

5

PREHISTORIC REVOLUTIONS

It is generally agreed that our species is currently undergoing a revolutionary transformation, but the nature of this transformation, and where it will lead, are topics of considerable dispute, both among scientists and among the general population. In thinking about our modern transformation, therefore, it is useful to look back and examine the history of our species. By knowing whence we have come, we may gain greater insight into where we are and where we are going.

The Human Adventure began millions of years ago, and during humanity's time on earth, we have gone through a series of dramatic changes. There have been three prehistoric revolutions comparable in scope to our modern transformation. These are: the Human Revolution, in which our ape-like ancestors transformed themselves into human beings, the Neolithic Revolution, in which our ancestors developed plant and animal domestication, and the Urban Revolution, in which our ancestors began to build cities and in which the human community became divided into rulers and ruled.

5.1. EVOLUTION AND REVOLUTION IN HUMAN DEVELOPMENT

In looking at the development of our species, we see progressive development quite clearly. But this development has not been even. Rather it is marked by what Gould and Eldredge have called "punctuated equilibria" (Eldredge 1985, Gould 1985, Gould and Eldredge 1977), with long periods of stability separated by shorter periods of rapid change. Gould and Eldredge developed the concept with reference to biological evolution, but similar periods of rapid change have characterized the evolution of human culture. These periods of rapid change in the development of our species may be called prehistoric revolutions. Before looking at these prehistoric revolutions in greater detail, some general remarks may be made.

The transition from ape to human, what Hockett and Asher (Hockett and Asher 1964) have called the Human Revolution, began between five and ten million years ago. By about 40,000 B.P. (Before Present, or more precisely, before 1950), humanity reached its present level of physical and mental capabilities. All living humans are thus equally human and equally far removed from our ape-like ancestor. There are no living peoples representative of the lower or middle paleolithic stages of human evolution. Thus, there are no primitive races or primitive peoples.

Although there has been no measurable change in our human genetic capabilities during the past 40,000 years, there have been dramatic changes in our culture, leading to dramatic changes in human life-styles and in the nature of human societies. Following V. Gordon Childe, these changes may be conceptualized as a series of "revolutions:" the Neolithic Revolution (about 10,000 B.P.) which involved the development of plant and animal domestication and the emergence of a settled village-farming way of life; the Urban Revolution (about 5,000 B.P.) which involved the development of plow agriculture, systems of class rule, and cities; and the Industrial Revolution (about 1800 A.D.), which involved the development of machine production using the energy of fossil

fuels and the emergence of a world capitalist system. These Prehistoric Revolutions, together with the kinds of societies that have emerged from them, are diagrammed in Figure 5.1.

EVOLUTION AND REVOLUTION IN HUMAN DEVELOPMENT

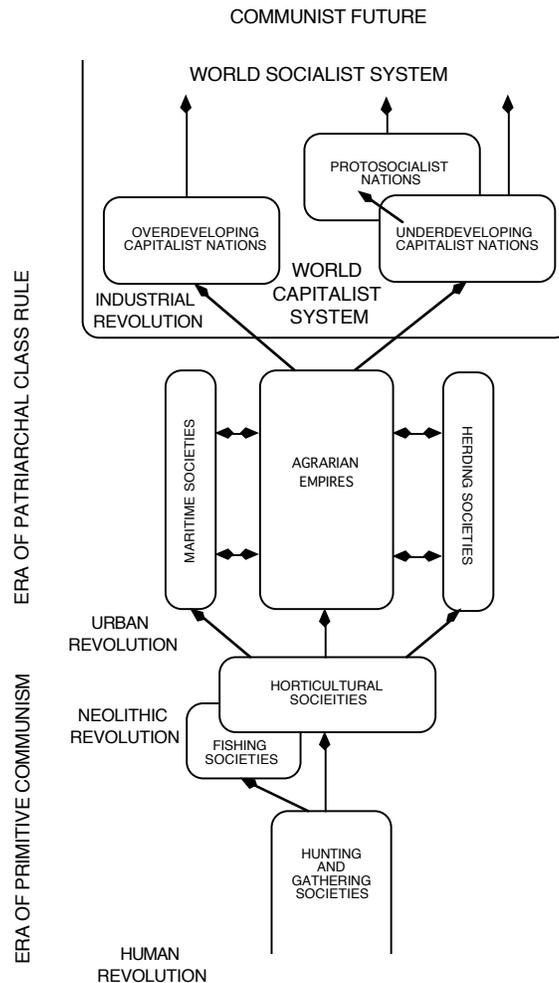


Figure 5.1. Evolution and Revolution in Human Development. This figure diagrams the various kinds of societies that have emerged from the various Prehistoric Revolutions discussed in this chapter. The modern societies that emerged from the Industrial Revolution are discussed in later chapters.

The upper levels of Figure 5.1. deals with the kinds of societies that have emerged since the Industrial Revolution. Although these are discussed more fully in our later chapters, a brief explanation at this point may be in order.

As Marx demonstrated in his chapters on the primitive accumulation of capital, the Industrial Revolution was financed by the plunder of Latin America, Africa, and Asia.

Although it occurred in Europe, the Industrial Revolution was thus a world-historical event which transformed the social structures not only of European nations but of the rest of the world as well. The result was the emergence of not one but two kinds of modern society: Overdeveloping Capitalist Nations in Europe and North America, which, on the basis of their centuries-long exploitation of the Third World, have developed the kinds of bourgeois affluence and irrationality criticized by Marxists and non-Marxists alike; and Underdeveloping Capitalist Nations, characterized by poverty, illiteracy, and backwardness, resulting from their continuing exploitation by the Euro-American nations.

The Overdeveloping Capitalist Nations and Underdeveloping Capitalist Nations are thus interdependent rather than independent and are locked into a single World Imperialist System. Since 1917, as portions of the formerly colonial or semi-colonial world have broken free from imperialism, they have embarked on independent socioeconomic development under the leadership of Communist Parties associated with the Third International. The result has been the emergence of Protosocialist Nations, a third type of modern society and harbingers of a new world system. Irrespective of how one feels about the particular policies pursued by the leaderships of the Protosocialist Nations, from the standpoint of social taxonomy they are different from either the Overdeveloping or Underdeveloping forms of capitalism, and must therefore be seen as a third form of modern society.

It may be noted that the cultures of surviving hunting and gathering and horticultural peoples can be used to reconstruct the probable life-style of prehistoric peoples after about 40,000 B.C., but only with some reservations. It must always be borne in mind that the hunters and gatherers of the upper paleolithic occupied the choicest environments and had no contact with horticultural or industrial peoples, while living hunters and gatherers and horticulturalists are usually linked into regional systems which include agriculturalists and state-level societies. Consequently, their economic and social life frequently cannot be understood except in relation to these regional systems (for further discussion of this point, see Keesing 1981:109-120). Further, all peoples studied by ethnographers have been subject to decades or centuries of Western contact which has dramatically altered the material conditions of their lives. In many cases this has led to the emergence of novel cultural complexes which must be understood as products of acculturation (or culture contact) rather than as survivals of our primitive past (Keesing 1981, Leacock 1978, Ruyle 1973b, Wolf 1982).

With this background, we may turn to the analysis of the revolutions of prehistory.

5.II. BEFORE THE HUMAN REVOLUTION

Every society has its stories about how things came to be as they are. Modern scientific explanations are fundamentally different from these origin myths which form part of every society. Most origin myths, from the Genesis of the Bible to the Kojiki of the Japanese, provide explanations to justify the existing order of things and tell people how to think and behave. Modern science has little interest in this. Instead, science attempts to understand the origin and development of the universe by studying the universe and reasoning from the data provided by the senses, not revelation or revealed authority. The creation, in other words, has left traces, from the fossils of earlier life-forms buried in the earth to the lingering radioactivity left by the Big Bang (sometimes called "the whisper of Creation," Barbieri 1985), and by studying these traces we can find out how things came to be. The result will not be God's Truth (which, in any event, we are probably no more equipped to understand than a frog is to understand Hamlet). It will, however, be something more satisfying: an approximation to reality which we can understand and improve upon. It will not tell us the Meaning of Existence, but will

provide us with the raw material from which we can construct our own meaning for the mystery of our existence.

This scientific enterprise has certain characteristics. It is a collective enterprise in which we can all share, more or less equally, but it does not seek to impose its views on anyone. This makes it fundamentally different from the theological views, which not only claim absolute truth but also seek to impose their truth on everyone. The Inquisition of the Catholic Church burnt Giordano Bruno at the stake in 1600 for defying authority by speaking of "infinite worlds in the Universe inhabited by intelligent beings" (Barbieri 1985:48). The point is not that Bruno was undoubtedly right and the Church wrong, although with 100,000 million stars in our galaxy and 10,000 million galaxies in the Universe, it is difficult to think that Bruno was not right. The point is that the scientific community neither possesses nor desires to possess the kinds of sanctions employed by the Church to enforce its authority. The scientific community, of course, does not lack authority; its authority comes from its ability to provide better explanations of reality, not from sanctions external to the process of the search for truth.

For the big questions about the creation of the universe, of life, and of the mind, there is considerable information and fairly general agreement among scientists. The universe was created about 15 billion years ago in the Big Bang; life on earth began about 3.6 billion years ago; the mind and consciousness began with the Human Revolution about 5 million years ago. This book, of course, is concerned only with the last of these, the origin, development, and consequences of human consciousness, our Human Adventure. To understand human life fully, however, it is necessary to consider the development of life itself.

5.II.1. The Development of Life

According to the present state of scientific knowledge, there were four main steps in the history of life: the origin of the cell, the origin of natural cycles, the origin of the nucleated cell, and the origin of multicellular life (Barbieri 1985). We may consider each of these.

About 3.6 billion years ago, the first living cells emerged from the "primordial soup" of organic compounds that existed in the early oceans. These first cells were anaerobes—that is, they lived without oxygen—since our oxygen atmosphere had not yet been created. They were also heterotrophs, in that they "ate" organic compounds already existing, rather than creating organic matter from inorganic matter, as do autotrophs. Finally, they were probably fermenters, in that they obtained their energy through the process of fermentation, rather than photosynthesis or respirations, processes which only developed half a billion years later, with the development of natural cycles.

These natural cycles link the three types of living creatures which have characterized all subsequent evolution: producers, reducers, and consumers. Producers harness solar energy through photosynthesis and make organic molecules from inorganic ones. Reducers are decomposers that obtain energy by dismantling organic matter and returning it to the inorganic world. Consumers have an intermediate role, feeding on organic matter, as do reducers, but the result is still organic and must be further processed by the reducers in order to be recycled. In principle, the consumers are superfluous, since life could continue without them (Barbieri 1985:34).

By about three billion years ago, then, the characteristics of all subsequent ecosystems were present, with a flow of energy and a cycling of matter, through producers, consumers, and reducers. In modern ecosystems, since the emergence of multicellular organisms, these functions are filled by plants, animals, and fungi. The earliest ecosystems, by contrast, were made up of bacteria-like creatures in an environment without oxygen.

Our modern oxygen atmosphere is a product of bluebacteria, tiny micro-organisms which release free oxygen as a by-product of photosynthesis. Bluebacteria appear about

2.6 billion years ago, and it took about a billion years to transform the atmosphere. This "oxygen revolution" transformed the conditions of life on earth, and the old anaerobic system of producers, consumers, and reducers was replaced with an aerobic system, dependent upon oxygen.

At the same time, about 1.6 billion years ago, a revolutionary development in cellular engineering was taking place: the emergence of nucleated cells. Single celled organisms, known as protista, differentiated into producers, consumers, and reducers, and were the dominant forms of life for another billion years. The nucleated cell, of course, forms the basis for all further development of life.

Multicellular organisms appear perhaps as early as a billion years ago, and about 600 million years ago, during the Cambrian era, there was a virtual explosion of new life-forms. All of the animal phyla appear rather suddenly (in terms of geological time, about 100 million years) in the fossil record about this time, no new phyla have appeared since and none have become extinct.

All of these developments occurred in the oceans; the land was barren throughout all of these developments and would remain so for another few hundred million years. Further, none of these developments would have been visible to the naked eye. These were microscopic organisms in the seas and in the slime at the bottom of the ocean. But from the slime, blobs emerged. These blobs, which would be very unimpressive were we to see them today, contained the basic organizational formats for all subsequent life.

The period of the development multicellular life is usually divided into the Paleozoic, Mesozoic, and Cenozoic, and each of these eras is further divided into epochs. The Paleozoic, which lasted from 600 to 225 million years ago, saw the development of marine invertebrates, fish, and, as plants and animals began to invade the land about 400 million years ago, amphibians. The Mesozoic, which lasted from 225 to 65 million years ago, is often known as the Age of Reptiles, for the dinosaurs are the most striking fossils from this period. The earliest mammals and birds appear in the Mesozoic. Finally, the Cenozoic, which lasted from 65 million years ago to the present, is known as the Age of Mammals (but could equally well be called the Age of Insects, Birds, or Flowering Plants).

In looking at the history of multicellular life two features stand out. First, there has been a progressive development of more highly evolved forms. Second, this development has been uneven, with rapid changes followed by long periods of stability (Barbieri 1985:21). This unevenness can be seen, on the one hand, in the fairly rapid (in terms of geological time) development of all the animal phyla in the Cambrian and in the even more rapid diversification of mammals into the major mammalian orders at the beginning of the Cenozoic, after the extinction of the dinosaurs. On the other hand, there have been major catastrophic extinctions, at the end of the Devonian, Permian, Triassic, and Cretaceous periods. The extinction of the dinosaurs at the end of the Cretaceous is perhaps the best known, but the worst was the Permian extinction at the end of the Paleozoic, when up to 96% of all species were destroyed, leaving as few as two thousand forms to propagate life (Barbieri 1985:20).

5.II.2. Development of Mammalian Life and the Primates

The apes which form the baseline for the Human Revolution, then, were already the heirs of a long developmental process leading back to the earliest life-forms over three billion years ago. Out of the primordial soup, we developed through a bacteria-like phase, an amoeba-like phase, and into blobs. The blobs from which we evolved were already, 600 million years ago, organized with an internal skeleton and a central nervous system. From such blobs developed the first vertebrates, the fish. Amphibians evolved from fish, and reptiles evolved from amphibians. Finally, about 200 million years ago, the first mammals evolved from reptiles. About 65 million years ago, after the extinction of the dinosaurs, mammals began to diversify into the modern mammalian orders.

These early mammals had a number of features which gave them advantages in the struggle for survival. First of all, they were warm-blooded creatures, able to maintain a constant body temperature. This meant that they were less at the mercy of the environment than our cold-blooded reptilian ancestors. This feature, known as homeothermy, is shared by birds (some paleontologists believe that dinosaurs, unlike other reptiles, were also warm-blooded). Birds developed feathers to help maintain their constant body temperature, we mammals developed fur. Homeothermy requires considerable metabolic energy, but the advantages, in terms of freedom from environmental conditions, are well worth the energetic costs.

Second, in contrast to all other vertebrates that lay eggs, mammals (except for some primitive forms such as the duck-billed platypus) reproduce by giving birth to living young and providing nourishment from the mother's breast. Again, this is costly in that considerable energy is invested in each offspring, but this is offset by the increase in reproductive efficiency. Mammals typically have a half-dozen or fewer offspring per birth and a high proportion of these live to maturity. Fish and frogs, by contrast, may lay hundreds or thousands of eggs, but only a small percentage survive.

Third, mammals developed a specialized, heterodont dentition with different kinds of teeth with different shapes and functions. In contrast to the homodont dentition of reptiles, in which all teeth are about the same, the primitive mammals developed incisors for cutting, canines for grasping and piercing, and premolars and molars for crushing and grinding. This was important since it enabled mammals to harness more effectively the energy resources of the environment. By processing food while eating, crushing the hard skeletons of insects and the shells of nuts and seeds, mammals were able to extract the full food value of these resources, again in contrast to reptiles which usually swallow their prey whole.

Each of these general mammalian characteristics, it may be noted, have been further developed by human culture. Our homeothermy is maintained by clothing and houses. Our children continued to be cared for, trained, and educated long after mother's milk ends. Our food is extensively processed by cleaning, cutting, and cooking before we eat it.

At the beginning of the Cenozoic, with the extinction of the dinosaurs and spread of flowering plants, there was a mammalian "explosion," and mammals began to diversify. Each of the various mammalian orders developed distinctive characteristics in adaptation to particular ways of life. Thus, whales and dolphins developed fins in adaptation to an aquatic way of life. Cats and dogs developed claws and fangs in adaptation to an predatory way of life. Antelope and zebra developed hoofs in adaptation to life on the plains.

The order from which we evolved, the primates, developed distinctive characteristics in adaptation to an arboreal way of life, eating leaves and fruit and preying upon small insects (Cartmill 1974). These characteristics include: 1. prehensile hands and feet, clearly advantageous for moving about in the trees; 2. stereoscopic and color vision, again clearly advantageous for arboreal life; 3. reduction in the sense of smell, which is less useful for arboreal life; 4. well developed brains, necessary to process information obtained by the eyes and to coordinate the movement of hands and feet with this visual information; 5. a distinctive reproductive strategy marked by prolongation of gestation and infancy and a small number of offspring per birth, related on the one hand to the length of time necessary for development of the brain and on the other hand to an arboreal habitat in which parents must carry infants; 6. complexity of social behavior, related to the prolonged mother-child relationship and the intensive care given each offspring but also providing the social environment necessary for this relationship; and 7. dependence on social learning.

These primate characteristics constitute an adaptive complex well suited to life in the trees. As Harris notes,

The arboreal environment, with its wind-blown, rain-splattered, and light-dappled foliage, requires complex monitoring and interpretation. The exploratory maneuvers of the forelimbs and digits and their capacity for bringing objects close to the eyes for inspection also need elaborate neural circuits. But most demanding of all is the high level of social interaction. It is no accident that the primates are among the "brainiest" as well as the most social of the mammals. The prolonged dependency of the primate infant, the large amount of auditory, visual, and tactile information passed between mother and offspring, the intense play among juveniles, and the mutual grooming among adults all presuppose a heightened ability to acquire, store, and recall information. It is also no coincidence that human beings, the brainiest of the primates, are also the most social of the primates. (Harris 1980:23)

These primate characteristics form the essential base from which human beings developed. They are not accidental, but are rather adaptations to a distinctive set of material conditions, produced by millions of years of natural selection. The millions of years that our monkey-like ancestors lived in the trees, then, left their heritage of well developed brains, agile hands, sharp vision, highly developed social life and social learning. These features form the essential precondition for the later phases of human evolution.

The next phase in pre-human evolution was an ape, or pongid, phase. The differences between monkeys and apes are well described by Campbell:

When the principal differences between apes and monkeys are spelled out, the humanlike nature of apes is unmistakable. Many species of monkeys are built to go on all fours and do so most of the time. Apes, by contrast, tend to upright. This does not mean that they always walk around on their hind legs as people do, but simply that they can do this and sometimes do do it. More important, they normally maintain their trunk semierect except when moving quadrupedally, or on all fours, when they are on the ground. Associated with this upright posture, an ape has much more flexible arms and shoulders for hand-over-hand swinging and climbing, and its arms and fingers are longer; the arrangement and proportions of its limb muscles are also different. Its spinal column is shorter and less flexible; its pelvis is broader; it has no tail; its head is better balanced on the spinal column, rather than being thrust forward like a monkey's, and its brain is larger and more complex.

The main characteristics of apes are related to their feeding habits and their size. Most of the food in trees is found among the small branches and twigs at the end of the main limbs, and one of the problems encountered by any primate feeding here is that the branches are too small and frail to bear the weight of any but the smallest animal. But for other reasons it pays to be big: large size gives protection from predators such as eagles and hawks, and a bigger body may mean a bigger brain, to name just two rather obvious advantages. In consequence of this, a new locomotor behavior that was impractical for small prosimians appears among some monkeys and among all apes: they spread their weight through their four limbs and support themselves, not upon a single branch in quadrupedal fashion, but on a number of branches, hanging by their arms from branches above their heads as well as placing their feet on the branches below them. This adaptation has enabled some of the larger monkeys and all the apes to move more freely among smaller branches, and at the same time to increase their size through evolution. (Campbell 1982:105)

It is difficult to pinpoint exactly when these pongid adaptations first appeared, since most of the fossil material consists of teeth, with some jaws and cranial material. Very little post-cranial skeletal material has been found, so that it is nearly impossible to reconstruct the bodily features of early primates. Clearly pongid dental and cranial fossil have been found from the Miocene epoch (25 to 5 million years ago), and it seems reasonable to believe that the basic ape adaptation was present at this time.

It is important to understand that these pongid adaptations provide a predisposition toward labor activities among apes which is lacking among monkeys and other primates. The ability to stand on two legs opens the possibility of using one's forelimbs for other purposes.

By the latter part of the Miocene, then, we may assume that the common ancestor between chimpanzees and humans was living on the forest floor with a behavioral way of life similar to that of modern chimpanzees - living in troops of 10 to 20 individuals, browsing on leaves, shoots, flowers, seeds, and pods, and occasionally engaging in tool using and tool making behavior and occasionally engaging in predation. Thus, our kinship with apes and other primates is important, since we share a number of characteristics with monkeys and apes as a result of our common ancestry. Our examination of these characteristics has shown how particular phases of pre-human evolution laid the groundwork for the Human Revolution.

5.II.3. The Place of Humanity in Nature

Biologists usually classify ourselves as *Homo sapiens*, the sole living representative of the Family: Hominidae (which includes fossil humans but not apes). We are also:

Superfamily: Hominoidea (which includes all apes but not monkeys);

Infraorder: Catarrhini (which includes monkeys from the Old World but not the platyrrhini monkeys from the New World);

Suborder: Anthroidea (which includes all monkeys but not the prosimians such as lemurs and tarsiers);

Order: Primates (includes all monkeys, apes, and prosimians, but not carnivores, whales, bats, etc.);

Infraclass: Eutheria (includes all placental mammals but not kangaroos or duck-billed platypi);

Class: Mammalia (includes all of the above, but not birds, reptiles, frogs or fish);

Phylum: Chordata (includes all of the above, but not insects, molluscs, or jellyfish);

Kingdom: Animalia (includes all of the above, but not plants, fungi, single celled protista, or bacteria.

Although this classification makes sense from a purely biological point of view, from an anthropological perspective it does not. Humans can be classified as animals only by ignoring our most distinctive characteristic, our conscious minds. If we see the origin of mind as an event equal in importance to the origin of life itself, or at least multicellular life, then it makes sense to place our species in our own Kingdom: Humanity. Our very close biological relationship to living apes is less significant than the very real gulf that separates us from the apes and all other living things. There are, of course, numerous problems in any biological classification, but biologists usually classify living things into four or five Kingdoms (Cain 1983). I suggest, however, that a six-Kingdom classification is most useful, as follows:

Kingdom: Bacteria (non-nucleated cellular organisms)

Kingdom: Protista (single celled organisms, with nucleated cells)

Kingdom: Plants (producer organisms that practice photosynthesis)

Kingdom: Fungi (multicellular reducer organisms)

Kingdom: Animals (consumer multicellular organisms)

Kingdom: Humanity (human beings with conscious minds)

Humanity is thus part of nature, but a very important part. Our consciousness is having an impact on the rest of nature comparable to that of the bluebacteria which created our oxygen atmosphere. We do not know what Life will be like in another million years. It is clear, however, that the further development of Life will depend upon what we human beings do, for we humans have the ability to radically alter the conditions of existence for all other life-forms. We are altering the atmosphere through our burning of fossil fuels and cutting down the tropical rain forests; we are altering the oceans through pollution and overfishing. If we have a nuclear war and a nuclear winter, this may not be the end of life, but it would at least be comparable to the major extinctions of the Mesozoic and Permian.

5.II.4. The Evidence for Human Evolution

Before looking at the phases of the Human Revolution in more detail, it may be useful to review the kinds of data upon which our knowledge of this process is based.

First of all, there is the evidence of comparative morphology. Already in Darwin's time, the similarities between apes and humans in terms of skeletal structure and musculature were well established. From the perspective of gross morphology, humans and apes are quite similar, much more so than either is to any other primate or mammal.

Secondly, and most importantly, there is the fossil record linking modern humans with ape-like ancestors. This is almost entirely a product of post-Darwinian (and hence, post-Marxian) research. Neanderthals were first discovered in 1856, but Neanderthal was already a highly developed hominid. It was not until 1890 that *Pithecanthropus erectus* (the so-called Java ape-man) was discovered; and *Australopithecines* were not discovered until the 1920's. The significance of the *Australopithecines* was not generally appreciated until the 1960s, when the spectacular fossil finds began to be made in East Africa. The fossil evidence available at present is far more complete than anything which could have been imagined in Darwin's time. Even so, as one researcher remarked, attempting to understand human evolution on the basis of available fossil material is like trying to reconstruct Tolstoy's *War and Peace* on the basis of thirteen randomly selected pages.

Third, there is evidence from the study of the behavior of primates, both in the laboratory and in the field. Observation of primates in controlled and experimental situations began in the 1930s with Carpenter and are continuing at present with the Gardiners and Washoe and are revealing much about the problem solving abilities and communication skills of chimps. Serious field studies did not begin until the 1960s, with Washburn and DeVore studies of baboons and Jane Goodall's study of chimps.

Finally, there is the serological evidence. Studies of the biochemistry of the blood of primates and other mammals can reveal not only degrees of relationship between different species and genera, but also the approximate age at which different species separated from one another. This evidence indicates that humans and chimps are very closely related and shared a common ancestor approximately 5 million years ago.

It is worth stressing once more that most of the evidence on human evolution has accumulated since the time of Darwin, Marx, and Engels; indeed, it is only within the past two or three decades that our understanding of human origins has been placed on a firm scientific basis.

The fossil evidence, together with the evidence from comparative morphology and serology, provides a fairly secure time framework for reconstructing the probable course of human evolution. This framework may be supplemented by the evidence of primate behavior using the comparative method. In general it seems reasonable to assume that our ape-like ancestor had behavioral characteristics similar to those of living apes, especially chimpanzees, and that our earlier monkey-like ancestor had behavioral characteristics similar to those of living monkeys. Thus, since chimps make and use tools, we may assume that our ape-like ancestor also made and used tools; since monkeys have protocultural traditions, we may assume that our ancestors also had protocultural traditions.

There is thus impressive scientific evidence supporting the modern view that humans evolved from an ape-like ancestor. The view of fundamentalist creationists finds little support among those who have dispassionately reviewed this evidence. There is also impressive evidence supporting the cultural evolution of humanity from simple societies to complex civilizations. The views of those who would seek an extraterrestrial origin for civilization (such as Von Daniken) are equally untenable (for a review of the evidence, see Olien 1978).

5.III. THE HUMAN REVOLUTION

Since the time of Darwin, bourgeois science has generally accepted that we are evolved from ape-like ancestors. The fossil evidence for human evolution, however, was almost entirely discovered in the twentieth century and really understood only within the last two or three decades. The use of molecular biology to trace the genetic relationships between humans and other primates is even more recent, only having started in the late 1960s. The modern understanding of human origins may be briefly summarized (for fuller documentation, see Campbell 1982, Poirier 1974, Wolpoff 1980).

Current scientific evidence indicates fairly clearly that humanity separated from our closest relatives, the chimpanzees, between five and ten million years ago. The earliest hominids, the australopithecines, with ape-sized brains but essentially human bodies capable of bipedalism, appear in the fossil record about 4 million years ago. Stone tools appear by about two million years ago, followed by the appearance of larger brained hominids, known as *Homo habilis* and *Homo erectus*. From that time on, there is a clear progressive development of stone tools and increasing brain size, until the appearance of modern *Homo sapiens* about 40,000 years ago. No significant genetic change in our human capabilities has occurred since, and all contemporary human populations are equally human. Within this general framework, there are, of course, areas of disagreement, especially concerning the precise relationship between the various australopithecine and early *Homo* fossils (for discussions of some of these views, see Boaz 1983, Skelton, McHenry, and Drawhorn 1986) for more critical views, see Clark 1988, Schwartz 1987).

Although bourgeois science is providing an increasingly clear picture of what happened in human evolution, bourgeois ideology is continuing to confuse the question of why it happened. Orthodox explanations of human origins run along two lines.

The first stresses the role of mentalistic phenomena, such as reason, conceptual thought, language, and symbols, in separating man from beast (leaving open the question of where to place woman). The second stresses the beast in man, and projects the institutions of capitalist patriarchy back to the very origins of our species, giving us theories of "Man, the Hunter," who is both a "killer ape" (Ardrey 1961) and a "family ape" tricked into exchanging meat for sex by the wily genes of women (Lovejoy 1981).

Considerations of space prevent any serious discussion of these views here. Marxists should not have to be reminded, however, that the question of the origin of our species is as much a political as an academic issue. Our views on the origin of humanity both reflect and reinforce our views on human nature and on such social questions as aggression, territoriality, war, private property, the family, and gender relations. Marxists, accordingly, need to view the evidence on human origins from the perspective of historical materialism.

As human beings, we differ from our primate relatives in both our bodies and our heads. Our bodies are unique in that we habitually walk on two legs, thereby freeing our hands. A complex set of adaptations in our feet, legs, pelvic girdles, spines, and skulls are all related to our bipedalism.

We are also unique in our heads, in the size and complexity of our brains and in what we do with our brains, namely engage in symbolic thought and communication. Although one may cite examples of behavior that may be called "symbolic" among some other species, especially chimps, such behavior is no more like human symbolizing than the hopping of kangaroos is like the flight of birds. Only human beings engage in massive and continuous symbolic thought, to the extent that we may properly be said to live in a symbolic world of our own creation, just as birds continuously soar and live in the air (Fried 1967:5-7,48, Langer 1942).

As intellectuals in bourgeois society, we naturally tend to believe that this mentalistic characteristic is *the* distinctive feature of our species. The problem with such a view, however, is that it provides no explanation of the transition from the thought processes of

apes to the thought processes of human beings. The solution to this problem lies in recognition of a third distinctive feature of our species, our dependence on social labor.

This was recognized by Marx and Engels in *The German Ideology* over a decade before Darwin published *Origin of Species*:

Men can be distinguished from animals by consciousness, by religion or anything else you like. They themselves begin to distinguish themselves from animals as soon as they begin to produce their means of subsistence. (Marx and Engels 1846:7)

Engels amplified this view in the light of the then-existing scientific evidence in his 1876 essay, "On the Part Played by Labor in the Transition from Ape to Man,"

First labor, after it and then with it, speech—these were the two most essential stimuli under the influence of which the brain of the ape gradually changed into that of man. (Engels 1876:255)

Although many of the details in Engels' essay need to be modified, the evidence accumulated during the past century, and especially since WWII, have confirmed the broad outlines of Engels' labor theory of human origins (Fleur-Lobban 1979, Reed 1963, Ruyle 1976, Woolfson 1982).

All human beings are absolutely dependent upon the use values produced by social labor. Our food, clothing, houses, and word processors are all produced by human labor, and, importantly, by other people's labor. Even if, as Marx points out, human life is reduced to a mere stick, there is still the necessity of producing that stick. It is this dependence on social labor that is the distinctive feature of our species, from which the others, our bipedalism and our mental capabilities, are derived.

The fossil record indicates clearly that our bodies became human before our heads. The australopithecines were bipedal millions of years before there was any significant increase in brain size. Bipedalism, however, didn't just happen. Bipedalism involves major structural changes in the feet, legs, pelvic girdle, spine, and skull which are disadvantageous in terms of structural strength, speed of locomotion, and childbearing. The only advantage of bipedalism sufficient to overcome its maladaptive qualities is that bipedalism frees the hands for labor activities. Bourgeois anthropologists, of course, do not pose their explanations of bipedalism in quite these terms. The explanations they do suggest, however, such as tool use and the transport and sharing of food, all involve aspects of the labor process (Kurland and Beckerman 1985).

The fully elaborated labor process, including use of tools and social relations of production (cooperation, sharing) occurs only among humans. Approximations to the labor process that we see in other species, from the webs of spiders and hives of bees to the group hunting of social carnivores and the nest-building and tool-making of chimps, may be called protolabor (for fuller discussion of this distinction, see Ruyle 1976).

Our closest animal relatives, the chimps, exhibit several sorts of protolabor in their life processes: nest-building, tool-making, group hunting, and sharing of meat. But, although the total life process of chimps appears to include all of the aspects of the fully elaborated human labor process, they are not all included in any single process among chimps. Chimp tool-making is an individual activity; chimp hunting occurs without tools. Further, and most importantly, protolabor among chimps is an incidental part of their total life process. Chimps, like people, must eat, but most of their food comes from their own individual efforts. Food obtained through protolabor accounts for only a small portion of their total caloric intake. Consequently, the protolabor of chimps does not generate significant selective pressures on the gene pool of the chimp population.

Among humans, by contrast, the situation is quite different. Nearly all the food eaten by humans, in even the simplest hunting and gathering societies, is produced by social labor and shared according to socially established rules. This dependence on social production generates powerful selective pressures which have transformed our ape-like ancestors into human beings.

There are thus clear differences in the life processes of apes and humans. Among apes, typically, there is direct, individual appropriation of naturally-occurring use values. Apes simply browse, eating food where they find it. All humans, by contrast, from the simplest hunting and gathering society to the most complex industrial civilization, consume use values which have been produced by social labor. This difference is absolute. All human societies are dependent upon a definite mode of production. None of the non-human primates exhibit anything more than the most rudimentary productive processes.

The Human Revolution, then, was initiated when apes began to produce their means of subsistence. This in turn produced *Homo faber*, a small-brained human whose body was already adapted to social labor in a rudimentary hunting and gathering mode of production.

The term, *Homo faber*, is of Marxian origin (McMurtry 1978:25) and would not be recognized by bourgeois paleoanthropologists. This proposed taxon includes the various "species" of *Australopithecus* (*afarensis*, *africanus*, *robustus*, and *boisei*) and pre-sapiens *Homo* (*habilis* and *erectus*). Paleoanthropologists do not agree on the taxonomy of early hominids (for discussion of the major contending views, see Boaz 1983, Skelton, McHenry, and Drawhorn 1986). It is beyond the scope of this paper to enter into an extended critique of bourgeois paleoanthropology, but as Engels pointed out, scientists continue to be influenced by

that idealistic world outlook which, especially since the fall of the world of antiquity, has dominated men's minds. It still rules them to such a degree that even the most materialistic natural scientists of the Darwinian school are still unable to form any clear idea of the origin of man, because under this ideological influence they do not recognize the part that has been played by labor. (Engels 1876:259)

The processes at work in the emergence of *Homo faber* may be briefly summarized (for a fuller discussion, see Tooby and DeVore 1987).

About ten million years ago, in Africa and probably throughout the Old World tropics, there were populations of apes that were within the range of variation of contemporary great apes (chimpanzees, gorillas, orangutans), both morphologically and behaviorally. These apes were probably adapted to a semi-terrestrial life on the forest floor characterized by a largely vegetarian diet, social life in troops of 10 to 20 individuals, dependence on trees for nesting, and a certain degree of tool use (nest making, use of sticks and stones for defense and other purposes). Between five and ten million years ago, some of these ape populations began to engage in systematic labor processes. Precisely why this occurred is not clear, but it is very likely related to moving from the forest into a more open environment. This shift required changes in their behavioral way of life—greater social cooperation and increased use of tools, in short, dependence on social production.

Dependence on social labor meant, first of all, that the hands must be free to serve as organs of labor rather than of locomotion. Hence, selective pressures favored bipedalism: the human foot became a specialized organ of locomotion and the hand a specialized organ of labor.

The Human Revolution was thus accomplished by apes who transformed their browsing existence into a definite mode of production, hunting and gathering, and thereby transformed themselves into the earliest humans, *Homo faber*. As *Homo faber* developed their forces of social production, so too did they evolve toward *Homo sapiens*. The earliest instruments of production were crude sticks for digging and hunting and containers for carrying seeds and roots. Stone tools appear about two million years ago with larger-brained humans, and fire somewhat later. Increasingly complex stone tools are found with increasingly large-brained fossils. Finally, with what Gilman (1984) calls the "Upper Paleolithic Revolution," modern *Homo sapiens* appear with elaborate tool kits and fully human cultural complexes. The archaeological and paleontological record

thus provides clear evidence of the dialectical relationship between the developing forces of social production and increasing brain size.

Just as the labor energy expended by modern wage slaves becomes embodied in commodities, so the labor energy that *Homo faber* expended in producing use values (meat, fruit, nuts, roots, etc.) became embodied in those use values. And in consuming those use values, *Homo faber* was consuming a definite amount of labor energy, their own and that of other members of the group who also participate in production. The energy expended in production, and embodied in use values, thus flows from producer to consumer. The ensemble of reciprocal energy flows in the *Homo faber* commune, in which all members were equally both producers and consumers, thus formed the essential energetic substratum of *Homo faber* existence, just as it has for all subsequent human existence.

We do not know when our human mental capabilities for language and religion first appeared, since they leave few traces in the archaeological and paleontological record. It seems clear, however, that these mental abilities are also related to our human dependence on labor. Dependence on social labor required a more powerful system of communication, and thereby favored the development of language. First labor, and then alongside with it, language, created additional selective pressures favoring greater mental abilities and hence, larger brains. These improved mental abilities in turn permitted the development of more powerful productive systems and more powerful communication systems which in turn demanded still greater mental abilities. Finally, magico-religious belief systems emerged on the base developed by labor and language (Ruyle 1976).

As a mode of production, hunting and gathering involves making and using tools for hunting animals and gathering vegetable food, transporting this food to a home base, and sharing the product of this labor. This is by no means a crude or parasitic way of life, as is sometimes supposed. In fact, hunting and gathering requires extensive knowledge of the environment and natural process and demanding skills. The abilities required to make and use bows and arrows are the same as those required to make and operate spaceships. Further, hunting and gathering requires a high degree of cooperation and sharing between the men and women of society. Our human abilities, both technological and social, were formed during millions of years of adaptation to the hunting and gathering mode of production which was technologically progressive for most of human existence.

Hunting and gathering formed the base for a primitive communist social order marked equal obligation to labor and equal sharing of the products of labor (for discussion of the dynamics of hunting and gathering society, see Leacock and Lee 1982). Bourgeois anthropology has come to acknowledge that our ancestors were apes but it refuses to consider that they were communists. But communists they were, and it is important for us to bear in mind that not only our physical bodies, but our mental abilities and moral sensibilities were formed through millions of years of adaptation to a communist social order.

Just as the instruments of class oppression were absent from hunting and gathering society, so too was gender oppression undeveloped. Although the absence of class oppression among foragers is clear, the question of gender oppression is more complex. Leacock has presented abundant ethnographic documentation for her egalitarian model of gender roles in foraging societies, and suggested that evidence to the contrary is best explained as due either to acculturation or viricentrism among ethnographers, or both (Leacock 1972, 1975, 1977, 1978). But others suggest that women are universally subordinate, in some degree, in all societies, including foraging societies (De Beauvoir 1949, Firestone 1971, Gough 1975, Harris 1974, Ortner 1974, Rosaldo 1974). Even those who take this latter view, however, acknowledge that women's oppression is less among foragers than in class society. Gough, for example, stresses that:

In general in hunting societies, however, women are less subordinated in certain crucial respects than they are in most, if not all, of the archaic states, or even in some capitalist nations. These respects include men's ability to deny women their sexuality or force it upon them; to command or exploit their produce; to control or rob them of their children; to confine them physically and prevent their movement; to use them as objects in male transaction; to cramp their creativeness; or to withhold from them large segments of the society's knowledge and cultural attainments. (Gough 1975:69-70, see also Briffault 1931:207-208, Fleur-Lobban 1979:347)

To the best of my knowledge, no one has suggested that patriarchal institutions comparable to those of historic civilizations existed in foraging societies, although male chauvinism does characterize some village societies (such as the Yanomamo). Rather, gender roles among foragers are characterized by free and equal access to strategic resources and the social product by "the complementarity and interdependence of male and female roles" (Caufield 1985:97).

By about 40,000 years ago, then, the Human Revolution was complete. Our ancestors had made the transition from an ape way of life in the forest to a highly developed hunting and gathering mode of production. Further transitions, the Neolithic, Urban, and Industrial Revolutions, have changed our modes of production and consequently our life-styles and the kinds of societies we live in, but they have not altered our basic human nature.

Thus, the paleontological record confirms Marx and Engels' insight that people make themselves—the evolution of humanity was a process of self-creation through social production. The labor theory here is in conformity with, confirms, and extends the basic postulate of historical materialism, that the mode of production in real life determines the consciousness of humans, rather than vice-versa. Human consciousness itself was created by our dependence on social production.

All living humans are equally far removed from our ape-like ancestors and are equally human. There are no "primitive" races, and no "primitive" languages, family patterns, or religions. The technology of hunting and gathering peoples may be less powerful than ours, but it endured and served humanity well for millions of years, which is more than we can say for our system of industrial capitalism.

Humanity, then, evolved under conditions of liberty, equality, and solidarity in the hunting and gathering commune. These conditions were transformed into male chauvinism and oppression in the Neolithic and Urban Revolutions.

5.IV. THE NEOLITHIC REVOLUTION

By about 15,000 years ago, hunting and gathering was no longer meeting the needs of humanity. The precise reasons for this are not entirely clear, but the most plausible explanation lies in what Cohen calls the "food crisis of prehistory." (Cohen 1977) Population growth throughout the paleolithic, Cohen argues, was slow but real, and humanity had expanded throughout the habitable earth, into the Americas and Australia as well as the Afro-Euro-Asiatic land mass. The nomadic hunting and gathering of the paleolithic evolved into a more sedentary hunting and gathering of the mesolithic. Flannery (1969, 1974) calls this the "Broad Spectrum Revolution" because humans began utilizing a broader range of environmental resources. Human populations began more intensive utilization of local environments including maritime and riverine resources such as fish, marine mammals, and shellfish. Such mesolithic hunting and gathering permitted larger populations which settled into mesolithic villages. But although fishing and shellfishing temporarily solved the food crisis, population was still limited. Fishing societies utilized a new food resource, but they did not control the reproduction of that resource.

Other populations began utilizing wild grains (in Southwest Asia and Mesoamerica) and root plants (in Southeast Asia). It was out of these new relationships between the

human population and natural biota that the Neolithic Revolution emerged. Human populations began to control the reproduction of the wild foods upon which they depended, and through this process, the wild foods became domesticated. A new mode of production emerged, horticulture, which was capable of almost unlimited expansion. This Neolithic Revolution occurred, more or less independently, in three widely separated areas: Southwest Asia and North Africa, Southeast Asia, and Mesoamerica and Peru. Although most archaeologists believe that plant domestication developed in the New World completely independently of the Old, a few criticize this view and present challenging arguments for diffusion from the Old World (see Carter 1977, Lathrap 1977). Further, although it seems reasonable that horticulture arose from the gathering activities of women, there is little ethnographic or archaeological support for this view (Pryor 1986:886-888).

The horticultural mode of production was to have revolutionary consequences. It did not, as far as we can tell, reduce human toil, for this was not particularly onerous under a hunting and gathering mode of production (Sahlins 1968). Neither did it contribute to the biological well being of members of the human population, for there is no evidence to suggest that people were healthier or lived longer. Nor is there any reason to believe that it increased human happiness or the fulfillment of the human potential, for hunters and gatherers are as fully human as horticultural peoples. Indeed, there are indications that the human condition has worsened since our ancestors adopted agriculture, and it has been suggested that the invention of agriculture was the "worst mistake in the history of the human race" (Diamond 1987).

The advantage of horticulture is simply that it permitted the primitive commune to harness more calories from a given area of land. Although this solved the prehistoric food crisis, it led to population increase and new crises in the form of competition for land and wealth.

The revolutionary feature of the new horticultural mode of production was that it formed the base for a settled village-farming way of life which permitted the accumulation of wealth. New wants and new technologies for satisfying these wants appeared (such as pottery, weaving, and architecture) and the wealth associated with neolithic populations far exceeds that of hunters and gatherers.

But the Neolithic Revolution did more than make human populations wealthier. It radically transformed the conditions of life of humanity. The possibility of accumulation stimulated what Marx called "the most violent, mean and malignant passions of the human breast, the Furies of private interest" (1867:10). The passions for wealth, for power, for privilege, in a word, human greed, which found little scope for expression under the nomadic conditions of the hunting and gathering commune, found fertile soil in the settled conditions of horticultural society. Lenski and Lenski speak of an "ethical regression" associated with the transition to settled horticultural society:

it is one of the great ironies of evolution that progress in the technological and social organizational spheres is often linked with ethical *regress*. The emergence of horticultural societies provides several striking examples. Some of the most shocking, by the standards of modern industrial societies, are the increased head hunting, scalp taking, cannibalism, human sacrifice, and slavery, all of which are much more common in the technologically and organizationally progressive horticultural societies than in the more backward hunting and gathering societies.

Another development that can be regarded as ethical regression is the decline in the practice of sharing and the growing acceptance of economic and others kinds of inequality. (Lenski and Lenski 1978:176)

Although Lenski and Lenski and most bourgeois anthropologists attribute this increase in warfare to competition for land, it seems clear that the desire for plunder, women, and slaves were also important (Ruyle 1986).

Horticulture, then, created new conditions which led to the dissolution of the primitive commune. It did not happen at once. In some cases primitive communism persisted in

horticultural society. The Iroquois, usually considered the type example of primitive communism, were a horticultural people. Nonetheless, in some cases at least, it did happen. Some men developed techniques for exploiting the labor of others, and in this way began to break up the primitive commune and construct the earliest systems of class rule.

This unleashing of the "Furies of private interest" was the force that tore asunder the primitive commune and led to the emergence of the predatory ruling classes which have dominated human history. The liberty, equality, and solidarity of the primitive commune were transformed into the male chauvinism, oppression, and class struggles of civilization in the Urban Revolution.

5.V. THE URBAN REVOLUTION

Bourgeois anthropology sees the Urban Revolution as merely the emergence of a new kind of society, civilization, with distinctive cultural features: cities, centralized state organization, writing, full-time specialization in arts or crafts, and so on. Underlying the Urban Revolution, however, was a structural transformation: the overthrow of the primitive commune and the establishment of patriarchy and class rule. This transformation may be understood in terms of energetic structure.

As discussed above, humans are interdependent in a way that sets them off from all other primates and we may speak of an energetic substratum underlying human society. People pump energy into this substratum when they produce use values; they withdraw energy from it when they consume those use values. It is possible to measure this energy, however rough and approximate such measurement may be. If I spend four hours digging up, cleaning, and cooking yams, there are four hours of my labor energy embodied in those yams. When I eat them, I am consuming, in addition to the caloric energy of the yams, four hours of labor energy.

If someone else eats the yams, they are consuming four hours of my labor energy, and we can speak of energy flowing from producer to consumer. The energy flows between members of a population, between groups, and between classes, are an indispensable element of human social life. In measuring and analyzing the social energetics of a human population, we are analyzing "the real foundation, on which rises a legal and political superstructure and to which correspond definite forms of social consciousness" (Marx 1859:3).

Viewed in terms of their energetic structures, human societies fall into two great categories.

On the one hand, there are energetic systems, represented by the primitive communism of hunters and gatherers and tribal horticulturists, in which 1. all members of the population participate, more or less equally, in production through the expenditure of their own labor energy for most if not all of their lives, and 2. all members of the population have more or less equal access to the social product and consume more or less equal amounts of labor energy through their lives.

On the other hand, there are energetic systems, represented in incipient form by chiefdoms and in developed form by historic and contemporary civilizations, in which some members of the population 1. do not directly participate in production but nevertheless, 2. consume labor energy at a much higher rate than the remainder of the population. Such systems are systems of class rule, and the labor energy consumed by the ruling class is the surplus. The surplus comes from the direct producers who expend more energy in production than they consume.

The flow of energy from the direct producers to the ruling class occurs because members of the ruling class are expending energy into a mode of exploitation, an institutionalized system of instrumental techniques of exploitation, violence, and thought

control whose purpose is to direct the flow of social energy to the ruling class. This mode of exploitation is the "mode of production" of the ruling class (Ruyle 1975).

A mode of exploitation has three sets of components (the analysis here is of precapitalist modes of exploitation; modern modes of exploitation require a somewhat different analysis). First of all, there are exploitative techniques, the precise instrumentalities through which surplus is pumped out of the direct producers and into the ruling class: simple plunder, slavery, taxation, corvee, rent, managerial exploitation, and various forms of market exchange, including wage labor. Second, there is the State, which monopolizes legitimate violence and is thereby able to physically coerce the exploited classes. Third, there is the Church, which monopolizes access to the sacred and supernatural and is thereby able to control the minds of the subordinate population, keeping them obedient and docile by legitimizing the status quo and threatening supernatural sanctions for misbehavior (see White 1959:303-328). The State and the Church, then, form twin agencies of oppression whose purpose is to support and legitimate the differentials of wealth and privilege resulting from ruling class exploitation.

These elements, or functions, of the mode of exploitation are combined in different ways by different ruling classes. The State and the Church, for example, may be institutionalized separately, as in medieval Europe and Japan, or they may be combined into a single unitary institution, as in many bronze age civilizations.

The mode of exploitation is the instrumentality through which a predator-prey relationship is established within the human species in which the stakes are human labor energy rather than the energy locked up in animal flesh. The differentials of wealth, privilege, and prestige which characterized all historic civilizations are created by this predatory relationship between ruler and ruled.

Once this predatory relationship is established, the system of exploitation become larger and more complex, with a complex division of labor developing not only in the sphere of production (between agricultural workers and workers in the industrial arts, metallurgy, textiles, pottery, etc.) but also in the sphere of exploitation (warriors, priests, scribes, etc.). The result is an elaboration of occupations and statuses among the different kinds of producers, exploiters, parasitic groups, and so on. In addition to the ruling class itself, there are typically privileged retainer classes (officials, scribes, priests), various divisions within the producing class (between peasants and artisans and between rich and poor peasants, for example), and finally an underclass (composed of outcasts, outcasts, beggars, and thieves), which may not be directly exploited (since no surplus is extracted from them) but which nonetheless plays an important role the the overall system of exploitation (for discussions of the class structure of the agrarian civilizations, see Lenski and Lenski 1978, Sjoberg 1960).

The surface structure of developed class societies may thus be quite complex, and the fundamental class opposition between ruler and ruled is likely to be overlaid and concealed by a more diversified arrangement of classes attached to the flow of social energy in a variety of ways. This complexity of surface structure, however, does not negate the underlying predatory relationship between rulers and ruled.

Two additional points need to be made. The first is that exploitation necessarily generates resistance so that class rule is invariably accompanied by class struggle. The history of civilization, as Marx correctly pointed out, is the history of class struggle. Class struggle, together with the progressive development of the forces of social production, have been the motive forces of cultural evolution during the period of historic civilizations.

The second is that systems of class rule are invariably patriarchal. The oppressive agencies of State and Church are typically staffed by men, and men are both the prime movers and primary beneficiaries of the system of exploitation. Women, typically, are defined by their relationship to men, and their place in the system is determined by their relationship to their fathers, husbands, and sons. Women are also typically reduced to an inferior position in class societies. But just as class oppression breeds class struggle

(the history of which was largely hidden before the birth of Marxism), so gender oppression breeds gender struggle (the history of which has been largely hidden until the emergence of feminism, see, e.g., Carroll 1976).

As class society develops, so does patriarchy. Men and women develop different but complementary maximizing strategies within the overall system of inequality.

It was men, not women, that took advantage of the predatory opportunities opened up by the Neolithic Revolution. Women no doubt formed the earliest exploited group as the women of defeated groups were enslaved or taken as secondary "wives" (Ruyle 1986).

As ambitious men developed the techniques of exploitation, they became capable of extracting more surplus than any one individual could consume. The predatory, patriarchal male acquired wives and retainers to help him, in a Veblenesque manner, consume his surplus. This, of course, gave him greater power over them. Less ambitious men, or men not so well endowed for exploitation or less well placed by birth, either attached themselves to ruling males as retainers or lived as exploited direct producers.

Ambitious women may attempt to pursue male predatory activities, and in rare cases may be successful. More commonly, women support and encourage men in their predatory activities. In this situation, women develop techniques of manipulation in an effort to achieve indirectly, through men, what is denied to them directly through patriarchy. For the most part, however, women are reduced to supporting their men at whatever level they may be in the exploitative system.

Such were the origins of patriarchy and class rule. They were brought into being by the same forces that presently maintain them: the self-interest of the male rulers. Patriarchy and class rule began when some men discovered that they could pursue their interests at the expense of others. The preconditions for this discovery was the transition to a settled way of life based on horticulture, but this was not its cause. Its cause lies in the greed and avarice of men.

Developed class societies first appear in Mesopotamia by 3000 B.C., slightly later in Egypt and then in the Indus Valley and North China. Still later, after about 1500 B.C., systems of class rule begin to develop independently in the New World. The new ruling classes had cities built and developed writing to record their activities and we begin the period of human history. Following McNeil (1963), the history of class society, or civilization, may be divided into three eras: an era of Middle Eastern dominance, down to about 500 B.C., when the civilizations of the Middle East were clearly the most advanced, but peripheral civilizations were developing in the mediterranean region, India, and China; an era of Eurasian Cultural Balance, from about 500 B.C. to 1500 A.D., when there was a rough balance between the civilizations of the Middle East, China, India, and Mediterranean Europe; and finally the rise of the West, after 1500 A.D., when the modern imperialist world system was constructed by the rising European bourgeoisie. This modern imperialist system cut short the independent development of patriarchal class rule by Native American men in Mesoamerica and Peru.

The occurrence of three independent Neolithic Revolutions and six Urban Revolutions is testimony to the creative potential of our species *as a whole*, not just in some particular "race" or group of "great men." Further, the main line of cultural advance down to 1500 A.D. was in the agrarian civilizations of Africa and Asia, not Europe. This point is worth stressing in view of the fact that Marx lumped these societies together under the rubric of the "Asiatic Mode of Production," and regarded them as static and unchanging. In this, he was simply reflecting a common Nineteenth Century prejudice which has become outmoded with the growth of our understanding of Chinese, Indian, and Middle Eastern history. Contemporary Marxists would be well advised to pay more attention to the actual history of Asiatic societies and less to trying to figure out what Marx really meant in his scattered remarks on the Asiatic Mode of Production (cf. Cameron 1985). The ethnocentrism of regarding the Roman Empire and feudal Europe as the center of human development during the precapitalist period may be

seen by listing some of the achievements of Chinese civilization: paper and paper money, printing, civil service examinations and bureaucracy, the compass, and gunpowder. Modern bourgeois civilization would be impossible without these contributions, just as it would be impossible without the Afro-Asian achievements of agriculture, writing, and decimal mathematics. For most of human history, Europe—not Africa or Asia—was a cultural backwater.

5.VI. CONCLUDING REMARKS

A scientific knowledge of whence we have come can help us guard against the philosophy of despair and guide our action in assisting the birth of a new world. Anthropology has given us an increasingly clear picture of whence we have come. We have seen that there were important revolutions in the prehistory of our species, revolutions that transformed the material conditions of life for our species.

We are now living through a revolution of similar importance. The Industrial Revolution, led by the modern bourgeoisie, has created new forces of social production undreamt of even in Marx's time. These new forces give us the power to banish the misery, hunger, and want that have been the lot for so many people throughout human history and with them, exploitation and oppression. Yet the philosophy of despair tells us that this is impossible. Exploitation, oppression, and misery, we are told, will continue to be the lot of men and women.

But Anthropology shows clearly that inequality, exploitation, oppression, and male chauvinism are not universal features of human social life, but instead are products of human action within a particular set of material conditions.

Today, material conditions are changed and we are now in a position where the struggle to eliminate both patriarchy and class rule shows every promise of success. It must be recalled that the ruling classes have been perfecting their systems of exploitation and oppression for thousands of years. We socialists have only had about a century to construct new systems to eliminate poverty and oppression. There are no guarantees of success, but there are good reasons to believe that both evolution and revolution are on our side. As will be discussed in a later chapter, the existing socialist nations have made dramatic progress when compared with their prerevolutionary pasts, and, although they clearly have not solved all of their problems, they are dealing with them.

Revolution is good for human beings. The oppression, inequality, and alienation of class rule can be reduced and, in time, eliminated. As Lewis Henry Morgan observed,

The time which has passed away since civilization began is but a fragment of the past duration of man's existence; and but a fragment of the ages yet to come. The dissolution of society bids fair to become the termination of a career of which property is the end and aim; because such a career contains the elements of self-destruction. Democracy in government, brotherhood in society, equality in rights and privileges, and universal education, foreshadow the next higher plane of society to which experience, intelligence, and knowledge are steadily tending. It will be a revival, in a higher form, of the liberty, equality, and fraternity of the ancient gentes. (Morgan 1877:467)

This higher plane of society, socialism, will not appear automatically. Just as patriarchal systems of class rule were developed by the conscious activity of men, so the overthrow of class and gender oppression will be the result of the conscious activity of working class men and women. By better understanding the prehistoric revolutions through which primitive communism was overthrown and patriarchal class rule was constructed, perhaps we can participate more fully in our present revolution, and assist in the construction of a new socialist system which will prevent the re-emergence of male chauvinism, exploitation, and oppression.