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THE INTERACTION OF THE WRITING SYSTEM AND THE PHONETIC SOUND SYSTEM

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Abstract: The article analyzes the processes of formation of Japanese writing and phonetic system, the introduction of Chinese writing system into Japan and the adaptation of this process to Japanese language. The gojuon scheme, the articulatory sequence of consonants and vowels, pa–fa–ha sound changes and the emergence of handakuten/dakuten signs indicate that Japanese writing has approached phonetic accuracy. The eight-vowel system discovered by Hashimoto Shinkichi served as a scientific explanation of the phenomena of spelling in ancient Japanese. The study sheds light on the historical development of Japanese writing and phonetic thinking, the natural evolution of language and the process of accurate expression of oral speech through graphic signs in writing.

Keywords: Japanese writing, phonetic system, gojuon scheme, Pa–fa–ha sound change, dakuten / Handakuten, hashimoto Shinkichi, eight-vowel system, ancient spelling phenomena

It was somewhat difficult for the Japanese people to correctly express sentences in Chinese writing. Due to insufficient knowledge of the Chinese writing system, a number of errors were made in the use of hieroglyphs, including confusion between similar hieroglyphs, violation of word order, and the use of hieroglyphs that were not in accordance with the meaning. In general, these texts did not meet the requirements of the standard Chinese language. Let us consider the processes of the introduction of the Chinese writing system to Japan in the 6th-7th centuries. The phonetic sequence is ha-hi-fu-he-ho. This remarkable fact makes us think about the complexity of interactions in ancient Eastern civilizations. However, for linguists, it is enough to note with amazement how beautifully the phonetic sequences are structured. Among the vowel sounds, “i” and “e”, “u” and “o” have similar characteristics, while the first sound, “a”, has a unique character. In the phonetic series of the Godjuon scheme, vowels are placed one after the other: a–i–u–e–o, so that the characteristics of each sound are more clearly distinguished[1, 25].

When humans pronounce vowels, they use their speech apparatus like a trombone. The narrower the space in which the sound is formed, the thinner the vowel. When pronouncing the sound “I”, the tongue is placed flat forward, the space left for the sound is very narrow, and the lips are stretched to the sides. When pronouncing the sound “O”, the tongue is retracted back, the lips are moved forward and the space widens, and the sound is heard lower. When pronouncing the sound “A”, the tongue is in a neutral position, and the mouth opens up and down. When pronouncing the sound “U” in Japanese, the lips are not pulled forward, as in Russian; this sound is formed deeper than the sound “O”. When pronouncing the sound “E”, the position of the speech apparatus is in an intermediate position between the sounds “A” and “I”. The order a-ka-sa-ta-na-ha-ma-ya-ra-va is formed in such a way that the articulation of consonants begins in the deepest part of the speech apparatus and gradually moves forward. Of course, “a” is a vowel and is in the first place, since the tongue does not participate in its pronunciation at all. The sound “k” in the syllable “ka” is formed in the back of the tongue,

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blocking the free flow of the vowel deep down. The sound “s” in the syllable “sa” is formed between the tongue and the palate, and the air moves forward over the tongue, not yet reaching the teeth. In the sound “t” in the syllable “ta”, the tongue touches the teeth. When pronouncing the sound “n” in the syllable “na”, the speech apparatus is arranged in the same way as in the sound “ta”, the difference is that the air comes out through the nose [2,65].

There is a problem with the pronunciation of the “ha” series. It is understandable, because the tongue goes back again - this is a back lingual sound. This is considered evidence that this series was originally a “fa” series and that in ancient times the Japanese pronounced the sound "f" instead of "h". The next sound - the “m” in the syllable “ma” - completes the articulation, since when it is pronounced, the lips are completely closed. The remaining series, namely the ya, ra and va series, have the initial sounds [y], [r] and [v], which are considered semivowels, so these series are considered separately. However, their order is also built on the basis of a shift from the back of the tongue to the front. The fact that the tongue goes back again - once again confirms that this sound is a back lingual sound. Thus, the phonetic sequence ho–hi–fu–he–ho was in the form pa–pi–pu–pe–po until the Nara period, and in the Nara period the consonant [p] turned into [f]. Approximately at the end of the Muromachi period - the beginning of the Edo period, the sound [h] appeared, which is pronounced much softer than both the Russian “h” and the English “h”. For example, the word “leaves”: in ancient times it was pronounced as [pa], then it changed to [fa], and finally the modern variant [ha] appeared. What is the reason for such changes? In his work “Study of the P Sound”, Uzda Kazutoshi (1867–1937) called the main reason for these transformations “degradation of labial consonants”. This phenomenon is explained by the decrease in the tension of the lips when pronouncing some sounds. In addition, in addition to the series pa-pi-pu-pe-po, the series va-vi-we-wo also underwent changes (the initial consonant of this series was pronounced like the English “w”, and in the current series "va-o", the "w" sound was preserved in the syllable "va", but it was lost in the syllable "o"). If we were to write the word "river" in hiragana according to modern rules, it would be かわ. However, according to the historical spelling principle, it should have been written as かは. In ancient times, かは was pronounced like [kapa], and later it changed to [kafa], but it never became [kaha]. The fact is that at the end of the Heian period, a phenomenon called は行転呼音 (hagyō: tenkoon - "ha-like sound reversal") occurred: in this case, the sound [f] that was preserved in places other than the beginning of a word became [w]. Therefore, [kafa] changed to [kawa], but in writing it was still expressed as かは [3,58].

Only in the 20th century, the scientist Hashimoto Shinkichi suggested that the reason for the special spelling phenomena in ancient writing goes back to the ancient phonetic system of the Japanese language. He became interested in the phenomenon described by Isidzuka and after studying it, he discovered that there was an "eight-vowel" system (that is, the presence of 8 different vowel sounds). This discovery immediately explains the following situation: why pairs of characters were never used interchangeably in Manyogana script.

For example:

- Hieroglyph ((仮) syllable [ki],
- The characters 紀 represent the syllable [ki].

In no case were these signs interchanged, because for the people of that time, these two syllables were distinct sounds.

Hashimoto called this phenomenon「上代特殊仮仮名遣い」(jōdai tokushu kanazukai) — meaning "Special kana spelling of the ancient period". In his 1942 book「ロー国語の音韻大

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多のあるない」(Kōdai kokugo no on'in ni tsuite) he divided the manyogana characters into groups based on the gojuon (Japanese table of 50 sounds) [6,75].

He gave two sets of characters for 20 syllables:

Group A – mo:rui (i-e-o)

Group B – otsurui (y-ue-uo)

After Hashimoto's research, the eight-vowel system became accepted and accepted by the scientific community. Thanks to this discovery:

The phonetics of the Nara period became much clearer.

Great progress was made in the etymology and historical grammar of Japanese words.

In the monuments written in Mangyōgana, the second syllable of the word "God" is written with group B hieroglyphs (微、未、尾、味), i.e. [mɪ], and the second syllable of the word "upper" is written with group A hieroglyph (美), i.e. [mi]. The words [kami] and [kami] are not homonyms and are not etymologically related: the hieroglyph 美 was never used to write the word "God". There is reason to assume that by the 9th century the differences in pronunciation of the twenty pairs of syllables mentioned above had disappeared, since there are no separate kana signs corresponding to group A and group B hieroglyphs [5,86].

The issue of missing vowels in the series ya-yu-yo remains. Logically, it should have five vowels: ya-yi-yu-e-yo. However, even at the time of the "Manyōshu", the Japanese language did not have the sound [yi], and no pairs of Manyōgana characters were recorded for writing the sound [i]. As for the differences in the sounds [e] and [e], this difference was preserved until the 10th century, as Okumura Teruzane (1792-1847) wrote in his book "Kogen [e], [e] ben" ("On the sounds [e] and [e] in ancient words"). The differences in the pronunciation of i/ɪ, e/ue and o/uo as separate vowels were the last to disappear. It is assumed that this happened at the end of the 11th - beginning of the 12th centuries, that is, after the creation of the kan, which is why there were two signs for the sounds [i], [e], [o] in the syllabic alphabet. Semi-consonant sounds Pa-pi-pu-pe-po are called semi-consonant sounds, and this term immediately raises many questions. What does this “semi-” consonance mean? Does the sound [p] belong to the consonant sounds? In any textbook, it is called voiceless, even first-graders know this. Until the time of the Nara, the sound [p] was considered a voiceless sound paired with the sound [b], but later it was deprived of this honorable place. This place was first taken by the sound [f], and then by the sound [h]. The sound [p] itself was preserved in imitative words and verb exclamations. For example, [hyu:-hyu: pyu:-pyu: byu:-byu:] – “the wind is blowing”; [hi:-hi: pi:-pi: bi:-bi:] – “someone is crying”; [hara-hara para-para bara-bara] – “leaves are falling, rain is falling, hail is falling”; [heko-heko peko-peko beko-beko] – “bows (about a person), bends (about a flexible surface)”. These examples show that the sounds [h, p, b] reflect an increase in the level of movement. The sound [p] here performs the function of a sonorous sound, but it cannot be called a sonorous sound, because the sonorous sound [b] is considered. But it cannot be called voiceless either, this place is taken by the sound [h]. Thus, the sound [p] does not belong to "neither here nor there", which is why it is called 半濁音 [handakuon] - "semi-consonant sound" [9,87].

When students learn katakana and hiragana, they don't even think about the fact that 半濁点 [handakuten] ([hannigori]) - the round mark in the upper right corner of the ha-hi-fu-he-ho line - appeared in Japanese writing relatively recently. Before that, for five centuries, educated people would guess which word should sound the same, based on the content. From the Muromachi period to the Edo period, there was no tradition of putting any marks next to kana signs. It's hard to believe, but it's true: handakuten was first used by Portuguese missionaries at

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the end of the 16th century, when they translated Christian books into Japanese. In fact, they did not intend to change Japanese writing, they introduced handakuten for themselves, because they wanted to make the process of learning Japanese easier for themselves. Thanks to handakuten, they were able to more accurately reflect the oral speech of the Japanese in writing. The most striking example of the Portuguese form of writing is the Japanese-Portuguese dictionary compiled by the Jesuit Rodriguez (1558-1629) [10,52].

The idea of a small circle was not an invention of the Portuguese. The fact is that in Japanese literature of that time, in special cases, when the author wanted to emphasize the absence of resonance, it was customary to put a small circle - 不濁点 [fudakuten]. Thus, the Portuguese missionaries changed the meaning of this sign to its direct opposite. An example of the use of fudakuten is the famous book by Motoori Norinaga: in 1797 he translated "Collection of Old and New Japanese Songs" into a modern language and published it under the title「古今和歌集遠鏡」"Kokinwakashu: tōkagami" ("Collection of Old and New Japanese Songs": View through a Binocular"). The fact is that in Japanese there are expressions such as koe nakuba and shiramoji (with resonance), and the author did this so that the reader would not be confused. Nakuba is an old conditional form, which expresses a definite permanent connection between two parts of speech, while nakuba, as in modern Japanese, means conditional, that is, the condition does not have to be fulfilled in all cases. Shiramashi means "we probably could not know", while shiramaji means "we do not intend to know". In both cases, the fudakuten is inserted by Motoori, who interpreted the original text in this way [6,48].

The Japanese continued to use the small circle to indicate a specific pronunciation, and this was not limited to the syllables ha-hi-fu-he-ho, but was used until the end of the Edo period. At that time, this sign became especially popular in "street literature" - novels intended for ordinary people and in which the characters used street language in their speech. For example, the word "father" was pronounced by ordinary people as [atotsan], and to express this in writing it was written as: おとつさん. The Meiji period reforms, which confirmed the "historical spelling of the tick", officially made the handakuten mark an indicator of the sound [p], although many people still did not use this mark, because they did not consider it necessary. Since 1946, the obligatory use of the handakuten mark has been generally accepted in spelling standards. The rule of using dakuten in all cases has appeared much more recently. Even the 1889 Constitution of the Empire of Japan did not specify the ringing. The Constitution of the Empire of Japan, 1889, Article 3: "The person of the Emperor is sacred and inviolable." Read: [tennō-wa shinsei-ni shite okasu bekarazu] Written: [tennō-wa shinsei-ni shite okasu hekarasu]. In addition, some laws that have survived from a time when the rule for placing dakuten was not as strict as it is today still exist in their original form, and only when they are amended are new editions published indicating the ringing.

Dakuten 声点 [shōten] – “sound points”, which are derived from the so-called “tone points”. For example, in the commentary to the “Golden Light Sutra” (see above), the reading of the hieroglyphs is indicated using manyogana, and these signs are surrounded by dots indicating the tone. For example, 織 means “to weave”, next to it are manyogana signs 於留, which indicate the reading of the day [oru]. The first character [o] has a single dot in the upper left corner - this means that this syllable should be read with a high flat tone. The second character [ru] has a dot in the lower left corner, which indicates a low flat tone. In this commentary, the tone pattern is also presented in the form of a table: instead of a hieroglyph, a square is drawn, around which are dots and hieroglyphs explaining their meaning. The Japanese writing and phonetic system were formed as a result of centuries of complex historical

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processes [9,87]. The adoption of the Chinese writing system caused certain difficulties in adapting to the phonetic and grammatical features of the Japanese language, but it was this process that gave impetus to the independent development of Japanese linguistics. The structure of the Gojuon scheme, the articulatory sequence of consonants and vowels indicate a high level of systematization of Japanese phonetic thinking.

The eight-vowel system discovered by Hashimoto Shinkichi made it possible to explain the spelling phenomena of ancient Japanese on a scientific basis and served to more accurately reconstruct the historical phonetic picture of the Japanese language. Sound changes such as pa-fa-ha indicate that articulatory simplification played an important role in the natural evolution of the language.

The formation of the dakuten and handakuten signs led to the approximation of writing to oral speech. At first, the sonority, which was based on semantic and contextual perception, was later expressed through specific graphic signs. As a result, modern Japanese writing has become a perfect system, combining phonetic accuracy and historical tradition.

Reference

1. Алпатов 1973—2006 — Алпатов В. М. Категории вежливости в современном японском литературном языке. М.: Наука, 1973. 2-е изд.М.: УРСС, 2006.

2. Алпатов 1988—2003 — Алпатов В. М. Япония: язык и общество. М.: Наука, 1988. 2-е изд. М.: Муравей, 2003.

3. Лутфиллоева Ф. М. Япон тили иероглифларини компьютер имитацион моделларидан фойдаланиб ўқитиш методикаси //Science and innovation. – 2022. – Т. 1. – №. Special Issue 2. – С. 1-143.

4. Makhmudovna L. F. Introduction Of Advanced Pedagogical And Information And Communication Technologies Into The Educational Process In Teaching Japanese Hieroglyphs //Czech Journal of Multidisciplinary Innovations. – 2023. – Т. 24. – С. 1-5.

5. О.В.Язковская Отображение мифоиделогической концепции кокутай в учебных очерках по истории Японии конца 30-40-х годов XX века. Вестник ТГТПУ. 2011. №2 (24).

6. Miller 1982 — Miller R. A. Japan's Modem Myth. The Language and Beyond. N. Y.; Tokyo: Weatherhill, 1982.

7. Лутфиллаев М., Лутфиллоева Ф. Мультимедиали воситалар асосида визуализацияланган ўқитиш технологиялари //Анализ актуальных проблем, инноваций, традиций, решений и художественной литературы в преподавании иностранных языков. – 2022. – Т. 1. – №. 01. – С. 153-156.

8. Moeran 1989 — Moeran B. Language and Popular Culture in Japan. Manchester University Press, 1989.

9. Doi, T. (1986). Amae: A Key Concept for Understanding Japanese Personality. In: Lebra, T. S., & Lebra, W. P. (Eds.), Japanese Culture and Behavior. Honolulu: University of Hawai'i Press.

10. Wierzbicka, A. (1997). Understanding Cultures Through Their Key Words. Oxford: Oxford University Press.