DOWNLOAD PDF MAN AS A FACTOR IN SOCIAL EVOLUTION

Chapter 1 : Human and Social Evolution | UCSF Helen Diller Family Comprehensive Cancer Center

Social relations and structure of society have gradually evolved from simplicity to complexity, in the same way that technical matters and tools have become complicated reaching up to space-ships. As in natural evolution, the structure of a creature with a single cell is simple in comparison with the body of an animal or human being.

The phrase efficiently points toward the simultaneous tension and intimate proximity between our biological evolutionary origins and inheritance, on the one hand, and our symbolically structured, socially entangled, and technologically shaped lives, on the other. Indeed, biocultural evolution is a staple term that college students learn in introductory anthropology courses. For example, it gives a thematic focus to exploring the evidence for how prehistoric culture, technology, population migrations, and interbreeding patterns contributed to the rise of sickle cell anemia in Central and West African populations â€¦ as a biological adaptation to resist malaria infection! When we see one of the few, really clearly documented examples of biocultural evolution, we immediately get a more profound appreciation about how we shape our own biology, perhaps just as much as it shapes us. The phrase is not problem-free. From the beginning, there has beenâ€”and there certainly remainsâ€”a conceptual imbalance between the biological and the cultural dimensions. The evolutionary theory foundation for understanding biological change in populations enjoys a solid disciplinary history, with both healthy debates and advancing scientific knowledge. However, when it comes to culture and its connection to biology, moments of clarity tend to be obscured by clouds of intellectual confusion and disagreement. Concepts and Methods in Biological Anthropology is straightforward: The mutual, interactive evolution of human biology and culture; the concept that biology makes culture possible and that developing culture further influences the direction of biological evolution; a basic concept in understanding the unique components of human evolution. A key part of the definition is that there is a dynamic feedback over time between biological and cultural changes. Consider recent archaeological research that has provided striking evidence for big game hunting, transport, butchering, and small-group meat sharing around a campfire around , years ago in the Near East Stiner et al. The biocultural-feedback concept helps us to place this finding in a bigger framework of human evolution. The nutritional and resulting fitness benefits of cooperative hunting and food-sharingâ€”which were presumably socially learned, cultural behaviors that our Middle Pleistocene ancestors exhibitedâ€”would have shaped natural selection over subsequent generations for direct and indirect reciprocity and reputation monitoring behaviors for a clear definition of direct versus indirect reciprocity, see Nowak Culture can influence biological evolution. And in turn, biological evolution shapes cultural behavior patterns in later generations. So far, so good. This raises one problem. Wilson, Luca Cavalli-Sforza, Robert Boyd, and Peter Richerson offered variations on the theme that intergenerational inheritance in human populations occurs on two main channels: Reasoning along this line was common then. Mark Flinn and Dick Alexander [] provided a nice early review of dual-inheritance models. In popular essays around the same time, Stephen Jay Gould described cultural inheritance as Lamarckian. We socially pass on learned or socially acquired traits to the next generation. In comparison, genetic inheritance is mainly only modified by random mutation, and it is natural selection that shapes adaptation over the generations on the population level. In any case, inquiry into cultural inheritance as being analogous to genetic inheritanceâ€”and thus forming a dual-channel inheritance dynamic in human evolutionâ€”has certainly been productive. The socio-cognitive capacity to learn fitness enhancing behaviors from conspecifics is most likely to evolve in populations inhabiting substantially unpredictable environments. In other words, cultural learning can be an adaptive strategy when your environment really varies randomly and over space and over time. Of course, the notion of culture having to do with transmission and inheritance of ideas, behaviors, and artifacts is not unique to dual-inheritance research, which is a quite specialized area of inquiry within Biological Anthropology and Human Biology. Thus, most introductory textbooks in Cultural Anthropology also emphasize that culture is what is historically transmitted, especially in the process of childhood enculturation, across generations. The problem is that dual inheritance theory would define culture only as the vertical or horizontal transmission of behaviors and ideas, whereas cultural anthropologists tend to use the concept of culture as a much more

encompassing socio-cognitive and symbolically structured phenomenon, often constraining and guiding our embodied social actions â€¦ but sometimes opening up possibilities for agency, social change, and resistance. A lot of attention is given to biological variation and its measurement. A lot of argumentâ€”usually well-reasoned, with clear scholarly supportâ€”is devoted to themes like political economy and inequality. They and other contributors present compelling arguments and evidence that symbolic structures and power relationships influence human health, well-being, and demography. Yet, their version of biocultural synthesis does not define culture. I will state up front that there are a lot of reasons to conclude that human culture is indeed about more than transmitting ideas and behaviors. Insights from dual-inheritance research are highly valuable scientifically, but they ignore why Goodman and Leatherman perceive a chasm between evolutionary and cultural analysis frameworks. It may be enough to argue that culture is not just social transmission of behaviors. But the evolutionary emergence of human culture whatever it may actually be is a compelling scientific problem. When it comes down to it, anthropologists broadly agree that biocultural evolution is an important concept, so much so that it is a staple of what we teach undergraduates at the introductory level. The evolution of human culture is somehow connected to our capacity for language, tool-making and use, and effective participation in really complicated social networks. The point of departure in this blogâ€”as I try to clarify biocultural evolution as a human-specific evolutionary processâ€”is that exploring where we came from will help us to break down and define the phenomenon of culture much more clearly. In doing so, we will also better understand the relationship between culture and biology. The question we will try to answer is: What was it about the early, emergent hominin niche ca. In turn, we will consider what the coevolution of niche and social behavior has to do with the emergence of culture in the hominin lineage. The Origins and Evolution of Cultures. Human Ecology 10 3: Building a New Biocultural Synthesis: Political-Economic Perspectives on Human Biology. University of Michigan Press. Introduction to Physical Anthropology, 13th Edition. Five rules for the evolution of cooperation. How Culture Transformed Human Evolution. University of Chicago Press.

Chapter 2 : Introduction to Human Evolution | The Smithsonian Institution's Human Origins Program

Sociocultural evolution, sociocultural evolutionism or cultural evolution are theories of cultural and social evolution that describe how cultures and societies change over time.

Later advocates of this theory suggested radical and often coercive social measures in an attempt to "correct" this imbalance. Thomas Huxley spent much time demonstrating through a series of thought experiments that it would not only be immoral, but impossible, [1] Stephen Jay Gould and others have argued that social Darwinism is based on misconceptions of evolutionary theory, and many ethicists regard it as a case of the is-ought problem. After the atrocities of the Holocaust became linked with eugenics, it greatly fell out of favor with public and scientific opinion, though it was never universally accepted by either, and at no point in Nazi literature is Charles Darwin or the scientific theory of evolution mentioned. Jim Walker compiled a list of quotes from Mein Kampf in which Hitler described himself as a Christian, or mentioned God, Jesus or a biblical passage. Hitler often used Christian beliefs like, "Jews killed Jesus," to justify his anti-Semitism. Many proponents of animal rights hold that if animals and humans are of the same nature, then rights cannot be distinct to humans. Charles Darwin, in fact, considered " sympathy " to be one of the most important moral virtues â€" and that it was, indeed, a product of natural selection and a trait beneficial to social animals including humans. Darwin further argued that the most "sympathetic" societies would consequently be the most "successful. As man advances in civilization, and small tribes are united into larger communities, the simplest reason would tell each individual that he ought to extend his social instincts and sympathies to all the members of the same nation, though personally unknown to him. This point being once reached, there is only an artificial barrier to prevent his sympathies extending to the men of all nations and races. If, indeed, such men are separated from him by great differences in appearance or habits, experience unfortunately shows us how long it is, before we look at them as our fellow-creatures. This virtue, one of the noblest with which man is endowed, seems to arise incidentally from our sympathies becoming more tender and more widely diffused, until they are extended to all sentient beings. As soon as this virtue is honored and practiced by some few men, it spreads through instruction and example to the young, and eventually becomes incorporated in public opinion. The discussion page may contain suggestions. Please help improve it by rewriting it in an encyclopedic style. The following is a summary of his arguments in the Prolegomena, the most detailed and comprehensive of the two sections devoted to it. It should be noted that Huxley is here attempting to disprove the science behind Social Darwinism; as such, the moral arguments only come in later in the essay. Without constant upkeep, it would return to the state of nature, even the very walls surrounding it crumbling in sufficient time, but by constant diligence of the gardener, may be maintained in a state of art. This "state of art" is not permanent: It is instead the replacement of natural selection by artificial selection through the human energy expended in maintaining it. This artificial selection is, however, part of natural selection: It is the action upon a set of species by the human species by way of the human species expending energy through evolved intelligence on its choice of selection. It is thus no less natural than, for example, a predator expending energy through evolved instinct on preferentially hunting a certain prey species. The presence of humans may change the dynamic, but in a perfectly natural way. Hence, it is part of the cosmic process, that is natural laws, even though the "histological process" may remove many aspects of the "struggle for existence" that is a key part of the natural laws that apply to biology, from its preferred plant species by substituting human work for work done by the species itself. Not only is the state of nature hostile to the state of art of the garden; but the principle of the horticultural process, by which the latter is created and maintained, is antithetic to that of the cosmic process. The characteristic feature of the latter is the intense and unceasing competition of the struggle for existence. The characteristic of the former is the elimination of that struggle, by the removal of the conditions which give rise to it. The tendency of the cosmic process is to bring about the adjustment of the forms of plant life to the current conditions; the tendency of the horticultural process is the adjustment of the conditions to the needs of the forms of plant life which the gardener desires to raise. Nature uses unrestricted breeding to let hundreds compete for the natural resources that would only support one, and uses

frost and drought to kill off the weak and unlucky, requiring not just strength, but "flexibility and good fortune. The struggle for existence is not actually required for improvement: Can we then apply this to humans? Suppose a shipload of English colonists sent to form a settlement, in such a country as Tasmania was in the middle of the last century. On landing, they find themselves in the midst of a state of nature, widely different from that left behind them in everything but the most general physical conditions. The common plants, the common birds and quadrupeds, are as totally distinct as the men from anything to be seen on the side of the globe from which they come. The colonists proceed to put an end to this state of things over as large an area as they desire to occupy. They clear away the native vegetation, extirpate or drive out the animal population, so far as may be necessary, and take measures to defend themselves from the re-immigration of either. In their place, they introduce English grain and fruit trees; English dogs, sheep, cattle, horses; and English men; in fact, they set up a new Flora and Fauna and a new variety of mankind, within the old state of nature. Their farms and pastures represent a garden on a great scale, and themselves the gardeners who have to keep it up, in watchful antagonism to the old regime. Considered as a whole, the colony is a composite unit introduced into the old state of nature; and, thenceforward, a competitor in the struggle for existence, to conquer or be vanquished. Under the conditions supposed, there is no doubt of the result, if the work of the colonists be carried out energetically and with intelligent combination of all their forces. On the other hand, if they are slothful, stupid, and careless; or if they waste their energies in contests with one another, the chances are that the old state of nature will have the best of it. The native savage will destroy the immigrant civilized man; of the English animals and plants some will be extirpated by their indigenous rivals, others will pass into the feral state and themselves become components of the state of nature. In a few decades, all other traces of the settlement will have vanished. However, as yet we lack an organized gardener. Let us imagine an idealized one: The unwanted native species - men, animals, or plants - are all weeded out and destroyed. Those to replace them are chosen with a view to his ideal of the colony, just as a gardener tries to create through his selection his ideal garden. And, finally, to ensure that no struggle for existence between the colonists interferes with the struggle against nature, he provides them with sufficient food, housing, and so on. In order to attain his ends, the administrator would have to avail himself of the courage, industry, and co-operative intelligence of the settlers; and it is plain that the interest of the community would be best served by increasing the proportion of persons who possess such qualities, and diminishing that of persons devoid of them. In other words, by selection directed towards an ideal. When the colony reached the limit of possible expansion, the surplus population must be disposed of somehow; or the fierce struggle for existence must recommence and destroy that peace, which is the fundamental condition of the maintenance of the state of art against the state of nature. If the administrator is guided purely by scientific considerations, he would work to restrict the population by removing "the hopelessly diseased, the infirm aged, the weak or deformed in body or in mind, and the excess of infants born," just as a "gardener pulls up defective and superfluous plants, or the breeder destroys undesirable cattle. Only the strong and the healthy, carefully matched, with a view to the progeny best adapted to the purposes of the administrator, would be permitted to perpetuate their kind. However, we do not have an idealized administrator: Of the more thoroughgoing of the multitudinous attempts to apply the principles of cosmic evolution, or what are supposed to be such, to social and political problems, which have appeared of late years, a considerable proportion appear to me to be based upon the notion that human society is competent to furnish, from its own resources, an administrator of the kind I have imagined. The pigeons, in short, are to be their own Sir John Sebright. A despotic government, whether individual or collective, is to be endowed with the preternatural intelligence, and with what, I am afraid, many will consider the preternatural ruthlessness, required for the purpose of carrying out the principle of improvement by selection, with the somewhat drastic thoroughness upon which the success of the method depends. Experience certainly does not justify us in limiting the ruthlessness of individual "saviors of society"; and, on the well-known grounds of the aphorism which denies both body and soul to corporations, it seems probable indeed the belief is not without support in history that a collective despotism, a mob got to believe in its own divine right by demagogic missionaries, would be capable of more thorough work in this direction than any single tyrant, puffed up with the same illusion, has ever achieved. But intelligence is another affair. The fact that "saviors of society" take to

that trade is evidence enough that they have none to spare. And such as they possess is generally sold to the capitalists of physical force on whose resources they depend. However, I doubt whether even the keenest judge of character, if he had before him a hundred boys and girls under fourteen, could pick out, with the least chance of success, those who should be kept, as certain to be serviceable members of the polity, and those who should be chloroformed, as equally sure to be stupid, idle, or vicious. The "points" of a good or of a bad citizen are really far harder to discern than those of a puppy or a short-horn calf; many do not show themselves before the practical difficulties of life stimulate manhood to full exertion. And by that time the mischief is done. The evil stock, if it be one, has had time to multiply, and selection is nullified. However, humans are not cattle, nor flowers: They do not even correspond to social insects such as bees: With bees, "The members of the society are each organically predestined to the performance of one particular class of functions only. If they were endowed with desires, each could desire to perform none but those offices for which its organization specially fits it; and which, in view of the good of the whole, it is proper it should do. Among mankind, on the contrary, there is no such predestination to a sharply defined place in the social organism. However much men may differ in the quality of their intellects, the intensity of their passions, and the delicacy of their sensations, it cannot be said that one is fitted by his organization to be an agricultural laborer and nothing else, and another to be a landowner and nothing else. Moreover, with all their enormous differences in natural endowment, men agree in one thing, and that is their innate desire to enjoy the pleasures and to escape the pains of life; and, in short, to do nothing but that which it pleases them to do, without the least reference to the welfare of the society into which they are born, checked only by sympathy, familial and social bonds, and fear of the judgment of ones fellow man. In short, he describes a creation of morality. Since morality is what keeps the desire for selfishness in check, it is necessary to the propagation of society, with one requirement: Without the protection of society against them, "The followers of the "golden rule" may indulge in hopes of heaven, but they must reckon with the certainty that other people will be masters of the earth. I have further shown cause for the belief that direct selection, after the fashion of the horticulturist and the breeder, neither has played, nor can play, any important part in the evolution of society; apart from other reasons, because I do not see how such selection could be practiced without a serious weakening, it may be the destruction, of the bonds which hold society together. It strikes me that men who are accustomed to contemplate the active or passive extirpation of the weak, the unfortunate, and the superfluous; who justify that conduct on the ground that it has the sanction of the cosmic process, and is the only way of ensuring the progress of the race; who, if they are consistent, must rank medicine among the black arts and count the physician a mischievous preserver of the unfit; on whose matrimonial undertakings the principles of the stud have the chief influence; whose whole lives, therefore, are an education in the noble art of suppressing natural affection and sympathy, are not likely to have any large stock of these commodities left. But, without them, there is no conscience, nor any restraint on the conduct of men, except the calculation of self-interest, the balancing of certain present gratifications against doubtful future pains; and experience tells us how much that is worth. Every day, we see firm believers in the hell of the theologians commit acts by which, as they believe when cool, they risk eternal punishment; while they hold back from those which are opposed to the sympathies of their associates. Huxley finishes with a series of short, further evidences against Social Darwinism, including: Consider the vast changes of society between the Tudor and the Victorian eras; however, human nature, as evidenced by their writing, remains the same. If the struggle for existence has affected us to any serious extent and I doubt it it has been, indirectly, through our military and industrial wars with other nations. Moreover, it is fairly probable that the children of a "failure" will receive from their other parent just that little modification of character which makes all the difference. I sometimes wonder whether people, who talk so freely about extirpating the unfit, ever dispassionately consider their own history.

Chapter 3 : The Human as the Biosocial

Human evolution. Human evolution is the lengthy process of change by which people originated from apelike ancestors. Scientific evidence shows that the physical and behavioral traits shared by all people originated from apelike ancestors and evolved over a period of approximately six million years.

What is Cultural Evolution? Theories of cultural evolution need to be distinguished from theories within evolutionary psychology, even though both may involve an application of evolutionary ideas to the explanation of cultural phenomena. The evolutionary psychologist e. Tooby and Cosmides tends to assume that the most important inheritance mechanism in all speciesâ€"our own includedâ€"is genetic inheritance. Evolutionary psychology regards the human mind as evolving through a conventional process of natural selection acting on genetically inherited variation. Such a hypothesis can also help to explain novel cultural trends: So evolutionary psychology is hardly silent about culture and cultural change. Even so, cultural evolutionary theorists tend to place far more stress on the role of non-genetic inheritance, and specifically of cultural inheritance mediated via learning, as a factor playing a positive, creative role in adapting species to their social and biological environments. Darwin believed, as do biologists today, that natural selection can explain the origin of many complex adaptive traits. This explanatory schema is largely neutral regarding what mechanism accounts for parent-offspring resemblance. For example, offspring might learn skills from their parents, and thereby come to resemble them behaviourally. From the perspective of natural selection explanations, it does not matter why offspring resemble parents, only that they do resemble them. As we have seen, cultural processes such as learning might, in principle, underpin this form of inheritance. But we do not learn only from our parentsâ€"we also learn from peers, authority-figures and so forth. This is known as oblique transmission. Once we acknowledge the possibility that learning can underpin natural selection, we also acknowledge that a theory of evolutionâ€"a theory which seeks to explain change, including adaptive change in a populationâ€"may also need to be further expanded to encompass oblique transmission. The admittance of oblique transmission into evolutionary theory necessitates far more radical revisions to traditional Darwinian models of evolution. This is because oblique transmission opens up the possibility that some traits may spread through a population in spite of the fact that they reduce the fitness of the individuals who bear them. While large amounts of work in cultural evolution have focused on the human species, there is also a growing body of work assessing the implications of learning for adaptation and speciation in many other species including chimpanzees Whiten et al , whales Rendell and Whitehead , fish and birds among many others Laland and Hoppitt Moreover, this work on non-human species also helps to refine and to answer a series of questions about why humans, compared with other species, seem so conspicuously good at building, maintaining and refining collective storehouses of adaptive cultural capital Henrich , Laland Natural Selection and Cultural Inheritance In a classic early work of cultural evolution, Cavalli-Sforza and Feldman ask among other things how we can explain declining birth rates among Italian women in the nineteenth century. These women went from having around five children on average to having only two. It would be extremely implausible to argue that this occurred as result of natural selection Sober , It would be implausible, for example, to argue that the fitness of women with smaller families was greater than the fitness of women with larger families. But surely Italian women could have raised more than two children to be healthy adults. Forms of oblique transmission are required to explain this transition, because if cultural transmission was always vertical, then the trait of having greater numbers of offspring would be maintained in the population by natural selection, albeit selection acting via cultural inheritance. One might react to this with confusion: Of course we acquire traits from others by learning. And of course those others from whom we learn can include peers as well as parents. In part, we can respond to this bewilderment by pointing to the virtues of clarifying the conditions required for cultural inheritance to overcome natural selection. Cavalli-Sforza and Feldman argue that if women simply acquired whichever preference for family size was the most widely adopted in their local cultural environment, then cultural inheritance would not have enough of an effect to overcome natural selection. Women must be disposed to acquire the preference for small family size even when it is

present in only a small proportion of their cultural circle, if small family size is to replace large family size in the population as a whole. This is an illuminating claim, and it takes a quantitative model to show it. This question of what benefit is to be had from setting these sorts of claims in a quantitative theory will be raised in more detail later in this article. For the moment, note that one may also ask why it should be the case that we are able to learn from non-parents at all, given the adaptive costs of such a disposition. If the tendency of Italian women to learn from their peers has led them to reduce their fitness by reducing their family size, why did natural selection allow such learning dispositions to become established in the first place? Boyd and Richerson, two other pioneers in cultural evolutionary theory, claim that the overall adaptive benefits of learning from non-parents in fact outweigh the overall adaptive costs Richerson and Boyd , Ch. They give several reasons for this view. Suppose an inventive or lucky individual is able to discover some behaviour, or technique, which augments fitness. If other individuals in the population can copy that behaviour, then their fitness will probably be augmented, too. It will often be difficult for individuals to ascertain which behaviours in fact augment fitness, hence which behaviours should be copied. The problem, then, is how to tune a learning mechanism so that beneficial behaviours are copied, while non-beneficial behaviours are not. Boyd and Richerson suggest that prestige bias can overcome this problem: Moreover, evidence has been accumulating for the reality of prestige bias. In other words, they claim that individuals are accorded a broad form of prestige, which affects their likelihood of serving as a cultural model. The value of prestige bias relies on the supposition that those individuals who are able to get themselves into prestigious positions have a better than average tendency to make use of fitness-enhancing techniques. This heuristic will not be failsafe: But the question which settles the plausibility of natural selection explaining prestige bias is not whether prestige bias will sometimes lead to the copying of maladaptive techniques; the question, rather, is whether individuals who learn from the prestigious will tend to be fitter on average than individuals who either do not learn at all, or who are equally likely to learn from any member of the population, regardless of their social status. Richerson and Boyd , â€”22 suggest that other learning heuristics may be adaptive. One of these they call conformist bias. This may mean acquiring behaviours appropriate to a new biological environment: But it can also lead to the generation of socially appropriate behaviours, which will obviate ostracism or attack. Moreover, they argue that children tend to seek out cultural conformists as individuals whom they should trust. These findings offer some support the existence of a form of conformist bias, although Lewens has suggested that both the theoretical and empirical cases for conformist bias may not be as strong as first meets the eye. These examples show the nature of the interaction between cultural evolutionary thinking and more traditional natural selection thinking. Natural selection acting on genetic variation can establish dispositions to learn from non-kin in spite of the fact that under some circumstances these dispositions lead to the proliferation of maladaptive traits. It is worth noting that this aspect of much cultural evolutionary thinking retains a strong methodological affinity with the evolutionary psychological approach it is sometimes contrasted with Lewens Learning dispositions themselves are often understood by cultural evolutionists as genetically inherited adaptations, produced in response to adaptive problems faced by our earlier ancestors. Some recent critics of cultural evolutionary thinking e. Heyes , and especially Heyes consequently argue that it is not cultural enough, for it tends to downplay the possibility that learning dispositions themselves might be inherited through forms of learning. All agree, though, that once these learning dispositions are in place, we should not assume that every trait in a population must be explained by reference to the biological fitness benefit it has conferred in the past. Evolutionary adaptationists tend to ask, of any given trait, what effect might have led natural selection to favour that trait. Even if an adaptationist stance of this sort is justifiable for learning mechanisms and cultural evolutionists typically are adaptationists in this respect this does not mean that an adaptationist stance is justifiable for learned traits. Historical Pedigree The notion that culture itself evolves, and that Darwinian insights can be applied to understanding cultural change, is by no means new. A very early example of cultural evolutionary thinking comes from William James: A remarkable parallel, which to my mind has never been noticed, obtains between the facts of social evolution and the mental growth of the race, on the one hand, and of zoological evolution, as expounded by Mr Darwin, on the other. The great man needs to be made, and society does this. Hence ultimately it is society itself that explains social change. Variations are produced by

unknown causes, and the environment selects among them. The same is true of great men: Great men, like spontaneous variations, are essential and inexplicable elements of the evolutionary process. This social evolution is a resultant of the interaction of two wholly distinct factors: Both factors are essential to change. One of the reasons for this is that cultural evolutionary theories often define themselves in opposition to those which claim that genetic inheritance is the only significant inheritance mechanism. Clearly one cannot cast Darwin as a cultural evolutionist in this manner, for he had no notion of genetic inheritance to oppose. Having said this, Darwin did believe that what was learned in one generation could be inherited in later generations. These were understood to be particles produced throughout the body, of a character specific to the body part that produces them. Darwin believed that gemmules then travelled to the gonads, where they were transmitted to offspring in the sex cells. Darwin claimed that gemmules were produced throughout the body in order to explain the inheritance of acquired characteristics. So in one sense Darwin is in alignment with modern cultural evolutionistsâ€"he believed that characteristics learned during the life of a parent could be transmitted to offspring. But in another sense Darwin is opposed to modern cultural evolutionists, for rather than distinguishing between different interacting inheritance systems e. There are other respects in which one might choose to regard Darwin as a proto-cultural evolutionist. Darwin sometimes integrates discussion of technological evolution into his broader discussions of natural selection. In the Descent of Man, Darwin pauses to discuss technical innovation, arguing that successful innovations will usually be imitated, thereby increasing the success of a group as a whole, increasing the size of that group, and consequently increasing the chances of inventive members being born into it Darwin Darwin , Finally, Darwin endorses the view, widely favoured these days, that natural selection need not act on organisms. Rather, natural selection is substrate-neutral. A natural selection process can occur whenever certain abstract conditionsâ€"these days often expressed as differential reproduction with inheritanceâ€"are met. Darwin explicitly endorses the view that natural selection can act on entities other than organisms in the context of language change, a cultural phenomenon. This position is briefly explored in the Origin of Species, and further expanded in the Descent of Man. A struggle for life is constantly going on amongst the words and grammatical forms in each language. The better, the shorter, the easier forms are constantly gaining the upper hand, and they owe their success to their own inherent value. Darwin , Darwin asserts that this is no mere analogy: Cultural evolutionary theory in general requires only a systematic effort to model the effects of cultural inheritance, and one might decide that thinking in terms of natural selection acting on units of culture is not the best way of doing this. We will investigate these issues in more detail later in this article. We have already mentioned Herbert Spencer, and Spencer is sometimes regarded as a key early advocate of efforts to apply evolutionary thinking to human culture e. Jablonka and Lamb , 21â€" Spencer reasoned that if the experiences of past generations were imprinted on human minds, then it would be true both that some forms of knowledge in current generations were a priori, and also that this knowledge had its origins in experience, albeit the experience of our ancestors. Darwin himself had made a brief note along similar lines in his M notebook: There is an important difference between Darwin and Lorenz, which these superficial similarities might hide.

Chapter 4 : Top 5 Theories of Social Change â€“ Explained

a parallel theory of progressive social evolution that refuted the traditional religious understanding of human sin, which was predicated on the notion that, after the fall from grace, the human condition was corrupt beyond repair.

Tap here to turn on desktop notifications to get the news sent straight to you. Because the human brain has become so large and sophisticated in terms of the social computations it supports, it takes a very long time for it to develop fully. We like to be surrounded by friends and share our personal experiences with others. The recent appearance of various social networking tools, and their adoption at a virtually explosive rate, nicely illustrate the strong and fundamental human desire for social belonging and interpersonal exchange. Not surprisingly, there is emerging evidence that evolutionary processes have favored the development of complex social behaviors in humans, along with the brain architecture that supports them. The human brain, and particularly the neocortex which constitutes its outmost layer , is much larger in humans as compared to other primates and mammals of similar size. This is particularly interesting because the neocortex comprises many of the brain areas involved in higher social cognition, such as conscious thought, language, behavioral and emotion regulation, as well as empathy and theory of mind -- the ability to understand the feelings and intentions of others. We are, so to speak, biologically hard-wired for interacting with others, and are thus said to be endowed with a "social brain. There is, however, growing consensus that two processes likely played key roles in triggering the observed dramatic increase in brain, and particularly neocortex, size. Both of these processes offered additional defense mechanisms against infanticide and predation on offspring. And that is what ultimately counts in evolution: In terms of brain development, the emergence of socially monogamous pair bonds and bi-parental care imposed unprecedented needs for extensive social coordination and synchronization between the two partners and parents. For example, who is responsible for which aspects of childcare? Or how can both partners optimize the time used for searching food versus providing shelter to their offspring? These newly appearing requirements are thought to have laid the foundations for human social evolution as reflected in the development of advanced social cognition and skills. It is believed that eventually, the cognitive mechanisms necessary for pair bonding and coordinated bi-parental care generalized to non-reproductive individuals. This generalization likely helped the formation of larger social groups, such as extended families, same-sex alliances, large coalitions, etc. The increasing size of such expanded social groups in turn entailed further social brain development, ultimately giving rise to the present form of the human social brain. The obvious benefits of social brain evolution are that humans are, today, equipped with a highly sophisticated social processing machine that enables us to engage in complex social interactions, and to maintain relationships to a great number of different individuals as well as groups. Our brains are further wired in a way that we experience reward during mutual social interactions, and feel sensations similar to physical pain when we are socially rejected or disapproved. It therefore looks like evolution has provided us with the perfect hardware for living in a world that is becoming ever more crowded. Social evolution, however, does not only come with benefits. It also has its costs. Compared to other mammals, human children have a very long developmental period and are highly dependent on care by adults. Human parents not only have to nurture their children until their brains are fully operational biologically, but they also have to provide an extended and stable context within which their children can safely acquire all the skills necessary for understanding their social surroundings. And this process continues far beyond childhood. For example, some social skills can only be learned by means of peer activities during adolescence, and throughout this period parents still have important protective and sheltering roles. Recent research on attachment style in humans is starting to reveal some of the underlying behavioral and neural correlates of such guided social learning, and particularly the consequences if social learning does not occur in a sheltered environment. If others close to a child are responsive and caring, the child develops a secure attachment style. If they are unresponsive or inconsistent in their behavior towards the child, however, the child develops an insecure, either avoidant or anxious attachment style. Once acquired, the attachment style of a person is believed to remain rather stable throughout the lifespan, and to even be transmitted from one generation to the next. It is therefore likely to

circularly influence many of the steps involved in social brain development and skill acquisition during childhood, adolescence, and even adulthood. We now have preliminary evidence that an insecure attachment style prompts people to respond either too strongly or too weakly to social information. This is especially striking in the case of attachment avoidance, which appears to considerably decrease both behavioral and brain responses within positive social contexts normally experienced as strongly rewarding. Becoming social has made us who we are today. Evolution has provided us with the best tools possible for successfully engaging in social interactions. We should, however, not forget our responsibilities to ensure that future generations can learn in a protected and sheltered environment how to properly use these tools for their own lives.

Chapter 5 : Manâ€™s Social Evolution | Evolution of Man | www.nxgvision.com

Thomas Huxley, Darwin's Bulldog, spent much of his book Evolution and Ethics debunking Social Darwinism, piece by piece. The following is a summary of his arguments in the Prolegomena, the most detailed and comprehensive of the two sections devoted to it.

A substantial part of the phenotypic variation in a population is caused by genotypic variation. The frequency of one particular allele will become more or less prevalent relative to other forms of that gene. Variation disappears when a new allele reaches the point of fixation â€”when it either disappears from the population or replaces the ancestral allele entirely. Before the discovery of Mendelian genetics, one common hypothesis was blending inheritance. But with blending inheritance, genetic variance would be rapidly lost, making evolution by natural selection implausible. The Hardyâ€”Weinberg principle provides the solution to how variation is maintained in a population with Mendelian inheritance. The frequencies of alleles variations in a gene will remain constant in the absence of selection, mutation, migration and genetic drift. Despite the constant introduction of new variation through mutation and gene flow, most of the genome of a species is identical in all individuals of that species. When mutations occur, they may alter the product of a gene , or prevent the gene from functioning, or have no effect. This process is easier once a gene has been duplicated because it increases the redundancy of the system; one gene in the pair can acquire a new function while the other copy continues to perform its original function. Sexual reproduction , Genetic recombination , and Evolution of sexual reproduction In asexual organisms, genes are inherited together, or linked, as they cannot mix with genes of other organisms during reproduction. In a related process called homologous recombination , sexual organisms exchange DNA between two matching chromosomes. If each individual were to contribute to the same number of offspring two , a the sexual population remains the same size each generation, where the b Asexual reproduction population doubles in size each generation. The two-fold cost of sex was first described by John Maynard Smith. This cost does not apply to hermaphroditic species, like most plants and many invertebrates. The Red Queen hypothesis has been used to explain the significance of sexual reproduction as a means to enable continual evolution and adaptation in response to coevolution with other species in an ever-changing environment. Gene flow Gene flow is the exchange of genes between populations and between species. Gene flow can be caused by the movement of individuals between separate populations of organisms, as might be caused by the movement of mice between inland and coastal populations, or the movement of pollen between heavy-metal-tolerant and heavy-metal-sensitive populations of grasses. Gene transfer between species includes the formation of hybrid organisms and horizontal gene transfer. Horizontal gene transfer is the transfer of genetic material from one organism to another organism that is not its offspring; this is most common among bacteria. It is possible that eukaryotes themselves originated from horizontal gene transfers between bacteria and archaea. From a neo-Darwinian perspective, evolution occurs when there are changes in the frequencies of alleles within a population of interbreeding organisms, [78] for example, the allele for black colour in a population of moths becoming more common. Mechanisms that can lead to changes in allele frequencies include natural selection, genetic drift, genetic hitchhiking, mutation and gene flow. Natural selection Further information: Sexual selection Evolution by means of natural selection is the process by which traits that enhance survival and reproduction become more common in successive generations of a population. It has often been called a "self-evident" mechanism because it necessarily follows from three simple facts: Different traits confer different rates of survival and reproduction differential fitness. These traits can be passed from generation to generation heritability of fitness. More offspring are produced than can possibly survive, and these conditions produce competition between organisms for survival and reproduction. Consequently, organisms with traits that give them an advantage over their competitors are more likely to pass on their traits to the next generation than those with traits that do not confer an advantage. The central concept of natural selection is the evolutionary fitness of an organism. These traits are said to be "selected for. Conversely, the lower fitness caused by having a less beneficial or deleterious allele results in this allele becoming rarerâ€”they are "selected against. These charts depict the different types of genetic selection. On

each graph, the x-axis variable is the type of phenotypic trait and the y-axis variable is the number of organisms. Group A is the original population and Group B is the population after selection. Natural selection within a population for a trait that can vary across a range of values, such as height, can be categorised into three different types. The first is directional selection , which is a shift in the average value of a trait over timeâ€”for example, organisms slowly getting taller. This would be when either short or tall organisms had an advantage, but not those of medium height. Finally, in stabilising selection there is selection against extreme trait values on both ends, which causes a decrease in variance around the average value and less diversity. A special case of natural selection is sexual selection, which is selection for any trait that increases mating success by increasing the attractiveness of an organism to potential mates. Although sexually favoured, traits such as cumbersome antlers, mating calls, large body size and bright colours often attract predation, which compromises the survival of individual males. Eugene Odum , a founder of ecology , defined an ecosystem as: These relationships involve the life history of the organism, its position in the food chain and its geographic range. This broad understanding of nature enables scientists to delineate specific forces which, together, comprise natural selection. Natural selection can act at different levels of organisation , such as genes, cells, individual organisms, groups of organisms and species. If selection would favour either one out of two mutations, but there is no extra advantage to having both, then the mutation that occurs the most frequently is the one that is most likely to become fixed in a population. Most loss of function mutations are selected against. But when selection is weak, mutation bias towards loss of function can affect evolution. Loss of sporulation ability in Bacillus subtilis during laboratory evolution appears to have been caused by mutation bias, rather than natural selection against the cost of maintaining sporulation ability. In parasitic organisms, mutation bias leads to selection pressures as seen in Ehrlichia. Mutations are biased towards antigenic variants in outer-membrane proteins. Genetic drift Further information: Genetic drift and Effective population size Simulation of genetic drift of 20 unlinked alleles in populations of 10 top and bottom. Drift to fixation is more rapid in the smaller population. Genetic drift is the random fluctuations of allele frequencies within a population from one generation to the next. Genetic drift may therefore eliminate some alleles from a population due to chance alone. Even in the absence of selective forces, genetic drift can cause two separate populations that began with the same genetic structure to drift apart into two divergent populations with different sets of alleles.

Chapter 6 : Top 6 Factors of Social Change â€“ Explained!

The obvious benefits of social brain evolution are that humans are, today, equipped with a highly sophisticated social processing machine that enables us to engage in complex social interactions.

The Human as the Biosocial Contemporary science considers the human being on the basis of two different dimensions of his existence: Human beings appeared on earth as a result of a long process of development. As biological creatures, they still retain a close genetic connection with the animal world. Man got ahead of the mammals thanks to the intensive development and differentiation of the cerebral cortex. The characteristic anatomical and physiological features of the human being are erect posture, free upper extremities, adapted for using and making tools, and advanced develop ment of the means of communication. The need to maintain balance in the erect posture caused a certain curvature of the spinal column and a shift in the general centre of gravity. Since the upper extremities were no longer used for body support and walking, the skeleton of the lower extremities became stronger and their muscles developed, the feet became arched to act as springs. All the systems of the internal organs have adapted to the erect posture, the means of delivering blood from the lower extremities to the heart and the brain have become more complex. The diaphragm has shifted from a vertical to a horizontal position, the muscles of the abdomen have come to perform a much greater role in the act of breathing. At a certain level of anthropogenesis, under the influence of labour activity and communication, biological development became what is, in effect, the historical develop ment of social systems. The human being is also a natural being and, as such, is endowed with natural vital forces, which take the form of inherited qualities. Birth gives man existence as a natural individual. Although he comes into the world with insufficiently formed anatomical and physiological systems, they are genetically programmed as uniquely human. The newborn child is not a "tabula rasa" clean slate on which the environment draws its fanciful spiritual patterns. Heredity equips the child not only with instincts. He is from the very beginning the possessor of a special ability, the ability to imitate adults, their actions, the noises they make. He has an inherent curiosity, an ability to enjoy bright objects. He is capable of being upset, disappointed, experiencing fear and joy. His smile is innate and it can be observed even in prematurely born babies. Smiling is the privilege of man. And these purely human innate potentials are developed in the course of his whole subsequent life in society. To sum up, man is an integrated unity of the biological, the organismic and the personal, the natural and the social, the inherited and what he acquires during his life. Developing both historically and in the course of his individual develop ment as a social being, man does not "opt out" of the multiform biotic flow. The physiological rhythm of the blood circulation, nutrition, breathing, sex life, the rhythmical vortices of the energy and information processes in the organism, birth, maturity and death, the phases of individual existence â€” childhood, adolescence, rebellious youth, young manhood, maturity, advanced life, old age, senility and complete declineâ€”all this and much else is genetically programmed. Human beings are the towering peak of a great biological system, the latest to emerge in time, and the most complex. Three forms of determinationâ€”the biotropic, the cosmotropic and sociotropicâ€”operate in the human being. They embrace the whole history of humanity, regional and national traditions, the influence of a certain social group, of microconditions, the great power of biological heredity. If a chimpanzee were placed from birth in ideal conditions and surrounded by gifted teachers, it still would not change from an ape into a man. Heredity sets an impassable gulf between ape and man. The genetically coded abilities of the child are the product of a long process of evolution, but even such apparently simple and seemingly innate abilities as the ability to distinguish ordinary sounds of speech and musical tones are formed only in the process of its living mastery of the historically shaped forms of language and music. At the moment of birth a child is only a candidate human being, it cannot become a full member of the human race if isolated. It must learn to become human through communication, through being introduced to the world of people, of society, which regulates, guides and fills his behaviour with social meaning. Every human being has amazingly obedient fingers; he can take up a brush and colours and begin to paint, but this does not make him into an artist. It is the same with consciousness, which is not our natural birthright. The conscious mental phenomena inherent in man are

shaped during life by education, training, the active mastery of world culture, language, and a world-view. Thus, the social principle permeates the individual and determines the essentially human structure and mechanisms of his mentality, consciousness and mode of behaviour. In the past decade world science has devoted much attention to the problem of the relationship between the biological and the social in man. Paradoxically, it is the social conditions of life of modern man that have so urgently confronted us with the problem of his natural origin: According to this view, the oldest of our brains is reptilian, the second was inherited from the lower mammals, and the third is the achievement of the higher mammals. This is the one that turned the living creature into man. So, figuratively speaking, when a doctor invites his patient to lie down on a couch, he is dealing simultaneously with a human being, a horse and a crocodile. The conception of socio-biologism has also won some recognition in Western science, due probably to the striking successes of biological research in recent decades, particularly in the sphere of genetics, neurophysiology, ethology, etc. To the question does man rely on "genes or society? They believe that the existing system of heredity fully reflects the results of his appearance as a unique biological species. Its significance is so great that it can virtually serve for an unlimited period, for the whole foreseeable future, and this precious hereditary basis of humanity must be preserved from any harmful external influences. Others maintain that the human being as a biological species is already on the way to extinction. Thanks to the creation of his own environment and the successes of medicine, man has deviated from the stern discipline of natural selection and thus burdened himself with increased pressure from accumulated mutations. A third school of thought works on the assumption that the human being, as a biologically young species, carries too many animal genes in his heredity. The social environment in which he lives is created not by the history of humanity but by the activity only of its elite. On the crest of these ideas there emerges a somewhat elaborated form of eugenics, which imperatively declares that whether we want it or not, science must deliberately control the reproduction of the human race, and introduce some kind of partial selection for the "benefit" of humanity. Some Western scientists propose that the sperm of the "finest specimens of the human race" should be used for this purpose. It should be put into deep freeze for a long time to allow for objective assessment of the true value of the individuals concerned. Sperm thus preserved may then be used for mating purposes. The wife and the donor will be the biological parents while the husband assumed to be inferior to the donor remains only the "adopting parent". Exercises in "genetic engineering" even go as far as to assume an "adopting mother", in which case neither mother nor father is a truly biological parent. Even if one ignores the purely genetic implications of such selection, one is confronted by a host of moral and psychological questions. Who possesses the genotypes with the desirable features? Who should or could decide the question of what precisely is desirable? Who would dare, and by what right, to prevent the majority of men and women producing progeny, and limit this activity to an elite group? To whom can society entrust such a crucial decision? This hypertrophy of genetic factors and opportunities stems from the belittling of the social principle in man. Man is a natural being, but a human natural being. Nature gives the human being less than life in society requires of him. Life and the development of society may continue only through the biological form of human existence, and human biology can develop its genetic programme only in the context of the social reality. In its origin, biological law is socially conditioned. Only when swaddled in the "cotton wool" of social care can the childâ€”the most helpless of all young animalsâ€”realise the species programme implanted in it by nature. The animal is born with fur or feathers, it is clothed by nature. But the baby is born naked and has to be clothed by society. It must learn to be human. And this it does in constant communication with adults, in its lifetime acquisition of culture. The influence of the social on the biological is demonstrated by the increase in longevity from approximately 18 years in the stone age to between 64 and 74 in modern times. The active period of life has also increased, particularly that of mental activity. The onset of old age has receded, the period of childhood has lengthened and sexual maturity has accelerated. The phenomenon of acceleration is regarded as an epochal shift, one of the most significant phenomena in contemporary biology, with serious medical, pedagogical and other social implications. What regulates the relationship of the sexes? Why does one find the following stable ratio in human population: In post-war years, after the loss of so many males, the birth rate of boys increases. Life shows that on the borderline between the biological and social the pressure of

conflict sometimes reaches great intensity. Quite often it causes shifts and disruption. The number of diseases is ominously increasing, particularly those of the cardio-vascular, oncological and neuro-psychiatric types. Physical time flows on smoothly but socio-biological time is constantly accelerating. Every hour and every minute of physical time is becoming more and more full of socio-psychological living content. The flow of contemporary life is like a violent mountain stream, it rushes us along at perilous speed. Everyone is trying to live faster, so as not to lag behind the general information front, to keep up with the accelerated development of culture. In the last 10 or 15 years the volume of scientific information, of discoveries and inventions, has outstripped everything previously achieved in human history. The sense organs and the human brain are fiercely and ceaselessly bombarded by all kinds of information. When discussing biological factors, one should not reduce them to the genetic. More attention should be given to the physiological and ontogenetic aspects of development, and particularly to those that evoke a pathological effect, for it is these that modify the biology of the human being, who is also beginning to perceive even social factors in quite a different way. Dialectics does not simply put the social and the biological factors on an equal footing and attribute the human essence to the formula of biotropic-sociotropic determination favoured by some scientists. It stresses the dominant role of the social factors. Nor does dialectics accept the principles of vulgar sociologism, which ignores the significance of the biological principle in man. As the highest intelligent being, man is the focal point of all forms of the motion of matter. They are represented in him hierarchically, and the highest ultimately guiding and regulative factor is the social, to which all other forms are subordinate. In other words a human being embodies and sums up, as it were, the whole development of the universe. High though he stands in the universal hierarchy, a human being, when he becomes the target of scientific research, is dissected into small and even minute particles, each of which, the teeth, the stomach, the intestines, and so on, are investigated and treated separately. This is the result of the progressive differentiation of scientific knowledge, which enables us to penetrate deeper into the intricacies of human structural organisation. Without this it would be impossible to advance science. But in the course of such differentiation scientific thought tends to overlook the real and higher integrity of man, although he cannot be fully understood or treated without taking into account the whole. So there is a need for the opposite process of cognition, namely under standing of man as the highest unitary system.

Chapter 7 : Human Cultural Evolution

The rise and fall of inclusive fitness theory. For the past four decades kin selection theory has had a profound effect on the interpretation of the genetic evolution of eusociality and, by extension, of social behavior in general.

Chapter 8 Human Cultural Evolution Self-preservation, reproduction and greed are biological imperatives. They arose from millions and billions of years of biological evolution. They are as much a part of human life as any other life on earth. However, humans are not just biological creatures. We are also social creatures, the most social on earth. The ways we deal with each other, from personal to international relationships, can have as much an influence on our behavior as our instinctive reactions. But our societies and cultures did not spring like Athena, full-grown, from the forehead of Zeus. They grew and developed during millions of years of cultural evolution. And the closer our primate ancestors approached being human, the less biological evolution influenced our behavior, and the more cultural evolution took over. This does not mean that biological evolution ended. On the contrary, it remained as important as ever. It simply altered direction. The emerging human body evolved to fit its ecological niche, to survive as a living creature. The emerging human mind now evolved to fit its cultural niche, to survive as a social creature. Nevertheless, it is possible to make educated guesses. We can start with some assumptions: We have all the characteristics of biological creatures, such as genes, chromosomes, DNA and RNA, cellular structure, etc.. When presented with environmental problems such as lack of air, food or water, we die, just like other organisms. The archeological record shows alterations in human structure and behavior although often the last is an educated guess as the environment, according to geological evidence, changed. Genes guide how a body develops; bodies develop to cope with the conditions in its environmental niche; we are As Carl Sagan and Ann Druyan say in Shadows of Forgotten Ancestors, "If we want to understand ourselves by examining other beings, chimps are a good place to start. It is the last that is important to an examination of human cultural evolution, how humans became human, how we evolved from an early ape into ourselves. Chimpanzees live a comparatively relaxed life: It is the latter, the difference in how chimps and protohumans gathered food, that caused a great break between them. Leakey, Chimps and other apes eat plant foods when and where they find them. However, when meat is available, it becomes the center of attention. The other chimps gather around, "asking" for a share. Whichever chimp brings it in shares it however rhe wishes. It is probable that protohumans did the same thing with meat. It is how protohumans handled plant foods that differs from other apes. Instead of an individual foraging for rherself and eating what rhe finds on the spot, protohumans began gathering the food and bringing it back to a central area. Here they shared it among the other members of the band. Why would protohumans change the way they handled food from what is obviously a perfectly acceptable method for chimpanzees? The answer probably lies in the environment in which the protohumans found themselves. Chimpanzees inhabit tropical-zone forests where plant food is near at hand. The search or food is more for favorites than for needs. Chimps live in an environment where resources are relatively abundant. Protohumans changed their way of dealing with food. Since they did so, it must have been in adaptation to their environment to improve their ability to survive. The most logical reason for a change in the pattern of "eat what comes to hand" would be a lack of food that came to hand. That is, the protohuman must have evolved in a marginal environment, one in which food was scarce or difficult to gather. This led to a basic change in the relationships between the members and the social life of the band. This was probably an adjustment to the band living in these marginal conditions. Where resources are abundant, there is no need for cooperation. An individual can get what rhe needs on rher own. In marginal conditions, a cooperative group can do a better job than individuals in exploiting what resources there are. A division of labor also arose in that gathering of food. The males gathered the meat supply. At first they were probably scavengers, finding animals that had died or predators had killed, since they were too small, weak and harmless 2 to have much success as hunters. However, as cultural evolution continued, cooperation overcame those limitations, leading to a greater hunting ability, much as chimpanzees do today. This division of labor made sense because of the biological need to reproduce and the obligations imposed by that need. The females, being the ones with the biologically dictated responsibility of bearing and rearing the young, were

probably often burdened with them. Thus, females would find hunting difficult, since it undoubtedly involved traveling long distances and maintaining silence on a stalk, both hard to achieve with an infant along. In addition, there are dangers on a hunt, particularly for a small primate that can change from predator to prey in an instant. The female is biologically more valuable than the male: Thus, it is sensible for the females in the band to do this job, while the males do the hunting. The division of labor allowed the group to better exploit its niche see Chapter Three for a discussion of the niche. When each animal is foraging only for itself, it must personally find all its needs. However, dividing the labor in such marginal conditions allows each animal to gather what it can, rather than what it needs. If it falls short of what it personally needs, it gets the rest from the surplus others have found. Thus, males that fail in their hunt can still eat what the females have gathered. When the males succeed, all gain from the concentrated nourishment that meat provides, 4 and can save the plant food for more lean times. The division of labor led to two things. The first was the camp. Most apes are constantly on the move, following the food supply, foraging as they go. Wherever evening overtakes them, they stop for the night. With abundant resources, there is no need to scavenge everything in an area to survive: However, sharing food requires a central place to which the animals can return to do the sharing. Such a place, a camp, serves two purposes. First, it is a convenient place where all the members of the band know the others will eventually be, particularly the males who may be gone for hours or even days on their hunts. This also makes it easier to share the food found. Second, it allows the band to better exploit its range. The members of the band can radiate out from the camp in different directions every day, eventually covering the entire area. When, after a few days, the band has exhausted the area, they can move on and find a new camp. The third effect of the division of labor was each gender depending on the other for survival. Although the females could have lived exclusively on vegetation as vegetarians do today , the greater concentration of nutrition in meat would benefit both the females and their young. Although the males could have gathered plant foods to fill their nutritional needs, this would have lessened the effectiveness of the group in exploiting their niche. In addition, hunting and scavenging are not always successful. Thus, the males depended on what the females gathered, while the females and their young benefitted from what the males gathered, leading to a much closer relationship between all members of the group. The two effects of dividing food-gathering labor, the camp and the dependence of the sexes on each other beyond reproduction, were the first great steps toward modern human culture. Sharing of resources and its concomitant division of labor led to a divergence in both the biological and cultural evolution of the sexes. Moir, ; Tannen, Each of these differences arises from how the brain works, both in perception and response to that perception. These changes would include becoming more sedentary, developing a group mentality, improving their senses, and making them the major influence on socializing the young. The last is a primary difference between humans and most other creatures on earth. First, the females bearing and rearing the young would have bound them to a fairly sedentary lifestyle and made gathering plant foods their contribution. There is no need to pursue a running rice stalk or dodging carrot -- plants tend to stand still. And carrying a child would make any such pursuit difficult if not impossible, anyway. Their obligation to rear and care for the relatively immobile young would also contribute to staying sedentary. Second, the females would likely have stayed together in a group for several reasons. Plant foods are often small: As the adage says, "Many hands make light work. A group mentality would be an advantage in exploiting a marginal environment. In addition, there is safety in numbers. Predators are less likely to go undetected when there are many eyes, ears and noses at work. And even if a predator attacks, the confusion several running, screeching animals can cause could lessen its chances of success. They can help each other, act as babysitters for each other, share in the training. As mentioned above, the latter becomes more and more important as an animal increases in intelligence and social life. This in turn requires a period of training in the use of that intelligence and how to function in that society. A human needs more training than any other creature.

Chapter 8 : Women and Economics.

The timeline of human evolution outlines the major events in the development of humans species and the evolution of human's ancestors. It begins with the time of the origin of life and presents a.

Human Evolution Human evolution is the lengthy process of change by which people originated from apelike ancestors starting nearly five million years ago. The modern scientific study of human evolution is called paleoanthropology. A subfield of anthropology, this discipline searches for the roots of human physical traits, culture, and behavior. It attempts to answer questions: What makes us human? When and why did we begin to walk upright? How did our brains, language, art, music, and religion develop? By approaching these questions from a variety of directions, using information learned from other disciplines such as molecular biology , paleontology, archaeology, sociology, and biology, we continue to increase knowledge of our evolutionary origins. Most cultures throughout human history have myths, stories, and ideas about how life and culture came into existence. Although the current theory of evolution, based on the ideas of Charles Darwin , is accepted by a majority of scientists in our time, it is important to remember that many earlier ideas were recognized as well. Darwin presented evidence showing that natural species including humans have changed, or evolved, over long spans of time. He also argued that radically new forms of life develop from existing species. He noted that all organisms compete with one another for food, space, mates, and other things needed for survival and reproduction. The most successful individuals in this competition have the greatest chance of reproducing and passing these characteristics on to offspring. Over hundreds of thousands of generations, one form of life can evolve into one or more other forms. Darwin called this process natural selection. Modern science now understands that the mechanism for evolutionary change resides in genes , the basic building block of heredity. Genes determine how the body, and often the behavior, of an organism will develop over the course of its life. In recent decades, biological and social scientists have made impressive strides in understanding our complex physical and cultural origins. Their research has revealed gradual alterations in our genetic structure, as well as shifts in culture and behavior, that have transformed humankind into the planet-dominant species. Scientists estimate that our human ancestors began to diverge from the African primates between eight million and five million years ago. This figure is the result of studying the genetic makeup of humans and apes, and then calculating approximately how long it took for those differences to develop. Using similar methods of comparing genetic variation among human populations around the world, it is thought that all people living today share a common genetic ancestor. Here, fossil remains of our earliest ancestors can be found. Humankind appears to have first evolved in Africa, and the fossils of early humans, or hominids, who lived between five million and two million years ago, come entirely from Africa. Starting with the modern human skull, it is possible to trace our ancestry back millions of years. As we travel back in time, our ancestors look less and less like us and begin to resemble our closest relatives, the African apes. Because our physical and genetic characteristics are similar, evolutionary theory offers evidence that ancestral humans had a very close relationship to a group of primates, the apes. Humans, chimpanzees, gorillas, and the large apes of Africa share a common ancestor that lived between eight million and five million years ago. Humans, or hominids, belong to the scientific order named Primates, a group of more than species of animals that includes the monkeys, lemurs, and apes. Modern humans have a number of physical characteristics resembling our ape ancestry. The social systems of humans also share similarities with the African apes and other primates, such as baboons, chimpanzees, and rhesus monkeys. Chimps live, groom, feed, and hunt together and form strong family bonds. Early humankind probably had a similar lifestyle. Scientists now know that nearly 98 percent of the genes in humans and chimpanzees are identical, making chimps the closest living biological relative of humans. However, there are fundamental differences between modern humans and their primate relatives. The human brain is larger and more complex, giving humankind the ability to communicate through language, art, and symbols, to walk upright, and to develop a throat structure that makes speech possible. One of the earliest defining human traits is bipedalism, the ability to walk upright on two legs. This characteristic evolved over four million years ago. Other important human characteristics, such as a large and

complex brain, the ability to make and use tools, and the capacity for language and culture, developed more recently. Many of what we consider advanced traits, such as art, religion, and different expressions of cultural diversity, emerged during the past , years. Most paleoanthropologists today recognize ten to fifteen different groups of early humans. They do not agree, however, about how they are related or which ones simply died out along the way. Researchers also disagree about how to describe, identify, and classify these early human species, and what factors influenced the evolution and extinction of each species. Evolution of Australopithecines Nearly five million years ago in Africa, an apelike species evolved with two important traits that distinguished it from the apes. This species had small canine teeth next to the four front teeth , and it was bipedal , meaning it could walk on two legs instead of four. Scientists refer to these earliest human species as australopithecines, or australopith for short. The fossil record shows that there is not an orderly sequence leading from one form to another. Several groups lived at the same time and characteristics developed at different rates; therefore the human family tree suggests a long and complex past. Fossils from several early australopith species that lived between four million and two million years ago clearly demonstrate a variety of adaptations that mark the transition between ape to human. Prior to four million years ago, fossil remains are scarce and incomplete; where available, however, they do show a primitive combination of ape and human features. Most of the key characteristics that stand out as distinctly human are related to their bipedal stance. The australopiths had an S-shaped spine that allowed for balance when standing. The opening through which the spinal cord attached to the brain was positioned more forward, allowing for the head to be balanced over the upright spine. The pelvic bone was shorter and broader than in apes, giving the pelvis a bowl shape that supported the internal organs when standing or walking upright. The upper legs angled inward allowing the knees to support the body while standing or walking. Shorter and less flexible toes functioned as rigid levers for pushing off the ground with each step. Most early species had small canine teeth, a projecting face, and a small brain. They weighed between 22 and 37 kilograms 60 to pounds , and were 0. Males were generally larger than females. Both had curved fingers and long thumbs with a wide range of movement. The apes, in comparison, have longer, more curved, and stronger fingers that make them well adapted for hanging and swinging from branches. Apes also have short thumbs, which limits their ability to manipulate small objects. There were at least two major groups of australopithecine, one with very large teeth and heavy jaw muscles referred to as robust, and another referred to as gracile. The main difference was in the size of the jaws and teeth. Beyond that, there was no appreciable difference in body size. The evidence suggests that the large-toothed robust group ate primarily plant foods, where as the gracile group concentrated on a more diverse diet that included meat. Details known about each group are delineated below. Early Australopiths or Gracile Group Ardipithecus ramidus. Discovered in and estimated at 4. This ancient line suggests a close relationship with apes and chimps because of the enamel found on the teeth. Whether or not it walked upright is unknown. Discovered in and estimated at four million years old. Jaws were apelike but the legs were humanlike; it may have walked upright. Discovered in by Donald Johanson and known as "Lucy. Thought to walk upright and bipedal, these may have left footprints in volcanic ash in Laetoli 3. Fossils show sexual differences, and suggest that they were adept at climbing trees. First found in by Raymond Dart, this was the first known australopith. Dating from 3 to 2. Many feel this is the best candidate as ancestor to early Homo species. Later Australopiths or Robust Group Australopithecus aethiopicus. Found in , this group dates from 2. The skull, known as "the black skull," shows a possible relationship with A. This group lived over a long period of time, between 2. This skull has the most specialized features of the robust group, with a massive, wide face capable of withstanding extreme chewing forces. This group lived between 1. This group had jaws, teeth, and habitat similar to A. Evolution of Modern Humans Homo habilis. After researchers unearthed the australopithecines, the next major "missing link" to be found was Homo habilis, an early representative of modern humankind. This creature was bipedal, fully upright, and had the capacity to use forearms for handling tools and weapons. These fossil specimens show an increased brain size of cubic centimeters 37 cubic inches , and a jaw and tooth size more closely resembling modern humans. Any residual physical traits for climbing had also disappeared. Cut marks on bones suggest the use of tools to prepare meat. They probably retained some of the skeletal characteristics of the australopithecines that made them great

climbers. They may have spent considerable time in trees foraging, sleeping, and avoiding predators. They were the first of our relatives to have opposable thumbs, and the fossil skulls show physical traces of asymmetrical brain development, which is reflected in the way that stone tools were shaped. Some researchers feel that Homo habilis had a large enough brain to have the rudimentary capacity for speech that may have encouraged cooperation and sharing amongst members of a group. That our distant H. The technology of these first toolmakers existed for more than , years.

Chapter 9 : Cultural Evolution (Stanford Encyclopedia of Philosophy)

In fact, today, the evolutionary viewpoint is so broadly applied that one can speak most accurately of Total Evolutionism, as including Stellar Evolution, Molecular Evolution, Organic Evolution, and Societal (or cultural) Evolution.

As in natural evolution, the structure of a creature with a single cell is simple in comparison with the body of an animal or human being. With one form gradually evolving into another, the form of human society has undergone a similar process of change. The structure of primitive and tribal societies is very simple. A man is a chief and the few tasks are probably divided by him among the members. But with the progress of science and technology, society, too, has had a greater division of labour and the tasks are much more numerous. In the past, it was possible for a man to become a teacher of all the knowledge of his own time and become an Aristotle, an Avicenna. But now the system of education has become so elaborate that even if there were hundreds of Aristotles and Avicennas as specialists in each branch of knowledge, they would still be ignorant of many other branches which exist in the world. The consequence of this is to remove the similarity between individuals and create distinctive traits and differences, for, as man creates work, work, too, builds man, except that man creates kinds of work and work affects the number of men. Human beings in a society have different natures since each one deals with a task different from those of others and this causes a differentiation. That is why it is said that technical progress has made man a stranger to himself that is a man is built according to the nature of a task or a job, and has lost his unity with others. Human Relations Beside power and domination over nature and beside the structure and formation of human society, there are other matters related to human nature, and that is the relations of human beings with one another. Has man, parallel with his progress in technology and social structure, been able to advance in connection with human relationships? If he has, then it means true evolution and advancement. If human beings have progressed in their cooperation in comparison with those of the past, and feel a greater responsibility towards other beings, then they have evolved. Now let us see if human sentiments have made a proportionate advance has human exploitation of other beings disappeared or taken a different form and increased? Has human injury and violation to other beings been augmented? Has human transgression over the rights of others decreased with progress in technology and social structure? Some deny this progress, and claim that if the criterion of progress is welfare and happiness, then technical evolution can hardly be counted as progress. Two examples may be given in this connection: One of the things in which great progress has been made is speed, in such things ac telephone, telegraph, airplane etc. But can this be considered progress by a human standard? In one way, speed has brought some facilities to man, and in another way it has deprived him of tranquility, for, as it quickly takes a person to the destination, it also provides a quick facility for attaining a sinister design. If a man who is sound and benevolent has benefitted from speed, a wicked criminal, too, can equally employ speed for an evil purpose. That is why some people doubt whether this may be called progress. Does medical advance depict a true progress? Apparently it does, for we and our children are more secure against various diseases. But writers like Alexis Karl think that judged by a human standard, human generation has been weakened by medical progress, for, in the past, physically weak people who could not combat diseases perished and the strong remained to produce strong offspring, and at the same time the congestion of population was checked in the world. But now that medicine artificially preserves weak individuals who are condemned to death by nature, the next generation will be even weaker. A baby which is born after seven months is doomed by nature, but medicine uses all its tools and efforts to save it. What will the next generation be like? This, too, makes medical progress subject to doubt. Still another example may be given: Looking at news agencies and mass media may give a fine impression that it is very pleasant to sit at home and become easily aware of what is happening in the whole world. But as learned men of the East and West say, one should remember how much worry and anxiety is caused by the same mass media. For, it is often advisable for human beings not to know of some matters, especially of disasters, about which they can do nothing. Thus we cannot claim that evolutionary growth has taken place in the relations of human beings with one another, or even if it has, it is not proportionate to the development of tools and social organization. He is

an animal which has become human, and the question is whether his humanity is subordinate to his animalism or vice versa. So far, then, four points have been discussed: Has man of today or of yesterday put some space between himself and animality, and secured human values? Is his human evolution greater than that in the past? What part have the prophets played in historical evolution, and what will it be in future? What role has religion had and will have in future? We can estimate this role by scientific and social evidence, and realize whether man needs religion in future for his evolution or not, for, the survival of everything is subject to its need. The question whether religion will continue to survive depends on its role in the evolution of human nature and his spirituality and humanity. It is only religion that can safeguard good relationship among human beings and nothing else can take its place, as proved by the past history. The question is, then, that in future either human society will become extinct and man will attain its true destiny which is an overall evolution, namely evolution in its relation with nature, in awareness, in power, in freedom, in sentiments, in humanism etc. No other factor but religion can safeguard the greater part of human evolution in connection to his own nature.