible for the elicitation of certain behaviours. The claim is, that these mechanisms are determining what kind of content humans are susceptible to, and also, that these structures are directing the fundamental organization of the mind. In other words, the biological determinism that is endorsed leads to an explanation of almost every existing psychological and even social and cultural manifestation on the basis that its underlying modules evolved to enhance adaptation, or more precisely, because they contributed to increased rates of survival and reproduction:

"Our developmental and psychological programs evolved to invite the social and cultural worlds in, but only the parts that tended, on balance, to have adaptively useful effects. Programs governing psychological development impose

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conceptual frameworks on the cultural and social worlds; choose which parts of the environment are monitored; choose how observations and interactions are categorized, represented, and interrelated; decide what entities to pursue interactions with ...” (Tooby/Cosmides 1992: 87)

In Tooby and Cosmides` view, behaviour is neither determined entirely and solely by biological or cultural constraints, but by universal mental mechanisms, that are either more or less open to input of the environment. According to them, biological and non-biological determinism is a “nondistinction” and hence the interplay of both is involved in the elicitation of behaviour (cf. Tooby/Cosmides 1992: 46). But as they propose this unison and deny a sensible separation of the two aspects of human determination, they emphasize that even those psychological mechanisms that are more open, react only to certain environmental influences. Thereby, they are constraining the range of possible externally provided input to specific contents that, after being confronted with, lead to their computation by these specialized modules (cf. Derksen 2007: 197). A similar idea is found in the work of other evolutionary psychologists who argue that modules can vary in their susceptibility to input, when activated more frequently:

“Individual differences in feeling rejected are not necessarily due to inherited or developmental differences (although these can directly or indirectly be contributors as well), but to being frequently in recurring environmental conditions that activate the relevant mechanisms. However, the threshold for activation of the mechanisms may become adjusted or recalibrated.”

(Malamuth/Heilman 1998: 519)

The recent increase in dedication towards the principle of biological determinism in science, regarding the explanation of human nature using this type of constructed knowledge to account for observed social hierarchies and power relations, is problematic, to say the least. Many scholars are concerned with this trend of locating societal problems in the biological makeup of humans, not only because of it being a faulty explanation, but also in respect to it being a legitimization of current states of social injustice.

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“Over the past decade and a half we have watched with concern the rising tide of biological determinist writing, with its increasingly grandiose claims to be able to locate the causes of the inequalities of status, wealth, and power between classes, genders, and races in Western society in a reductionist theory of human nature.” (Stevenson 2000: 304)

### *3.2.5.4. Naturalization of social constructs*

It is very important to consider the political implications of biological determinism, in the sense that it leads to a naturalization of social constructs. Politicians can capitalize on the commonly held assumption that certain sentiments are biologically determined, and even more so when parts of the scientific community endorse these beliefs, thereby having an influence on general public opinion. This is especially convenient for people who are placed in an advantageous position, justifying their right to claim this status based on an allegedly inherent superiority:

“Biological determinism (biologism) has been a powerful mode of explaining the observed inequalities of status, wealth, and power in contemporary industrial capitalist societies, and of defining human 'universals' of behavior as natural characteristics of these societies. As such, it has been gratefully seized upon as a political legitimator by the New Right, which finds its social nostrums so neatly mirrored in nature; for if these inequalities are biologically determined, they are therefore inevitable and immutable. What is more, attempts to remedy them by social means, as in the prescriptions of liberals, reformists, and revolutionaries, 'go against nature.' Racism, Britain's National Front tells us, is a product of our 'selfish genes.' Nor are such political dicta confined to the ideologues: Tune and again, despite their professed belief that their science is 'above mere human politics' (to quote Oxford sociobiologist Richard Dawkins), biological determinists deliver themselves of social and political judgments.” (Stevenson 2000: 309)

So, based on flawed science, ideologies are constructed that can be used to account for the way things are, thereby claiming that societal forms and their underlying norms are at the

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same time the product of natural mechanisms determined by biology, as well as being unchangeable, due to that origin (cf. Ehrlich/Feldman 2003: 86). This, of course, frustrates pretty much every imaginable motivation to engage in enterprises that have the aim of changing the system, because in this view the system is inextricably bound to human nature. The opposite position would claim that, the other way around, the system that has been constructed over the course of history is now determining the lives and thoughts of the people living in it, and that by changing it you could better the situation. This could be achieved, for example, by a system that is promoting fairness for its members and by a distribution of power, information and material goods, on an egalitarian basis.

“That, despite their pretensions, biological determinists are engaged in making political and moral statements about human society, and that their writings are seized upon as ideological legitimators, says nothing, in itself, about the scientific merits of their claims. Critics of biological determinism are often accused of merely disliking its political conclusions. We have no hesitation in agreeing that we do dislike these conclusions; we believe that it is possible to create a better society than the one we live in at present; that inequalities of wealth, power, and status are not 'natural' but socially imposed obstructions to the building of a society in which the creative potential of all its citizens is employed for the benefit of all.” (Stevenson 2000: 310)

#### ***3.2.5.5. Denial of evolutionary psychology engaging in biological determinism***

An interesting phenomenon regarding biological determinism in evolutionary psychology is the aspect of consciousness contributing to individual choices. On the one hand it is proposed, that even though much of the behaviours displayed today are based on them providing enhanced Darwinian fitness in the EEA, on the other, such behaviour is not deemed as inevitable or unchangeable. Some evolutionary psychologists even argue, counterintuitively, that the flexibility of human nature is actually based on the wide range of mental modules our mind is made up of, in large part tuned to react to social environments (cf. Malamuth/Heilman 1998: 517).

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As a defence of allegations of evolutionary psychologists being biological determinists, it also has been argued that through knowledge about the psychological mechanisms, it would be possible to change the occurrence of behaviour that is seen as unfit for social reasons. An example is provided by David Buss, who ascertains that men being smiled at by women automatically infer sexual interest, because the evolved mental modules function to promote motivation and thus behaviour that leads to engage in casual sexual relationships. His line of argumentation goes that by knowing about this innate propensity for increased inference of sexual intent by men, they can realize this fact and consciously decrease or even suppress their natural desires (cf. Buss 1999:19).

First of all, alternative explanations are not regarded, and second, even if it were true, knowing about the ultimate cause would not change the capacity to modulate the behaviour elicited via its proximate cause. Most importantly and quite to the contrary, if the reason for such propensities is positioned in the individual but also existing universally due to evolutionary formed psychological mechanisms, the causal explanatory impact of culture is neglected. Thus, the idea of changing social systems is not considered as being useful in influencing behaviour, because the basis of it is localized in the individual instead of society. This also exemplifies the methodological individualism that posits causal impacts going outward from the individual to shape the social environment, and not vice versa, or even solely the other way around.

#### *3.2.5.6. Adaptationism*

As a response to the critique that evolutionary psychologists assume humans to be designed as a conglomeration of mental modules, that are specialized to a high degree because of and in order to let them cope with adaptive problems, Buss argues that firstly restraints like high costs and secondly evolutionary time lags have to be taken into account. These constraints acted on the generation of innate modules and led them to be of suboptimal design. An example for the first one could be that the module leading to a fear of snakes is not so strong as to make humans generally too afraid to venture into the wild, because this would have interfered with the necessity of gathering nutrients. For the second, the often uttered statement of a divergence between the modules solving adaptive problems in the EEA, but

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nowadays even leading to detrimental effects, is given. This has been termed as “... stone-aged brain in a modern environment.” (Buss 1999: 20)

“Biological determinism sees organisms, human or nonhuman, as adapted by evolutionary processes to their environment, that is, fitted by the processes of genetic reshuffling, mutation, and natural selection to maximize their reproductive success in the environment in which they are born and develop. ... Organisms do not merely receive a given environment but actively seek alternatives or change what they find. ... The 'environment' itself is under constant modification by the activity of all the organisms within it. ... Even for nonhumans, then, the interaction of organism and environment is far from the simplistic models offered by biological determinism.” (Stevenson 2000: 313)

Stevenson emphasizes, that we are situated in a world that is quite diverse and specific in relation to the problems we are confronted with. Hence, it would be difficult to argue that the mind is functioning in a way that is relying on the ability to solve problems that recurred and somewhat fixated our patterns of reactions towards such situations in a general way. As he points out, we are born into a world that has been socially constructed for a large part, and that through accumulative and emergent processes, every subsequent generation has to deal with novel situations, problems and demands (cf. Stevenson 2000: 314).

#### 3.2.6. Gradualism

Ontological principles always entail a definitive statement about the properties of the object under consideration. For example, the supposition of gradualism is that humans are only gradually different from other animals, but qualitatively homologous. Hence, the same biological laws can be applied to account for reasons of human behaviour as for non-human animal behaviour. Tylor already put emphasis on the fact, that because humans are able to use symbols, this leads to the necessity of utilizing unique techniques in analysing and explaining human phenomena:

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“Thus, in the late nineteenth century, Tylor—although an enthusiastic admirer of Darwin and the founder of academic anthropology in Great Britain—stressed how the potential of the evolved human brain meant that the transmission of information between people had become possible in a new way, through symbolic communication, and that this new way meant that human history had a different character to the history of other animals.” (Bloch 2005: 190)

In a similar way, but in much more detail, White emphasizes that the symbol is the basis of all human behaviour, and thus creates a qualitative step that has to be considered in anthropological explanations:

“This difference is one of kind, not one of degree. And the gap between the two types is of the greatest importance – at least to the science of comparative behaviour. Man uses symbols; no other creature does. An organism has the ability to symbol or it does not; there are no intermediate stages.” (White 2005: 25)

The opposing view to this qualitative discontinuity sees human and non-human animals on a continuum which cannot be separated punctually but only gradually, hence it has been termed gradualism. This way of thinking can be seen as one of the fundamental reasons of why sociobiologists find it suitable to seek explanations of human phenomena in other animals. E.O. Wilson, as founder of sociobiology, is one of the most prominent figures in endorsing this scientific principle, which is especially apparent in chapter 27 of his eponymous book *“Sociobiology: The New Synthesis”* titled *“Man: From Sociobiology to Sociology”*. It is in this part of his work that Wilson argues for a synthesis – although a seemingly more fitting term would be absorption – of all sciences that are concerned with explaining humans, under the umbrella of biology. The following thought experiment of his is illustrative of this intention, and proves some of the non-distinctions he supposes, regarding human and non-human animal behaviour:

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“Let us now consider man in the free spirit of natural history, as though we were zoologists from another planet completing a catalog of social species on Earth. In this macroscopic view the humanities and social sciences shrink to specialized branches of biology; history, biography, and fiction are the research protocols of human ethology; and anthropology and sociology together constitute the sociobiology of a single primate species.” (Wilson 1976: 547)

Similarly, evolutionary psychology is based on the assumption of a fundamental similitude of humans and other animals, especially in regard to a natural evolution being guided by biological mechanisms, leading towards innate psychological predispositions: “Nature, as represented by evolutionary psychology, emphasizes similarities, specifically similarities between humans and other animals.” (Baumeister et al. 2007: 519)

Even nowadays, this view of extrapolating theories and models from biology to explain human behaviour is held high, not only by evolutionary psychologists and sociobiologists, but also by many philosophers or professionals of other academic disciplines concerned with human nature. For example, the philosopher John Gray praises E.O. Wilson for elaborating on this frame of thinking and defends his position: “He has been attacked by biologists and social scientists who believe that the human species is not governed by the same laws as other animals. In that war Wilson is undoubtedly on the side of truth.” (Gray 2007: 5)

The opposing view to gradualism formulates a major point of critique on the basis of the implied ignorance toward the power that is inherent in symbols, having an influence on almost all human activities. White even perceives the use of symbols as the crucial point in separating the human world from those of other animals, because especially through speech and the implied communication of thoughts that lead to the possibility for accumulation and preservation, the complex phenomena of human culture could emerge. For White, contrary to the gradualist view endorsed by biological theories, the definition of human behaviour is, that it is symbolically founded. Only through the usage of symbols and their interconnections with culture, an action is a uniquely human behaviour (cf. White 2005: 39).



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Some aspects of cognition are exclusively demonstrated by human beings, as for example the ability of utilizing complex languages, the transfer and learning of sophisticated motor skills and the use of abstract theoretical reasoning, seem to fall into this category (cf. Hatfield 2013: 3).

“Of course there are human universals that are in no sense trivial: humans are bipedal; they have hands that seem to be unique among animals in their capacity for sensitive manipulation and construction of objects; they are capable of speech.” (Stevenson 2000: 314)

Regarding the uniqueness of human language and the capacity for it, biological Anthropologist Terrence W. Deacon argues that although the human brain evolved due to similar mechanisms as in non-human animals there still occurred a qualitative change that created this peculiarity of the human mind, enabling the use of a sophisticated and meaningful symbolic verbal communication:

“What results is a detailed reappraisal of human brain and language evolution that emphasizes the unbroken continuity between human and nonhuman brains, and yet, at the same time, describes a singular discontinuity between human and nonhuman minds, or to be more precise, between brains that use this form of communication and brains that do not.” (Deacon 1997: 14)

In sum, all these specific human attributes led to an enormous flexibility and adaptability that contributed to the proliferation of the human species on the planet:

“Human beings – oriented to cooperation with others, living in symbolically constructed and learned social universes, and possessing language and the ability to communicate over time and space – are capable of almost anything. This, in my view, explains our unique evolutionary success.” (Ferguson 2011: 264)

### 3.2.7. Universalism

Universalism describes a way of assigning attributes that are to be found in all human beings, which is essentially equivalent to what is usually referred to as “human nature”. American anthropologist Donald E. Brown – who worked at UC Santa Barbara and has been extensively quoted in the book *“The Blank Slate: The Modern Denial of Human Nature”* by evolutionary psychologist Steven Pinker – defines different kinds of human universals, firstly in regard to the context they can be placed in, be it in the cultural, linguistic, social, behavioural, or the realm of the mind (cf. Pinker 2003). He emphasizes that sometimes they cannot be placed strictly in one category, but instead only in-between them.

Secondly, they can be emic or etic in the sense that they are, for example, universal from an outside perspective but not recognized as such from within a culture. Thirdly, they can be categorized according to their commonness, as either absolute universals being represented in all humans, as near-universals that are almost always observed, as conditional-universals that exist reliably but need a certain precondition, or as statistical universals that occur above chance level in all societies.

He also speaks of universal pools, which implies the emergence of universals based on a limitation of possibilities. For instance, this is posed by semantic contrasts in relation to kinship terms on the basis of concepts of sex and generation, as in the denotations for mother and father (cf. Brown 2004: 47ff.).

Evolutionary psychologists base these universalities on evolved cognitive mechanisms that once served an adaptive function to promote the survival and reproduction of our ancestors, being a fixed part of the human mind at present. Daly and Wilson, for example, emphasize this adaptationist view and define human nature on the basis that “ ... all normal human beings share a very large `toolkit` of cognitive, motivational, and emotional equipment, which assumed its contemporary forms over evolutionary time because of its utility.” (Daly/Wilson 2003:570)

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They propose that this idea of a specific nature only makes sense when it is compared to differing evolved sets of attributes, for example the ones found in other animals (cf. Daly/Wilson 2003: 570). Other evolutionary psychologists even point to universalities that are shared across all mammals, to claim that these observed propensities are in humans as well as in non-human animals biologically and not culturally determined, or the other way around, that even in animals these are constructed via culture. Specifically, this argument is used for the proposition of an innateness of gender differences, that are said to be found in diverse species, thus making a cultural explanation for their occurrence in humans unlikely (cf. Gaulin/McBurney 2004: 12).

Brown criticises anthropologists for having neglected the search for and even the idea of some human universals in the past, instead focusing their attention on the diversity found in different cultures. He praises psychologists for their endeavours in locating universals, but in the same breadth reproaches them for not conducting a sufficient amount of cross-cultural research in order to locate them (cf. Brown 2004: 50). The concept of a universal human nature that is shared by every individual human being poses an essential element not only in theories of sociobiology and evolutionary psychology, but also for proponents of cultural materialism. The basis, range and content of such universals are points of high contention though:

“Nothing I have said about the gene-free status of most cultural variations is opposed to the view that there is a human nature shared by all human beings. Hence the disagreement about the human biogram is entirely a matter of substance rather than of principle – that is, precise identification of the content of the biogram.” (Harris 2001: 127)

Evolutionary psychologists use the argument that ultimately, for any possible behaviour, there is a need for biological processes that enable it. This is used to propose that specific response patterns are engaged in by mental modules in order to correspond to situations. For example, the fact that humans usually develop speech when being exposed to a certain environment, but chimpanzees do not under the same circumstances, is regarded not only as a unique characteristic of the human mind, but also as evidence for specific mental

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modules being an inherent part of a universal human nature. This kind of argument entails the danger of misapplication, by confusing a general ability for something, with it being the cause for the formation of specific phenomena. This is often done by making analogies, as in the case of the proposition that the limitation of expression of genes responsible for producing a specific skin color – by melanin synthesis due to exposition to ultraviolet radiation of a strictly determined wavelength and photon energy – is used to explain general ways in which organisms evolved in order to react to environments in a predetermined fashion (cf. Gaulin/McBurney 2004: 5ff.).

In other words, by referring to adaptive benefits leading to the evolution of specified biological mechanisms that are sensitive to certain inputs, then producing reactions that are essentially constrained, it can be reasoned that the brain functions in the same manner, thus predetermining a universal psychology. This becomes problematic as soon as it is used to arbitrarily propose such mechanisms without evidence, maybe even in a scientific context in which alternative explanations could be excluded due to this logic.

The opposite way is to see human nature as immensely complex, exemplified in the diversity that can be observed. This is making the idea of explaining determination underlying these manifold forms, on a biological and even sociocultural level, an enterprise that succumbs to the almost unimaginable amount of variables that would have to be taken into account before formulating causal relationships for specific human universals. “To get from the broadest characteristics of a sociocultural formation to specific activities or beliefs, more and more factors must be brought in. A complete explanation of anything would be an enormous, perhaps impossible task.” (Ferguson 1995a: 26)

Especially in regard to the implications of the fluidity of constructed meaning and historical development in general, the boundaries of what is thought to be universal across all humans are changing continuously:

“All humans are born, most procreate, all die; yet the social meanings invested in any of these acts vary profoundly from culture to culture and from context to context within a culture. This is why about the only sensible thing to say about

human nature is that it is 'in' that nature to construct its own history. The consequence of the construction of that history is that one generation's limits to the nature of human nature become irrelevant to the next." (Stevenson 2000: 315)

### 3.2.8. Reductionism

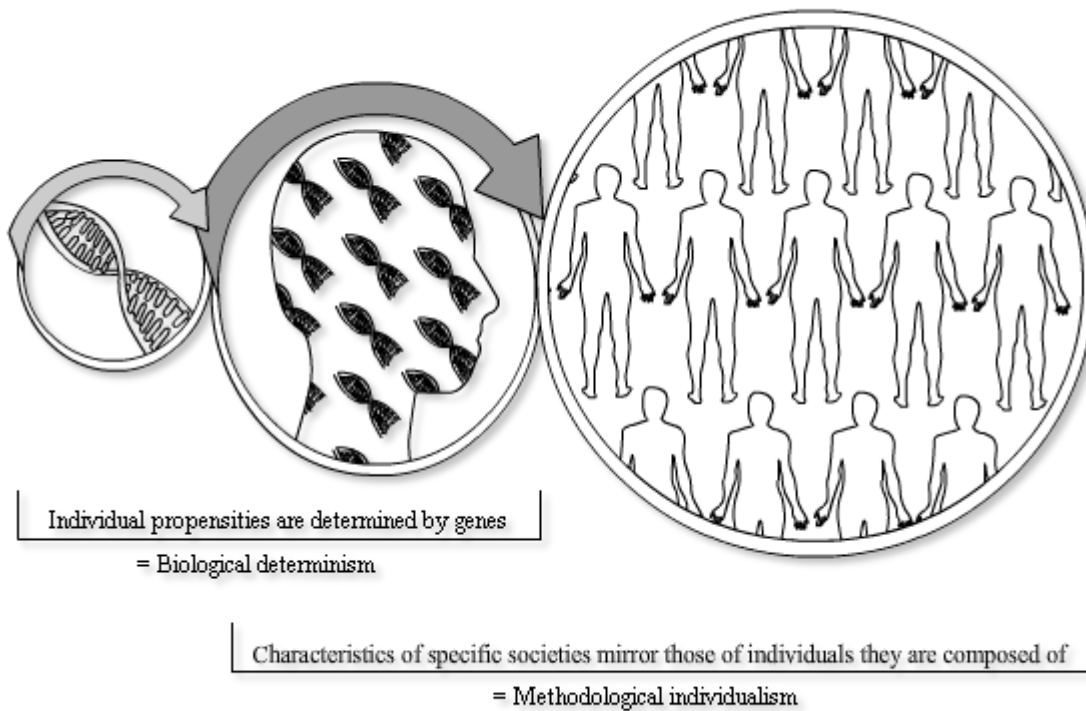
Methodological reductionism tries to explain systems in terms of individual parts, neglecting that the whole can have emergent properties that none of its parts share individually (cf. Gross 2010: 792). "Reductionist explanation attempts to derive the properties of wholes from intrinsic properties of parts, properties that exist apart from and before the parts are assembled into complex structures." (Stevenson 2000: 312)

This mistake has been repeatedly applied to explanations of society, by reducing their characteristics to the behaviour of the individuals comprising them, thereby relying on methodological individualism as discussed earlier:

"Broadly, reductionists try to explain the properties of complex wholes- molecules, say, or societies-in terms of the units of which those molecules or societies are composed. They would argue, for example, that the properties of a protein molecule could be uniquely determined and predicted in terms of the properties of the electrons protons, etc., of which its atoms are composed. And they would also argue that the properties of a human society are similarly no more than the sums of the individual behaviors and tendencies of the individual humans of which that society is composed. Societies are 'aggressive' because the individuals who compose them are 'aggressive,' for instance. In formal language, reductionism is the claim that the compositional units of a whole are ontologically prior to the whole that the units comprise. That is, the units and their properties exist before the whole, and there is a chain of causation that runs from the units to the whole." (Stevenson 2000: 307)

**Figure 3:** Reductionism in biological determinism and methodological individualism

Exemplification of different forms of methodological reductionism:



As shown in the previous figure, examples of reductionist explanations are found in biological determinism, according to which the individual is reduced to properties provided by genes, or methodological individualism, according to which characteristics of societies are understood to be direct reflections of the attributes of their members. Actually, the degree of qualitative dissimilarity usually increases the further away the level of observation is placed. The scope posits margins regarding the explanatory gap between phenomena of high complexity and their smallest components. For example, biology cannot exclusively rely on physicist explanations of matter, in the same way that social scientists cannot rely on biological explanations, because the objects under investigation follow qualitatively different laws:

“The main fallacy in this kind of thinking is that the reductionist hypothesis does not by any means imply a 'constructionist' one: The ability to reduce everything to simple fundamental laws does not imply the ability to start from those laws and reconstruct the universe. In fact, the more the elementary particle physicists tell us about the nature of the fundamental laws, the less relevance they seem to

have to the very real problems of the rest of science, much less to those of society.” (Anderson 1972: 393)

### *3.2.8.1. Physiological analogies concerning evolutionary developments*

As has already been elaborated in detail, evolutionary psychology conceives the brain to be composed of specialized modules that evolved to serve solving specific evolutionarily recurrent problems. Hence, there is a tendency in the field to compare the functional evolution of the mind with that of physiology, in the sense that both of them have evolved in order to solve adaptive problems. “Successful psychologists have always been adaptationists for the same reason that successful physiologists and anatomists have always been adaptationists ... because the objects of their interest are so clearly organized to achieve various ends.” (Daly/Wilson 1999: 509)

A favoured example used by Tooby and Cosmides is a comparison between the evolution of the human mind and the human eye. Thereby, they are referring to the problem-solving mechanism of evolution, shaping the organism to increase its coping with environmental interactions (cf. Hallpike 2011: 220). This metaphor has also been utilized by Chomsky, making claims about an essential similarity between cognitive faculties and organs composed of perceptual and motor systems (cf. Fodor 1983: 4). In other words, as the mind is the product of the physical body, and the body is the product of evolution – and it has to be emphasized that evolutionary psychologists attribute great importance to an adaptive specialization due to this process – the analogy to organic functionality is at the basis of their argument (which is already amply expressed by the title of Tooby, Cosmides and Barkows` direction giving work “*The Adapted Mind*”) (cf. Hamilton 2008: 106f.).

Other evolutionary psychologists also point to an analogy between an evolved and adaptive psychological structure – what they refer to as “mental tool kit” – and anatomical structures. They claim that evidence for this can be found in the field of neuroscience and artificial intelligence models. Daly and Wilson are referring to the functionality of the eye and its diverse forms in different species as well, demonstrating its evolved specifications according to the needs to adapt to certain environments (cf. Daly/Wilson 2003: 571f.).

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“A key concept of evolutionary psychology is therefore the mental module, and we must now look in some detail at what this involves. The idea is particularly well exemplified in David Marr’s ground-breaking neuropsychological study *Vision* (1982), which is constantly referred to by evolutionary psychologists as the most convincing example of a mental module.” (Hallpike 2011: 231)

Hallpike argues that the visual system in fact has to be highly specialized and accurate in displaying actual events of the physical world, to be valuable in regard to the process of evolution:

“To operate effectively, then, our visual system operates like a computer, which processes data according to a programme innately hard-wired into our brain to solve basic problems about how the world is: it gives results that are normally correct, and would have been of no selective value if it could not do so.”  
(Hallpike 2011: 231)

He puts this highly constrained and historically unchanging way of information processing, necessary for an organism to perceive physical characteristics physiologically, in contrasting juxtaposition to the flexibility and non-uniformity implied in the exposure to social phenomena, especially during the proposed time of the EEA. Hallpike argues that there could not have been enough time and consistency of occurrences for the proposed specialized mental modules to have evolved:

“Our conclusions are therefore that the EEA was marked by a series of basic transformations, of very uncertain date, in human social organization relating to such fundamentals as sharing and co-operation, planning, pair-bonding and the family, the control of fire and the use of cooking, and language, which would have required a number of major mental readjustments to a sequence of new circumstances, quite unlike the unvarying problems of vision and the other physical senses.” (Hallpike 2011: 230)



### 3.2.9. Epistemological similarities and differences between sociobiology and evolutionary psychology

One of the major epistemological differences between the fields of sociobiology and evolutionary psychology lies in their positioning of explanatory power regarding behaviour. Evolutionary psychology shifts the importance, that has previously been attributed to observable behaviour by sociobiology, into the realm of the structure of the mind, which is, as of yet, difficult or even impossible to ascertain. Thus, the proposed biological structures that underlie innate human propensities, being used to account for the performance of behaviour, are not directly verifiable. In other words, evolutionary psychologists take a step back to the underlying mechanisms governing the elicitation of observed behaviour itself:

“The brain takes sensorily derived information, and produces either data structures (representation) or behavior as output. ... Behavioural descriptions can be illuminating, but manifest behavior is so variable that descriptions that capture and explain this variability inevitable require an explication of the psychological mechanisms and environmental conditions that generate it.”

(Barkow/Cosmides/Tooby 1992: 8)

This, by virtue of the deficiency of present-day methods for exactly evaluating how the causal mechanisms of the brain function, leads evolutionary psychology to be less vulnerable to certain points of critique that sociobiology already has been confronted with.

Evolutionary psychologists are thereby actively drawing away from simple ways of falsifying their assumptions.

Daly and Wilson see a common basis of evolutionary psychology, evolutionary anthropology, sociobiology and human behavioural ecology in the way that all these approaches rely on the concept of evolved proclivities toward the final expression of behaviour, based on them having provided relative adaptive advantages:

“These approaches are all 'evolutionary' by virtue of their adaptationist, selectionist conceptual framework, and they are all 'psychological' to the degree

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that they focus on how people acquire and evaluate information and how they use that information in behavioural decision making.” (Daly/Wilson 1999: 509)

The authors emphasize that these adaptationist models yield explanatory weight for mechanisms observed in the non-human animal sphere, but criticize evolutionary psychology for applying the same systems on humans, while deeming them as only theoretical explanation of observed behaviours:

“ ... [B]ehavioural ecologists and sociobiologists have been making real progress in understanding nonhuman social psychology and behaviour, apparently because they have partitioned the subject along the lines of discrete, real-world problem domains (such as mate value assessment, kin recognition, parental investment allocation, and threat and bluff) ... Evolutionary psychologists are convinced that the same approach will also work for the human animal, that is, that the principled postulation and testing of adaptationist hypotheses with explicit attention to how adaptations evolve is the remedy that can rescue psychology’s functional theorizing from arbitrariness.” (Daly/Wilson 1999: 510)

So, Daly and Wilson propose that what makes evolutionary psychology unique, compared to psychological research in the past, can especially be found in its application of a perspective on human behaviour that emphasizes natural selection as basis for the evolution of human behaviour: “What is 'new' about HEP, then, is simply its relentless application to human beings of the same selectionist perspective that has been so successful in the study of animal behaviour.” (Daly/Wilson 1999: 510)

Another important point of diversion between the two fields is that sociobiologists tend to view human behaviour as being based on general mechanisms that lead to an adjustment according to a dynamically changing environment. What is also implied here is the notion, that human beings – similar to other animals – principally act in a manner that aims to maximize their reproductive success (cf. Betzig 1998: 266). To the contrary, evolutionary psychologists put a great deal of importance on the differences between modern day environments and those in which the mental modules governing our behaviour evolved,

thereby explaining why certain behaviours promoted Darwinian fitness in the past but are now leading to a decrease of it, while still being performed (cf. Janicki/Krebs: 197).

### **3.3. Theories of evolutionary psychology**

#### **3.3.1. Environment of Evolutionary Adaptedness (EEA)**

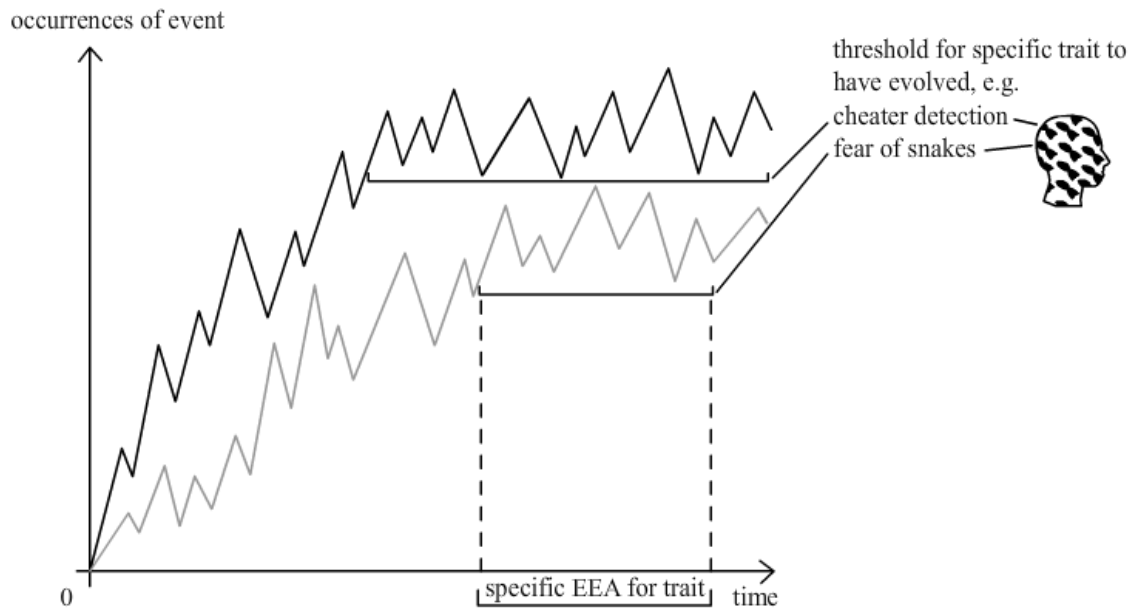
One of the major premises of evolutionary psychology is the concept of the “Environment of Evolutionary Adaptedness” (EEA). It rests on the assumption that the panhuman, universal mind, with all its mental modules, originated during the time – about 2 million years in sum, according to Tooby and Cosmides – that our ancestors spent as hunter-gatherers (cf. Barkow/Cosmides/Tooby 1992: 5). This way of life has been maintained by humans until approximately 12.000 years ago, which, depending on the source, makes up 90 to 98 per cent of our history as a species (cf. Lee/Daly 1999: 1; Badcock 1991: 86).

In this ancestral environment, selective pressures are thought to have formed human cognition into a highly specific shape that is now universal amongst all members of humankind (cf. Bolhuis et al. 2011: 1). Even though in their original writings they equate this time with the Pleistocene, in a later paper Tooby and Cosmides relativize this period in the sense that it can be more openly applied. According to them, a specific time and environment was acting on the evolution of each unique module responsible for adaptive mental functioning:

“Although the hominid line is thought to have originated on edges of the African savannahs, the EEA is not a particular place or time. The EEA for a given adaptation is the statistical composite of the enduring selection pressures or cause-and-effect relationships that pushed the alleles underlying an adaptation systematically upward in frequency until they became species-typical or reached a frequency-dependent equilibrium.” (Cosmides/Tooby 2005: 22)

**Figure 4:** Specific EEA as combination of occurrences of events related to selection pressures

Evolutionary psychologists' conception of requirements for specific traits to have universally evolved in humans



EEA: Environment of evolutionary adaptedness

The previous figure illustrates this assumption of combined necessities for specific traits to have evolved and to be represented universally in all humans. In order to engage in a theoretical formulation of what the adaptive problems actually were that our ancestors had to face, evolutionary psychologists allegedly rely on observations gained by studying hunter-gatherer societies. They perceive modern hunter-gatherers generally as living their lives analogous to humans in the Pleistocene, hence making a comparison sensible (cf. Betzig 1998: 266). These observations are then linked with theories of evolutionary biology, based on evidences provided by paleontological findings:

“By combining data from paleontology and hunter-gatherer studies with principles drawn from evolutionary biology, one can develop a task analysis that defines the nature of the adaptive information-processing problem to be solved.” (cf. Barkow/Cosmides/Tooby 1992: 11)

When looking closely at this statement, one can notice that the authors talk about using facts gathered by paleontology, which is concerned mostly with fossil records thereby being closer positioned to the study of (evolutionary) biology, rather than relying on findings and

insights from archaeology, the focus of which lies to a greater extent on providing evidences about specific human activities in the past. These are evaluated especially through the method of uncovering and analysing relics of material culture, thus being more closely connected to the field of anthropology, most prominently the `four-fields` approach practiced in the USA, where archaeology is even considered a sub discipline of anthropology (cf. Bailey/Peoples 2011: 3; Boas 1920: 314). This is just another indicator that evolutionary psychologists tend to “black box” evidences provided by culture in their explanation of individual behaviours, instead relying on biological explanations for their ultimate and proximate causes (cf. Gibbon 1984: 2f.).

To provide a specific example of the neglect towards cultural explanations of behaviour, in the article named “*evolutionary psychology and sexual aggression*”, four points are postulated that should be considered when explaining characteristics of sexual aggressors: Firstly, universally evolved adaptations in form of specialized mental modules and secondly universally developed differences in these modules according to gender. Only then cultural and individual factors are mentioned and that only briefly and in a very unspecific and vague manner, thus being attributed little explanatory power or causal impact on the explication of the phenomenon in question (cf. Malamuth/Heilman 1998: 539). As Maarten Derksen formulated it fittingly:

“In Tooby and Cosmides’ version of evolutionary psychology, the direction of causality is up from nature to culture, and then sideways through the epidemiology of cultural representations. To all intents and purposes there is no feedback, no causal influence from culture back to nature.” (Derksen 2007: 192)

#### ***3.3.1.1. Hunter-Gatherers as a living model and archaeological evidences***

Regarding the tremendous range of differences in almost every aspect of living in the past that has been accounted for by empirical evidence, and also considering the problems on a theoretical level that have been mentioned above, it can be deemed unfeasible to engage in comparisons between foragers that are alive and the ones from the past. Also, because living hunter-gatherers display a wide array of live styles, it is difficult to make observations that

yield results in explaining universalities of human behaviours. This insight has already been provided by Richard Lee and Irven DeVore (1934-2014), in their jointly organized symposium held in 1966, named “Man the Hunter” (cf. Betzig 1998: 267).

As Hallpike points out, the adaptive problems that “had” to be solved by our ancestors are sometimes only conceived retrospectively, to be used as explanation for the evolution of allegedly problem solving, content and domain specific, specialized mental modules. He emphasizes the importance of the ability of our ancestors to display exploratory behaviour, thereby, for example, engaging in the use of fire for cooking. This is seen not as an adaptive necessity, but as an innovation: “...[I]t was not the solution to a pre-ordained 'problem', but simply an innovation that in the outcome happened to increase human fitness.” (Hallpike 2011: 221f.)

The possibility of the human mind having evolved into a composition of specialized mental modules that even contain pre-programmed scripts – to use the computer jargon which evolutionary psychologists so favourably endorse – to solve “social problems” would necessitate that these problems reoccurred on a relative constant basis over a long period of time in a somewhat stable social environment. Even though extended knowledge about the natural environment of the Pleistocene exists, we do not, and probably never will, have unambiguous data about the social life, as it occurred in our evolutionary past:

“While, however, we are quite well informed about physical conditions in East Africa one or two million years ago, by the standards of ethology and of social anthropology we know virtually nothing about the social relations and organization of our ancestors in those remote epochs, and even less about their mental capacities.” (Hallpike 2011: 215)

Similarly, American anthropologist Robert Léonard Carneiro points to the fact, that even though archaeology provides an insight into the early development of mankind – leading into a direction of increased complexity, based on findings such as diverse stone tools – it cannot give a precise account of the details of their usage and evolution. They can only be hypothesized based on the correspondence of social life to this technological basis. A more

explicit picture of early history could only be provided since the time of detailed documentation, which Carneiro places roughly at three thousand years ago (cf. Carneiro 2003: 9).

It is important to consider that social life is extremely fluid in character. Hence, the environment it provides is in constant change and probably shifted its demands in short intervals of time, especially when compared to the enormous temporal dimension of biological evolution (cf. Bolhuis et al. 2011: 2). Thus, the idea that this inherently flexible structure provided enough consistency to be considered a stable basis for allowing the evolution of mental structures, solving specific “social problems”, remains doubtful (cf. Betzig 1998: 267). It is questionable whether social environments could ever be characterized as providing enough inherent stability and uniformity to allow for the evolution of specialized mental modules that are attuned to them. In fact, they are highly dynamic and fluctuating in providing contents, contexts, situations and the like, a circumstance Hallpike exemplifies by referring to the use of fire or grammatical language: “The control of fire for cooking, and the emergence of grammatical language, are good examples of the problems involved for the strict adaptationist scenario when it is faced with radical changes in the modes of interaction with the environment.” (Hallpike 2011: 223).

#### *3.3.1.2. Problems of reconstructing former environments*

Even the influence of the physical environment our ancestors faced shifts in its explanatory force regarding adaptive evolution, as knowledge about this time and place is changed by discoveries of new evidences. For instance, the impact that the properties of the savannah had on the evolution of human bipedalism have recently been put into question:

“In an early and unmistakably habitat-specific account of human evolution, Raymond Dart posited that key human traits such as bipedality and larger brains were consequences of life on the open savannah. ... Current evidence indicates that bipedality was established millions of years before the widespread expansion of savannah grasslands.” (deMenocal 2004: 4)

A recently proposed alternative theory for how bipedality in humans evolved, explains it based on a reconstruction of our ancestors' physical environment, namely, that it has been providing the opportunity to wade in water. Also, physiological and energetic constraints have been taken into account for its explanation (cf. Niemitz 2010: 259). This goes to show that even something that can be relatively accurately reconstructed theoretically, like the "natural" environment of the past, did not have an unambiguous impact on the evolution of the human body. Even if we assume that the brain consists of modules that represent the environmental problems of our past, it remains impossible to prove exactly how this environment in its complexity looked like, based on empirical evidence. This fact has even been admitted by some evolutionary psychologists (cf. Daly/Wilson 2003: 583).

Thus, the explanatory power is pointing in one direction, leading to a circular reasoning by claiming that the past – which cannot be reliably reconstructed – provided the basis for the evolution of mental modules that we can "observe" acting today. Still, evolutionary psychologists refer to the concept already held by Charles Darwin, claiming that natural selection not only shapes physiological structures underlying it but also behaviour itself, and even the social aspects of it. For example, David Buss emphasizes that all behaviour is dependent on the structure of the organism, interestingly enough taking as example the evolution of bipedality being dependent on the form of legs that need to be able to support the weight of the rest of the body by themselves, thereby allowing for that behaviour. He goes on to mention the evolution of character traits that have been artificially selected for in domestic dogs, as an example of how propensities such as tameness or a comparably high aggression also can be shaped and passed on via inheritance (cf. Buss 1999: 11).

#### *3.3.1.3. Disparities between past and modern environments*

Another important and fundamental aspect of the principles of evolutionary psychology is the reasoning, that because we are mentally adapted to the EEA, that the problems provided by the environment we face nowadays do not mesh with the ones we had to solve in the past. Thus, many psychological issues are said to be based on biological maladaptation (cf. Barkow/Cosmides/Tooby 1992: 5; Pinker 2005: 5).



### 3.3. Theories of evolutionary psychology

For instance, when we are hungry and thus have appetite for fats and sugar, this is an expression of mental programs that proved useful in our evolutionary past. Nevertheless, they may be quite detrimental to health in the environment of the modern Western world, where it is possible to consume an exorbitant amount of these substances, provided that you have the financial or other means to obtain them (cf. Buss 1999: 7). In evolutionary psychology, it is often reasoned that behaviours that are perceived as inappropriate nowadays – by being socially or ethically inadequate or bad for psychological or physiological health – served an adaptive purpose in the EEA (cf. Buss 1999: 20; Bolhuis et al. 2011: 1; Pinker 2005: 5). Regarding human sexual behaviour, for example, it is proposed that approaches based on self-interest and manipulation contributed to increased reproductive success in the past, thus favouring sexual coercion and thereby placing even acts of rape into the context of evolved and innate psychological modules (cf. Malamuth/Heilman 1998: 515).

Via such reasoning, the doors are opened to redirect the origin of problems that may in fact be based on social factors towards a biologically determined foundation created by the specific evolution of the mind, making the enterprise to find solutions on a social basis more or less futile (cf. Derksen 2007: 192). An example in this vein is the proposition that aggression and violent behaviour is only conceived as being pathological by the majority of the population, because it does not serve an adaptive function in the environment of modern state societies any longer. Exceptions to this can be found under certain circumstances that socially underprivileged individuals are especially faced by, due to being unable to rely on the protective power provided by mechanisms of some states. In contrast, aggressive behaviour is said to have served an adaptive purpose in the EEA, being the claimed reason for a propensity towards it, that is now naturally existing in the human mind (cf. Daly/Wilson 2003: 584). An example similar to such reasoning is given by proclaiming that watching violent television programs can possibly trigger a mental module that makes children act aggressively, because the psychological mechanism served a different and adaptive function in the past (cf. Janicki/Krebs 1998: 197; cf. Gaulin/McBurney 2004: 14).

This goes to show how arbitrarily explanations of behaviour can be projected onto a biological basis that has been determined by evolution during a speculatively reconstructed past, thereby explaining diverse occurrences of behaviours in the present.

#### 3.3.2. Inclusive Fitness / Kin Selection

The concept of group selection by British zoologist V. C. Wynne-Edwards (1906-1997) was rebutted in 1964 by John Maynard Smith as well as in 1966 by British biologist David Lambert Lack (1909-1973), but most powerfully by American biologist George Christopher Williams (1926-2010). Altruism has been a huge theoretical problem of evolutionary biologists in relation to group selection. Williams argued that group selection does not work, because altruistic individuals that are dedicated for the promotion of the survival of others will themselves produce less offspring, compared to selfish actors (cf. Buss 1999:15; Badcock 1998:461). Hence the conclusion that “ ... natural selection should tend to favour selfish, uncooperative phenotypes.” (Reeve 1998: 43)

Also, in 1964 the British student William D. Hamilton made the observation that close biological relatives share the replications of many genes and if individuals manage to help each other, more of these genes – most importantly the ones causing or contributing to this altruistic behaviour – are passed on to future generations via reproduction (cf. Reeve 1998:45). In order to have come to this conclusion, Hamilton has been largely influenced by the work of geneticist R.A. Fisher. In a popular journal published in 1955, J.B.S. Haldane, when asked whether he would sacrifice his life to save his brother, famously joked that he would lay down his life for two brothers or eight cousins, referring to Hamilton`s theory.

It became known as the theory of kin selection, coined by John Maynard Smith, and has since been used to explain some aspects of animal social behaviour (cf. Laland/Brown 2011: 52). The term “inclusive fitness” was chosen by Hamilton in order to emphasize that not only the organisms own reproductive success, but also that of its relatives – in the sense of increasing the numbers of offspring – is a guiding principle for animal behaviour (cf. Laland/Brown 2011: 55). David Buss defines it in the way that “ ... natural selection favors characteristics that cause an organism`s genes to be passed on, regardless of whether the organism produces offspring directly.” (Buss 1999: 12)

In this sense, the formulation of the theory of inclusive fitness solved the problem of altruism as alternative explanation to group selection, at least when the behaviour under

consideration is directed at genetic kin (cf. Buss 1999: 15; Badcock 1998: 461). This concept is taken further by evolutionary psychologists, who propose that the different amounts of care provided by a mother towards her offspring is based on the expectancy of it further passing on its, and to a degree her, genetic material. This is allegedly done by an evolved module, engaging in a sort of cost-benefit analysis based on the availability of certain predictors in the past, and is also used as an explanation to account for the occurrence of infanticide (cf. Daly/Wilson 2003: 579). Evolutionary psychologists relate this concept of inclusive fitness to the evolution of modules, shaping them in a way that promotes psychological action and elicitation of behaviour according to this theoretical principle: "Other things being equal, the more closely psychological mechanisms reliably produce behaviour that conforms to Hamilton's rule, the more strongly they will be selected for." (Tooby/Cosmides 1992: 67)

In the literature, a line of critique can be found directed towards the perception that inclusive fitness is pictured as conscious motivation for expressed behaviour. It is argued by evolutionary psychologists that inclusive fitness led to the evolution of unconscious mechanisms that can be observed only on a larger scale. " ... [B]ehaviourist researchers were accused of treating inclusive fitness as a motive or objective rather than as the historical arbiter of the selective retention of attributes ..." (Daly/Wilson 1999: 511)

#### *3.3.2.1. Kin recognition and investment theory in humans and other animals*

Still, the precondition for this concept to function as is proposed, is that animals can discriminate between genetic relatives and non-relatives, as well as that they are engaging in positive behaviour towards the former. Hence, this is a basis for nepotistic behavioural patterns. These allegedly omnipresent social preferences in animals led authors Daly and Wilson to the necessity of using them to account for observed conflict and violent behaviour within human family structures (cf. Daly/Wilson 2003: 578). Because the certainty of a child being one's own offspring is far greater for mothers than for fathers, different psychological modules are hypothesized to have evolved in the sexes. For example, paternal affection towards a child is supposed to be elicited via cues that enhance the probability of it being a biological kin. Daly and Wilson point to empirical data supporting that the discovery of actual

non-paternity on the father's side leads to aggression that is directed toward the mother, but not the child itself. The reason for why the aggressive behaviour is expressed is claimed to be that the investment in another men's progeny is actually lowering that which could have been provided for the promotion of his own genetic material (cf. Daly/Wilson 2003: 580f.).

An example of what kind of hypotheses this logic of kin investment theory can lead to regarding the explanation of human behaviour is provided by Smith. He reasoned that if true, maternal grandmothers should "invest" more of their time in their grandchildren compared to maternal grandfathers or paternal grandmothers, and those three should spend more of their time than paternal grandfathers, because the certainty of biological relatedness is the weakest for people in this last category. After testing this hypothesis by measuring the time spent by about 600 grandparents with their grandchildren, he found that indeed maternal grandmothers invested about twice as much time in their alleged progeny compared to paternal grandfathers, the other two groups lying in between.

Another suggestion of how to translate a measure of investment into the realm of humans has been provided by Smith and colleagues, who hypothesized, that mechanisms of kin selection should be found by investigating the different amounts of money that have been left to survivors by will of the deceased. They see evidence for kin selection in the fact that after investigating 1000 wills, on average more money has been provided to genetic kin than to non-kin. Also, more has been left to close relatives than more distant ones, in other words to those with comparably "more reproductive value". It was noticed that people with higher amounts of money bequeath a larger sum to their sons, and those with less leave more to their daughters. This is considered as evidence for the existence of a psychology that has been shaped by natural selection to provide more support to genetic kin (cf. Surbey 1998: 398). Alternative explanations as to how culture and the proximate psychological mechanisms it confounds could account for these observations instead are not considered, even though it would be fairly easy to formulate such hypotheses.

Mechanisms for kin-recognition are classified as being either direct or indirect, the former functioning, for example, by equating the location of a conspecific with it being genetic kin,

and the latter, for example, by basing the discrimination on phenotypic characteristics. These two mechanisms of recognizing genetic kin are not mutually exclusive though (cf. Reeve 1998: 62f.). There exists considerable criticism on the necessity and also functioning of the mechanisms that allow for kin recognition in humans and also other animals (cf. Sahlins 1976: 25f.). David Buss tries to counter these doubts by referring to rules of thumb that evolved in order to identify close kin. He suggests that, like a spider building a web with enormous precision but without sophisticated mathematical abilities, humans also do not calculate the degree of genetic relationship, relying on intuitions like optical similarities of close genetic relatives with the own image instead (cf. Buss 1999: 19f.). Because the theory of kin selection helped shedding light on the explanation of specific behaviours in non-human animals, also in an evolutionary framework, and as biologists are usually confronted with it in the course of their education, it is only plausible why it has been applied to explain human behaviour in the same terms:

“... [T]he development of the concept of inclusive fitness made it possible to explain the evolution of all genetically controlled variations in infrahuman animal behaviour in conformity with the principle of natural selection. It is understandable, therefore, why sociobiologists find the temptation to apply the same principle to the explanation of human social behaviour well-nigh irresistible.” (Harris 2001: 120f.)

A critique of the application of kin selection theory to account for specific mechanisms in human interactions has been formulated by American anthropologist Marshall David Sahlins, who points to cross-cultural evidence against its functioning in this context. The manifold differences in social systems, regarding aspects of personal interactions found in diverse cultures, do seem way too complex to be explained by such mechanisms:

“My aim is to support the assertion there is not a single system of marriage, postmarital residence, family organization, interpersonal kinship, or common descent in human societies that does not set up a different calculus of relationship and social action than is indicated by the principles of kin selection.” (Sahlins 1976: 26)

Even though inclusive fitness is generally perceived as a valuable mechanism in explaining problems that fields like population genetics and behavioural ecology are concerned with, the notion that it can help in clarifying parts of how the brain and mind work is negated by some neuroscientists (cf. Panksepp/Panksepp 2000: 109).

#### **3.3.3. Theories of culture proposed by evolutionary psychology**

In this subchapter I will describe some of the ways in which culture is conceptualized on a biological level and the ideas and proposed mechanisms these theories are based upon. Following this is a critique of these concepts, based first and foremost on them being essentially of a reductionist and biologically deterministic nature.

##### ***3.3.3.1. Culture as adaptation and transmission of information***

The usual way in which sociobiologists approach culture is by linking it directly to behaviour, because of its obvious influence on reproductive success. Thereby, mental processes and constructs like ideas and beliefs are reduced in their importance, except when they exert an impact on observable behaviour. The overall assertion is that humans unconsciously, but also consciously perform actions that promote Darwinian fitness and are adaptive according to the environmental conditions, as well as that the construct of culture is only a means to the end of enhanced genetic replication. This proposed maximization of fitness is carried further as an explanation of cross-cultural diversity, which is seen as a consequence of adapting to specific environments, in the course of which different cultures and social systems are created (cf. Janicki/Krebs 1998: 168).

To provide a specific example of how evolutionary psychologists claim that an adaptation can influence cultures, Buss, inspired by the theory that extensive peacock plumages signalize a low amount of parasitic infestation, draws a comparison to human cultures that put a high value on a well-groomed appearance. The proposition is that in regions with a low prevalence of parasites, cultures tend to place less importance on physical attractiveness compared to cultures in regions with higher amounts, because the adaptive requirements

are lower. This is used to exemplify that cultural variations can be explained by evolved adaptations, to a certain degree (cf. Buss 1998: 426).

Similar to the way that many scientists stemming from the sociobiological tradition have already conceptualized culture, evolutionary psychologists tend to reduce it to information. It is presented as something separated from the individual, like an external entity or substance. It can be characterized as, metaphorically speaking, flowing through humans like blood through vessels, but without them having much influence on its content. Hence, their definition of culture can be described as “ ... information and its transmission between individual minds. As such, culture is something that works through but is not done by people.” (Derksen 2007: 190)

The definition of culture by Tooby and Cosmides is fundamentally linked to the uniformity of mental and material attributes and contents, even if those are shared only by two people: “ ... [W]e will use culture to refer to any mental, behavioural, or material commonalities shared across individuals, from those that are shared across the entire species down to the limiting case of those shared only by a dyad ... .” (Tooby/Cosmides 1992: 117)

#### *3.3.3.2. Innate psychological contents as the basis for the emergence of culture*

Boyd and Richardson argue that evolved and genetically inherited predispositions lead to a direct bias which is consciously or unconsciously expressed in behaviour that enhances Darwinian fitness. It does so by producing a motivational impetus in the individual, leading it to address the satisfaction of needs ranging from reducing hunger, achieving sexual satisfaction, but also of meeting social approval. This concept of pre-adjustment is used to explain individual choices of embracing certain beliefs and values, based on them providing the fulfilment of goals that have been biologically consolidated via the evolutionary process (cf. Janicki/Krebs 1998: 182f.).

Similarly, what Tooby and Cosmides termed as “metaculture” is reflecting the theory that innate, panhuman mental proclivities provide universal regularities across cultures. This

happens due to a common underlying and content-providing basis, posed by the evolved mental modules that make up the human mind:

„There is certainly cultural and individual variability in the exact forms of adult mental organization that emerge through development, but these are all expressions of what might be called a single human metaculture. All humans tend to impose on the world a common encompassing conceptual organization, made possible by universal mechanisms operating on the recurrent features of human life.“ (Tooby/Cosmides 1992: 91)

The basis for this argument is the proposition that mental modules do not only react in a predetermined and evolutionarily shaped manner, but also that they provide content without prior experience or environmental interactions:

“The heterogeneous mechanisms comprising our evolved psychological architecture participate inextricably in all cultural and social phenomena and, because they are content-specialized, they impart some contentful patterning to them. Indeed, models of psychological mechanisms, such as social exchange, maternal attachment, sexual attraction, sexual jealousy, the categorization of living kinds, and so on, are the building blocks out of which future theories of culture will, in part, be built (Sperber, 1990; Tooby & Cosmides, 1989a).”  
(Tooby/Cosmides 1992: 121)

Starting from this frame of metaculture, they expand their concept and differentiate between evoked culture and epidemiological culture. The former posits that some of our functionally organized, domain-specific mechanisms are triggered by local circumstances, leading to witnessed within-group similarities and between-group differences, whereas the latter emphasizes the existence of mechanisms that lead to imitation and hence the spreading of “representations” that are observed by others. What is also implied here is that these mechanisms set boundaries in regard to the likelihood of some being distributed more or less compared to others (cf. Tooby/Cosmides 1992: 121). “Consequently, epidemiological



culture is also shaped by the details of our evolved psychological organization.”

(Tooby/Cosmides 1992: 119)

This proposition of an epidemiological culture can be seen as theoretical basis for diverse concepts prominent in biologically inspired explanations of cultural phenomena. They are aiming to find a basic unit of transmission, thereby reducing culture to its contents.

According to Tooby and Cosmides, the specific information that is generated and actually, or preferably, shared, is also specified by our innate mental structures: “Our complex content-specific psychological architecture participates in the often distinct processes of generating mental content, generating local similarities and between-group differences, and generating what is 'transmitted'.” (Tooby/Cosmides 1992: 117)

So, culture is perceived as something that has been created by our minds according to a predefined structure that evolved to react to specific input, but is providing predefined content regardless of the environment as well. Additionally, the informational products can be seen as objects that exist and are only transmitted by individual human minds:

“They [evolutionary psychologists] remain wedded to an ideational conception of culture and a cognitivist approach to psychology: culture is comprised of information and its transmission, and is carried by the information-processing mechanisms of the brain. The integration of the biological, psychological and social sciences that they seek, is based on this concept of information.” (Derksen 2007: 204)

#### ***3.3.3.3. Cultural selectionism***

This concept of culture is the fundament of what is termed the “cultural-selectionist approach to social evolution”, which is essentially based on an analogy to Lamarckian mechanisms of inheritance, and can be found in many proposed forms since the 1960s. They are always based on the reduction of culture into its proposed building blocks, but these units have been conceptualized and named differently by diverse authors, ranging from “memory-images” and “culturgens” to, most famously, the “memes”:

“The cultural-selectionist approach to social evolution has tried to find the basic unit of culture by postulating the existence of 'social genes'. We are asked to believe that societies are composed of tiny self-replicating particles – the 'memory-image' (Blum 1963), the 'idea' (Boulding 1970), the 'instruction' (Cloak 1975), the 'meme' (Dawkins 1978), the 'concept' (Hill 1978), and the 'culturgen' (Lumsden and Wilson 1981) – which, like the gene, are units of information competing for survival.” (Hallpike 1988: 43f.)

Richard Dawkins coined the term “meme” in 1976, its name being an obvious reference to the term gene, but inspired by the Greek word “*Mimema*” which denotes something that is copied. The concept of memes entails an attribute analogous to that of a gene, in the sense of it being the smallest part in the process of replicating information (cf. Bloch 2005: 192). Thereby, social evolution is seen as equivalent to biological evolution, based on replication, variation, transmission and selection, but is founded on the propagation of memes instead of genes: “ ... Dawkins proposes that the essential property of the gene is that it is a particle of replication, and argues that replication (and cultural selection) in human society is achieved by cultural transmission or imitation in the form of particles – the 'memes'.” (Hallpike 1988: 45)

The main point of critique regarding memes is that they cannot be defined in a universally valid manner that is also generally accepted which hints at the concept being fairly vague. Another very important problem of the idea lies in its neglect of considering the transformability of memes. The active process of continual transformation basically flaws the fundamental principle of it being conceptualized as a solid entity (cf. Bloch 2005: 201).

#### ***3.3.3.4. Theories of culture based on feedback loops***

The so called “dual inheritance theories” focus on the interaction between social and biological evolution, trying to explain phenomena such as how “ ... lactose-tolerance evolved in tandem with dairy farming in a few human cultural groups.” (Derksen 2007: 193). One step further down this observation of interconnection between genetics and culture lies the

“niche construction theory”, which is looking at the influence an organism has on its environment that then again shapes the evolution of the following generations, thus “ ... creating a feedback loop from biological evolution to a constructed niche and back again.” (Derksen 2007: 194)

“Niche construction theory draws attention to the way individual organisms construct their own natural environment, and Plotkin accords the human mind the power of socially constructing its cultural milieu. The organism does more than relay information between two evolutionary processes, it shapes its own environment, the nature and the culture it finds itself in, and in so doing becomes an active player in both biological and cultural evolution.” (Derksen 2007: 195)

Other approaches by evolutionary psychologists to explain culture are also based on a feedback-loop, in which culture is created by universal characteristics inherent in the human mind, but is in fact shaping the behaviours of individuals by providing the social environment they react to (cf. Malamuth/Heilman 1998: 517). Because the whole concept of culture proposed by evolutionary psychology is based on the assumed patterning of the mind, also providing innate proclivities and even mental contents without any prior experience, the falsification of this presumed structure would negate the basic theory and further elaborations of it.

Such a critique from neurobiological science has in fact been formulated, as is shown in the work of Brad M. Peters, who states that: “If there are problematic assumptions within evolutionary psychology’s definition of the mind, then we also have reason to question their special treatment of culture and learning, since both are thought to be influenced by modular assumptions unique to the paradigm.” (Peters 2013: 306)

#### **3.3.4. Animal and human comparisons in evolutionary psychology**

In sociobiology, the prevalence of using analogies from animal research in the explanation of human behaviour already was a given and has been criticized in many respects ever since:

“The revolutionary ideas of Williams, Hamilton, Trivers, and Maynard Smith were of huge importance for the study of animal behaviour. The controversial aspect was the application of sociobiology to human beings and Wilson, in particular, received much of the attention in this regard.” (Laland/Brown 2011: 61)

A specific example would be the explanation of expressions regarding reciprocal altruism, by comparing the Aché hunter-gatherers way of sharing with the one vampire bats (*Desmodus rotundus*) engage in. The line of argumentation goes that under certain circumstances the disadvantage for bats sharing food is in general smaller than the gain for the receiving animal. Hence, reciprocal altruism can constitute an evolutionary stable strategy that benefits both parties and hence has evolved. Due to chance having implications in the process of hunting, this is seen as a fundamental basis for reciprocity to have been encouraged in bats as well as in humans.

Also referring to the Aché people, cooperative hunting is presented as a primal human adaptation. It is said to be comparable to the hunting style of common chimpanzees (*Pan troglodytes*), thus seen as evidence for the importance of reciprocal altruism regarding the sharing of prey, for early human evolution. The author goes on to address the impact of this mechanism on the evolution of the human mind and behaviour, because it is presented as a psychological adaptation that can be biologically passed on (cf. Badcock 1991: 85ff.).

#### ***3.3.4.1. Innate psychology and animal experiments***

References to studies conducted on animals are frequently made in the field of evolutionary psychology as well. This especially concerns the propagation of evidence that innate psychological modules exist in all animals, constituting predetermined and environmentally triggered behavioural responses (cf. Gaulin/McBurney 2004: 5). These behavioural dispositions are theorized to have emerged and to subsequently have been conserved evolutionarily in the form of features that can now be compared across diverse species (cf. Úbeda/Llorente 2015: 183). An early example of comparative psychology is provided by the studies during the middle of the 20th century by American psychologist Harry Harlow (1905-1981).

“In animal research, ethologists and comparative psychologists debated whether instincts determine social behaviour. As the editor of the major journal in comparative psychology, Harlow was aware of the controversy between comparative psychologists and ethologists about the role of biological instincts in animal and human behaviour.” (Vicedo 2013: 150)

Harlow contributed to cross-species comparisons in early comparative psychology. He famously used rhesus macaques (*Macaca mulatta*) in experiments, trying to demonstrate an instinctual nature of social behaviour, by showing the importance of critical periods in early development for the formation of healthy adults (cf. Vicedo 2013: 146 f.). One of his experiments involved providing eight new born monkeys with two different artificial mothers to interact with. One was uncomfortable to the touch, due to it being constructed out of wire mesh, whereas the other one has been covered in soft cloth and was being radiated by a light bulb for heat. For one half of the monkeys, only the artificial mother with cloth provided lactation, and for the other half, the situation was reversed. The point was that the monkeys did not seek relief with the food spending mother, but with the one providing comfort instead (cf. Vicedo 2013: 151).

This is used as an argument for the validity of “attachment theory”, claiming an innate propensity to associate mother figures, not because of reinforcing mechanisms proposed by operant conditioning, but instead by naturally seeking contact comfort. Harlow was influential in revitalizing the debate of instincts for the American public, as well as the scientific community at the time, often portrait as an intellectual fellow of Konrad Lorenz and John Bowlby, both of whom also had contact and correspondence with him. But, according to Marga Vicedo, his work actually put the assumed determination of innate biological needs into question (cf. Vicedo 2013: 147). She draws this conclusion from the data produced by Harlow himself, showing that the behaviour of macaque mothers was neither biologically predetermined nor depending on an imprint of early experiences. Instead, it has been profoundly influenced by the environment, namely due to a lack of social interactions (cf. Vicedo 2013: 176).

“At first Harlow supported Bowlby’s view about the key role of the mother in infant development, but later he departed from this position to emphasize the role of peers. In addition, Harlow did not think Lorenz’s view about imprinting and instincts could be applied to the pliable development of affectional systems in monkeys or in humans.” (Vicedo 2013: 178)

Another example is drawn from the works of American psychologist John Garcia (1917-2012), who studied rats and showed their propensity to associate food with sickness, even when the latter occurs after a relatively long period following the consumption. But, this behaviour was not observed if instead of food another stimulus like a buzzer or flashing light implied the subsequent occurrence of nausea. The conclusion was that innate mechanisms function to ease the association of some indices with the subsequent occurrence of physical discomfort but not others, constituting so-called “prepared learning”. This finding has been extrapolated by American psychologist Martin Seligman to be studied in humans, who ascertained that it was easier to condition humans towards a fear of snakes, in contrast to stimuli like electric outlets. This study has subsequently been modified and tested on monkeys by American clinical psychologist Susan Mineka, who trained them via observational learning. They had to watch the reactions displayed by their conspecifics and allegedly imitated a fear reaction only when elicited by the monkeys seeing snakes, but not by the ones seeing the controlling stimulus of a flower, even though the reaction of the observed animal has been the same (cf. Buss 1999: 27f.).

Evolutionary psychologists also draw comparisons from non-human animals and apply concepts from biology regarding the topic of sexuality and gender, without acknowledging the impact of cultural factors:

“In recent work on sexual selection and sex differences, for example, researchers (most of whom embrace the evolutionary psychology label) have taken current concepts from theoretical biology and from studies of other animals, and have applied them without essential modification to the study of *H. sapiens*.” (Daly/Wilson 1999: 511)

Daly and Wilson themselves also engage in making analogies between non-human animals and animals, for example in their study of lethal interpersonal violence. In it, one amongst many comparisons is found in the explanation of violent reactions in non-human animals and humans, due to the appropriation of resources by adversaries (cf. Daly/Wilson 2003: 584).

#### *3.3.4.2. Critique and boundaries of comparisons*

Some evolutionary psychologists criticize an approach of searching evidence for the evolution of human behaviour by looking at other animals, or even extinct exemplars of our own biological family:

“People are unmistakably vertebrates, mammals, primates, and hominids. But they`re unmistakably unique. To look too hard for the roots of their behaviour in other primates or even other hominids is to underestimate the power of natural selection to shape new families, genera, and species – with very new adaptations.” (Betzig 1998: 271)

Even though evolutionary psychologists claim a uniqueness of the human mind, they generally locate the basis of behaviour in the specific, task-oriented structure that comprises the brain of all animals possessing a central nervous system, originating by evolution and caused by an adaptation to the environment:

“The information-processing mechanisms that collectively comprise the human mind differ in many ways from those that comprise the mind of an alligator or a bee or a sparrow or a wolf. The minds of these different species have different *design features* ... These differences in psychological design causes differences in behaviour ... ” (Barkow/Cosmides/Tooby 1992: 8)

Thus, Tooby and Cosmides break down all minds into design features, thereby postulating a common basis and an ontological uniformity between humans and other animals even though still emphasizing their specific structural differences. In general, evolutionary psychologists rely on concepts from biology that have been used to explain animal

behaviours and tend to extrapolate these theories to account for a wide range of behaviours that are believed to be reserved solely for humans:

“Even efforts to understand such peculiarly human phenomena as language, artistic production and appreciation, humour and governance routinely invoke the concepts of sexual selection, evolutionary game theory, kin selection, Zahavian handicaps, and other theoretical staples of contemporary animal behaviour research.” (Daly/Wilson 1999: 511)

Similar to sociobiologists, some evolutionary psychologists emphasize the usefulness of biological explanations based on evolutionary models in order to understand social behaviours and interactions with the environment in animals, claiming that these can be applied to humans as we are social animals as well (cf. Gaulin/McBurney 2004: 14). Pinker, for example, sees the process of socialization only as secondary when regarding the emergence of cultural forms, in contrast to innate psychological proclivities of humans that are also to be found in animals, only in different manifestations. For him, the causal arrow points from the biologically determined individual to the construction of society, instead of the other way around:

“Bellicosity, cravings for sweets, sexual ornamentation, and male promiscuity have been well established as mating, kinship, and survival maneuvers not only among hominids and primates but to some extent among other animals as well. Far from being socially constructed, they shape the institutions of society, and far from perverting the goodness of noble savages, they are the raw materials of unreflective animal behaviour.” (Fromm 2003: 94)

The philosopher Leslie Forster Stevenson points to the essential problems of using concepts of biological determinism for the explanation of human societies. He sees not only inappropriateness in the validity of such reasoning in regard to humans, as is displayed by E.O. Wilson's work, but even in its application for non-human animals. He proposes that the concepts used, fail to account for non-human animal behaviour and are consequently misapplied for the explanation of social phenomena in humans:



“ ... [O]ur major goal is to show that the world is not to be understood as biological determinism would have it be, and that, as a way of explaining the world, biological determinism is fundamentally flawed. Note that we say 'the world,' for another misconception is that the criticism of biological determinism applied only to its conclusions about human societies, while what it says about nonhuman animals is more or less valid. Such a view is often expressed—for instance about E. O. Wilson's book *Sociobiology: The New Synthesis* ... Its liberal critics claim that the problem with Sociobiology lies only in the first and last chapters, where the author discusses human sociobiology; what's in between is true. Not so, in our view: what biological determinism has to say about human society is more wrong than what it says about other aspects of biology because its simplifications and misstatements are the more gross. But this is not because it has developed a theory applicable only to nonhuman animals; the method and theory are fundamentally flawed whether applied to the United States or Britain today, or to a population of savanna-dwelling baboons or Siamese fighting fish.”  
(Stevenson 2000: 311)

A point of critique in searching for comparative aspects of humans, prosimians, monkeys or apes – even chimpanzees, despite being the closest living relative species to *homo sapiens* – is the tremendous variety found in diverse aspects of their living habits. Be it in regard to diet (ranging from eating fruits, leaves, insects, meat or a mixture of those), or the structure and size of the group (for example living solitary or possibly displaying a fission-fusion dynamic), or be it in ways of procreation (mating monogamously, polyandrously, promiscuously or in harems), the diversity makes a direct reference, as prototype of the behaviours modern humans display, practically impossible.

Also implied in this insight is the fact that the adaptive pressures faced by primates and their ancestors are diverse and under constant change (cf. Betzig 1998: 266f.). Jakk and Jules Panksepp also point towards the fact that the specific regions of the human brain elicit functions that seem to be working for special purposes only due to individual life histories. They contrast these anatomical parts with genetically pre-determined circuits that are

### 3.4. Summary of paradigms and principles

placed in subcortical regions, responsible for the elicitation of motivations and emotions which are existent in the central nervous system of all mammals (cf. Panksepp/Panksepp 2000: 108). The authors emphasize that evolutionary psychologists tend to ignore facts by neuropsychology that have been established by looking at the neural composition of diverse animals: “Real neural functions across a variety of species should provide definitive constraints on speculation about what evolution did or did not create within human and animal brain/minds.” (Panksepp/Panksepp 2000: 108)

### 3.4. Summary of paradigms and principles

A paradigm, after philosopher and historian of science Thomas Samuel Kuhn (1922-1996), describes all that entails the scientific socializing of its adherents, for example the personal experience, education, and indoctrination of shared believes. More generally, it influences the complete individual’s life history, resulting in a model of standard scientific practice that is based on general rules being abided by its followers (cf. Kuhn 1962: 10f.). The basis of every scientific endeavour relies on the paradigm it can be placed in according to its underlying principles. The components of these can be broken down and categorized and its aspects subsumed into epistemological, ontological, methodical and theoretical principles. Some of the principles a specific paradigm is associated with can be shared amongst them, but the constituting parts themselves are mutually exclusive. Following is a table that lays out some of the discussed paradigms that are concerned with the explanation of human social phenomena and human nature in general:

**Table 1:** Paradigms and the corresponding principles underlying them

|                           | ⇒<br><b>Principle</b><br>⇒     | <b>Epistemological</b><br>Principle | <b>Ontological</b><br>Principle | <b>Methodic</b><br>Principle | <b>Theoretical</b><br>Principle |
|---------------------------|--------------------------------|-------------------------------------|---------------------------------|------------------------------|---------------------------------|
| ⇓<br><b>Paradigm</b><br>⇓ | <b>Sociobiology</b>            | Science                             | Gradualism                      | Individualism                | Biological Determinism          |
|                           | <b>Evolutionary Psychology</b> | Science                             | Gradualism                      | Individualism                | Biological Determinism          |
|                           | <b>Cultural Materialism</b>    | Science                             | Punctualism                     | Holism                       | Infrastructural Determinism     |
|                           | <b>Cultural Relativism</b>     | Humanism                            | Punctualism                     | Individualism                | Idealism                        |

### 3.4. Summary of paradigms and principles

The methodological principle regards the system of reference. For example, the individual with its specific attributes could be the focal point of attention, from which the causal arrow is drawn into the direction of explaining mass phenomena. On the other end, the emergent properties could be examined in their entirety, incorporating personal interactions as well. In this context the influence of society on the individual should also be considered, as French sociologist and anthropologist David Émile Durkheim (1858-1917) explicitly emphasized. Under specific circumstances this can lead to the generation of a positive or negative feedback loop, due to amplification. Methodological individualism can take the concrete form of “psychologisms” or “mentalisms”, by seeking explanations of societal mechanisms based on individual psychological characteristics, as can be seen in anthropological works by Boas, Mead or Benedict, following the paradigm of cultural relativism. Although Boas acknowledges the important influence of culture on the individual, he also emphasizes the possibility for cultural change by the will of its members: “The activities of the individual are determined to a great extent by his social environment, but in turn his own activities influence the society in which he lives, and may bring about modifications in its form.” (Boas 1920: 316)

Having said that, Boas did not propose that there is an innate psychology that brings about the change of society, but that it can be influenced from the outside by ideas which subsequently can modify the receiving minds and thus culture itself (cf. Boas 1920: 317).

Methodological individualism works by transposing observations made in a micro-range onto a macro dimension, in disregard of emergent qualitative changes due to the accumulation and interplay of its component parts (cf. Gross 2010: 792). In other words, it works by looking at properties of the constituting elements and takes these findings as evidence for attributes of the whole system. Thus, the possibility of society to change by itself is a supposition of cultural relativism and other fields that utilize the epistemological principle of humanism, because they rely on the theoretical principle of idealism which asserts the possibility of human ideas to shape society fundamentally (cf. Vaughn 2003: 5). At its core lies the ontological principle that defines human beings as distinct from other animals due to their capacity for free will, making the formulation and application of nomothetic measures futile (cf. Lamont 1997: 173f.).

### 3.4. Summary of paradigms and principles

In contrast, cultural materialists emphasize the impact of outside influences posed by the social and physical environment as well as including economic factors in their explanations (cf. Gibbon 1984: 403). According to this theoretical principle of probabilistic infrastructural determinism, the material relations of a society to the environment have the most significant impact on the evolution of culture. For example, cultural materialists like Carneiro view societies comparable to physical objects, in the sense that they need an impetus like increased population pressure for change to occur. “The principle of infrastructural determinism begins with a simple premise: the physical world conforms to physical laws that must be accommodated by a society’s infrastructural organization.” (Ferguson 1995a: 24)

In contrast to the humanities, that evade the notion of determinism by postulating that the free will of human beings makes the formulation of causal links in regard to societal evolution impossible, cultural materialism relies on the epistemological principle of science (cf. Lamont 1997: 173f.). This entails amongst other things positivism, operational definitions and the search for laws that can be applied universally via nomothetic measures. Further, it encompasses that observations can be verified or falsified by further investigation and also that objectivity should be at least approximated by means of repetitive observations and high levels of inter-observer reliability. In this sense, it relies more on the emic (or outside view), because the etic (or insider view) approach runs into the danger of unreflectively accepting the personal opinion of the research subjects, without critical external evaluation (cf. Kottak 2004: 47). It also takes into account synchronic and diachronic implications as well as probability calculations, statistics and parsimony. The Human Relations Area Files (HRAF) can be used as substitution for the impossibility of conducting laboratory experiments, in order to engage in worldwide cross-cultural comparisons. Additionally, cultural materialists follow the postulate of value neutrality by decidedly trying to leave out the own, personal political agenda of the researchers involved.

In general, evolutionary psychology as well as sociobiology combine methodological individualism with biological determinism and reductionism, by stating that the propensities that make up the individual psyche are innate and influence societal mechanisms. A typical example of such a line of argumentation entails the proposition that war emerges out of aggressive and territorial tendencies that are an inherent part of human nature. What is also

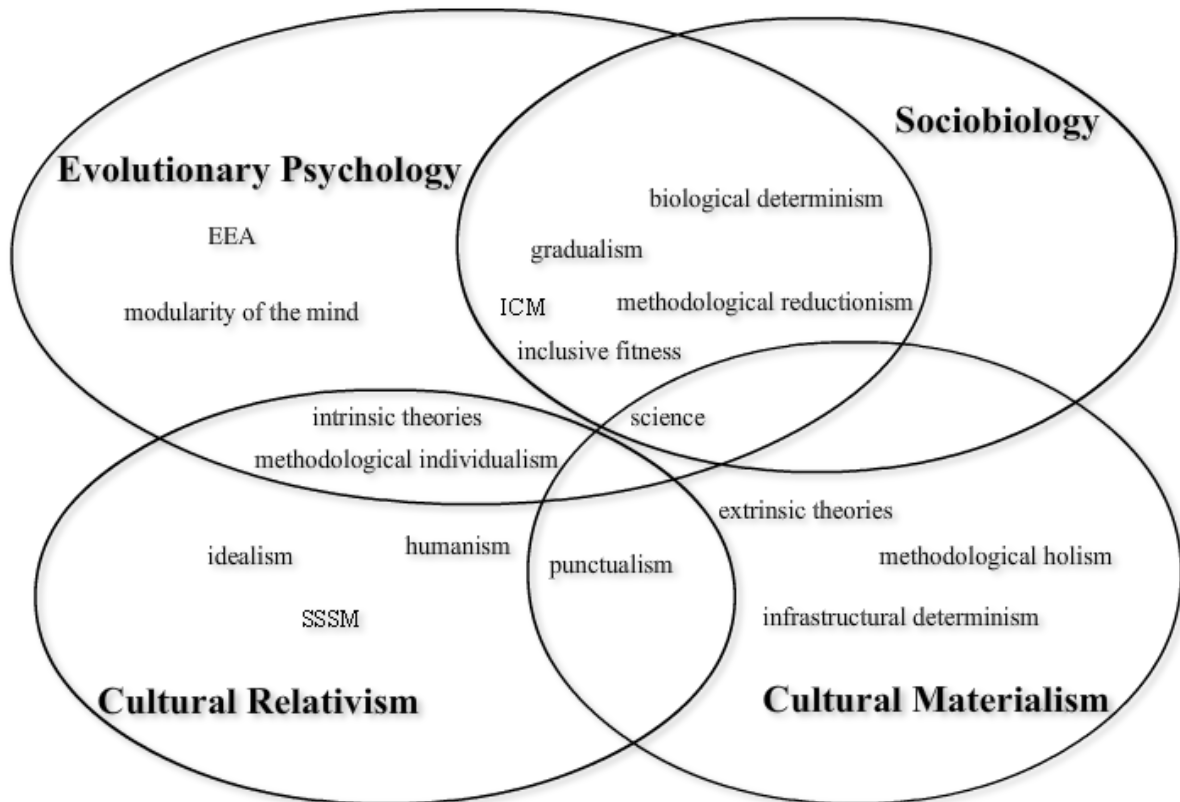
### 3.4. Summary of paradigms and principles

being implied is that a male dominated hierarchy between gender roles develops naturally due to them being on average more brutish, suppressive and also physically stronger in comparison to women, who are presented as being more submissive and pacific (cf. Shanafelt/Pino 2014: 31).

Underlying this is the ontological principle of gradualism which claims that human and non-human animals are only gradually but not qualitatively different from each other, thereby allowing for purely biological explanations of individual and social human behaviour. This entails neglecting the importance and direction giving impetus of symbolic interactions which also have an accumulative effect and historical implications. Following is a figure illustrating the overlaps of constituent components of the aforementioned paradigms:

**Figure 5:** Overlaps between and peculiarities of the different paradigms discussed

Paradigms and their constituent components:



SSSM: Standard Social Science Model

ICM: Integrated Causal Model

EEA: Environment of Evolutionary Adaptedness

#### 4. Evolutionism from a social science perspective

The concept of evolution was applied in the social sciences even before it has been formulated by Charles Darwin to be used to explain biological mechanisms. “Without meaning to minimize the profound biological contributions of that great man, we should remember that the evolutionary study of society and culture long antedates him.”

(Sahlins/Service 1960: 3f.)

Nevertheless, Darwin`s explanation of mechanisms that drive evolution from the outside had a deep impact on theories concerned with cultural evolution:

“Darwin`s explanation of organic evolution in terms of an objective, external process like natural selection had been enormously successful, and had brought remarkable order and comprehension into biology. It was to explanations of this type that the early anthropologists were powerfully drawn.” (Carneiro 2003: 17)

This led to an emphasis on the importance of environmental variables in shaping the process and direction of social evolution, by pointing to similar developments of societies that were situated in accordingly likewise surroundings (cf. Carneiro 2003: 17).

The basic definition of evolution in cultural anthropology differs enormously between various intellectuals:

“It seems that there is a great deal of disagreement about this concept, especially in cultural anthropology. To some anthropologists, evolution is simply change (e.g., Birdsell 1957). To others it is growth or development, which is a special kind of change. Some would outlaw the concept of progress from evolution. Others accept 'advance' but eschew the term 'progress' (Greenberg 1957). Another finds progress of the very essence (White 1959). Evolution in its most significant aspects is 'multilineal' we are told by one student of cultural evolution, and in its least significant aspect, 'universal' (Steward 1953). It is

#### 4.1. Diverse approaches towards evolutionary explanations

significantly both, argue others (White 1959; Haag 1959; Kluckhohn 1959). Is evolution 'history'? Most of it is, writes Kroeber, and the remainder is probably functionalism or 'science' (1946). But evolution and history are distinctly different processes, White replies, and functionalism is still another (1945; 1959).” (Sahlins/Service 1960: 4f.)

#### 4.1. Diverse approaches towards evolutionary explanations

The tradition of using biological evolution as a model for social evolution has a long history and many attempts have been made to utilize it, as it is seen as being capable of producing explanatory power. The British evolutionary biologist Julian Sorell Huxley (1887-1975) perceived culture as a unique kind of evolution, a view that, from an early point on, elicited some indisposition in anthropology:

“What is the relation between biological and cultural evolution? Culture is *sub species evolutionis*, Julian Huxley asserts, a variety of evolution in general. Presumably, this implies that culture and life are 'cousins,' that they have common evolutionary descent. ... [A]nthropology has long maintained its guard against the 'biological analogy.’” (Sahlins/Service 1960: 5)

But, if used in a specific way and context, some anthropologists believe that it can be a useful concept if it is properly applied to cultural evolution: “The evolutionary perspective had been missing in anthropology and we should like to join in current efforts toward re-establishing it, but hardly at the cost of the many other legitimate anthropological concerns.”(Sahlins/Service 1960: 3)

The American anthropologists Marshall Sahlins and Elman Rogers Service (1915-1996) make a distinction in the way evolution is looked at, not only in cultural anthropology but in general. They were identifying two major approaches based on different notions: Either – and this is the more common point of view – evolution is conceptualized as successive changes in form, which they label the “succession-of-forms” view, or, not as often, evolution

#### 4.2. Similarities and disparities in the concepts of social and biological evolution

is conceived as movement in a specified direction that, if followed, defines something as evolving, which they term “grand-movement” view (cf. Sahlins/Service 1960: 6).

The famous and influential anthropologist and social scientist Leslie Alvin White (1900-1975) was profoundly interested in social evolution, seeing its cause to be based on an ecological and energy-optimization mechanism, performed by societies as wholes:

“Among cultural anthropologists, Leslie White has shown the greatest theoretical concern with evolution ... holding that culture moves in the direction of increased energy utilization ... .While it is true that White applies this outlook to all reality, organic, inorganic, and superorganic, the concept 'evolutionist process' itself does not specify a broad over-all *direction* in which reality is moving.” (Sahlins/Service 1960: 6)

Sahlins and Service reached the conclusion that it makes most sense to differentiate between two aspects of the process of evolution, being specific and adaptive or being general and progressive. Hence, they distinguish between “General Evolution” and “Specific Evolution”, the former being based on advance and progress whereas the latter is characterized by divergence and variation (cf. Sahlins/Service 1960: 11). They also acknowledge a fundamental difference or even opposition in the way inorganic in contrast to organic evolution functions, the former leading towards a random distribution of energy and matter, thereby ending in homogeneity, whereas the latter one proceeding towards higher organization, higher energy concentration, and heterogeneity (cf. Sahlins/Service 1960:8).

#### **4.2. Similarities and disparities in the concepts of social and biological evolution**

The basis of cultural evolution is fundamentally linked to similar processes underlying biological evolution. These are based on a change in form by differentiation, which is caused by a movement towards enhanced accommodation to the environment. Also, both concepts



#### 4.2. Similarities and disparities in the concepts of social and biological evolution

of evolution are seen as being progressive in the sense that, from an outward perspective, they increase the complexity of the object (or subject) they act on:

“It appears almost obvious upon stating it that in both its biological and cultural spheres evolution moves simultaneously in two directions. On one side, it creates diversity through adaptive modification: new forms differentiate from old. On the other side, evolution generates progress: higher forms arise from, and surpass, lower. The first of these directions is Specific Evolution, and the second, General Evolution ... Any given change in a form of life or culture can be viewed *either* in the perspective of adaptation *or* from the point of view of overall progress.” (Sahlins/Service 1960: 12f.)

Despite the differences in form when comparing biological and cultural evolution, the common tendency of movement implies an adaptive purpose by providing enhanced benefits for survival. Still, the underlying mechanisms that lead to a change are of a different nature and follow patterns that are unique and specific, depending on the object of evolution:

“Obviously cultural and biological evolution do differ in many ways, for culture and life have different properties, different means of transmission and change, and each has laws peculiar to itself. Nonetheless, both can be embraced within one total view of evolution. ... Culture is the superorganic means available to the human species for utilizing the earth`s resources in the service of survival; accumulation of experience through symboling permits improvements in this endeavour: hence, cultural evolution in particular is part and continuation of evolution as a totality.” (Sahlins/Service 1960: 8)

### 4.3. Explanations for social evolution

Sahlins and Service see the major purpose of cultural evolution as similar to that of biological evolution, because both of them are providing an enhancement in the capacity to gain comparably more energy with less expenditure of resources:

“Culture, continuing the life process, appropriates free energy and builds it into an organization for survival, and like life, culture moves to maximize the amount of energy exploitation. ... The homology is primarily *functional*: both life and its offshoot, culture, are energy-capturing systems which move in the direction of thermodynamic improvement as well as adapt to various means of energy appropriation.” (Sahlins/Service 1960: 9)

They emphasize that by using biological evolution as a reference for cultural evolution, no reductionism is engaged in, because only similar concepts are mutually applied:

“To explain two things in similar terms is not the same as explaining one in terms of the other. Therefore there is no reductionism.” (Sahlins/Service 1960: 10)

After Hallpike, the difference between explanations of social phenomena that are based on biological models lies in their foundation, either relying on functionalism or Darwinism:

“ ... [T]here is a strong connection between functionalism and evolution. According to this view, ultimately derived from Spencer, societies are functionally integrated systems, in the manner of organisms, so that innovations appear and survive because they meet the functional requirements of society as a whole, and the direction of the evolutionary process thus resembles in some ways the growth and maturation of the individual organism. It is therefore assumed that every institution and custom exists because it makes some essential contribution to the wellbeing of the society in its struggle for survival in the natural environment and with other societies, and that this struggle for survival will also lead to new and more efficient institutions.” (Hallpike 1986: 20)

The Darwinian model of social evolution proposes that because of the relative adaptive advantage of some traits over others, these are propagated to a greater extent. This leads to comparably more descendants, thus prevailing over others by claiming the highest overall quantity of a population:

“A second type of biological model, which is significantly different from that of functionalism, is that of Darwinism, which has been widely employed in recent years to explain social evolution ... Essentially, the Darwinian model envisages a population of organisms (or genes in a gene pool), in which some variant forms, whether of gene or organism, are better adapted to the environment than competing forms, thus allowing organisms possessing a more adaptive trait to leave more offspring than those without such a trait, or, allowing genes of one type to spread in the gene pool at the expense of genes of a competing type.”  
(Hallpike 1986: 20)

An equivalent to the occurrence of biological mutation is seen in the way that information is passed on imperfectly, hence leading to a selection by environmental forces that determine if they are adaptive and will be propagated further:

“Because culture is transmitted from person to person it follows that there will be errors and innovations in this transmission analogous to mutation in sexual reproduction, and it is not therefore necessary to invoke either structure or purpose: the only requirements are variation and selection. The direction of social evolution, like its biological counterpart, is thus the result of the selective influence of the environment.” (Hallpike 1986: 20f.)

Hallpike criticises that this approach does not engage in an explanation of why or how these pressures lead to the existence of specific institutions that societies rely and depend on:

“One of the great advantages of this Darwinian approach is that it avoids the problem of explaining just how it is that societies can produce those institutions

that are functionally necessary for them, by treating the emergence of novelty simply as a random process that is bound to occur in the transmission of culture from person to person and from generation to generation. And if it is possible for such a theory to explain the development of all the marvellous intricacies of animals and plants, surely it should be relatively easy to apply it to the much cruder systems of human society? Darwinism is therefore a good example of an exogenist, atomistic theory in which the environment plays the role of the selective agency, and is therefore responsible for any directional features of the evolutionary process.” (Hallpike 1986: 21)

An interesting point put forward by Hallpike is that the comparison of organisms and societies is not appropriate, because the basic units of the latter are systems of meaning and ideas of individuals that do not necessarily promote the stability of society in general, as opposed to the tangible units organisms are composed of. Also, he emphasizes that the structural features of society influence the individuals it is built on. This could be contrasted with organisms being influenced to a great degree by their constituting structural units (cf. Hallpike 1986: 27).

An important realization regarding the evolution of societies is the so called “Principle of Continuity”, which acknowledges historical developments by stating that “ ... cultures of today were necessarily derived from the cultures of the past by a continuous process. In the history of culture there had been no interruptions or discontinuities.” (Carneiro 2003: 14) This realization has been a tenet in the works of early anthropologists, such as in the case of Edward Burnett Tylor who emphasized its fundamental importance if one is to understand present events as well as the reasons for specific historical occurrences. Regarding an increase in complexity as sign of an evolutionary process, it is crucial to consider the necessity of finding an objective basis of evaluation for the underlying and distinguishing attributes. Otherwise, the possibility of succumbing to the fallacy of applying or implying a moral element into this way of comparison is given. Spencer`s approach to accomplish an objectification of different grades of complexity has been based on the definition and discovery of the structural traits of societies (cf. Carneiro 2003: 14f.).

## 5. The examples of war, violence and aggression

### 5.1. Theories about innateness of aggression in humans

Konrad Lorenz, similarly to Sigmund Freud, viewed aggression as something that bottles up inside and has to be released, which allegedly can be controlled by engaging in displacement activities like sports or similar physically exhausting or strenuous activities (cf. Gross 2010: 452, Wiehe 1998: 3). By explaining aggressive behaviour and violence as an evolutionarily evolved and characteristic aspect of human beings, evolutionary psychologists naturalize some forms of even excessive brutalities and lethal acts that are committed. Thereby, they are relieving the individual from conscious decision making and hence alleviating responsibility for such actions. A similar perspective is provided by Daly and Wilson when stating that “ ... violence may often be better understood as the adaptive output of a healthy psyche functioning normally, in which case an appropriate remedial response must address the social and material circumstances conducive to the violence.” (Daly/Wilson 2003: 569)

Proximate causes that lead to violence are put aside, instead emphasizing an underlying human nature that has been shaped through mechanisms of biological evolution, as already proposed by Charles Darwin (cf. Daly/Wilson 2003: 570). Other evolutionary psychologists argue in a similar manner and emphasize that aggression should not be considered as pathological behaviour because of the before mentioned relative adaptive advantages it provided our ancestors with on a recurrent basis (cf. Malamuth/Heilman 1998: 520).

Aggression and its link to warfare has been a focal point of theoretical diversion, as it has been used by some to explain war stemming from individual tendencies towards aggression – foremost present in males. This innate propensity towards aggressiveness is perceived by evolutionary psychologists to have evolved based on it serving an adaptive function in deep time (cf. Gross 2010: 450). Tooby and Cosmides, as well as many other evolutionary psychology scholars, hold the view that aggression is a universal human trait, mistakenly pointing to alleged evidence provided by archaeological records (cf. Ferguson 2013: 112f.). As American anthropologist Brian Ferguson, specialist in the anthropology of war, points out:

## 5.1. Theories about innateness of aggression in humans

“The proposition that war was common and deadly enough to act as a selection mechanism on our species is *axiomatic* in evolutionary psychology.” (Ferguson 2013: 113)

This point of view goes back to the tradition of ethology, in which aggression is explained as instinct that developed to help in providing the survival and successful reproduction of a species. This, of course, led to the comparison of humans and non-human animals by ethologists, such as in the case of Konrad Lorenz, in order to account for this phenomenon (cf. Wiehe 1998: 3). Similarly, Daly and Wilson explain violent behaviour as outcome of an evolved psychological adaptation, because it enhanced the success in competitive encounters and strengthened nepotism in individuals, leading to the propagation of this trait to subsequent generations. They argue that not homicide itself is an adaptation, but that selection favoured propensities towards violent behaviours because they enhanced the survival and/or reproductive success of individuals. A verification of this theory is said to be found in the fact that sexual jealousy is a typical motivation for males to engage in interpersonal violence. Thereby, Daly and Wilson are linking an increased tendency towards jealousy combined with subsequent violent behaviour, to promote evolutionary fitness under specific circumstances (cf. Daly/Wilson 2003: 574).

They also hypothesize, based on empirical evidence, that regions with a low life expectancy are causally connected to increased rates of homicide, because taking higher risks is an evolved propensity when the future is discounted by the individual psyche. This is also proposed as a natural reaction to the observation that people in close vicinity have a comparably low life expectancy. Based on a psychological adaptation to make statistical inferences that respond to probability calculations, mental modules are said to lead to the corresponding behaviour of individuals (cf. Daly/Wilson 2003: 577f.).

### 5.1.1. Theories regarding rape provided by evolutionary psychology

Even the act of rape is conceived by some evolutionary psychologists as a result of male adaptation, basically caused by women having been more selective in mate choice relative to men. Comparisons are drawn from non-human animals, as for example by referring to male, high-ranking chimpanzees that show behaviours of denying lower ranking males

## 5.1. Theories about innateness of aggression in humans

access to females. In general, they are making analogies to observed forced copulation by males in many different animal species (cf. McKibbin et al. 2008: 87f.). The basis of this argumentation is, that oftentimes males have more physical prowess compared to females, providing them a capacity to exploit this imbalance in order to increase their reproductive success. Evolutionary psychologists Neil Malamuth and Mario F. Heilman claim that the reason of animal species not engaging in rape could also be due to established counterstrategies by females and/or their breeding partners, which is argued to have impeded the evolution of mental modules that elicit this behaviour in the first place (cf. Malamuth/Heilman 1998: 520ff.).

For example, in wild ducks (*Anas platyrhynchos*) it has been observed, that males actively engage in preventing their breeding partners from getting raped. Another comparison is drawn from the behaviour of scorpionflies (*Panorpa*) who, according to the authors, engage in rape as a third option only in case the offering of dead insects to the female – boldly termed “nuptial gift” – or an alternative salivary secrete cannot be provided by the male fly. Female elephant seals (*Mirounga*), a species in which rape seems to be the most prominent form of sexual intercourse, are said to have “used” this frequent phenomenon to select higher ranking males, by drawing attention when being sexually assaulted. Regarding common chimpanzees (*Pan troglodytes*) it has been hypothesized that females that do not defend themselves against rape, but instead yield to the aggression of males, thereby decrease the amount of possible damage. This could have been favoured by selection, thus leading to an innate propensity for that behaviour (cf. Malamuth/Heilman 1998: 520ff.). Konrad Lorenz already argued for an innate propensity towards aggression in humans by using human-animal comparisons, but he based his claims on observations of genetically much more distant relatives: “According to Lorenz (1966), it’s legitimate to make direct comparisons between different species, although his theory of human aggression is based on the study of non-primates, and mainly non-mammals (largely fish and insects).” (Gross 2010: 450)

One theory of rape in humans provided by evolutionary psychology proposes that unequal minimum amounts of parental investment between the biological genders – the usual argumentation entails that females have to invest nine months of time and additional

## 5.1. Theories about innateness of aggression in humans

hardships due to pregnancy, whereas males need only to produce sperm – shaped different sexual behaviours for males and females. Because of having impact on their reproductive success in the EEA, this correspondingly led to the evolution of specific modules of the mind. Three of these evolved mental mechanisms are theorized to have a direct influence on the propensity of males to engage in rape, namely one regarding a comparably excessively pronounced sexual drive, another one is actively guiding coercion and a last one encourages dominance over the opposite sex (cf. Malamuth/Heilman 1998: 524).

This conceptualization of rape has, of course, many implications and has since triggered much criticism:

“According to Thornhill and Wilmsen-Thornhill’s 'rape adaptation hypothesis', during human evolutionary history there was enough directional selection on males in favour of traits that solved the problem of forcing sex on a reluctant partner to produce a psychological tendency specifically towards rape. In other words, not only does this hypothesis recast an oppressive form of behaviour in a much more positive light (it’s 'adaptive'), but it also represents it as a natural characteristic of men ('they can't help it')." (Gross 2010: 451)

This concept is especially questionable when considering that the rape of children or other men could not have led to an enhanced differential reproductive success in the past, but evolutionary psychologists would probably argue, that this is just a misdirection of a naturally evolved disposition. Hence, this kind of argumentation is deflected by defining such behaviour simply as a by-product of innate propensities that served an adaptive function. They also point to non-human animals, for instance by proposing an uncontrolled male sexual arousal as adaptation in order to increase the chance of successful copulations.

But even though comparisons are drawn from non-human animals to account for rape in general, evolutionary psychologists admit that there is still a lack of ecological information about the environment that has led to “rape adaptations”, in order to make inferences about their occurrence in modern humans. Also, the necessity to study humans specifically and not just to rely on comparative studies in order to understand such phenomena has



## 5.1. Theories about innateness of aggression in humans

been emphasized. This approach usually is based on methodological individualism, indicated by neglecting the effects and implications of wider social systems (cf. Malamuth/Heilman 1998: 522).

### 5.1.2. Critique of innate human dispositions towards violent behaviour

As a decisive, historically important and internationally recognized point in this still ongoing and controversial discourse, in 1989 the UNESCO adopted a statement on violence. It has been designed following an international meeting of scientists, specialized in diverse disciplines – ranging from sociology to social psychology, biological anthropology, neurophysiology, animal behaviour science and biochemistry – termed the “Seville Statement on Violence”. In it, five core propositions have been formulated, namely that:

- It is scientifically incorrect to say that we have inherited a tendency to make war from our animal ancestors.
- It is scientifically incorrect to say that war or any other violent behaviour is genetically programmed into our human nature.
- It is scientifically incorrect to say that in the course of human evolution there has been a selection for aggressive behaviour more than for other kinds of behaviour.
- It is scientifically incorrect to say that humans have a “violent brain”, and that
- It is scientifically incorrect to say that war is caused by “instinct” or any single motivation.

(cf. Kohn 1990: 269ff.)

According to the conclusions of American biologist David Adams, the idea that by looking at the unequal distribution of male and female participants that is commonly observable in human warfare, the myth has been perpetuated that men are biologically inclined to be more aggressive than women. This has also been used politically as an argument against the validity of the Seville Statement on Violence (cf. Adams 1992: 18). Evidence from Adams research negates this view, pointing to the fact that in rats (*Rattus norvegicus*) males are no more aggressive than females, and that the reason for the origin and development of this

## 5.1. Theories about innateness of aggression in humans

proposition lies partly in the fact that male animals have primarily been used for studies concerned with this topic. In other words, the experiments for testing this hypothesis have been biased by the already established and commonly held mindsets of the researchers. Thereby, preconceptions about human behaviour are projected onto experiments conducted on non-human animals that are again verifying and reinforcing them, in a kind of feedback loop. Adams fittingly states that: “Finally, we can look forward to the day when the myth that male animals are more aggressive than females can no longer be used by those who would argue that war is the product of biology rather than culture.” (Adams 1992: 25)

In their “virtuous violence theory”, anthropologist Alan Page Fiske and psychologist Tabe Shakti Rai put forward the notion that the motivation for engaging in violent acts is for the most part culturally constructed and determined, ironically often by providing moral directives or even imperatives for people to perform them. This locally specific and sociocultural construct of morality is depicted as a mechanism that basically functions to regulate social relationships in the broadest sense (cf. Fiske/Rai 2015: 2). For the researchers, the majority of social interactions are determined by so called relational models that can be categorized as communal sharing, authority ranking, equality matching and market pricing. Underlying the fundamental motivation for the elicitation of specific behaviour, moral judgement and emotions, are aspects concerning hierarchy, equality, proportionality and unity (cf. Fiske/Rai 2015: 18). Still, surprisingly, the authors also suggest that at the underlying core of these proximate explanations for violent acts, “... there should be plausible evolutionary processes that would select not just for the propensity for violence but also for a propensity tuned to social systems and relational circumstances.” (Fiske/Rai 2015: xxiv)

Fittingly, evolutionary psychologist Steven Pinker contributed the foreword to their work “*Virtuous Violence*”, in which he refers to evolutionary stable strategies underlying the application of game theory to biological evolution (more specifically the theories of “inclusive fitness”, the “hawk-dove game” and “iterated prisoner`s dilemma”) that lead to innate tendencies toward making specific choices. He contrasts these evolved propensities to unconsciously but strategically act according to these mathematically rational models

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with, how he calls it, “ ... cool cognitive calculations by which we reckon and regulate our lives by formal rules.” (Fiske/Rai 2015: xvii)

Pinker refers to universal human inclinations that underlie and motivate social behaviour across all cultures, in the form of obsessions towards solidarity, dominance, authority, equity and fairness. He compares this common denominator for violent acts beneath cultural diversity with the idea of a universal grammar underlying all languages (cf. Fiske/Rai 2015: xvii).

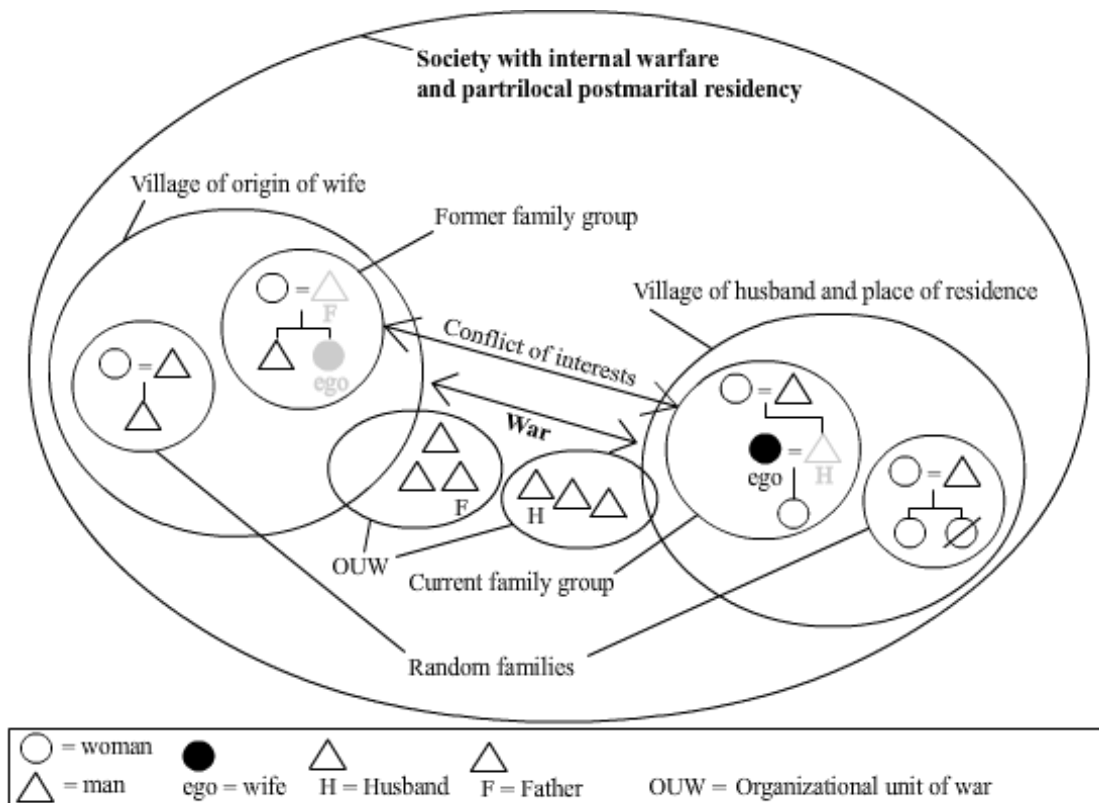
Regarding the phenomenon of war, currently there are tendencies in the literature that assume it to be as old as mankind itself, ignoring the fact – based on archaeological data and ethnographic records – that it exists only for approximately ten thousand years (cf. Fry 2013: 5). A prominent example is found in Pinker, who promotes the view that using violence is an innate human inclination that is a cause for abundant engagement in warfare by our ancestors. He proclaims a decrease of warfare at the present time in westernized societies, based on an increased sense of morality through political and social mechanisms acted out by many modern states (cf. Pinker 2011: xxi f.). Steven Pinker is backing this idea up by referring to statistics demonstrating the death tolls of modern states compared to those of hunter-gatherer societies. His statistical data is flawed, as it is in fact based on societies that do not resemble hunter-gatherers in the sense that they could be compared to ancient human life-styles, but have either already been influenced by other societies or actually engage in a horti- or agricultural way of living which is positively correlated with increased warfare (cf. Ferguson 2013: 116). The often neglected fact is that war has evolved over time and that it has been absent longer than being present in human history (cf. Fry 2013: 15f.).

Steven Pinker`s view is an example of how cultural beliefs, in his case that we live in a more peaceful world nowadays than humans did in the past, can bias science (cf. Fry 2013: 20). According to Ferguson, the actual reasons for why war has emerged can be found in the historical development of complex hierarchies that are characterised by a high degree of social stratification based on an increase in population size and density, that is linked to societies displaying a sedentary way of living (cf. Ferguson 2013: 116).

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Regarding the monopolization of war by men, Adams puts forward the notion that the social system plays a major role in determining the place of residence of a couple as well as the style of warfare, being either internal or external. When a society engages in internal warfare and women are postmaritally situated patrilocally – meaning that they reside with a husband's kin group – a conflict of interests can arise. This is so because the women are living with their husbands, who in turn possibly go to war with the remaining family members or friends that are still located in the antagonised village. Thus, the women are excluded from the organizational units that go into battle.

**Figure 6:** System of patrilocal postmarital residence leading to internal warfare with conflict of interests between wife and husband, excluding them from organizational units of war



The previous figure illustrates a hypothetical example of such a situation, in which the village of origin is at war with the one a wife is currently residing in with her husband. The anthropological evidence shows that in none of the societies that follow these patterns, women warriors exist. It also asserts that, to the contrary, in cultures with a matrilineal style

## 5.1. Theories about innateness of aggression in humans

of residence and external warfare they do, because no conflict of interests ensues on a systemic basis (cf. Adams 1992: 19).

According to Adams this monopolization of warfare by men may have started because they tend to be physically stronger compared to women and also due to them not having to deal with the implications of pregnancy. But historically, this difference has seeped into other areas, from the appropriation of economic production (beginning with the tools of war), up to dominating organizational institutions, and even the gain of political positions of an emerging state. Thus, an imbalance of power has been extended and fixated, becoming so deeply rooted that it is even expressed in the way of thinking many people are demonstrating nowadays in the western world. This actual development can be then misinterpreted and rationalized by seeking the explanation in fundamental biological differences between the sexes, especially when not taking the historical and cultural dimensions into account: "Male power has developed to such an extent, both extensively and intensively, that many people take it for granted as a 'biological fact of life,' rather than searching for its probable cultural origins." (Adams 1992: 20)

In regard to the comparison of innate propensities towards violence in humans and the common chimpanzee (*Pan troglodytes*), Brian Ferguson emphasizes that the latter already displays enormous plasticity, which is only surpassed by the former:

"Chimpanzees – about which I am currently writing a book – have evolved a most flexible nature. With human beings, living in immensely complex social and symbolic worlds, that flexibility is squared. This is not to claim that we are born noble and peaceful. We are not species-ifically inclined against war either. Our orientation toward war, for it or against it, and our practice, depends on situations, inclusively defined as running from basic environmental circumstances, through social structures, to values and beliefs." (Ferguson 2011: 249)

In bonobos (*Pan paniscus*), the occurrence of intergroup violence is much lower and in other species of social animals, such as dolphins, peccaries or elephants, no intergroup violence

has been observed (cf. Ehrlich/Ehrlich 2008: 101). But concerning an innate propensity towards aggression in the common chimpanzee, Ferguson emphasizes the influence of humans on the environment, leading to an increase of violent acts observed, which he terms the “Human Impact Hypothesis”. He criticises the common view that limits the extent of human impact only on them providing resources, pointing out that it also entails forced loss of habitat, practices of poaching, retaliation by humans for crop raiding, the introduction of epidemics, and also the effects imposed by researchers and tourism (cf. Ferguson 2011: 252f.). A similar point is made by Paul and Anne Ehrlich, who suggest that environmental change led to crowding of chimpanzees at Gombe which resulted in a shortage of resources, then causing intergroup violence (cf. Ehrlich/Ehrlich 2008: 100). Ferguson stresses the importance of considering historical developments in the evolution of warfare, not only for humans but also chimpanzees, pointing to political implications. If neglected, this could instead lead to reductionisms in form of propositions for an innate propensity towards violent behaviours:

“As with human warfare, to be understood, chimpanzee violence must be seen in its historical context. If these acts of violence are seen as expressions of a dark chimpanzee nature, international support for their protection may decrease. If, on the other hand, they are seen as a consequence of human disturbance, support for protection may grow.” (Ferguson 2011: 253)

## 5.2. Case studies

### 5.2.1. Intrinsic vs. extrinsic theories exemplified by studies on the Yanomami

The biological anthropologist Napoleon Alphonse Chagnon most famously used the Yanomami (also called Yanoama, Yanomamö, Yanomamo and Yanomama, due to their high degree of local dispersion) to demonstrate that in humans, individual aggressiveness is a reason for the enhanced propagation of one`s genes. He did so by pointing to his data showing that being “Unokai” – a term for a military rank in Yanomami society, denoting somebody who has killed other warriors during warfare – implies having more children, compared to non-Unokai. Chagnon used this to make the claim that those who had killed

more enemies also “produced” more offspring (cf. Koch 2014: 54). His conclusions are often referred to by evolutionary psychologists when claiming that innate violence has served an adaptive function in pre-state societies (cf. Daly/Wilson 2003: 584). The explanation for the prevalence of warfare amongst the male Yanomami given by Chagnon is therefore based on them competing for females, something that the Yanomami informants themselves believe as being the reason (cf. Harris 1976: 97).

Marvin Harris contrasts this intrinsically based theory with his “protein hypothesis”, which proposes that the mode of production was the initial reason for the high frequency of war in Yanomami society. He emphasized that they have switched from being pure hunter gatherers or semi-sedentary to being foraging horticulturists. In their case, this entails a dependency on cultivating plantains and bananas, causing an increase in population that is leading to a scarcity of resources. Thus, his hypothesis claims that the reason for warfare in the Yanomami lies in their economic basis, forcing them to gain protein:

“Amazonian specialists Jane and Eric Ross suggest that protein scarcities and not libidinal surpluses account for the constant fissioning and feuding among Yanomamo villages. I agree. The Yanomamo have 'eaten the forest' - not its trees, but its animals – and they are suffering the consequences in terms of increased warfare, treachery, and infanticide, and a brutal sex life.” (Harris 1974: 102)

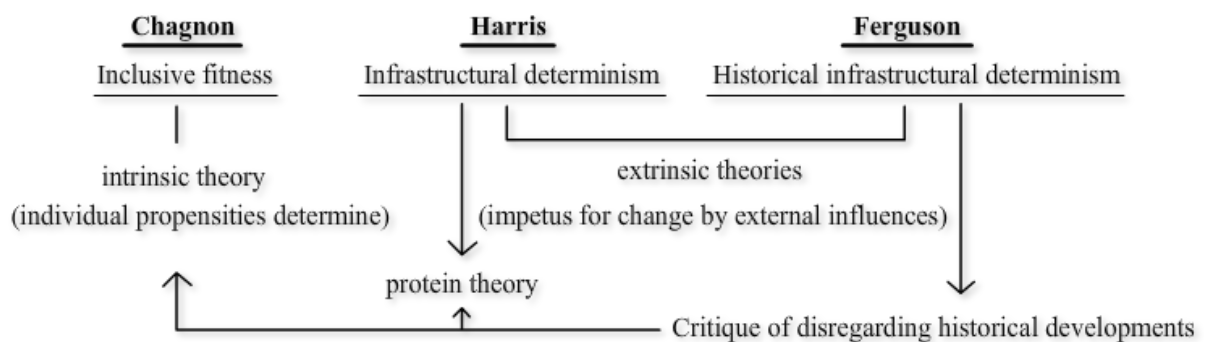
Extrinsic theories that are contrasting the intrinsic theory of Chagnon can be found in infrastructural determinism and Brian Ferguson’s modification of it, namely historical infrastructural determinism. He argues that conflicts have to be put in their historical context, emphasizing that due to contact with Westerners iron axes have been introduced, enhancing the method of production. But via this sudden dependency on Western products that could not be produced by the Yanomami themselves, the scarcity of supplies, uneven distribution, and the inherently capitalist notion of competition, the engagement in warfare has been intensified through the influence of external factors:

“I hope to show that the occurrence of warfare among different Yanomami groups almost invariably follows identifiable changes in the Western presence – including the presence of anthropologists – and that without those changes there is little to no war. I also hope to explain the causality of this temporal connection by showing that the patterning of who attacks whom is primarily a result of antagonistic interests in the acquisition of steel tools and other Western manufactures.” (Ferguson 1995b: 7)

Summing up, the following figure demonstrates the different models for explaining warfare on the basis of them relying either on extrinsic or intrinsic methodological principles.

**Figure 7:** Principle explanations for warfare by Chagnon, Harris and Ferguson

Extrinsic and intrinsic theories of motivations to engage in war proposed by Chagnon, Ferguson and Harris



### 5.2.2. Biological determinism as explanation of human warfare

There have been attempts to conceptualize the origin of human warfare on a biological, deterministic basis, by making a comparison to aggressive aspects of behaviour displayed by the common chimpanzee (*Pan troglodytes*). By viewing the basis of behaviour as being founded on the structure of the mind that has evolved due to it being adaptive, evolutionary psychologists can easily engage in human-animal comparisons while black-boxing the implications of culture. This is done, for example, by explaining the emergence of personality in humans and chimpanzees on grounds of the same mechanisms of selection (cf. Úbeda/Llorente 2015: 183). The reasoning of biological anthropologist Michael L. Wilson's theory is based on the assumption, that the ultimate cause for why chimpanzees defend



their territory using aggression lies in intergroup competition which is proposed to be a central factor in the evolution of social behaviour. To live in a group with more members entails an advantage to obtain scarce resources and an extended range of territory increases the individual's body mass as well as creating the possibility to forage in larger parties. It is also argued, that shorter inter-birth intervals can be provided, and that if females prefer to live in a group with more males, the latter could benefit from advertising a large community size. This all is used as explanatory basis for the observation that chimpanzees expand their territory by killing members of other communities. But the reason for why the actual killing occurs is seen as more difficult to explain (cf. Wilson 2012: 371f.).

To account for this observed behaviour, Wilson is drawing from the "imbalance of power hypothesis" proposed by British primatologist Richard Wrangham and colleagues, but emphasizes that it focuses more on costs rather than benefits. According to Wilson, the main costs of killing include the probable risk to the attackers as well as the time and effort invested. Benefits entail the elimination of genetic competitors and a reduction of the strength of the rival coalitions (cf. Wilson 2012: 373). This explanation is then applied to make a comparison with aggressive encounters in other mammals, including humans, on the basis of the proposed similitude of their social structures: "But in chimpanzees, and species with similar social structures (such as humans, lions, wolves, and spotted hyenas), variation in party size creates opportunities for gang attacks, thereby reducing the costs." (Wrangham 1999, after Wilson 2013: 373)

Another point made by evolutionary psychologists is that biologically, men are more prone to engage in violent acts than women, not only because of their different morphology and physiology but because of inherent psychological mechanisms as well. These mechanisms are theorized to have evolved due to them serving a function in acquiring and maintaining a higher social status compared to competing males. The fact that violence is also frequently directed to non-males is considered as being natural in case a conflict arises (cf. Daly/Wilson 2003: 583). As Harris points out, one of the fundamental differences when using innate and also morphological differences in males and females as an argument for an observed assignment of social roles – that is essentially being neglected by biologists when comparing human with non-human animals – is that in the former there is a " ... lack of correspondence

between its hereditary anatomical equipment and its means of subsistence and defense.”  
(Harris 1974: 84)

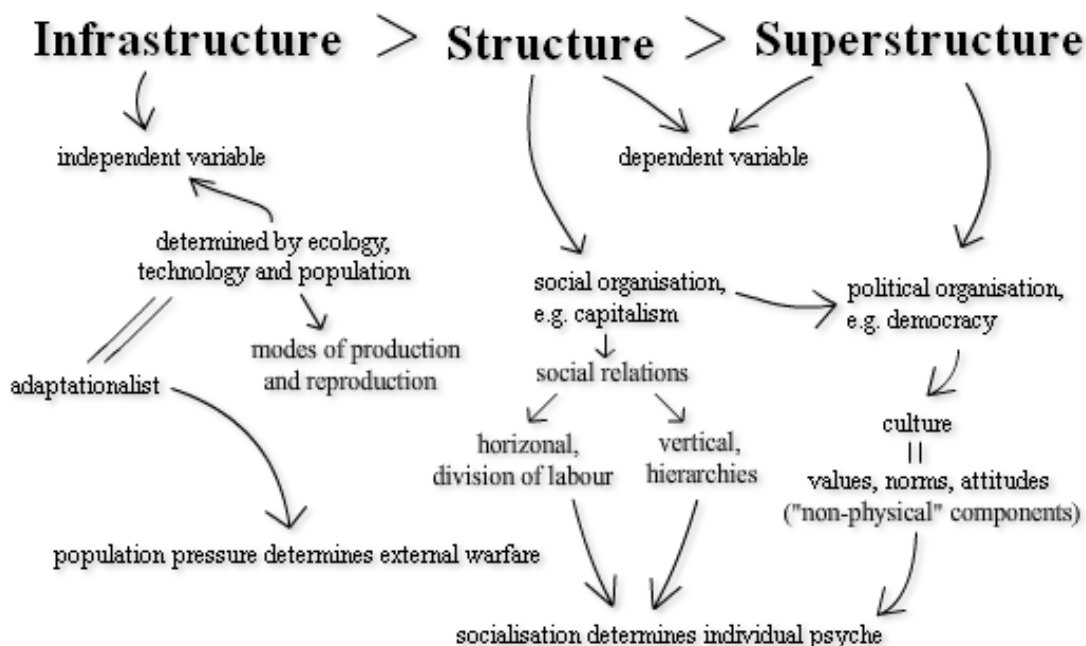
In other words, humans are generally able to use technology in a way that trumps bodily attributes in oppressing others. Hence, the crucial point in establishing a hierarchical order between the sexes cannot be found by searching for a biological basis, but instead by looking at the distribution of means that can be used to exert power: “In human societies, sexual dominance is not settled by which sex is bigger or innately more assertive, but rather by which sex controls the technology of defense and aggression.” (Harris 1974: 84)

Again, a black-boxing of culture is engaged in by relying on biological reductionism, which is leading to a misinterpretation of human behaviour. This is done by failing to acknowledge the great importance of complex social structures and material influences compared to the impact of biological attributes in the determination of behaviour. Or, as Harris formulates it: “Our primary mode of biological adaptation is culture, not anatomy.” (Harris 1974: 84)

### 5.3. Explanations of war from cultural materialism

#### 5.3.1. Infrastructural determinism

**Figure 8:** Cultural materialist explanation of society according to infrastructural determinism



### 5.3. Explanations of war from cultural materialism

According to cultural materialism, as pictured in the figure above, societies can be broken down into three components. Namely these are their infrastructure, which entails the modes of production and reproduction based on factors of interaction with the physical environment, their structure, which encompasses relations of production, such as political organisation, and finally their superstructure, including amongst others its values, beliefs, and symbols (cf. Ferguson 1995a: 23). Of especial importance in this is the theory of infrastructural determinism which is based on the assumption that “ ... changes in the infrastructure probabilistically determine changes in the rest of the sociocultural system.” (Ferguson 1995a: 23)

Christopher Hallpike also emphasizes the importance that cultural materialism places on the deterministic power of infrastructure on aspects of societies, such as its institutions and belief systems:

“The material tradition also stresses the enormous importance of the environment and the technological responses to the problems it presents, but this type of theory need *not* assume random variation (any more than did Lamarckism, for example), and also cuts across the endogenist/exogenist distinction. On materialist assumptions one aspect of society, the mode of production and reproduction (commonly referred to as the 'infrastructure'), occupies a key position with regard to the rest of society, whose institutions and beliefs it determines either directly (e.g. Leslie White and Marvin Harris), or ultimately and indirectly (e.g. Marx).” (Hallpike 1986: 21f.)

In contrast to the way sociobiologists try to find explanations for the behaviour of human beings – as for instance in their genetic makeup, which supposedly causes changes in the structure of societies – cultural materialists postulate that individual human propensities have only a minimal impact on society:

“Cultural materialists pursue a strategy that seeks to reduce the list of hypothetical drives, instincts, and genetically determined response alternatives

### 5.3. Explanations of war from cultural materialism

to the smallest possible number of items compatible with the construction of an effective corpus of sociocultural theory. Sociobiologists, on the other hand, show far less restraint and actively seek to expand the list of genetically determined traits whenever a plausible opportunity to do so presents itself. From the cultural materialist perspective, the proliferation of hypothetical genes for human behavioural specialties is empirically as well as strategically unsound ... ” (Harris 2001: 127f.)

The circumscription theory by American anthropologist Robert L. Carneiro, being a specialist for social evolution and specifically South-American cultural studies, explains war as a necessary effect of structural unification of autonomous villages in the process of nation building. This theory is based on cultural ecology, basically going back to German theoretician Karl Marx (1818-1883), and explains the emergence of states based on extrinsic factors that cause determined processes which lead to the formulation of general laws regarding state origins. Basically, the theory proposes that agricultural societies fission in case the spatial possibility is provided, because arable land is needed to supply the demands of population pressure that is caused by population growth. If the space is limited, the autonomous villages have to fuse and integrate themselves politically which is made possible through efficient modes of production. The structural units thus combine into larger ones until only two remain and engage in warfare, ending up in the creation of a single unified state. Through higher stratification and division of labour, the efficiency of successful warfare is increased, thus explaining war through external factors leading to emergent processes on a holistic and nomothetic basis (cf. Carneiro 1970: 736f.; Ehrlich/Ehrlich 2008: 114).

In the creation of his synthetic theory of warfare, Brian Ferguson analysed and modified the theory of infrastructural determinism as formulated by Marvin Harris to include causal relations that account for constraints and feedback relations between structure, superstructure, and infrastructure. He includes historical developments and even individual agency as influential factors, but still emphasizes restraints posed by infrastructural and even structural elements, acknowledging a causal priority of the former (cf. Ferguson 1995a: 26ff.).

### 5.3.2. Implications of animal studies for the origin of human warfare

Ferguson is not negating the idea that common chimpanzees engage in what can be called warfare, based on observations of them patrolling territorial borders and performing violent, cooperative actions. Still, Ferguson emphasizes his doubt of a selection for biological traits that lead to an increased tendency to commit violent actions against members of other groups, be it in regard to common chimpanzees or humans:

“Whether chimpanzees make war depends on your definition. Mine has always been elementary: organized, potentially lethal violence against members of another group. Using this definition, there is no question that chimpanzees have the capability to make war and have done so on occasion. The patrols that often precede attacks, and the attacks themselves, display a high degree of intelligent cooperation. ...What is very much in question is whether chimpanzees, and humans, are predisposed to war, whether our common evolutionary heritage has selected into our genes a tendency, a predilection, to attack and kill members of other groups.” (Ferguson 2011: 249)

The often uttered claim of innate tendencies towards territorialism in humans has been critically evaluated by Ferguson. He came to the conclusion that there are many implications imposed by some aspects of territoriality, but that in no way the occurrence of war can be reduced to it in its entirety: “Territoriality is not a first principle that somehow explains human warfare. Rather it is a variable, and its expression and connection to intergroup violence is something that needs to be explained.” (Ferguson 2011:264)

He points out that the phenomenon of warfare cannot be explained by looking at individual propensities, but instead that a stratification of society seems to be the crucial explanatory factor: “War leaders' positions get elevated in wartime. Often, leaders favor war, because war favors leaders. ... In the archaeological record, one of the preconditions contributing to war is the development of hierarchy.” (Ferguson 2011: 266)

### 5.3. Explanations of war from cultural materialism

Ferguson's view regarding proponents of biological reductionism and -determinism, who refer to innate human dispositions in order to explain warfare, is decidedly critical. He also questions their approaches concerning the explanation of its interconnection with cultural constraints:

“Proponents of biological explanations of war do not say it is some kind of fixed instinct. They always emphasize that our biological tendencies are mediated, channeled, and even redirected by culture. They do say humans have a decided tilt toward violence against outside groups, and that this leaning is a necessary factor for understanding war, from tribal peoples to world conflicts today. My position is that there is no tilt, no predisposition toward or against war.”

(Ferguson 2011: 264)

## 6. Conclusion

Evolutionary psychology tries to explain the emergence of culture at least partially as being determined by psychological, content providing mental modules that have evolved due to reoccurring, adaptive problems. Those had to be solved by our ancestors in an “environment of evolutionary adaptedness”, leading to the formation of a universal human mind. Although evolutionary psychologists tend to claim a uniqueness of the human animal, explanations for the development of these modules are fundamentally based on biological theories of evolution. Those have been put into question even in their application on animal behaviour because of being partly based on ideologies of modern, Western societies. For example, innate propensities for aggression and territoriality in common chimpanzees are taken as explanation for the emergence of war in humans, neglecting evidence of external influences, even on the non-human animal`s behaviour.

Furthermore, evolutionary psychology contrasts its “Integrated Causal Model”, which has been inspired by the “modern synthesis” already proposed by its intellectual precursor sociobiology, against the “Standard Social Science Model”. The former includes an attempt to dissolve the age-old dichotomy between nature and nurture by conceptualising it as being based on the same biological foundation, whereas the latter is deemed as being useless for not ever having produced workable results due to relying on ideographic methods. It is allegedly used by the entirety of social and cultural anthropologists, thereby neglecting alternative explanatory models from scientifically based anthropological paradigms like cultural materialism, which is utilizing nomothetic methods.

Because of the circular logic inherent in evolutionary psychology, basically every observed human action can be arbitrarily explained by referring to it having provided a benefit in an empirically non-verifiable adaptive environment, as long as the behaviour in question is observed to occur universally. One of the problems with this concept is that the applied methods tend to neglect cultural influences on the evidence for universalities. This is so, because they are either provided by studies of Westernized college students, or hunter-gatherer societies which in some cases are in actuality horti- or agriculturalists, having at the

time of inquiry already been influenced by the effects of capitalism or contact with the outside world in general. Additionally, the legitimacy of extrapolating insights about currently living hunting and gathering societies to inform about the lifestyle of the “environment of evolutionary adaptedness” as well as using proximate and ultimate explanations for behaviours of non-human animals to account for human actions has been contested.

The principles of evolutionary psychology are based on universalist doctrines and reductionist assumptions about a partially deterministic individual psychology being the basis for the emergence of specific cultural forms. By neglecting qualitative differences between humans and other animals, for example in the utilization of symbols – and therefore meaning – by the former, the explanation of individual behaviour can be reduced to biological mechanisms that allegedly have led to the formation of the human mind. It is regarded as a compilation of modules that are specialised, content-specific, and pre-equipped with information and preconceptions, even concerning social interactions, thus providing a universal “metaculture” as the basis for the emergence of all cultures.

Critique has been formulated from various fields of science and philosophy, be it from biology, psychology, neuroscience, anthropology, archaeology, sociology, politics, linguistics and others. Still, even though it is based on obvious logical flaws, evolutionary psychology is a thriving field that is enjoying much popularity and exerting great influence on the scientific community as well as on the general public. I have to emphasize however that this thesis is only scratching the surface and cannot do justice to the entire discourse that is surrounding the enterprise of evolutionary psychology by now, evaluating all the arguments of its critics and proponents about its veracity and flaws. In my opinion, this academic seesaw will probably keep going up and down for some time, eventually leading to a boiling up and simmering down, leaving behind the history of a field struggling for its principal validity.



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#### **Internet source**

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## Abstract (English)

Evolutionary psychology tries to explain human social phenomena on the basis of individual propensities which are caused by a universal modularity of the mind that evolved in a proposed “Environment of Evolutionary Adaptedness” (EEA), because of recurring adaptive problems the human species faced. Culture is explained as emerging from the individual mind that has been modulated due to adapting to consistently occurring environmental and social events, leading to the existence of universal human inclinations to think and act in a determined way. Based on models that have been used in sociobiology, like “inclusive fitness” and more specifically “kin selection“, evolutionary psychologists argue that selective pressures also led to the design of modules reacting to the social environment by responding to specific input.

Evolutionary psychologists Tooby and Cosmides criticize the “Standard Social Science Model” (SSSM) on the basis of its assumption that nurture trumps nature or, more specifically, that it claims a false dichotomy between the two which according to them cannot be separated. Thereby, they are conceptualizing an all-encompassing biology in the form of programs that are innate in every human being and triggered in certain environments and life stages, even providing specific content that the mind comes pre-equipped with. Those mechanisms, that compute social aspects of human behaviour, lead to the existence of a “common metacultural structure” that serves as a universal basis, providing the possibility of transmitting variable cultural forms.

In contrast, theories from anthropologists adhering to the paradigm of cultural materialism explain society not by referring to the propensities or actions of individual human beings, but instead by emphasising environmental impacts and irreducible, emergent properties of society, that – the other way around – actually influence individual thoughts and actions. A point of critique is directed in particular at the work of evolutionary psychologist Steven Pinker, who used hunter-gatherer studies to propose that in modern times, humans became more peaceful. First of all, the societies Pinker used to make his point were actually not all hunter-gatherers but also horticulturalists, a form of subsistence which is positively linked

with the emergence of warfare. Secondly, Pinker also refers to societies that at the time of inquiry already had been influenced by the impact of Western culture, such as the Yanomami. Brian Ferguson disproves this theory and demonstrates via archaeological evidence that hunter-gatherer societies in general actually did not engage in organized warfare.

Evolutionary psychology has faced much criticism from diverse disciplines, ranging from biologists, neuroscientists, philosophers, anthropologists and social scientists on scientific as well as political grounds. Sahlins, Gould and Lewontin started this line of critique already against sociobiology, a field which can be seen as intellectual precursor to evolutionary psychology. Marshall Sahlins used ethnographic data to prove that sociobiological mechanisms like kin selection have no explanatory value in regard to human interactions. He has also criticised that this explanation of evolutionary processes is based on western, capitalist ideologies of individual profit maximization, which are firstly applied to the animal kingdom and subsequently also to human society.

Comparisons of human and non-human animal propensities as a basis for explaining human social phenomena have been utilized since sociobiology. Even though evolutionary psychologists emphasize a unique human nature in general, it is oftentimes constituted by referring to observations and theories of animal behaviour. Diverse species of animals have been used as a model for human traits, especially data about our genetically closest relatives from the taxonomic family of primates, Hominidae, namely the common chimpanzee (*Pan troglodytes*) and the Bonobo (*Pan paniscus*). Brian Ferguson and others have shown that the environmental influence has an often neglected impact on their expression of aggressive behaviour, which cannot be reduced solely to innate attributes. David Adams also provided evidence that there is no individual, biological basis for the emergence of warfare. This is exemplified based on the refutation that biologically innate gender differences in levels of aggression exist between women and men, also emphasizing that even if they would, human institutional behaviour is not a direct representation of human individual behaviour.

The method of evolutionary psychology to empirically investigate these human universals consists of cross-cultural studies, which are criticized on the basis that they often rely on

subjects that actually come from “Western, Educated, Industrialized, Rich and Democratic” (W.E.I.R.D.) societies. Also, by assuming that hunter-gatherer groups can be used as models for the life that our ancestors faced in the “environment of evolutionary adaptedness” (EEA), human universals are searched for. In this regard, critique has been expressed stating that most of the societies tested had actually already been influenced by the impact of other societies at the time of investigation.

In conclusion, evolutionary psychology is explaining proximate causes with ultimate ones on a hypothetical basis, oftentimes drawing inspiration from observations of non-human animal behaviour, which are only subsequently investigated empirically. Following this, every observed trait or social interaction could be theoretically and arbitrarily based on the effects of adaptive pressures that our ancestors encountered with a certain frequency. This allegedly led to the creation of specific modules in the human brain, eliciting the mind to react in a more or less predetermined way to external and internal stimuli. Leading evolutionary psychologists like Tooby and Cosmides argue, that the only alternative explanation of human society lies in ideographic approaches of the humanities, ignoring the alternative hypotheses social scientist like cultural materialists provide on a nomothetic basis, thereby purporting a false dilemma based on an informal fallacy.

## Abstract (German)

Evolutionäre Psychologie versucht die sozialen Phänomene des Menschen auf der Basis von Individuellen Neigungen zu erklären, welche von einer universellen Modulation der Psyche, die sich in einem angeblichen Umfeld der evolutionären Adaption auf Grund von wiederkehrenden Anpassungsproblemen, mit der die Menschheit konfrontiert war, formte. Kultur wird als etwas beschrieben, dass aus der individuellen Psyche hervorgeht, welche durch konstant wiederkehrende soziale und umweltbedingte Situationen geprägt wurde, was zu der Existenz von universellen Denk- und Handlungsmustern der Menschen führte. Basierend auf Modellen die schon in der Soziobiologie Anwendung fanden, wie beispielsweise dass der genetischen „Gesamtfitness“ oder insbesondere „Verwandtenselektion“, argumentiert die evolutionäre Psychologie damit, dass durch selektiven Druck auch Module entstanden sind, welche auf das soziale Umfeld reagieren, wenn sie spezifischen Input erhalten.

Die evolutionären Psychologen Tooby und Cosmides kritisieren das „Einheitsmodell der Sozialwissenschaften“ auf Basis seiner Annahme, dass Einflüsse der Umwelt die der biologischen Anlagen übertrumpfen, genauer gesagt, dass es eine Dichotomie zwischen den beiden annimmt, welche ihnenzufolge aber nicht getrennt betrachtet werden können. Dabei konzipieren sie eine allumfassende Biologie in Form von angeborenen und allen Menschen zugrundeliegenden Programmen, die durch bestimmte Umwelteinflüsse und Phasen des Lebens aktiviert werden, und sogar spezifische, vorgefertigte Inhalte der Psyche mitsichbringen. Diejenigen Mechanismen, welche soziale Aspekte des Verhaltens der Menschen betreffen, führen zur Existenz einer „allgemeinen metakulturellen Struktur“ die als universale Basis dafür gilt, dass variable Kulturformen entstehen können.

Theorien von AnthropologInnen die dem Paradigma des Kulturmaterialismus angehören, erklären Gesellschaft im Gegensatz nicht aufgrund von Neigungen und Handlungen der einzelnen Menschen, sondern verweisen auf äußere Einflüsse, sowie auf emergente Eigenschaften der Gesellschaft, welche nicht reduziert betrachtet werden können, ihrerseits aber sogar die Gedanken und Handlungen der Individuen beeinflussen. Ein besonderer

Kritikpunkt ist an die Arbeit des evolutionären Psychologen Steven Pinker gerichtet, welcher Studien über Jäger und Sammler benutzte um zu behaupten, dass der moderne Mensch friedfertiger geworden sei. Doch erstens waren die Gesellschaften auf die sich Pinker bezogen hat in Wahrheit nicht alle Jäger und Sammler sondern betrieben auch Hortikultur, was eine Form der Subsistenz darstellt die im Zusammenhang mit der Entstehung von Krieg steht. Zweitens bezieht sich Pinker auch auf Gesellschaften, welche zur Zeit der Erhebung bereits von den Auswirkungen der westlichen Kultur beeinflusst wurden, wie beispielsweise die Yanomami. Brian Ferguson widerlegt diese Theorie und zeigt, dass Jäger und Sammler generell keine organisierte Kriegsführung betrieben haben, indem er auf archeologische Evidenzen verweist.

Evolutionäre Psychologie wurde von Vertretern diverser Disziplinen, sei es aus der Biologie, den Neurowissenschaften, der Anthropologie oder den Sozialwissenschaften, sowohl aus politischen als auch wissenschaftlichen Gründen kritisiert. Sahlins, Gould und Lewontin haben diese Art der Kritik schon gegen die Soziobiologie ausgeübt, welche eine Strömung darstellt, die als intellektueller Vorreiter der evolutionären Psychologie verstanden werden kann. Marshall Sahlins verwendete ethnographische Erhebungen um zu beweisen, dass Mechanismen der Soziobiologie, wie etwa Verwandtenselektion, keinen Erklärungsgehalt im Hinblick auf die Interaktionen der Menschen hat. Er kritisierte unter anderem auch, dass diese Erklärung von evolutionären Prozessen auf westlich-kapitalistischen Ideologien der individuellen Profitmaximierung basieren, welche zuallererst auf das Tierreich und folglich auf die menschliche Gesellschaft angewendet werden.

Vergleiche zwischen den Neigungen von Menschen und anderen Tierarten, wurden schon von der Soziobiologie angewendet um soziale Phänomene des Menschen zu erklären. Obwohl evolutionäre PsychologInnen grundsätzlich die Eigenart der menschlichen Natur hervorheben, wird diese oft durch Bezugnahme auf Beobachtungen und Theorien über Tierverhalten begründet. Diverse Tierarten dienen als Modelle für menschliche Eigenschaften, allen voran wurden Erkenntnisse über unsere genetisch am nächsten Verwandten aus der taxonomischen Familie der Primaten, den Hominiden, im Besonderen über Schimpansen (*Pan troglodytes*) und Bonobos (*Pan paniscus*), herangezogen. Brian Ferguson und andere haben gezeigt, dass Umwelteinflüsse eine oft vernachlässigte Wirkung

auf das Entstehen von aggressiven Verhaltensweisen haben, welche auch nicht auf angeborene Attribute reduziert werden können. David Adams brachte den Nachweis dafür, dass es keine individuelle, biologische Basis für die Entstehung von Krieg gibt. Dies wird erläutert indem er auf die Widerlegung von biologisch angeborenen Unterschieden der Aggressivität von Frauen und Männern verweist und auch betont, dass selbst wenn es diese gäbe, institutionell begründetes Verhalten keine direkte Repräsentation des individuellen Verhaltens der Menschen darstellt.

Die Methode der evolutionären Psychologie um menschliche Universalien empirisch nachzuweisen, besteht darin, interkulturelle Studien heranzuziehen. Diese werden aber dahingehend kritisiert, dass sie oftmals auf Subjekten basieren, welche in Wahrheit aus wohlhabenden, industrialisierten, westlichen, und demokratischen Gesellschaften, mit hohem Bildungsstand stammen. Durch die Annahme, dass Jäger und Sammler als Modell für das Leben dienen können, welches unsere Vorfahren in einer „Umwelt der evolutionären Anpasstheit“ bewältigen mussten, werden auch hier menschliche Universalien gesucht. In dieser Hinsicht wurde die Kritik geäußert, dass die meisten Gesellschaften die hierfür herangezogen wurden, zur Zeit der Erhebung bereits von anderen Gesellschaften beeinflusst worden waren.

Abschließend bleibt zu sagen, dass die evolutionäre Psychologie unmittelbare Ursachen durch eine Bezugnahme auf Endursachen hypothetisch erklärt, welche erst im nachhinein empirisch überprüft werden und sich dabei oftmals auf Beobachtungen von Tierverhalten beziehen. Folglich kann jede beobachtete Eigenschaft oder soziale Interaktion willkürlich und theoretisch auf die Effekte einer evolutionären Anpassung zurückgeführt werden, welche unsere Vorfahren mit einer bestimmten Häufigkeit konfrontierten. Dies führte angeblich dazu, dass spezifische Module im Gehirn entstanden sind, welche die Psyche in einer mehr oder weniger vorgefertigten Art auf externe und interne Stimuli reagieren lassen. Namhafte evolutionäre PsychologInnen wie Tooby und Cosmides behaupten, dass die einzigen alternativen Erklärungen der menschlichen Gesellschaft auf ideographisch orientierten Zugängen der Geisteswissenschaften basieren, wobei sie ignorieren, dass es auch nomothetisch orientierte Sozialwissenschaften wie die des Kulturmaterialismus gibt. Hiermit begründen sie ein falsches Dilemma, welches auf einem informellen Fehlschluss basiert.



# Curriculum Vitae

David Zdravko Beraha

Born: 06.08.1987

Nationality: Austria

Place of residence: Vienna

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## Education

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- General qualification for university entrance (WS 2009)

### University of Vienna

(Vienna, Austria)

- **Bachelor of Arts – “Social and Cultural Anthropology” (WS 2010 - WS 2013)**

#### **Subjects include:**

Ethnomusicology, Visual Anthropology, Medical Anthropology, Anthropology of Religion, Anthropology of Consciousness, Anthropology of Nature, Anthropology of Law, Historical Anthropology, Anthropology of Gender, Colonialism, Racism and Ethnicity, Kinship studies, Urban Anthropology, Neuro-Anthropology, Empirical Methods (Interview, Statistics, Fieldwork), Ethics

Regional foci: New Zealand/Aotearoa, South-East Asia, Mesoamerica

- **Master of Arts - “Social and Cultural Anthropology” (SS 2013)**

#### **Subjects include:**

Medical Anthropology, Philosophy of Science, History of Science, Philosophical Anthropology, Anthropology of Media, Anthropology of Politics, Ethnographic Practice, Historical Anthropology, Anthropology of Knowledge, Power and Ethics, Anthropology and Human Rights, Anthropology of Modernity, Regional Cultures of India, Visual Anthropology, Anthropology of Sound and Language

Regional foci: India, Africa, Oceania

### Messerli Institute

(Vienna, Austria)

(University of Vienna, Medical University of Vienna, Veterinary University of Vienna)

- **Master of Science - “Interdisciplinary Master in Human-Animal interactions” (WS 2013)**

#### **Subjects include:**

Animal Ethics, Animal Welfare, Comparative Cognition, Comparative Medicine

## Work Experience

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- **Eleventh Conference on Hunting and Gathering Societies (CHAGS 11)**  
(September 7-11, 2015, Vienna, Austria)

Assistance in various areas, such as material preparation, information desk and room attendance

- **Temporary assistant for a photo laboratory and shop (Photoshop Naschmarkt)**  
(2009, Vienna, Austria)

Assisting in photo development and sale

- **Temporary assistant in a computer company**  
(2009, Vienna, Austria)

Assembling personal computers

## Hobbies & Interests

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- Attended the international conference on veterinary ethics: VETHICS for Vets - Animal Welfare and Veterinary Medicine on September 18, 2015.
- Playing drums since the age of 12; Recording studio experience since 1999; Member of the Band "Mental Confusion"; Release of the Album "The Curse of Mental Confusion" (2013)
- Member of computer game development team "Mental Games" since 2015
- Other interests include digital animation, graphics design, game design and development, story writing, cinematography
- Computer program expertise includes Excel, SPSS, Flash CS
- Languages:
  - German (mother tongue)
  - English (advanced)
  - Spanish (basic knowledge)