

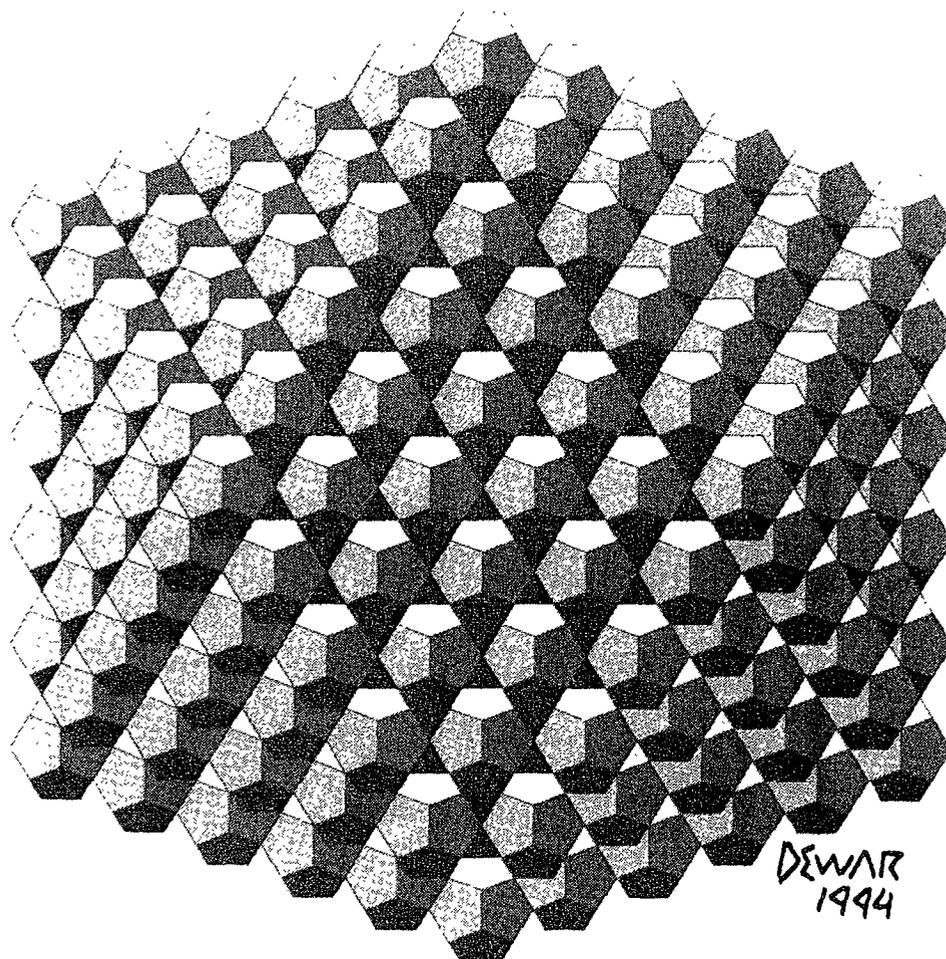
# Symmetry: Culture and Science

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## SYMMETRY VS. OMOTE-URA

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### 1. Mirror symmetry vs. OMOTE-URA contrast

Mirror symmetry must have been suggested by the form of the human body, for looking at from its front, the form of the body and the face are almost symmetrical. Since human being has been the criterion of everything, it is natural that people have thought of symmetry as an essential form in science, art and even in culture. There is however, another important viewpoint of the human body, that is, looking at from the side; or, thinking another axis of contrast which meets at right angles with that of mirror symmetry. While looking from the front of the human body the rightside and the leftside are symmetrical, looking from the side, the form of the rightside and of the leftside are not symmetrical. This latter contrast has not been named so clearly in Western culture, Japanese has called it OMOTE-URA, which can be translated in English as 'front-back'. Speaking of the human body, its front side is OMOTE, and its back side URA. In addition to this, there is another viewpoint of OMOTE-URA; that is, all the surface of the body which can be seen from the outside is named OMOTE, and its reverse side which cannot be seen from the outside is called URA in Japanese culture; and this sort of OMOTE-URA is to be called in English as 'surface-reverse'. And when we think of a part of this surface-reverse structure, it coincides surely with the 'front-back' structure

mentioned above.

If symmetry is regarded as an essential criterion of science, art and culture, *OMOTE-URA* contrast should be also valued more therefore.

At the outset, I will refer to the abstract model of *OMOTE-URA* contrast comparing with mirror symmetry contrast. *OMOTE-URA* contrast has, similar to mirror symmetry, two corresponding points. Every one point of *OMOTE* has its corresponding one of *URA*; they are however, not interchangeable each other like symmetry, which is the most important character of *OMOTE-URA* contrast.

## 2. *OMOTE-URA* in Japanese culture

*OMOTE-URA* has been one of the key terms dealing with Japanese culture. It has been used in the similar sense of 'TATEMAE-HONNE'. For example, social or political institutions such as laws, the Diet and shareholders' meetings are *OMOTE*, while mediation, peacemaking, consultation and so on are *URA*; where almost every decision in the Diet is merely a formal ceremony, its substantial consultation is previously decided; namely, every formal decision of *OMOTE* has its corresponding informal consultation of *URA*.

In the cultural structure, *OMOTE* is derived from the contact with other culture; that is, in general, two different cultures meet out of their *OMOTE*, or *OMOTE* is created in a culture through the contact with another culture, and as its inevitable consequence, the native part of the culture is situated as *URA*.

In my view, the core of the *OMOTE-URA* structure of Japanese culture is *ON* reading and *KUN* reading of Chinese characters. Since ancient ages, Japanese have imported Chinese characters from China, and they read the characters in *ON* reading which was similar to Chinese pronunciation; on the other hand they also read them in *KUN* reading which represented the native Japanese words corresponding to the

Chinese characters. Thus each Chinese character in Japan has had two readings. Later, in modern ages when Japanese imported Western languages, they used Chinese characters in the similar way for translation. Since Chinese characters have been used for expression of important concepts in Japanese history, the way of thinking of Japanese people has become dominated by the double structure of ON reading and KUN reading; namely, by that of OMOTE and URA.

### 3. OMOTE-URA structure in biology

HONDA Hisao, a biologist, deals with that the body of a living, particularly that of an animal consists of OMOTE-URA ( ventral-dorsal in terms of biology ) structure. He explains that the body of an animal is made of a closed sheet with some holes; for example the passage from the mouth to the anus is a hole of this sheet. The sheet has two sides, namely OMOTE and URA, and these two are never confused and are always divided. Even a cell which is an organizing unit of a living has this sheet with OMOTE-URA structure. In the process of development of a living body, OMOTE and OMOTE can come in contact and fuse each other, and URA and URA as well. OMOTE and URA can however never touch nor fuse. OMOTE, the surface of the living is essentially the boundary confronting with the outer world, nevertheless sheets and their OMOTE-URA structure can be created inside the body too, such as some internal organs called mesoderm.

This biological argument is very much common with my opinion on Japanese culture. Both a living body and a culture can be dealt with as closed structure. In Japanese culture, almost every formal institution has been imported from China and Western countries. Many of the rituals of the Tennou System were once from the ancient Chinese dynasties. Laws and the Diet of today have been received from Western countries. It is natural that these institutions once imported from outside

have taken part of OMOTE in Japanese culture. On the other side, many of traditional civilian ceremonies such as rituals, marriages etc. have not been imported from outside though, they have taken part of OMOTE in culture; they are, so to speak, like internal organs called mesoderm mentioned above.

#### 4. Conclusion: OMOTE-URA and mirror symmetry in culture

Thinking from biological structure and cultural structure in the contact with different cultures, OMOTE-URA contrast is, I believe, essentially universal structure in cultures, although this contrast is particularly clear in Japanese culture may be because of its history in which foreign cultures have come into contact intermittently. From the viewpoint of OMOTE-URA contrast, two cultures in contact are essentially not equal and cannot be understood each other at first; then, they may begin to fight, or they need some ritual of meeting, in which two OMOTE of them can be in contact with each other for keeping company in peace.

On the other side, mirror symmetry contrast may be another universal principle in cultural structure in general. From the viewpoint of symmetry; namely, looking at from the front of two cultures or from the front of a similar sort of two things in a culture, people may often find mirror symmetry in them; these are equality of nations, the parity of exchange in economy, the concepts of the equivalent value in natural science, equality of human rights and so on, which have been able to have the support of the people as ideals at any time, though they have not always been realistic.

#### Reference:

HONDA Hisao, *The living body built of the sheet*, Chuokouronsha, 1991, Tokyo

(本多久夫『シートからの身体づくり』中央公論社、1991、東京)