Cain and monogenism: who married Cain?

Paul Wyns, May 2014

This "old chestnut" is constantly drawn from the flames of Bible criticism and has recently been recycled as indirect evidence in support of ploygenism[1] and pressed into service against special creationism.[2] However, the Genesis account indicates monogenism - the origination of modern humans from a single human pair, not from divergent hominid lines.

If the progenitors of all modern humans originated with a dyad it follows that their descendants must have intermarried. Human descent must of necessity have derived from incestuous unions as there was no prohibition against consanguineous relationships until the Law of Moses. Indeed it was the norm in the ANE especially societies such as those of Ancient Egypt and others, brother–sister, father–daughter, and mother–son, cousin-cousin, aunt-nephew, uncle-niece, and other combinations of relations were practiced among royalty as a means of perpetuating the royal lineage. Abraham married his half-sister and Jacob was sent to his uncle Laban and married both of his daughters.

Biblical chronology is selective and therefore daughters are rarely mentioned in chronological lists. In fact Genesis 4 only mentions three females; Adah and Zillah (the wives of Lamech) and Zillah's daughter (Naamah) – but they are only mentioned because they are pertinent to the recounting of Lamech's vengeful poem. Also, biblical chronologies are not comprehensive (they often skip a generation listing a son as a grandson) moreover, we cannot discount the use of notional number structuring for describing the longevity of individuals (such as in the Sumerian King List) indicating that the length of the pre-history is undetermined.[3] The result of this phenomenon is that we do not know the size of the population or the male/female ratio in the time of Cain. However, it seems that polygamy was the norm, with the most successful males having multiple wives. This means that some male lineages may have been genetic "dead–ends" and that competition for females was probably fierce.

It is of course a truism that in-breeding compounds mutations and leads to increased risks of congenital disease and deformity in offspring. In fact, the tracing of female genetic origins is based on the rate of mutation in mitochondrial DNA. However, the first humans were made in the image of the divine and pronounced "very good" and as the degenerative process is time dependent the early population would have been healthy. The Hebrew word *ishshah* is the word for "woman," and it means "from man." It is a derivation of the Hebrew words *'iysh* and *enowsh*, which both mean "man." This can be seen in Genesis 2:23 where the name "woman" (*ishshah*) is given to one who came from Adam. Although the woman shared material with the man it implies similarity without necessitating cloning; this would boost the genetic diversity of any progeny. The earliest man's partner was called his *ishshah* and Cain's partner is also called his *ishshah* indicating the likelihood of

[1] K. Gilmore, "The Bible is not a Science Text Book" in Defence & Confirmation, (eds., J. Burke, D. Burke, K. Gilmore, C. Matthiesen) Vol.1 April 2014 :12-18,12

[2] Special Creationism (SC) differentiates itself from Young Earth (YE) creationism, Evolutionary Theism (ET) and Intelligent Design (ID) as it accepts the geological age of the earth; however, naturalistic processes are viewed by SC as the *baseline* rather than the *totus* of divine activity. SC contends that naturalistic equilibrium can be punctuated at any stage by creative acts (such as described in Genesis).

[3] See the Appendix in Andrew Perry, Old Earth Creationism, (Willow Publications, 2013),p.93-98

a consanguineous relationship – one that bears some sort of correlation, either directly (like Adam to Eve) or indirectly (a sister or niece). In any case, all creatures originate with a dyad and in that aspect man is no different, so the origins of every species must commence with connatural reproduction.

The Law of Moses forbade exogamous and consanguineous relationships and from a genetic viewpoint that was a sensible prohibition as it maintained racial separation (holiness) as well as genetic diversity. Even in the modern era we have societies (especially in the Middle East) that promote consanguineous relationships and those societies are characterised by higher than average genetic abnormalities.

Science and the origins of modern humans

All modern humans share common genetic ancestors and these have been termed "mitochondrial Eve" and "Y-chromosome Adam". Despite the biblical nomenclature it would be a mistake to assume that geneticists understand all modern humans as products of a biblical "Adam and Eve". Matrilineal descent goes back to our mothers, to their mothers, until all female lineages converge. DNA from the mitochondria, the energy powerhouse of the cell, is carried inside the egg, so only women pass it on to their children. According to geneticists "mitochondrial Eve" was not the first modern human female, but instead just one of thousands of women alive at the time with an unbroken lineage that continues on today (For instance, if an ancient woman had only sons, then her mitochondrial DNA would disappear, even though the son would pass on a quarter of her DNA via the rest of his genome or if a woman was infertile or had a daughter who died the mitochondrial DNA lineage would disappear). Similarly, "Y-chromosome Adam" is not thought to have even been contemporaneous with "mitochondrial Eve" and therefore mating with her would be impossible, so "Y-chromosome Adam" was the most successful of a group of "Adams".

Anthropological genetic science is a developing field and two major studies of modern humans' Y chromosomes suggest that 'Y-chromosome Adam' and 'mitochondrial Eve' may have lived around the same time after all.[4] If the extent of the differences between the genetic material of two populations and the mutation rate are known, then the time at which two populations diverge can be calculated. Most studies rely on genetic comparisons between humans and chimpanzees to determine the average mutation rate for humans and this has recently been challenged.[5] Of course, if the determined mutation rate is wrong it produces large discrepancies in the timescales. Even if the mutation rate is known, molecular clock analysis is still remarkably imprecise; typical uncertainties are on the order of ± 50,000 years. The original "population size" (e.g. a group of Adams and Eves) also plays a role in modelling as estimates of the ancestral population size of humans are based on genetic diversity. Using mathematical models, the heterozygosity of a population can be computed at any point in time from the heterozygosity of the ancestral population and the original population size. When an experiment was conducted with two sheep released on an isolated island eventually producing seven hundred offspring the measured diversity exceeded the predictions made by the models by up to a factor of four. The models underestimated

[4] Poznik, G. D. *et al*. Science 341, 562–565 (2013) and Francalacci, P. *et al*. Science 341, 565–569 (2013)
[5] Phillip Endicott et al., "Evaluating the Mitochondrial Timescale of Human Evolution," Trends in Ecology and Evolution 24 (2009): 515–21.

the genetic diversity of the actual population.[6] Moreover, population size is cyclical and can be influenced by factors like polygamy and extinctions (like a flood or epidemic etc) can cause genetic bottle necks where populations are rapidly reduced in size.

Whether or not "mitochondrial Eve" and "Y-chromosome Adam" can be equated with their biblical counterparts all modern humans must have converged at some stage of the timeline to an irreducible singularity of descent unless we want to assume the spontaneous emergence of a "group" of modern humans which is implausible even in naturalistic terms.

[6] Renaud Kaeuffer et al., "Unexpected Heterozygosity in an Island Mouflon Population Founded by a Single Pair of Individuals," *Proceeding of the Royal Society B* 274 (2007): 527–33.