Emergence of the Modern Human Mind

Kiyofumi Mochizuki

Josai International University, 1 Gumyo Togane-shi, Chiba-ken 283-8555, Japan

E-mail: mochidk@jiu.ac.jp

When did the modern human appear? Was it sudden or gradual? These are getting the most important theme not only in Archaeology, but in the evolution of human mind. The important thing in judging when humans evolved into modern humans is when humans obtained the modern human mind. However, thus far, the evolution of the modern human mind has been discussed mainly from archaeological, anthropological, and biological viewpoints, and has not been discussed so much in connection with the mind of living human beings. This is the first report on the discovery of direct evidence showing the emergence of the modern human mind by analyzing the Kansei characteristics of living human beings; the relationship between words expressing Kansei and the five senses(Sensus Communis). Some 165 words expressing Kansei were translated into 21 different languages, and surveys were carried out on the relationship for about 800 individuals from these 21 peoples. The results show that the relationship has racial and genetic characteristics. A comparison of the results obtained here with the genetic data reveals that the modern human mind appeared abruptly some 50,000 years ago.

Key words: *Kansei, Human Evolution, Modern Human Mind, Sensus Communis*

Introduction

When did the modern human appear? Archaeologists argue that the abrupt change in human behavior described as a creative explosion began around 50,000 years ago and that it stems from the emergence of the modern human (Brian, 1990; Mithen, 1996). However, some archaeologists refute this model of human evolution and propose a gradual transition from the Middle Stone Age (McBrearty & Brooks, 2000). Was the appearance of modern human sudden or gradual? The most important thing in judging when humans evolved into modern humans is when humans obtained the modern human mind. However, thus far, the evolution of the modern human mind has been discussed mainly from archaeological, anthropological, and biological viewpoints, and has not been discussed so much in connection with the mind of living human beings. This is the first report on the discovery of direct evidence showing the emergence of the modern human mind analyzing Kansei characteristics among peoples.

It has been pointed out that humans became modern humans by acquiring the ability for precisely mapping, exploring and transforming conceptual spaces (Mithen, 1996, 1998), that is, the ability to integrate the conceptual spaces. By obtaining this ability, we can create concrete images from series of words, and we can also make an instrument from several parts. We see that this ability is essential and unique for modern human. The ability to integrate conceptual spaces is called the Sensus Communis in philosophy.

One of the expressions of the Sensus Communis is the relationship between words and the five senses (RBWS), whereby one word is used in connection with plural senses. For example, the word *bright* is used in connection with the senses of sight and hearing, for instance, bright color and bright sound. It appears in words expressing Kansei. Here, I show the results of RBWS surveyed among peoples of the world, and I discuss the emergence of the modern human mind on the basis of the results.

Methods and Results

In order to clarify the characteristics of RBWS among people, 21 different peoples throughout the world were selected. One hundred and sixty five words expressing Kansei were translated into the 21 languages, and some 800 individuals from these 21 peoples were surveyed using the form shown in Table 1. First, in the 21 separate

Table 1 Survey form for RBWS and sample results

	Sight	Hearing	Smell	Touch	Taste	Feeling
1.bright	○	○				○
2.delicious			○		○	
3.violent	○	○		○		
165.elegant	○			○		

The circles in the table show sample answers.

groups of people, the individual data were analyzed by means of cluster analysis, where 165 (words) x 6 (senses); 990 variables, were used for the analysis. When several major clusters appeared in a group, I regarded each cluster as a different population. The data from the individuals in each cluster were averaged, and used as representative data for the population.

In the first procedure, in the Portuguese, British, Swedish, and Chinese groups, individuals fell into two major populations, whereas the 250 Japanese individuals investigated fell into three major populations. Subsequently, the data for the 27 populations were analyzed using cluster analysis. The results are shown in Figure 1. The populations fall into four major clusters. The racial characteristics of RBWS for populations in each cluster are shown in Figure 2 in the form of a radar chart. The axes represent the number of words related to each sense. The radar chart shows how closely the words are linked with the five senses. The greater the connection with multiple senses, the higher the number of words relating to each sense. The hexagonal area in each radar chart thus represents the degree of RBWS. The wider the area, the greater the degree of RBWS.

Discussions

The major clusters in Figure 1 are highly consistent with those obtained by the genetic analyses (Cavalli–Sforza, 1988; Nei, 1993). Moreover, the fact that I obtained three Japanese populations in my results, and their interrelationship with other populations (Figure 1), is consistent and correlates well with the results

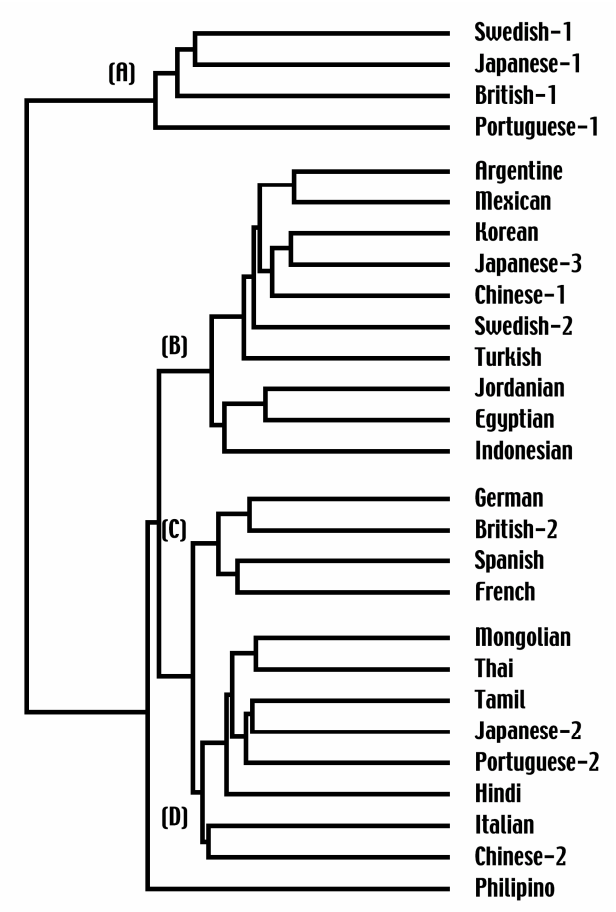

Fig.1 Cluster analysis of 27 populations

The cluster analysis comprised 990 variables (165 words x 6 senses). (A), (B), (C) and (D) represent four major clusters. Argentine and Mexican are Native Americans (Mochizuki, 2001).

obtained from the mtDNA analysis (Horai, 1995). Furthermore, the distribution of the three groups in Japan coincides well with the route for the three groups coming to Japan (Mochizuki, 1996). Moreover, the details of the relationships are confirmed by the archaeological history (Mochizuki, 2001). These results would indicate that the racial characteristics of RBWS are genetic.

Then, how were the racial characteristics of RBWS shown in Figure 2 formed and engraved as heritable features? The degree of RBWS is thought to be affected by the environment. For example, in forested environments various kinds of stimuli, such as the smell of plants, the songs of birds, and a colorful view, activate the five senses. As a result, the feelings described by one word relate to multiple senses and the degree of RBWS

is high, whereas it decreases in an environment with poor stimuli. Therefore, the RBWS characteristics for each group of people are thought to represent the environment in which they lived when RBWS was formed genetically. For instance, the populations belonging to cluster (A) show a high degree of RBWS (Figure 2a), which implies that they lived in an environment with plentiful stimuli such as that found in the fertile temperate zone: that is, the Fertile Crescent zone. On the other hand, the populations belonging to cluster (B) demonstrate a weak degree of RBWS (Figure 2b). This implies that they lived in an environment with poor stimuli: that is, proximate to the Sahara Desert.

These results suggest that the environmental information has been engraved in genes as the racial characteristics of RBWS, and, I would argue, concurrently with the formation of the Sensus Communis, the modern human mind. This can be explained by the metaphor of magma flowing from a volcano. Magma flows in all directions. On the southern slopes of the volcano, many plants are growing and the magma hardens together with the plants. By way of contrast, the northern slopes of the volcano are rocky with no plants. Magma hardens together with the rocks there. Although the magma is the same on both sides, the contents are different. If we can imagine that the hardening of the magma represents the formation of the Sensus Communis, the difference in the contents of the magma represents the difference in the characteristics of RBWS, and this difference is fixed when the magma hardens. Therefore, although the Sensus Communis emerged almost simultaneously among the peoples as the modern human mind, RBWS had racial characteristics due to the environmental differences. That is, although the modern human mind appeared in all peoples, RBWS was engraved with specific characteristics formed by the living environment. This suggests that the modern mind evolved independently among peoples. Were this not the case, RBWS would not differ between the various peoples. Thus, the major clusters shown in Figure 1 are thought to represent the geographical distribution of populations when humans obtained the modern mind.

Then, when the modern human mind appeared? The similarity of RBWS among populations in cluster (A) implies that RBWS formed prior to the separation of

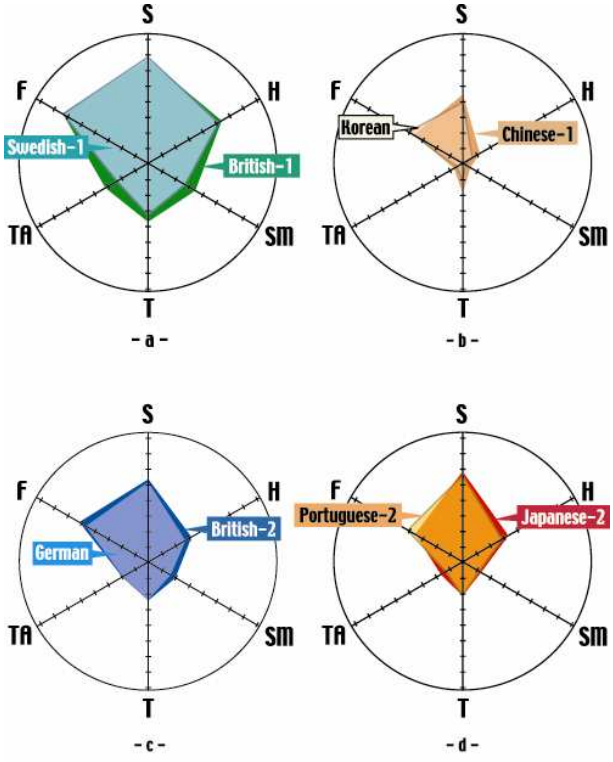

Fig. 2 Characteristics of RBWS

Each axis represents the number of words related to each sense. The maximum value for each axis is 165. (a), (b), (c) and (d) show the characteristics for the populations belonging to clusters (A), (B), (C) and (D) in Fig. 1. S, H, SM, T, TA and F represent the senses of sight, hearing, smell, touch, taste and feeling respectively.

Northwest Europeans and Japanese-1. A comparison of the genetic results and my classification (Figure 1) suggests that the populations belonging to cluster (A) in Figure 1 are descended from the group of people which first separated from other non-African peoples, possibly more than 100,000 years ago (Horai et al., 1986; Horai, 1995). After moving out-of-Africa approximately 100,000 years ago, they stayed in the Middle East for long period, and separated. Their separation is thought to have occurred about 45,000 years ago (Brian, 1990). Therefore, RBWS arose at least 45,000 years ago. Furthermore, RBWS varies greatly between Northeast Asians and Caucasians (Figure 2 (b) and (c)). This means that RBWS formed after Northeast Asians and Caucasians separated about55,000 years ago (Nei, 1974). Thus, RBWS formed between 55,000 and 45,000 years

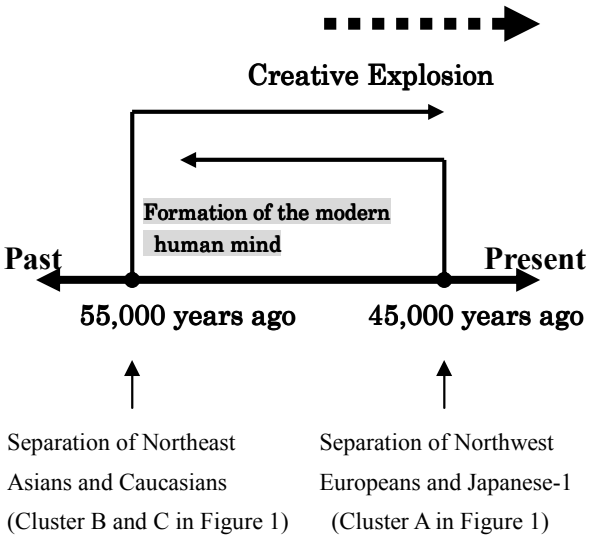

Fig.3 Period of the formation of the modern human mind

ago(Fig.3). This implies that the Sensus Communis; the modern human mind, must have emerged during this period, approximately 50,000 years ago. This is consistent with the beginning of the creative explosion (Pfeiffer, 1982).

Conclusions and summary

Here, I report the discovery of direct evidence showing the evolution of the human mind which has remained in the mind of living human beings. The results show that the modern human mind formed about 50,000 years ago independently and almost simultaneously among peoples living separately. These results suggest that evolution occurred spontaneously across individuals, and that it was not induced by the incremental change of parts as described by Darwin's theory (Darwin, 1859), but by the abrupt emergence of the new ability to integrate the parts; the Sensus Communis. These results would suggest that the evolution of the species is also due to the abrupt change of the whole rather than the incremental change of parts.

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Acknowledgements

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