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## THE ADDED LETTERS OF THE GREEK ALPHABET

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Some of the letters added to the alphabet by the Greeks (xi, phi, chi, psi) have caused much perplexity. In the Western Greek alphabet xi, phi, chi, with the forms  $\chi \phi \psi$ , come at the end of the alphabet. In Eastern Greek xi, with the form  $\Xi$ , the Semitic *samekh*, comes in the same place as the Semitic letter, after nu; phi, chi, psi, with the forms  $\phi \chi \psi$ , come in that order at the end. The confusion has given rise to all sorts of explanations. By some attention to the names of the letters, a little more light can be obtained. First of all, however, it must be pointed out that there must be a definite relation between the Eastern and Western alphabets as regards these added letters. The similarities, partial or complete, of forms, function, position, and name make that certain. The fatal weakness in Nilsson's treatment of these letters in his otherwise admirable article<sup>1</sup> is the implicit assumption that these letters developed independently in the two main branches of the Greek alphabet.

It is obvious that each of the four letters is named in the same way, by attaching one and the same vowel<sup>2</sup> to the consonant sound which the letter represents. This is true of no other letter of the alphabet except pi, and here the name is a natural development of the Semitic name *pe*. It seems, therefore, that pi is the prototype of the others. But why was pi picked out rather than nu, rho, or any other letter? Was the first of the new letters the xi, for example? If so, why was it named on the analogy of pi, with which it has nothing in common? Scholars have noted this fact and have tried to explain it by the nearness of xi to pi in the alphabetic order. But mere nearness, without actual juxtaposition, is a conclusive argument against rather than for this explanation. It will be noted that the four added letters consist of two aspirated mutes (chi, phi) and these same mutes followed by s (xi, psi), or, putting it another way, of the palatal surd *k* followed by

<sup>1</sup> "Übernahme u. Entwicklung d. Alphabets durch d. Griechen," *Kgl. Danske Videnskabernes Selskab, Hist.-fil. Meddelelser*, I (1918), 6.

<sup>2</sup> For our purpose it is immaterial whether the spelling  $\phi\iota$ , etc., or  $\phi\epsilon\iota$ , etc., is used.

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*h* and by *s*, and the labial surd *p* followed by the same letters. Obviously it was not the labial pair that was first formed out of the palatal *pi*; rather *phi* must have been the first. As to form, it was probably the *pi* with a distinguishing mark through it, as Nilsson suggests, though the *theta* perhaps had an influence in bringing about the use of a complete circle,<sup>1</sup> for it was the analogy of *theta* that presumably suggested the development of a single letter for the aspirated labial and palatal instead of using two characters. This of course is far from saying that *phi* grew out of *theta*. The resemblance of *phi* to *koppa* has led some to derive the former from the latter, but this is quite impossible in view of the fact that there is no similarity of function between them and that they are not near each other in the alphabet. One might as well argue for a relation between *mu* and *san* or *sigma* on account of their formal similarity, or of *P* and *R* in Latin, etc. I am quite ready to admit of course that *after* the invention of the various letters they influenced the development of one another, as they still do, but that is a matter quite apart from their original invention.

The introduction of *chi* must have come about soon after that of *phi*, to complete the series of aspirated mutes. But which is the original *chi*, the Eastern or the Western? One form of the Western *chi* ( $\psi$ ) is exactly the shape of the *kaph*, ancestor of the Greek *kappa*, in the oldest example of Phoenician script known, that found at Byblus. It seems better to say that this was known to the Western Greeks as an archaic *kappa* than to take refuge in the theory of pure coincidence. It is a not uncommon phenomenon to assign to an archaic form a new value. This was done in the case of *upsilon*.<sup>2</sup> When *i* and *j* were differentiated in modern times, no new form was devised, but the older of the two forms was assigned to the vowel, which is more entitled to it perhaps, but in the case of *u* and *v*, the more archaic form, *v*, was given to the newer letter. That archaic and variant forms were preserved side by side is well illustrated by the abecedarium of Metapontum, in which, to fill an empty space for the sake of appear-

<sup>1</sup> This is perhaps more plausible than to assume that the *phi* preserves the original rounded or oval form of *pe* found in South Semitic and in the Sinai Semitic inscriptions (see my article on "The Origin and Development of the Alphabet," *American Journal of Archaeology*, XXXI [1927]), but the latter explanation is by no means impossible.

<sup>2</sup> See my article cited above.

ance, two different forms of the last letter, xi, were used. Similar evidence is furnished by the preservation of obsolete letters (e.g., *samekh*) in various abecedaria.

We thus come to the important conclusion that the first letters added after epsilon were developed in the Western, not the Eastern, Greek alphabet. There are other arguments in favor of this view, such as the absence of these letters in some Eastern districts and their invariable presence in Western Greek. Particularly impressive is their presence in the newly found Marsiliana abecedarium, our earliest example of Etruscan script (about 700 B.C.).<sup>1</sup> The rather general tendency to assign the origin of the added letters to the Eastern alphabet has probably been due to the fact that the existing Eastern inscriptions are older than those of the West, but the early date of the Marsiliana abecedarium now weighs down the balance on the other side.

At about the same time, or soon after, the Western Greek developed a sign for *ks* and named it after the analogy of the other added letters phi and chi. The form seems to be a slightly changed form of the kappa.

One difficulty remains up to this point: If phi and chi were developed first, as seems certain from the relation of the name phi to that of pi, from the greater necessity for characters for the aspirated mutes than for compound letters like *ks* (a *ps*-character was not developed at all in Western Greek, and in old Attic xi and psi were not used), and from the parallel of theta, closer than that of zeta, why does xi precede phi and chi in the Western alphabet? The answer is supplied by an abecedarium from Metapontum, an Achaean colony. In this we find the order which we expect: phi, chi, xi, with the Western forms.<sup>2</sup> We must assume that as these letters were adopted elsewhere the order varied and finally became fixed as xi, phi, chi. That this should happen in the case of three added letters and not in that of the twenty-two letters of the original alphabet is not surprising, as the original letters were memorized in the regular order, when first introduced, by people who had no alphabet. Somewhat parallel is the case

<sup>1</sup> Cf. Grenier, *École française de Rome*, XLI (1924), 1.

<sup>2</sup> Others, too (e.g., Gercke, *Hermes*, XLI [1906], 551; Hammarström, "Beiträge z. Gesch. d. etruskischen, lateinischen u. griechischen Alphabets," *Acta Societatis Scientiarum Fennicae*, XLIX, 2 [1920], 42), consider this the original order on account of the greater need for phi and chi and the absence of xi in certain districts.

of the letters *y* and *z* added to the Latin alphabet in the time of Cicero. These are not found, however, in abecedaria of Pompeii which date from the Empire; this shows that they were in use for some time before being formally added to the alphabet. Under such circumstances a confusion in order would not be surprising.

At the same time the Eastern Greek independently developed a sign for *ks* in a different manner. The Greek had inherited a letter *samekh* which in the alphabetic order came after *nu*. This character was preserved, as we know from abecedaria, in both East and West, but not used, except sporadically for *ss*. The Eastern Greeks gradually came to use this character for *ks*, presumably without naming it. The name *samekh* was probably not available, as it is likely that the name *sigma* is derived from it. The choice of *samekh* for *ks* may have been due to the assimilation of *ks* to *ss* in some dialects.<sup>1</sup> As *samekh* was occasionally used with that value, confusion would be natural.

As the next step in our reconstruction of the history of the added signs, we may imagine that the Western forms of the signs were brought to the attention of Eastern Greeks. Phi they adopted readily. Xi, however, they did not need, as they were already using the *samekh*. They adopted the Western name for their *ks*-sign, but by some confusion used the Western form of *ks* for chi. Perhaps they recognized in the Western xi a variant form of kappa and therefore used it for *kh*. Such confusion continued in the various dialects:  $\Xi$  is used for  $\zeta$ ,  $\text{I}$  for  $\xi$ ,  $\Psi$  for  $\xi$ .<sup>2</sup> The Western form of chi was thus unnecessary, and the idea came into being of using this sign for the combination *ps*, on the analogy of *ks*.

It will be noted that the relative order of the names of the added letters is the same in Western and Eastern Greek (*xi*, *phi*, *chi*), that it is the order of the signs which differs. This circumstance suggests that the borrowing was one primarily of names, secondarily of signs. In other words, an Eastern Greek was told that the Western Greeks had three additional signs, *xi*, *phi*, *chi*, with the values of their initial sounds. His reaction was that his alphabet already contained a *xi*,

<sup>1</sup> For examples see Larfeld, *Griechische Epigraphik* (von Müller, *Handbuch*, I, 5) (3d ed., 1914), p. 245. This work contains an excellent summary of the literature on the points raised in this paper.

<sup>2</sup> Larfeld, *op. cit.*, p. 223.

but that the name was useful. The phi and chi he adopted in the order named, but confused the forms of the Western xi and chi in taking over the signs. Psi naturally came at the very end, as it did not occur in Western Greek.

Complicated as the foregoing explanation may appear, it probably is not as complicated as the actual facts, for the extra letters may have been buffeted about among the various communities. The facts are complicated and require a complicated explanation. The present one has the advantage of using the names of the letters as a criterion and of utilizing the striking similarity of the Western chi to the newly discovered early form of the Semitic *k*. Further light would be shed if one could find an explanation of the confusion of the sibilants in Greek that would harmonize with the confusion in regard to the added letters.

Many different places have been suggested as the starting-points for the added letters. The foregoing account points to Achaea, or perhaps to some other Peloponnesian district, for we have no abecedaria to tell us whether xi came after chi or before phi in these districts.<sup>1</sup> From here they spread to Northern Greece. The early Boeotian alphabet represents an early stage, with phi and chi, but xi used only occasionally. In some one of these northern states, perhaps Euboea, the order was changed accidentally to xi, phi, chi. Next they spread to an eastern center like Miletus, where the values were changed as shown above on account of the previously existing use of *samekh* for *ks*. Then these new values were carried not only to the other Eastern Greek districts but also to Corinth and the surrounding territory. For the alphabet of Corinth is Eastern only in respect to the added letters; in other respects it is either independent or Western, as one would expect from its geographical location.<sup>2</sup> The Eastern characters came to Athens also, but only phi and chi were accepted there.

This outline implies that Corinth refused to accept the added letters when they were offered by its neighboring states of the Western alphabetic division, but finally accepted the Eastern values when it

<sup>1</sup> The inaccurately recorded abecedarium of Vaste (Tarentum, founded by Laco-nians) perhaps had xi at the end.

<sup>2</sup> Cf. Drerup, *Musée Belge*, V (1901), 142 ff.

saw that most states had them in the one form or the other. This early conservative tendency is shown also by the other states to which Corinth was alphabetically or geographically related. The early inscriptions of Crete, Thera, and Melos have none of the added letters, although at the time they were carved both Eastern and Western values of the added letters were widely used. Athens adopted only the Eastern phi and chi, Boeotia adopted the Western phi and chi, but the xi did not find general acceptance.

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