

中国人和日本人在人种上的关系 ——颅骨测量性状的统计分析研究¹⁾

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关键词 中国人;日本人;颅骨

内 容 提 要

本研究以北亚、东亚、东南亚和大洋洲一大片区域为背景探索日本人的起源和亲缘关系。结果显示日本旧石器时代港川人、绳文时代和现代人与大约同时期的华南居民有最接近的亲缘关系;从绳文时代到现代日本人的时代变化具有与后者(以及华北居民)相同的趋势。

日本的古人类化石不很丰富,时代也较晚,它们未能提供多少直接证据说明日本人种的起源。日本的人类学家和考古学家多从较晚的人类学材料的研究中寻找他们的最早祖先。近年发现的更新世晚期港川(Minatogawa)人较清晰地再现日本列岛早期居民的面貌及其与周围地区人种上的亲缘关系。据樋口隆康归纳,日本的人种和文化因素可能通过五个通道传进,这就是西伯利亚通道、朝鲜通道、东海通道、冲绳通道、南洋(指太平洋)通道。也就是说,几乎所有与日本为邻的陆地和岛屿都可能成为影响日本的人种及其文化的根源。基于这样多种可能的关联的考虑,本研究以北亚、东亚、东南亚和大洋洲相当一大片区域为背景探索日本人的起源和亲缘关系问题。

一、材 料

日本旧石器时代人类化石中能提供比较完整的头面部测量资料的只有冲绳岛港川人第一号头骨,它属于男性个体。据铃木尚(Suzuki, 1982)研究,港川人可以看作为柳江人的“堂兄弟”。一万八千年前,原蒙古人种主干之一的华南支通过当时在亚洲大陆与冲绳和日本本土之间存在的陆桥,一支迁移到冲绳,另一支迁移到日本本土西部。港川人、牛川人、三日人和浜北人等本身可能就是从华南来的移民或者移民的后代。

日本旧石器时代之后的绳文时代持续约一万余年之久,一般粗分为早前期和后晚期二部。能收集到本研究的只有后晚期的冈山县津云贝塚遗址、爱知县吉胡贝塚遗址和南部关东地区三组材料。

1) 本研究是作者在日本东京大学理学部人类学教室进修期间完成的。工作中得到埴原和郎教授的指导、河内まき子博士和小泉清隆先生的帮助。作者对他们表示深切的感谢。

弥生时代是日本人种变动的时代，日本学者关于现代日本人起源的三种学说均是围绕着这个轴心运转。所谓“替代”，指的是弥生时代外来民排挤原住民绳文人；所谓“混杂”，指的是以上二者的混杂；所谓“转化”，指的是弥生期日本人的阶段性变化正好可以把在体质上有较大差异的绳文时代人和古坟时代人衔接起来。包括在统计分析中的是北部九州和山口地方类型佐贺县东背振村三津遗址和山口县丰浦郡北町土井浜遗址。

古坟时代人是现代日本人的直接祖先这一点是日本所有的人类学家都同意的。在本研究中若干现代组用来代表自古坟时代以来的近代日本人，它们是关东组、畿内组、北陆组、琉球组和阿依努（Ainu）组。

与日本的颅骨材料相对应，中国的男性颅骨材料有山顶洞一号头骨、柳江人头骨，以及笔者前一篇研究报告（王令红，1986）中的新石器时代陕西合并组、西夏侯组、庙底沟组、汉水合并组和华南合并组（为尽可能避免使用缺失数据的估计值，本组由甑皮岩组、昙石山组和河宕组合并而成），现代东北合并组、华北合并组、福建系台湾组、台湾合并组和海南岛组。所有各组均是未受人工变形的标本。

其它地区的材料有北亚的新石器时代近贝加尔组和外贝加尔组以及现代海岸楚克奇组、驯鹿楚克奇组、内蒙锡林郭勒组和两组朝鲜人颅骨，现代东南亚和大洋洲的加里曼丹（旧称婆罗州）组、西部爪哇组、中部和东部爪哇组、菲律宾 Tagalen 组、菲律宾 Aetas 组、安达曼组和新不列颠组（王令红，1986；Bonin, 1936；Hanihara, 1985；Suzuki, 1982）。

上述 38 个颅骨组共同含有颅长、颅宽、颅高（ba—b）、颅底长、最小额宽、颤宽、面底长、上面高、鼻高、鼻宽、眶高、眶宽（mf—ek）和总面角共 13 项测量平均值，它们组成本统计分析所用的对比数据。测量项目的定义与笔者前一篇报告（王令红，1986）同。在多元统计中必需的各项标准差以岛五郎的朝鲜组为代表，因为该组例数最多。

上齿槽面角本来也可包括在本研究之中。但是，通观各样本组的标准差后，注意到这项标准差一般比同组的总面角和鼻面角的标准差大一倍左右，这表明该项目的组内变异很大。不仅如此，在同一时代相同区域各组中，它的组间变异也远远大于其它项目。在笔者参与的一项工作中（张振标等，1982），上颌齿槽面角这一测量项目也被证明过可能导致不合理的统计分析结果。

二、方法和结果

（一）聚类分析

根据 Penrose 的平均平方距离（mean square distances）的聚类图（图 1）显示山顶洞一号头骨和安达曼组与其它 36 组有很大的差别，而这 36 组很清楚地分为四个组群（支）。第一支包含旧石器时代晚期的柳江人和港川人。第二支包括中国新石器时代各组和日本绳文时代各组。第三支囊括现代中国、日本、朝鲜和东南亚各组。第四支由现代北亚各组和日本弥生时代北九州和山口地方两组组成。大洋洲的新不列颠组与旧石器时代晚期二组归为一支，这与澳大利亚人种起源与华南旧石器时代人类有关的论述是符合的。在第二支中，阿依努组与日本绳文时代各组紧密有关，再一次显示阿依努人保留了绳文时代人

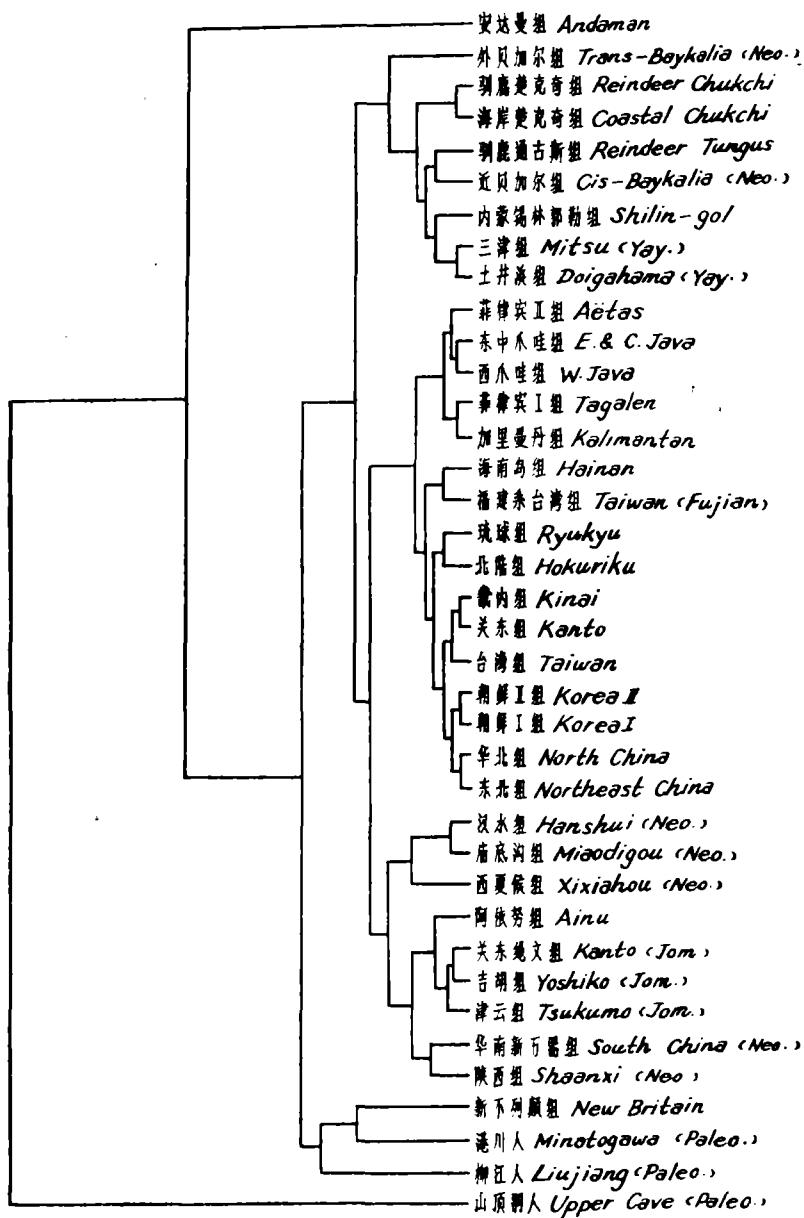


图 1 根据平均平方距离的聚类图
Dendrogram based on mean square distances

的基本体质特征。

(二) 因子分析

13个变量(测量项目)经变换后形成新的变量(因子), 后者可以更好地显示这些测量

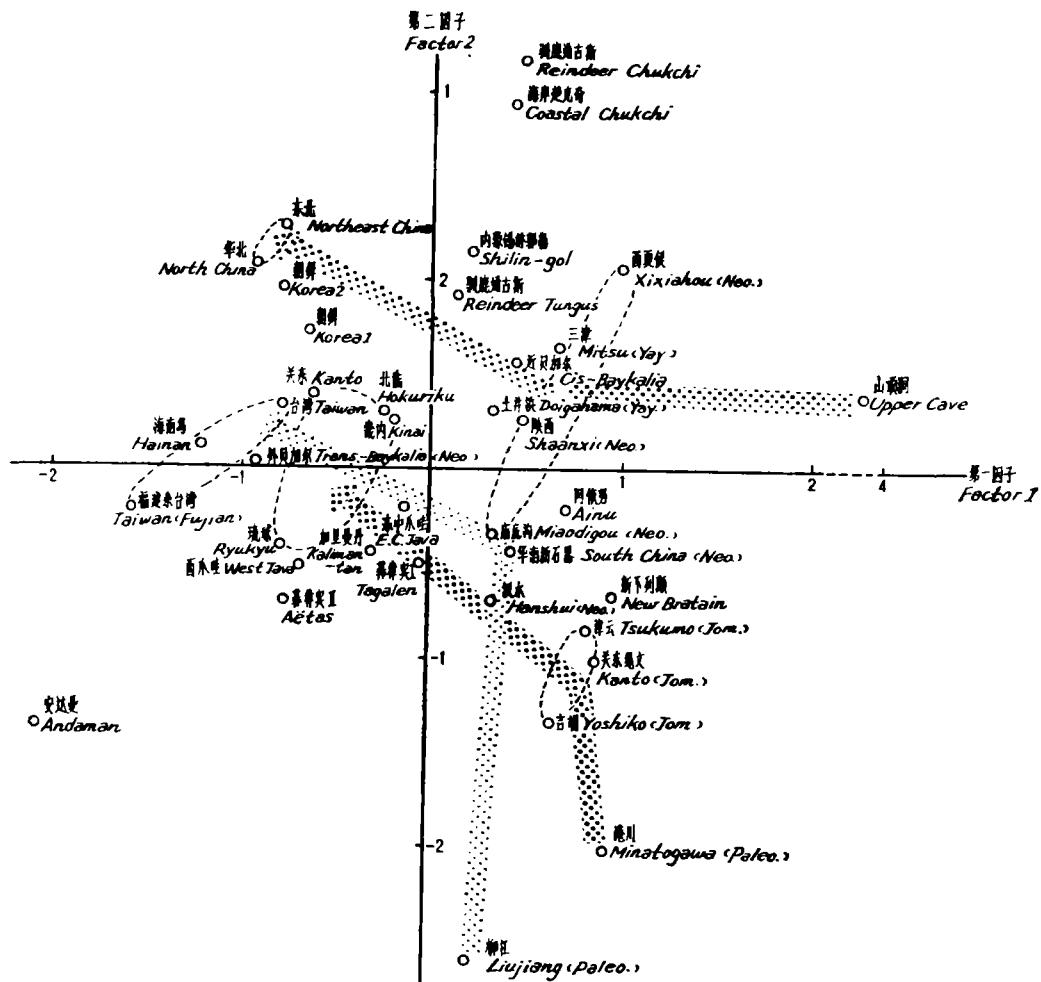


图2 各比较组在前两个因子上的分布

Scattergram of groups studied based on 1st and 2nd factor scores

项目之间的相关关系以及它们在不同组群之间的差别。第一因子包含了最大的信息量，它解释了所有方差的 35%。除眶高以外的所有线性测量项目，特别是眶宽、颅底长、面底长、颅长、最小额宽、鼻宽和颤宽七项，对第一因子都有较大的正的因子负荷。第一因子是大小因子。眶高的因子负荷是负值，表示眶高与其它项目存在负的相关性。第二因子中负荷最大的项目是上面高、眶高和鼻高，可称为面部高度因子。

以第一、二因子分别作为横、纵坐标轴的散点图(图2)清晰地显示从新石器时代(在日本为同期的绳文时代)到现代人的时代变化在华北、华南和日本三个地区具有相同的趋势。即是在此期间颅骨在大小上有减小的总趋势，这是由于对第一因子有特别大的因子负荷的七项目的缩小。第二因子不仅反映了地区差异(王令红,1986)，而且表现了三个地区共同的时代变化，即现代各组第二因子得分高于同地区新石器时代(在日本为绳文时代)，主要是由于眶高增高。

(三) 判别分析

本研究判别分析的目的是确定每一项目辨别现代中、日组群与新石器时代(或绳文时代)中、日组群的能力,或者说它们在两组群之间差异的显著性。结果表明这两组群之间有非常显著差异的项目是面底长、颅底长、鼻宽、颧宽、眶高、颅宽和最小额宽。此外,刚刚在5%的水平上达到显著差异的项目有眶高和总面部角,但前者主要是由于中国的样本组,后者主要是由于日本的样本组。

从以上三种方法产生的结果可以看出:(1)日本列岛上的早期和现代居民与华南的同期人最为相似;(2)北九州和山口地方的弥生时代人显示了一些类似北亚人种的体质特征,主要是在面部高因子上;(3)弥生时代人这些体质特征并不在现代日本人中占优势,至少是有所减弱,如果不是完全被同化的话;(4)毕竟现代日本人比绳文时代人与北亚居民在人种上稍微接近一些。虽然不能完全排除受弥生时代从北亚的移民遗留下来的影响的可能性,但更大的可能是由于华北、华南和日本居民共同的时代变化趋势。

三、结论和讨论

1.自从长谷川言人以来,日本人类学界一致公认日本最早的居民源自华南。港川人的发现以更多的证据充实了这类研究。港川人在总的说来类似于柳江人,但在某些方面有差别,主要是港川人上面高比较小;颅宽、颧宽、眶宽比较大;面部突颌更明显。由此推测从华南向日本列岛移民开始的时候应该比旧石器时代的柳江人更早一些。此外,日本还存在较早的旧石器时代文化遗址,这也支持上述判断。

日本人在人种上与中国更新世人类的关系有古地理的依据。第四纪冰期中,海平面急剧下降。据计算,在玉木冰期最高峰,海面比现在低132米左右。这样,现在水深平均18米的渤海和平均44米的黄海成为一片陆地,就连较深的东海和南海也分别有2/3和1/3以上的海区出露成陆(戴国华,1984)。虽然对于海平面下降的幅度有不同的意见,但是,日本与亚洲大陆之间至少曾有陆桥相通这点是肯定的。二者之间在第四纪哺乳动物群和旧石器时代文化上的联系(裴文中,1978;长谷川,1980;Nilsson, 1983),与人种上的联系一样,也是以古地理条件为依托的。

2.北九州和山口地方的弥生时代人与面部高度有关的项目(上面高、眶高和鼻高)的平均值较大,身长也比较高,男性平均身长在土井浜遗址为162.8厘米,在三津遗址为162厘米(金关,1966)。这些表明他们可能受到北亚人种类型的影响。但是,在面部突颌程度上这两组仍保留了地方性的特点。

3.弥生时代以后的日本人的面部高和身长比北九州和山口地方的弥生人有所降低。由此看来,来自北亚的影响是局部的、短期的。纵观日本人种的发展过程,尽管有过这段“插曲”,日本居民在总的发展趋势上仍沿着与有更久远的亲缘关系的华南居民相同的方向。

从新石器时代(或绳文时代)到现代,华北、华南和日本居民的颅骨有明显的缩小,主要表现在颅底长、面底长、颅长、最小额宽、颧宽、眶宽和鼻宽等项目上,而眶高则有所增

高。在强调共同的总趋势的同时，也应该注意到在中国和日本这一期间时代变化方面存在着某些差别。在中国，颅高有明显的减低。在日本，有的说绳文时代人颅骨稍高一些 (Suzuki, 1969)；有的说现代日本人颅骨稍高一些 (Yamaguchi, 1982)。从本文涉及的资料看，二者没有多大不同。面部突颌在现代日本人有明显减弱。这个变化在中国人中不明显。

4. 随着第四纪冰期的结束，日本列岛成为孤岛，它与大陆一度存在的通途成为永久的汪洋。从大陆大规模地移民的地理条件不再存在。此外，新石器时代开始出现农业、畜牧业、制陶业，居民愈来愈多地过着基本定居的生活，这是移民减少的内在原因。日本弥生时代在年代上相当于中国历史上的战国、秦、汉和三国西晋时代。秦、汉是中国历史上强盛的朝代，商船的远洋贸易相当发达，为战事需要也有过向边境地区的大规模移民。秦、汉代北部边境有一度强大的游牧民族匈奴(范文澜, 1978)。即便如此，很难想像汉族或匈奴族能够克服海上交通的障碍，大规模向日本列岛移民，并通过他们逐渐同化（而不是被同化）在绳文时期遍布全列岛约二十余万原住民 (Koyama, 1978)。

华北人、华南人和日本人从史前时期到现代的时代变化的平行性意味着可能存在共同的、群体内部的进化动力。有些学者在进化动力的“候选”名单中提出工具的发展、技术进步和食物的改变等，可能都有一定的道理。但是，要找到确定的因果关系，还需要更深入的研究。此外，这种共同的时代变化趋势在地理上超出了本文讨论的范围。以上结果与 Frayer(1984) 对欧洲更新世晚期到全新世早期人类头骨测量性状的时代变化趋势的研究可以互为印证。看来，晚期智人 (*Homo sapiens sapiens*) 体质特征的时代变化应引起人类学家们更大的注意。

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RACIAL RELATIONSHIPS BETWEEN CHINESE AND JAPANESE: A STATISTICAL STUDY OF CRANIAL MEASUREMENTS

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Key words Chinese people; Japanese people; Crania

Summary

Japanese racial elements are supposed to have been immigrated through almost all possible "roads" from surrounding seas. Japanese anthropologists have consistently paid attention to the surrounding regions, especially the continent of Asia, in seeking the "root" of Japanese people.

The present study considers the affinities of the inhabitants in the Japanese Islands within a broad spectrum of the surrounding regions. The Japanese groups studied consist of the Minatogawa man, the Tsugumo, Yoshiko and South Kanto Jomon period groups, the Doigahama and Mitsu Yayoi period groups, and the modern Japanese groups of the Kanto, Kinai, Hokuriku, Ryukyu and Hokkaido Ainu regions. In accordance with this composition, late Paleolithic, Neolithic and modern Chinese inhabitants are used for comparison. Both Northern and Southern Chinese groups of the three periods are included. In addition, Neolithic and modern North Asian populations, as well as modern populations of Korea, Southeast Asia and Oceania, 38 groups in all, are included in this comparison.

All of the 38 groups have means of the following 13 variables in common: cranial length, cranial breadth, basi-bregmatic height, cranial base length, minimum frontal breadth, bizygomatic breadth, facial length, upper facial height, nasal height, nasal breadth, orbital height, orbital breadth (maxillofrontale-ektokochion) and total facial prognathism. These 13 means of the 38 groups form the data-set for statistical study.

Cluster analysis based on the Penrose's distances, factor analysis and discriminant analysis have been carried out.

The mean square distances produced a dendrogram which shows that the Upper Cave man and the modern Andaman group are distant from the remaining 36 groups, while these 36 groups compose 4 blocks: 1) Paleolithic Liujiang man and Minatogawa man; 2) Chinese Neolithic and Japanese Jomon groups; 3) modern Chinese, Japanese, Korean and Southeast Asian groups; 4) Japanese Yayoi groups of the North Kyushu and Yamaguchi regions and North Asian groups.

As to the factors analysis, the first factor explains 35% of the total variance. As in the comparison of Chinese groups only, which was reported in the author's previous paper, almost

all of the linear variables, especially orbital breadth, cranial base length, facial length, cranial length, minimum frontal breadth, nasal breadth and bizygomatic breadth, have large factor loadings. This factor can be explained as size factor. In contrast, orbital height has a negative loading on the first factor. This implies that orbital height has a negative correlation with the other variables with regard to this factor. Also prehistoric groups have higher factor scores than modern groups of the same region. For the second factor, the variables which have the largest loadings are upper facial height, orbital height and nasal height. This factor reflects, mainly, geographical variation, and secondly, secular change from the Neolithic (Jomon period in Japan) to recent times. In this point, also, the analysis is comparable with the analysis of Chinese groups only.

A scattergram based on the first two factors documents a similar trend in terms of secular change from Neolithic (or Jomon) period to recent times in North China, South China and Japan. The general trend is a reduction in cranial size. This reduction concerns the 7 variables which have large loadings on the first factor. At the same time, orbital height increases slightly.

The purpose of the discriminant analysis was to detect the ability of each variable to distinguish between the groups of Neolithic (or Jomon) period on the one hand, and the groups of recent times on the other, regardless of whether Japanese or Chinese were represented. Its use was intended to test the significance of the differences between the two temporal periods in each variable. The results indicate that there are very significant differences between these two periods in facial length, cranial base length, nasal breadth, bizygomatic breadth, orbital height, cranial breadth and minimum frontal breadth.

Summing up the results produced by the above three methods, one can see that: 1) the early inhabitants of the Japanese Islands were most similar to the South Chinese of the same period; 2) Yayoi period people in the North Kyushu and Yamaguchi regions were characterized by high facial height. Their racial elements were affected by a North Asian race; 3) modern Japanese are most similar to modern Chinese among the modern populations studied; 4) there is parallelism in terms of secular change over the period from the Neolithic (or Jomon) to recent times between North China, South China and Japan.

The statistical study described above leads to a further discussion about the racial relationships between Chinese and Japanese peoples.

1. Starting with Prof. Kotondo Hasebe, Japanese anthropologists have generally recognized that the earliest ancestors of modern Japanese were derived from South China. The results of the present study are in good agreement with this viewpoint. This immigration seems to have happened in a time earlier than late Pleistocene—the age of the Liujiang man and Minatogawa man. Although the Liujiang man and Minatogawa man were very similar to each other, they were still different in stature, cranial breadth, bizygomatic breadth, orbital breadth, facial prognathism etc. If these two samples could represent their respective populations, it is a logical inference that this couple of “cousins”, as Prof. Hisashi Suzuki said, had diverged for a period of time. Furthermore, the existence of cultural remains and perhaps human fossils of a period earlier than that of the Minatogawa man gives support to this statement.

In the Quaternary glacial epoch, sea level was reduced by about 100 meters or more. The sea between the Continent and the Japanese Islands became a vast land or at least a land bridge linked them up. It is this land or land bridge that was the “road” of the immigrants from South China.

2. Although the Yayoi people in the North Kyushu and Yamaguchi regions were affected by a North Asian race in certain elements, modern Japanese people are still most similar to modern Chinese. With the fact in mind that they share a common ancestor, two alternative hypotheses can be put forward: that repeated immigration or parallel secular change accounts for the similarities between them.

3. With the close of the Quaternary Glaciation, the Japanese Islands separated from the Continent. The geographical basis for immigration on a large scale has not existed since the end of the glacial age. Also important is the way of life of Neolithic people. Agriculture, domestic animals and pottery occurred in this age. Residents lived settled lives increasingly. Immigration did not occur as frequently as before.

The Yayoi period in Japan was analogous to the Qin and Han dynasties in Chinese history in chronology, which developed foreign trade through ocean-going freighters. A nomadic nationality Xiongnu in the north border of the Qin and Han was also strong. Nevertheless, it is still hard to image that the barrier of the sea could be overcome by immigrants on such a scale so that the local inhabitants (but not the immigrants) were assimilated and absorbed gradually.

4. A certain parallelism in different regions in terms of secular change during the period from Neolithic to recent times implies that common motive forces were responsible for this process. In the list of candidates for these forces might be included cultural and technical progress, improvement of implements, change in food composition and food preparation, as suggested by some authors. In other words, for the secular change of a population in Holocene time inter-population factors are primary or more important; external influence is secondary or less important.

As to the affinities of Japanese, a common remote ancestor and a common trend of secular change resulted in the racial similarity of modern South Chinese and Japanese peoples.

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