

HUMAN POPULATION

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BIBLICAL HISTORY OF HUMAN POPULATION

According to the Bible, humanity began with two people about 6000 years ago and went through two major population bottlenecks (times when populations were very low). Humanity began on the sixth day of the Creation Week when God created a man—Adam—from the dust of the ground (Genesis 2:7). Later that same day God created a woman—Eve, the mother of all living humans (Genesis 3:20)—from a rib and flesh taken from Adam (Genesis 2:22). Accepting Biblical chronology (e.g. genealogies of Genesis chapters 5 and 11 and the kings lists of Kings and Chronicles), human population began from that original couple about 6000 years ago. Then, about 17 centuries after the creation of Adam and Eve all but eight humans were killed in a flood God sent to destroy humans (Genesis 7:23). This was the first major population bottleneck.

Ultimately, the three younger couples of those eight who survived the Flood generated all living humans. Then, within a few centuries of the Flood, while human populations were increasing, God once again judged their disobedience—this time by dividing their languages (Genesis 11:7-8). It appears that each family group living at the time was given a separate language and the various families left each other and spread over the entire earth. Although the Bible does not indicate that any humans died in this event, the large population was divided into a number of smaller population units (families), effectively creating a second population bottleneck. This Biblical account of human history explains several interesting facts about human genetics and population.

EXPONENTIAL POPULATION GROWTH

When a single bacterium is placed into an environment suitable for bacterial growth and reproduction, the bacterium soon buds into two, and the two bacteria soon thereafter become four, and the four soon thereafter become eight, and so on. If the conditions for growth continue to be good, the population continues to double every set amount of time. In this way bacterial populations follow a very predictable curve of exponential growth. In fact, measuring the doubling rate of the population at any given point in time allows one to calculate at least the minimum amount of time it would take the bacterial population to achieve its current size (assuming a constant food supply, an unchanging offspring number, an unchanging generation time, etc.). Applying that same principle to humans, from the present rate of population increase one could derive the current population of humans in about 4000 to 6000 years. Although the Bible claims that human longevity was greater after the Flood, the generation times do not seem to be much different, and it is likely that family sizes were larger. Human population growth rates are thus consistent with Biblical claims.

FREQUENCY OF HUMAN BURIALS

If human history is not as the Bible indicates, but rather has followed evolutionary history, then human population must have (somehow) remained at a constant low value up until only a few thousand years ago. In this scenario the total number of humans who have lived through time is many times larger than suggested in the Biblical scenario. This would suggest a correspondingly larger number of human deaths (and burials). The total number

of human skeletons recovered in excavation seems smaller than what might be expected in an evolutionary scenario, more in line with what might be expected in the Biblical scenario.

GENETIC LOAD

Whereas cells have a very faithful process of copying their DNA (and must have in order to reproduce faithfully), mistakes occasionally do occur. These mistakes are called mutations. Whereas many mutations bring about the death of the organism, some of them do not. A vast percentage of those mutations which do not kill the organism are then passed on faithfully to all descendants. As a result, mutations are accumulated in a given lineage. The number of mutations accumulated in a population or species is called the "genetic load" of that population or species.

Included within the genetic load of a species are all the genetic diseases of that species. Except for illness and predators which tend to pick off the sicker members of the population, the genetic load of a population tends to increase with time. The genetic load increases faster the shorter the generation time, the greater the rate of population increase, and the greater the time since the population began. In the evolutionary scenario humans are descendant from apes who inherited and added to a genetic load they inherited from their primate ancestors (who in turn inherited a genetic load from their ancestors, etc.). This, plus the longer time scales of the evolutionary model would suggest that humans should have an extremely large genetic load. In contrast, the Biblical scenario, with its initially perfect (genetic load of zero) creation only 6000 to 8000 years ago would be expected to produce a much, much smaller genetic load. Although precise determinations of the genetic load of humans have not yet been made, it appears as if the genetic load of humans is closer to the expectations of the Biblical scenario of human (and organismal) history.

THE EVE HYPOTHESIS

Since different lineages would produce different accumulations of mutations, after two lineages separate from each other, they would produce very different sets of mutations. With constant mutation rates and constant population sizes, doubling the time since the two lineages separated would double the number of mutational differences between the two lines. As a result, counting the mutational differences between two organisms should allow an estimate of the amount of time since the two organisms shared a common ancestor. In human cells most of the DNA is found in the nuclei of the cells and is used to create copies of the cell. However, there are organelles within human cells, called mitochondria which have their own DNA, presumably to facilitate the reproduction of those organelles within the cell. Human mitochondria, however, are all inherited from mothers (fathers only contribute half a complement of nuclear DNA and none of the organelles of the cell). Therefore, counting the number of mutations which are different between the mitochondrial DNA of two humans, an estimate can be made of the time since the two humans had a common, ancestral mother. When this was done for humans across the planet, and constant population sizes were assumed, it was inferred that all modern humans were descendant from an individual woman between 20,000 and 200,000 years ago. Although this figure can be made smaller (if there were population bottlenecks in human history), it is difficult to see how this figure could be made larger. Yet, *Homo erectus* fossils indicate both a worldwide distribution of humans and what appear to be racial differences among humans dating back to a time conventionally dated a million or so years before present. The mitochondrial DNA

mutation rate is thus inconsistent with the conventional dating of human fossils. In the Biblical scenario, however, the *H. erectus* fossils would be interpreted to be only a few thousand years old, and the population bottlenecks which are a part of Biblical history could very possibly bring mitochondrial divergence times to a comparable figure.

Later research on Y chromosomes (possessed only by males and thus passed on only through the male line) discovered no observed mutations on the section of Y chromosome examined in men in various places across the world. This suggests a much shorter time scale for a common ancestor of humans than even suggested by mitochondrial DNA—even more encouraging for the Biblical model.

In short, it would appear that several characteristics of human population and genetics are more easily explained by the Biblical scenario of human history than they are explained by the conventional, evolutionary view of human history.