

Man and the Pageant of Life: A Mosaic

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Man is a singular creature and unique among God's creations. While unfolding the pageant of Life, one realizes that there is no absolute knowledge. Accurate dating is impossible.

The stages of growth fade as they recede into the past. It is surmised that Neolithic impulses probably derived from somewhere in the Middle East and their lines converge towards some pole of dispersion. However, this exposition and indeed the whole saga of developments and ethnology, is still not clear. Beginnings have a sort of fragility. I am inclined to say that the theory of cultural diffusion from a single area is only partly correct.

It is reasonable to assume that there was probably a gradual human advancement in various countries which was influenced by migrations, trade people and contacts. There are lacunae in our knowledge of pre-Neolithic and Neolithic periods in the Mediterranean and environs. Time scales are not easy to define. To give examples, it is unlikely that the cultivation of such different crops as wheat and barley in Mesopotamia, rice in Thailand, maize in Mexico, in ancient times were related to each other. Furthermore, it is quite possible, that bronze and copper metallurgy in Crete, Cyprus, North-East Asia and Peru, also developed separately.

It is pertinent to point out, that the ascent of Man, although on different levels and in different ways, went on in countries sometimes far from each other separately. Of course knowledge and culture in the Mediterranean region as elsewhere were passed on - a cross fertilization during migrations. In recent years, improved dating techniques and DNA, are bringing about changes in archaeological and anthropological chronologies in various countries.

In 1899, W.Z. Ripley in his book 'The Races of Europe' one of the first to classify Europeans on the basis of multiple traits, names three races: Nordic, Alpine and Mediterranean - labels used ever since. In essence but not clear cut, this old division of past time inhabitants still remains fairly useful, but it was based mainly on generalizations and does not tally fully with the present situation.

It is generally agreed that all the present day races of mankind are variants of one species, Homo Sapiens. Man has through the ages been adaptive. Apart from the antiquity of the races of mankind, there is the transformation of Man as distinct geographical varieties and the improvement of the brain.

Large communities of Palaeolithic Man – Homo Sapiens, lived some 50,000 to 60,000 (?) years ago in Europe, heralding the great surge forward of the Neolithic Age. Ancient remains have been found in France, Spain, Czechoslovakia, Germany, etc.

Over the millennia there have been extensive and continuous migrations from country to country which resulted in countless marriages between Peoples. European citizens are now not a uniform race and encompass different nationalities, customs and creeds. In general terms, before the beginning of the last century, a high proportion of people in central Europe were designated mostly but not all in which brachycephaly (round or short headed) was common, without implying that everyone living in Europe was so. The people varied in size from medium to tall with a wide variation in complexion.

Our ancestors of Neolithic times, possibly around 8,000 years ago or so while standing on high ground in the south east of Sicily, looked and saw far away Malta and Gozo and wondered, a spirit of curiosity was born.

While on a visit (1974) to the Isole Eolie, Dr. T. Gouder and I were invited by the famous and eminent Italian archaeologist Prof. L. Bernabo Brea and we had a very interesting discussion with him. One of the questions I asked him was - when was Sicily in his opinion first inhabited? He told us that it is difficult to be exact but it could have been as long as 20,000 years ago, or probably earlier.

Italy had various prehistoric cultures, like the Celts, Etruscans, Phoenicians, Greeks, Carthaginians and Romans. All these affected the genetic mixture. In 1999, important archaeological deposits were discovered at Isernia-La Pineta. These were analyzed and dated to the early Palaeolithic. This period relates to the early part of the Stone Age which is intriguing and bewildering.

What kind of people are the inhabitants of the Maltese Islands? The 1992 statistics showed that 362950 people inhabited our islands. At present (mid 2007) the figure is 405577. Because of its central position in the Mediterranean, Malta is a typical

example of cultural crossroads and convergence of Mediterranean civilizations. In broad terms Malta and Gozo reflect to a large degree the influence of Mediterranean migrations. If one analyzes the features and skin colour, one finds that there is a surprising mixture of people who live or have lived through the centuries on the Mediterranean littoral. Walking through the streets of Valletta, Hamrun, Sliema, the Three Cities of Cottonera, Birkirkara, Mosta, Rabat, Zejtun, Paola, Zebbug, Siggiewi etc., one will notice a variety of features, statures and complexions.

I am inclined to say that there is not a Maltese type any more than there is one European type. There are of course variations within a range. Looking at a cross section of our population one notices mixed differences and similarities with here and there unclear dividing lines in a few villages to mark off distinct pockets. Maltese ethnology embraces Mediterranean, especially Italian, Phoenician, Greek, Lebanese, Armenoid, Saracenic and to a much lesser extent Nordic elements. Our civil laws exhibit an ensemble of Roman and Anglo Saxon statutes, while certain folkloric songs show Sicilian influences.

As time goes on more details are coming to light about the fascinating subject of human genes. During the last few decades a lot of research has been going on which included the start of the Human research project which aims among other aspects to have if possible a broad map of human genes. It aims to decipher gradually what a very large number of genes do and how they function.

It is believed that about one fourth deals with the brain followed by genes dealing with the placenta, liver, white blood cells, bone marrow, lungs, heart, the embryo and breasts. Dr Craig Venter, chief of the Institute for Genomic Research in Lockville Maryland, believes that great advances would be made and in due course about three quarters of all human genes would be known. Of course other researchers in various countries continue with their work with a view to unravel the web of human life with all its complexities.

The make-up is laid down by genetic heritage. Of course both the environment, level of nutrition and the circumstances of foetal development, influences constitutions and characters. Four main factors are responsible for the human differentiations. These are:

1. Gene Mutation
2. Natural Selection
3. Genetic Drift
4. Population mixture

Certain diseases have a significant heritable component. To give some examples. These vary from slight, such as in multiple sclerosis and some cancers, to moderate in psychiatric defects, diabetes, certain heart diseases, high blood pressure, migraines, acne, psoriasis, certain mouth and dental conditions and rather high in eye defects.

The ones I have mentioned are by no means complete and there is much truth that genes design to a considerable extent our life and future. They also often play a role in the development process, aptitudes and skills. However we should not let our imagination to run amok and turn us into creative visionaries. Ethical principles must be always kept in mind when asking about family history.

It seems likely that within limits certain genes also play a role of course besides other factors such as nutrition and lifestyle in determining lifespan. In our islands, increasingly people are living to be much older, many reaching about 80 years or more instead of around 70 or less up to a century ago. As nutrition and healthcare improves many youngsters are maturing younger and growing taller than their grandparents.

Gene-Gene interactions are hypothesized to play an important role in the etiology of various genetic disorders. For example researchers have localized (1996 and 1997) a second gene responsible for the most common type of diabetes and believe severe mutation of the same gene can cause a rare form of the disease among younger people.

An international team of scientists studied 217 individuals from the Botnia region in Finland. The 217 subjects were from 26 families who had 3 or more members stricken with non-insulin dependant, or type 2 diabetes (NIDDM), which afflicts more than 100 million people worldwide. The researchers located a gene called NIDDM2 on chromosome 12, that may be involved in a significant fraction of adult-onset diabetes, according to a study in an edition of the journal *Genetics* (Sept 1996) "Our study has narrowed it to a very small part of the genome on chromosome 12" said Dr Melanie Mahtani, a geneticist at the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts and principle author of the study.

As for faces themselves they are almost entirely genetically determined, as we can see from the startling similarity of identical twins appearances. Whatever genes are involved in coding for facial features they must be an enormous number to judge from the variety we see everyday. No two faces look alike, apart from those of identical twins.

It is possible that these genes may range over the entire genome, or they could perhaps cluster in some complex group, like those that code for HLA types. There could be some as yet unknown factors.

In *Moments of Vision* (1917), Thomas Hardy refers briefly to heredity:

I am the family face
Flesh perishes, I live on
Projecting trait and trace
Through time to times anon
And leaping from place to place
Over oblivion.

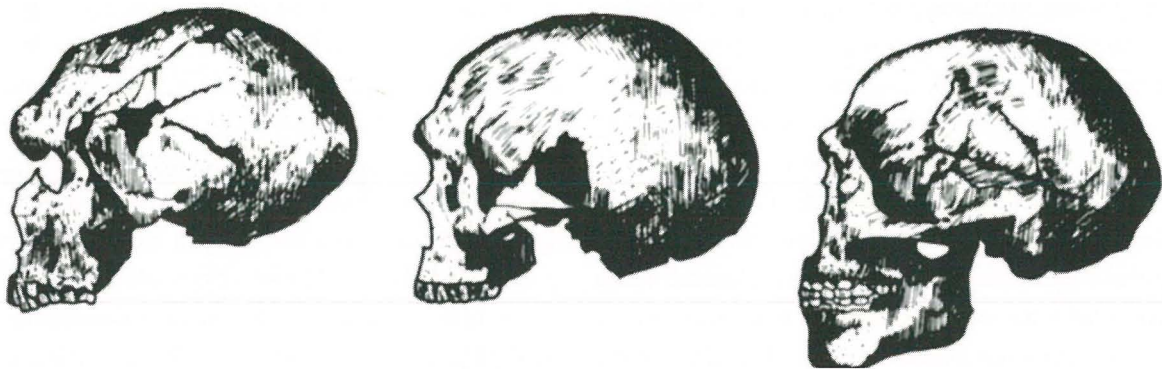
It is surmised that Punic Man had a capacity of approximately 1520 c.c. which is almost the average modern capacity of 1550c. c. However one must keep in mind that it is quality not quantity which counts most. It is not possible to arrive to any conclusions regarding the average Maltese IQ, because a survey has never been carried out.

A few other considerations may not be amiss. Man lived and vanished in the shams of the very ancient past for countless millennia until the final Palaeolithic period. The late Palaeolithic cultures tell of extensive migrations and gradual improvement in Man's mental and manual capabilities. The last Ice Age was a period when compared to the previous hundreds of thousands of years and other glacial periods preceding it, human development including the brain seems to have quickened appreciably. The period around 50,000 B.C. (?) or so probably ushered in Man with a better mental potential and more skills. Of course this does not mean that before that time his mind was a sort of almost a blank sheet. Far from it.

The brain can be defined as that part of the central nervous system contained in the cranial cavity and consists of the cerebrum, pons and medulla oblongata. The functions and workings of the brain is a lifelong coordinated process which regulates all human activities. Human beings are not as strong as animals of a more or less similar size such as the chimpanzees, but they have the most advanced brain of all living creatures.

The human brain is wonderfully complex. It is the body's control centre with more than 8 million cells and controls all the body's systems which includes the skeleton and muscles, thinking, circulation, the nervous system, digestion, respiration, immune system, limbs, reproduction, etc. It is likely that memories are stored in various locations in the brain.

It floats inside the skull in shockproof fluid protected from the knocks and jolts and wrapped in three cushioning layers of tissue. This amazing organ is more powerful, more creative than any computer and among the most wonderful creations of Almighty God. Looking at the surface of the brain (the cortex)



Types of very ancient skulls: At left is a Neanderthal from Austria. In the centre is one from Qafza, Palestine and at right one from an upper Palaeolithic site at Predmosti, Czechoslovakia



under a powerful microscope one sees a very specialized and complicated mass of nerve cells known as grey matter. These are connected by a vast network of pathways which carry millions of messages between the brain and the rest of the body. There is an element of spontaneous electrical activity which includes brain waves which can be observed with amplifications as in an electroencephalogram

There have been great strides forward in understanding how the brain functions. However there is a tendency to use consciousness to mean awareness and recognition but consciousness encompasses an element difficult to describe and also some ambiguity.

It is well known in general terms and not related specifically to the skull that bone tissue is not static and that healthy bones require very gradual modeling and remodeling to adapt to the dual roles as a supportive frame and a regulator of mineral homeostasis. The skeleton is very gradually remodeled via the coordinated activities of bone-resorbing osteoclasts and bone forming osteoblasts.

The mandible is the hardest bone in the skeleton. The development of the jaws and chin suggest a functional linkage between biomechanics, symphyseal structure and genetic factors.

I believe that masticatory biomechanical adaptation has affected the human jaws before and during the Pleistocene and more recent Man in Europe and elsewhere. In a wide biological context the retraction of the human mandible over the ages presented certain constraints in the oral cavity, such as not enough space for wisdom teeth and unerupted teeth. The chin and jaws may represent within limits an adaptative solution for necessary functional demands. However it is not possible at present to point clearly and exactly to the generative force behind the development of the uniquely human mandible and the formative factors. However I am inclined to say that the great changes in diet over countless millenniums have brought about significant changes in the mandible, maxilla, dental arches and teeth.

Tooth morphology has played an important part in human palaeontology because teeth preserve well and dental features are easily identified. Because dietary habits determine various aspects of man's lifestyle and health, theories and analysis of past dietary trends have been important in the study of men. Major dietary types can to some extent be distinguished by their microwear and attrition. However it must be stated that comparative anatomy is not a clear – cut subject, and in a general way, allows only certain specialised diets to be ruled out.

Interspecific comparisons of tooth morphology involve an understanding (not an easy exercise) to particular diets. It is

significant that a high proportion of the teeth from ancient skulls unearthed in Malta show extensive attrition and it is possible to make generalization about their diet. Research is under way to document wear patterns of ancient teeth and present day ones. Quantification and microscopic studies of the length and width of scratches, pit frequencies and minor changes on the surface of teeth may in due course provide a basis for evaluating better the effects of diets.

At this point some references to the Carbon Isotope analysis of bone is opportune. It is known that the isotopic composition of carbon in an animal's bones is a function of the isotopic carbon in its diet (De Niro and Epstein 1978). This is true for both the carbonate and collagen fractions of bone. The ratio of ^{13}C to ^{12}C in plants eaten by herbivores depends mainly upon the photosynthetic pathway that the plants use. It may be possible to apply this method to fossil bones, however if it can be demonstrated that diagenetic changes do not effect the carbonisotope ratios.

Strontium analysis of fossil bone (Toots and Voorhies, 1965) has helped to estimate past diets because plants contain varying minute amounts of strontium.

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