

INTERACTION OF SCIENCE AND ART IN JAPAN

MAYA GERASIMOVA

Institute of Oriental Studies of Russian Academy of Sciences
107031, Moscow, Rosdestvenka, 12
maiyasalve@gmail.com

In Japan very often the most advanced technologies are applied not only in manufacturing, construction and design, but also in the traditional genres of art, sometimes in order to find new ways and means of artistic expression, sometimes to revive old cultural traditions and at the same time to upgrade educational level. The most outstanding example is the so-called *Shigureden* - interactive museum of poetry, which is equipped by company Nintendo, famous in the world for its achievements in electronics.

As for traditional Japanese culture, it is known, that it was highly developed from the ancient times. At the same time advances in sciences until the mid-19th century have been grossly insufficient. Japanese knew very few about achievements in sciences and technology, which were common knowledge in the western countries.

The factors, which facilitated the development of sciences in Japan are the same, that helped to preserve its distinctive originality and can be recognized as derived from their traditional Shinto beliefs the national values, among which the most important were "to create" and "to learn".

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In one of the most picturesque places in Kyoto - Arashiyama, famous for its landscapes from the classic literature, is located interactive museum of poetry "Shigureden". It is a magic place, where "Traditional Japanese culture is reconstructed using advanced modern technology", - as it is announced in booklets and on the web-site.

The word "*shigure*" means "the drizzling rain," and the word "*den*" - "palace". It was the name of the place in the ancient aristocratic palaces, where the

nobles used to indulge themselves in some entertainment in inclement weather. The museum is equipped by the world's largest video game company Nintendo, famous in the world for its achievements in electronics.

In the main hall of the museum one can play interactive games with life-sized dolls, representing characters from the historical past.



FIGURE 1.

behind a translucent screen appears the figure of the noble and educated person, typical of the Heian era (left) or the famous historical and cultural person, for example such as a writer and a court lady Sei-shonagon (966—1017?), best known as the author of *The Pillow Book* (枕草子 *makura no sōshi*) left

Besides this the hall is filled with floor monitors that interact with Nintendo DS units, presenting portraits of the poets, poems, attributes of the epoch and cases, on which the poems were written.



FIGURE 2.

floor monitors



FIGURE 3.

portraits of the poets and stanzas of their poems on the screens of the monitors

The floor monitors also can turn into a huge map of Kyoto, making visitors feel as if they are in the sky, looking down at the temples, gardens, streets and landscapes.



FIGURE 4.

Visitors, using Nintendo DS-based locationaware devices

Visitors here use Nintendo DS-based location-aware devices, called ShigureNavi (shigure navigation). ShigureNavi is a kind of Nintendo DS without buttons - one can only change the sound volume. It is equipped with two sensor devices that receive signals from ceiling-mounted transmitters, thereby delivering location-relevant contents to visitors. It can be used as a “sky-walk navigation system”: if one specifies Nintendo headquarter using the ShigureNavi device, a big bird appears under his feet and guides him to the place through the sky, making him feel as if he is walking in the sky. When the floor-embedded monitors present portraits of the poets and poems as interactive digital installations, visitors, using the device, can play the old poetic card game *utakaruta*.

Utakaruta appeared in Japan in the XVII century, when the Japanese got to know from the Portuguese the European game of cards. Its main requirement is knowledge of the poems included in the classical Japanese anthology of “One hundred Japanese *waka* by one hundred poets”.

This anthology was compiled about 1235 AD, by the famous poet Fujiwara no Taiko (Sadaie) (1162-1241). The popularity of this collection was so great that many people knew these hundred poems by heart, even several centuries after it had appeared. On each card is written the initial or final stanza of the poem.



FIGURE 5.

On each card is written the initial (top) or final stanza of the poem (bottom)

The winner is the one, who manages to unite ahead of the others the "halves" and make the whole poem.

Utakaruta has become not just a popular game, but the traditional entertainment on the first day of the New Year. Today the competitions in knowing these poems are held in the New Year holidays in some shrines, clubs, etc. The use of digital technology allows visitors to expand the range of the poetic game. Of course, today, there are very few of those, who know the hundred poems by heart, but the popularity of the museum among all ages and social groups is beyond any doubts.

Needless to say about the benefits brought to society by such interaction of high technology and poetry, the role of which, as well as the role of various arts, in the lives of Japanese people has always been extremely high.

As far as we can judge from the literature and cultural monuments, the art from the ancient times was highly developed. The poetry and Art played the major role even in the everyday life of the people. It is known, that when the Europeans first appeared in Japan, they recognized as pieces of fine and applied Art the most of things the Japanese used in everyday life - lacquered boxes, vases, woodblock prints, trinket, etc. They were not only beautiful and well-made, but each of them was an expression of certain Image.

Meanwhile the Japanese were not successful enough in science. Due to the so called closed - door policy, pursued by the military-feudal government, every kind of relations with European countries, except highly limited communication with the Netherlands, were prohibited during the period of 1639-1854. So they got acquainted with achievements in science and technology, which were subject of common knowledge for people in Western countries, only after the year 1867. It was the time, when the reforms, aiming at modernization along Western lines, has begun.

So we can speak about asymmetry in mentality, which led to a highly developed arts and lack of scientific knowledge.

An attempt to trace the origins of certain features of the national character and, consequently, culture and art, can give the following picture, where the answer to the question about the reasons of long period "asymmetry" in Japanese life can also be found.

Realizing the human himself as a Part of the Whole was the basis of the Japanese culture and formed its specifics, which are reflected in all aspects of social life in Japan even today. Each of them is worth speaking about, but here I will concentrate on two - the creative activity, manufacturing (*monozukuri*) which in Japan has given rise to items that are highly artistic, and willingness to borrow other people's knowledge and experience, that has enabled Japan to achieve great success in all areas.

The attempt to highlight and summarize briefly the positions of Shinto, which influenced specifics of the national character of the Japanese and Japanese culture, will result in two principles - on the one hand it will be the relationship of people and multiple Shinto divinities, and on the other - realizing human himself as an integral part of the Nature.

Japanese gods *kami* are not the inhabitants of a distant world, they are very close to people, actively involved in their lives. *Kami* react to peoples actions, punishing them or encouraging. Peoples should please the gods and to appease them, because they can be very evil and send disaster on people. It was believed that, one of the ways to please *kami*, was to be industrious. It would mean the expression of their gratitude to the gods for the wonderful world, which they gave to them. When pleased, gods rewarded people for their diligent work in various ways, including giving them new knowledge. But diligent and hard work was not enough. People should also demonstrate to the gods that they understood their intentions and ideas. Their worldview has helped them in this task.

Animistic elements of Shinto gave rise to people's belief in the existence of the soul *kokoro* in everything, what surrounds a human, or with what he has to deal with during his life, - animate and inanimate objects, actions, phenomena, concepts.

The human's consciousness of himself as being an integral part of the Nature, involved into the "universal interconnectivity", along with the Shinto belief in the existence of the soul in everything, contributed to the birth of such perception of the world around him that everything, whatever it was, objects, events and phenomena, became the subject of equal importance. This attitude to the world is reflected in the concept of *mono-no aware* [aware], literally "the pathos of thing". Sometimes it is translated as "the empathy toward things," but it is a unique Japanese term for the basic Japanese concept, concerning their world viewing and it is worth remembering its Japanese pronunciation as we do concerning kimono, ikebana, samurai etc.

It is generally expected, that *mono-no aware* [aware], is interpreted as human's emotional response to the *kokoro* - the soul, existing in everything. As for aware[aware], it is explained as the movement of human soul, when it gets in contact with the soul of other things. The dictionaries of archaisms also explain "aware" [aware], as "the feeling, which connects person with this or that thing". Usually along with delight, sorrow and love, regarded as human's "main feelings", sympathy *nasake* is pointed out in every case. While on the topic, the explanatory dictionaries of modern Japanese, treating the meaning of widespread notion "*ninjo*" (literally "human feelings") also point out along with delight, sorrow, and love the feeling of sympathy.

It is necessary to emphasize, that from the ancient time the sympathy was regarded as one of the most "natural" human feelings. Moreover, the sympathy was the synonym of good taste and delicate soul — *furyu-na kokoro*. This interpretation of *nasake* can be confirmed by many episodes, described in classic literature.

World viewing, when the sympathetic attitude to everything around is regarded as one of the main values (this is a reason to regard *mono-no aware* not only as aesthetic, but also as ethics category) gives birth to the aspiration to see the

invisible, to hear the inaudible (Nakanishi, 1996) and to understand just by feelings and emotions the essence of a thing or a phenomena.

So we can suppose, that the Japanese, getting down to manufacture something, first of all reacted to the **natural** material, gave an emotional response to its heart, its natural essence, and tried to expose it. The Japanese are not the exception, it was (and still is) the same with everybody, but not many of them regard it as comprehension of the soul of the thing and an expression of respect and gratitude to Nature. This is why we can find extremely strong attention to the natural pattern on the wood, to the shape of stone, to the color of sand, to the “breathing” and “alive” texture of clay etc., which we can see in Japan.



FIGURE 6.

The clearly visible natural pattern on the wood pillars in this gallery adds to it not only artistic and aesthetic value, but also spiritual, creating a special atmosphere, when contact with the higher forces of Nature seems possible



FIGURE7.

“Stoneness of the stone” appeals to the human sensitivity and makes work his emotional activity, which means to feel afflatus



FIGURE8.

Human hand undoubtedly touched these stones, fetched out their “durability and reliability” and plunged them into the “unreliable” water in the pond around the garden house (Tokyo, Happon)



FIGURE 9.

One of the main criteria, by which the ceramics in Japan are assessed, is “breathing” and “alive” texture of its body

Thus, making the thing, whatever it would be, had become a creative action, although unconsciously, aimed at exposing natural essence and the finished product was the unique (only one) of its kind, unrepeatable as the Nature itself is. It was perceived not only in the utilitarian way, but also as some image, full of its own significance, linking the human with the Nature (M. Gerasimova 2003). In other words, he tried to expose “the stoneness of the stone”.

“Stoneness of the stone” – this expression belongs to Russian critic Shklovski` (Viktor Shklovsky, 1929). He used it, speaking about the tasks of art. But Japanese motivation for the exposure of “stoneness of the stone” was quite different. First of all it was the result of respect and sympathy to the object, which was a part of Nature as well as the human himself was, and secondly it was his belief that the fact of his “getting the gist” pleased divinities.

This belief contributed to the emergence of another feature, characterizing both - the process of creating something and the creator`s intention. Namely - the lack of interest to the creator`s individuality. It was not peculiar to the Japanese to try to show the surrounding world through the prism of his own vision or to express his personal emotions. Of course they did, but pretended not to, and it seems, that sometimes they succeeded. For example, the poem waka [vaka] by Fujiwara Shunzei (1114–1204)

神山や大田の沢のかきつばた
深き頼みは 色にみゆらむ
(*Kamiyama ya Ōta no sawa no kakitsubata*
Fukaki tanomi wa iro ni miyu ramu)

Literally it is said in it “There are irises near 'Ōta Wetland ... in the color of their flowers can be seen the depth of the entreaty”.

What it is about? It is rather about strong feelings, than beautiful flowers. As strong, as deep is the color of flowers. This is confirmed by the fact, that Ōta Wetland is situated near Kamigamo shrine, where people come with a prayer to the

divinity and the poet guesses, that power of their hopes and desires, usually expressed in their prayers, deepens the color of the flowers.

Beautiful and elegant, this poem is quite dramatic, because although the main characters are irises, it is about hopes and troubles of those, living in this mortal world. This poem is full of indescribable suggestiveness and make the reader experience the feelings, that are not mentioned in the poem (*yojo*). It must be emphasized that the poem should be understood as an expression of the nature of the strong feeling. It is a very important nuance for understanding Japanese poetry, but it is difficult to convey it *in translation*. I tried to find the translation of this poem into English. And I have found two, both in the Internet without specifying the name of the translator, although it would be better to say in this case “interpreter” or “versionist”. Here they are:

1. "Like the kakitsubata at Ōta Wetland, a God-sent heaven,
my trust in you can be seen in the color of their flowers."

2. This holy mountain - the irises of Ota marsh,
in their color can be seen **our** deep hopes”.

I will not go into details analyzing these variations, but it is necessary to point out the fact, that in both cases the personal element is brought into the poem. It is very typical for those who consider artistic creation to be the way of self-expression before everything else. This individualism - the European heritage of the nineteenth century, - was unknown in Japan, where, as already mentioned above, a creator was striving for the exposure of the essence of things, phenomena, events, concepts, human feelings and emotions.

Of course, they brought their emotions and feelings in poetry, but it was not a goal and happened unconsciously.

Strictly speaking, everything, that caused an emotional response, should be expressed and shared, and so became the theme of the poem. It can be proved by the specifics of ancient poetic tradition and a great many poems created "here" and

"now" not only by poets, but by ordinary people - fishermen, border guards etc, also. Not all of them are masterpieces, but they all have the character of an impromptu. This can be viewed as a sign of sacred importance of poem, the special status of the emotions and the necessity to express them - to each other, to divinities and to Heaven.

All these, as was believed, helped to harmonize connection between the Human, the Nature and the World around as well as "getting the gist" and exposure "stoneness of the stone", "woodness of wood" etc., manufacturing things.

Thus creative activity was aimed at ensuring universal interconnectedness of things, in which a man was a part, equal to others. Universal interconnectedness of things, as was believed, was maintained by the means of indirect communication. Indirect communication presupposes hint, symbol etc. Hint, symbol etc. are determined by inner view and inclination, intuitive understanding of the heart of the thing, which should be expressed. This does not mean that there was no canonical means of artistic expression used by the great masters in any field. However, these means, oriented on partner's sensitivity and imagination, making him empathetic co-creator, also contributed to the maintenance of interconnectedness. However, it should be stressed that the indirect, non-verbal communication was a feature not only of Art (though not realized as such). It brought the element of creativity into the everyday life also.

This can be clearly demonstrated by the example of Ikebana, known all over the world as the Japanese art of flower arrangement, which the Japanese call the "way of flowers"- kadō and do not recognize as Art, but as cultural tradition, inspired by religious worldview.

The truth about the origin of Ikebana is unidentified. It is thought to have come to Japan as part of Buddhist practice. But the Japanese used to put flowers on Shinto altars too and they saw no reason in presenting flowers to the divinities, as they were created by themselves. So people had to use imagination and arrange the

flowers in such a way, which would show to the divinities, that people understood their intentions. So what was required was nothing else, but a creative artistic idea (Yamaguchi, 1996).

Artistic approach had to be in any kind of activity in everyday life also, as already was mentioned above, which is full with symbols and allusions, causing associations, awakening the imagination and playing the role of means of indirect communication (M. Gerasimova, 2013).

So, speaking about various activities of the Japanese, we can use terms, which usually are used concerning the Art and its function: “motivation” and “connection”, but with two caveats. Communication usually has an intent or goal directed toward another individual. This is a motivated purpose. So the first caveat is that in the Japanese case we are not talking about artistic activity. (There was neither concept of Art, nor the word meaning creative artistic activity in Japanese language until the middle of the XIX century. One can recall a few examples of using the word, which is now used for the "art", to mean "technology, "engineering", "practical science", in other words, the knowledge and skills that can be of practical use. The most far-famed is utterance "Eastern morality - Western technique", where for the word "technique" is used the same word (*geijutsu*) as for the Art. It belongs to Sakuma Shozan (1811 – 1864) a Japanese politician and scholar of the Edo period and should be seen as an illustration to the way Japan ought to handle modernization. The Japanese got acquainted with the concept of "art" and the aesthetic theories, as well as western achievements in science and technology only after the year 1867, when the period of reforms, aiming at modernization along Western lines has begun).

Non-infringement of interconnectedness was regarded as a pledge of harmonious existence in the womb of the Universe. In contrast to this in the West we can see the desire to disassemble everything in this world, as Kawai Hayao including the phenomenon, on small parts, which is the starting point of a tendency

for analysis. This manner of thought was a powerful engine for the development of science in the West. (Kawai, 2004).

The second term refers to those to whom peoples intentions are directed to. In Japanese case these were not only individuals, but the divinities *kami* also. Divinities, believed to be very close to people, actively involved in their lives and encouraging them for their diligent work, as also already mentioned.

As one of the types of encouragement was considered new knowledge, which people get with the help of divinities.

Thus there was no fear in front of new and unknown, any changes considered as leading to the improvement and “to learn” being one of moral duties. (It is interesting to note that in Japanese language every word, which implies redoing something, that is aimed at revision, alteration or remake of anything, is a compound word, the second component of which is the word “*naosu*”, meaning “to improve” : for example –to change your mind - *kangaenaosu* – literally is “to correct thoughts” , to reconsider - *minaosu* – “to improve the “vision” of the things”, to rebuild –*tatenaosu* - to improve what has already been built, etc. And the most important is that due to all these improvements, made by people, not only the world is developing and becoming more and more perfect, but people purify and refine themselves.

It may explain the strong ability of people to assimilate different elements of other cultures, as well as the knowledge. The openness of the Japanese to the experience and knowledge of others can be explained by this belief. The researcher of Japanese culture and religion Yamaori Tetsuo points out, that the Japanese are good learners and it helped them to achieve great success during the modernization of Japan (Yamaori, 2004) and to take one of the leading positions in science and technology, in the worldwide scale in the future, what we can see today.

Due to this trait of national character, the Japanese could overcome the age-old gap between Japan and Western countries in scientific and technical fields in a very short period of two or three decades. It must be emphasized that the new

never canceled the old and aspiration to innovation in Japan has always been combined with the desire to preserve their traditions. One proof of this is mentioned above interactive museum of poetry “Sigureden”. There are many others too.

Today the interaction of science, technology and Art can be seen in various fields at various levels. In this regard, it must be said that in Japan, an innovation, whatever it was, never denied the old, but coexisted with it and today one can enjoy listening to the singing Vocaloid or seeing performances in traditional theaters Kabuki and No as well as performances, where robots are acting together with people, discussing the problems of their coexistence, in search of new ways of harmonizing the connection between the Human, the Nature and the World around.



FIGURE 10.

Scene from the play "I, Worker"

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