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THE MIDDLE MONGOLIAN VOCALIC HIATUS

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The consensus of western Mongolists to the effect that the written records of Middle Mongolian in the ḫPhags-pa script, along with those in Chinese-character transcriptions, show an "intervocalic hiatus", to be understood as a phonetic zero, in certain forms for which the Uighur–Mongol script employs a velar graph, is reinvestigated on both the pragmatic (orthographic) and the structural (phonological) level, with particular reference to the probable values of the ḫPhags-pa graphs for the laryngeals, studied in the light of the attested values of their Written Tibetan originals. Considerations of the complementary distribution of certain velar initials in Middle Chinese and Old Mandarin are also invoked, to clarify the use of both the Chinese characters and the ḫPhags-pa script in transcribing Middle Mongolian. The investigation points in the direction of understanding these "hiatus" writings not as incorporating or representing a phonetic (or phonological) zero but instead as overt graphic representations of a voiced laryngeal or uvular spirant.**

Key words: Middle Mongolian, Tibetan, Old Mandarin, phonetics, phonology, orthography.

Mutatis mutandis, an alphabetic system of writing functions by establishing a one-to-one juxtaposition between its graphs and the phonemes structurally operative in the language for which it is devised. This follows logically from the observed fact that any natural language makes do with a relatively small set of contrastive entities, i.e., phonemes, and such sets are small enough to permit us to devise an equally small set of distinct graphs to serve as their written surrogates. Probably no completely perfect alphabetic writing system has ever been devised, in the sense that every specimen thus far constructed inevitably makes some minor provision for writing units on a lesser level than that of the phoneme;[1] nevertheless, so long as these notations do not become too numerous, they do not significantly interfere with the essential function

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** Typographic conventions observed in this paper: < > enclose transliterations; / / enclose phonemic analysis-entities; [ ] enclose phonetic symbols.

[1] Even in the canonical analysis of Sanskrit in India, home of the phoneme, considerations of symmetry on occasion led to recognition of sub-phonemic elements (e.g., Emeneau 1946, on the status of the Skt. palatal nasal [ñ] as an allophone of the dental nasal phoneme /n/).

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of an alphabet, which is to provide a limited number of graphs for the limited number of the language's phonemes. If, on the other hand, the structural principle of a writing system were to be altered with the chimeric goal of providing a graph for every phone (or sound, or noise) of the language, the entire principle of alphabetic writing, not to mention the alphabet thus devised, would collapse upon itself, since the number of graphs would multiply so rapidly, in tandem with the enhancement of the phonetic–auditory powers of the one(s) devising the system, that it would soon reach unrealistic, and essentially unworkable, limits.[2] This, in effect, is the internal contradiction inherent in the so-called "International Phonetic Alphabet" (IPA), which may, to be sure, be described as "international", and is indubitably "phonetic", but is by that same token not actually an "alphabet" properly so-called, since it ignores the phonemic principle and seeks instead to devise graphs for every phone that any given observer can distinguish. Hence in the IPA the number of graphs is a function, not of the structure of the language at issue, but instead and solely of the degree of auditory–phonetic acuity achieved by the individual devising the graphs.

Nevertheless, it is possible to point to one feature that all alphabetic systems, even pseudo-alphabets of the purely phonetic, IPA variety, have in common. They all appear to observe the axiomatic principle embodied in the well-known classical tag *Natura vacuum abhorret*; i.e., they all attempt to provide graphs for sounds that someone perceives to exist, whether on the phonemic or phonetic level; but they do not as a general rule concern themselves with devising graphs for sounds that do not exist. Whatever their goals or ends, writing systems that to any significant extent honour the alphabetic principle are never concerned with writing entities that do not exist. In this respect, they resemble nature: they too abhore a vacuum and do not attempt to "write nothing".

An important exception to this last general principle is well-known and close at hand, in the form of the documentary evidence for what has long been called the "intervocalic hiatus" in certain early written records for Middle Mongolian. This apparent exception would, of course, be important in its own right if only because it appears to violate the essential phonemic principle of all alphabetic writing, by providing overt graphic representation for nothing rather than for something. But it is also important for yet another reason. Its details involve important elements for our knowledge of the structure of Middle Mongolian that we may only recover from the same written records in which this apparent exception appears; from this it also follows that clarification of the situation involved may eventually throw important light not only upon the history of Mongolian but also upon the ultimate, and perhaps original, relationships obtaining among the Altaic languages in general.

The most significant graphic evidence for this apparent exception is available to us in the Middle Mongolian texts transmitted in the Tibetan-based alphabetic writing system, now commonly known to scholarship by the somewhat irrelevant desig-

[2] For a recent demonstration of where this proliferation of "close transcription" in the IPA tradition may lead in the analysis of Modern Tibetan, see Denwood (1999), where fugitive sounds (or rather their symbols) put in an appearance here or there in a single word or two, but are scarcely noticed or accounted for thereafter (e.g., p. 71: [ɾ̥]; p. 92: [ɻ̥]).

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nation "h̲Phags pa" (hereafter: Q)[3]. This script was, in its own way, something of an IPA of the Mongolian Empire. It was essentially based upon the Tibetan writing system, but it introduced additions and alterations to this inherited system in order to provide graphs for "sounds" that were encountered in some of the various non-Tibetan languages that it was used to write but which appeared not to be readily represented by the available Tibetan-based repertory of graphs.[4] In thus deviating from the phonemic principle, the Q script tended, sometimes dangerously, in the direction of our own IPA and its "one sound – one symbol" fallacy; but fortunately this tendency was apparently kept in check in most instances, so that the expansion of the graphic repertory of the system along these lines never became a serious problem. As a result, the Middle Mongolian written records transmitted in Q are naturally of exceptional interest, both *qua* written records and at the same time as evidence for the phonological history of the language they seek to represent. The other major corpus of Middle Mongolian written records, those in which the language was transcribed by means of Chinese characters used as phonograms, presents its own special problems; but by and large the evidence of these texts will be found to follow along the same lines as that available from the Q.

Loss of a final velar when nouns in -G[5] appear with the plural suffix *-Ud* is one of the more striking phonological idiosyncracies of Middle Mongolian routinely identified in the handbooks and secondary literature, e.g. Poppe (1955, pp. 179–180; 1964, p. 99); Mostaert (1927 [= 1999], p. 257 and note 79). The received view of this phenomenon explains that in such cases as *čerig* 'army, soldier', *čeri'ud* id., pl., *ajimag* 'division', *ajima'udun* id., pl., gen., and *nojanlig* 'officer', *nojanli'ud* id., pl., an original final velar of the noun in question was replaced in the phonological system of the language by "hiatus" when the noun underwent morphological juncture with the plural suffix. This hiatus was and is traditionally represented in the scientific transcription of Middle Mongolian by "--'--", a writing that according to the commonly accepted view of the literature is to be understood as indicating no more than

[3] The term 'h̲Phags-pa', appearing in our literature in a variety of different transcription-spellings, is here passed over in favour of Q = *Quadratschrift, kvadratnaja pis'menost'*, WMo. *dörbeljin üsüg*, for a number of reasons; these include orthographic simplicity, but also the fact that naming the writing system in this abbreviated fashion after the honourific-title of its putative inventor h̲Phags.pa Blo.gros rgyal.mtshan (1235–1280), Vth Sa.skya patriarch, is effectively to designate it 'Rev.', the first element in his title being no more than a calque on Skt. *ārya*.

[4] Some of these graphic innovations included the provision of added symbols for the front-and-back allophones of the velar stops; but the most impressive was coining a specific symbol for a mid-front vowel allophone [ė] that was in fact no more than a positional variant of MMo. /e/. It is interesting to observe that, on the question of the phonemic status of this Q <e>, Poppe's analysis, initially purely auditory–phonetic (1950, p. 263), gradually shifted in the direction of a phonemic–structural approach (1955, p. 46), even while he continued cautiously to skirt open conflict on the issue. The graphic innovations in Q that were necessary when it was adapted to writing Middle Korean are much more involved, and if anything even more important for linguistic history than those concerned with Middle Mongolian (Miller 1996, pp. 86 ff.); most of them have been identified but remain to be studied in proper detail.

[5] Writings with *-G*, *-U* etc. represent archiphonemes of neutralisation, phonological entities on yet another structural level from those of the phone and phoneme (Miller 1955, passim).

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that both vowels between which it was found remained full vowels, with no trace of the development of a diphthong in which one or the other of the two vowels in question had become a semivowel, or a glide, or anything of the like.

In other words, according to this analysis the original velar phoneme terminating the noun here disappeared *qua* phoneme. It became a phonological as well as a phonetic zero. If it functioned at all on any level, phonemic or phonetic, it was solely as a "hiatus marker"; but apart from this the velar in question simply ceased to exist. And this in turn means that in writing it the Q script was writing a zero. Such is, to say the least, an interesting and unusual historical–linguistic scenario; but we must ask: is this what really happened? To have amplified its graphic repertory from time to time with this or that new, innovating symbol to accommodate a "new sound" encountered in this or that foreign language is one thing; but to use something already in the script inventory to write something that did not exist except as a hiatus marker is another. So we must ask: did the Q script in this and related cases depart so widely from the alphabetic principle as no longer to abhor a vacuum, and in effect to "write a zero"?

In attempting to answer this last question we must trace something of the history of the study and analysis of this phenomenon, and in particular the development of the doctrine of the "hiatus marker --'--". Obviously a complete account of the enormous bulk of the literature involved is impossible here; nevertheless, we may be adequately served by a selective sampling of the available sources.

Almost a century ago G. J. Ramstedt arrived at the first significant account of the larger pattern of phonological change in the early and prehistory of Mongolian of which the Middle Mongolian so-called hiatus is only one aspect. He suggested that "[d]er urmongolische tönende Klusil *γ, ebenso wie der spirant **w*, sind im Mongolischen in den meisten Fällen geschwunden, und zwei Vokale, zwischen welchen die betreffenden. Laute waren, sind in den jetzigen Dialekten zu einem langen Vokal zusammengeschmolzen. Dieser Schwund hat sich in vielen Fallen schon einer vorschriftlichen Periode vollendet, und der Hiatus, der sich auf solche Weise gebildet hat, wurde spater in der Schrift durch ein γ ausgefüllt, und als, Regel wird dieses γ in der Schriftsprache auch jetz beibehalten' (Poppe 1924, p. 670, summing up Ramstedt 1902, pp. 21 ff.).

Approximately two decades later, and particularly in response to the evidence of the Chinese transcription texts of the *Secret History* which were then becoming available to European scholarship,[6] P. Pelliot succinctly summed up the problem, but in the process also followed Ramstedt's lead insofar as to conflate it with the question of those other cases where WMo. < g, γ > appeared to write an original labial spirant phoneme rather than an original velar. In all these cases, he ruled, the velars of the Uighur–Mongolian script were no more than graphic notations for a phonetic, and phonological zero, i.e., they were mere hiatus markers that in reality wrote nothing. In substantiation of this view, he cited the evidence of the texts in the Q script

[6] As early as 1920 Pelliot boasted that he had already been able to reconstruct the entire Middle Mongolian text of the *Secret History* from its Chinese transcription (1920, pp. 134–135), and as evidence printed his version of section 188 of the text (1920, p. 176, note 2, p. 180, note 1) (= de Rachewiltz 1972, line 6424 ff.).

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along with that which he believed to have discovered in the Chinese transcriptions of the *Secret History* (Pelliot 1925, p. 208; p. 249, note 2). This view shortly thereafter became doctrine; in his analysis, and indeed even in the mechanical details of his transcription, Pelliot has been almost uniformly followed by western Mongolists ever since. This has been particularly the case in the subsequent interpretation of the Q script writings of the feature in question as "--'--", i.e. hiatus, a convention that, e.g., we too have followed in our introductory exposition of the problem *supra*.

But even though it soon became an important part of the western Mongolists' canon, the Pelliot version of what had happened in this particular segment of the Middle Mongolian phonology was not received everywhere in the world without dissent. N. N. Poppe continued to employ the accepted "--'--" notation in all his publications throughout his long and productive scholarly career. But at least once he made it clear that, in line with his understanding of the work of A. Dragunov on the Q transcriptions of Old Mandarin (1930, p. 637), he himself understood the writing "--'--" as rendering "a glottal stop of the Arabic type (*ʿayn*[7])", (Poppe 1951, p. 189b), i.e., the voiced pharyngeal fricative intended by the IPA symbol [ʕ][8]. In other words, it is plain that even though Poppe, in his unual concilliatory fashion, continued to employ the same transcription convention as did Pelliot and his many followers, in writing it he himself understood something quite different – in a word, not nothing but something.

Sharply divergent from the School of Paris Orientalists on this point were also the views of three important Japanese scholars whose work is too often mostly, if not entirely, overlooked by western Mongolists.

Shiratori Kurakichi (1865–1942), in the course of his study of the Middle Mongolian loan words in Chinese transcription in the *Koryŏsa* (1929), had occasion to transcribe several lines from the *Secret History*, section 232.[9] Working with the Chinese transcriptions of this text, and taking cognizance of the phonological implications of those transcriptions, Shiratori rendered each case of what today, following Pelliot, is commonly understood as hiatus not with "--'--" but instead with -*ɣ*-, i.e., with his symbol for a deep-velar or uvular voiced spirant.[10] Pelliot can hardly have been unfamiliar with these readings of Shiratori, as well as with the phonological–historical analysis underlying them, since his own article on the Middle Mongolian loan words in this same text (1930) was in effect a lengthy commentary based upon

[7] Poppe, *loc. cit.*, wrote "a glottal stop of the Arabic type", followed in ( ) by the Arabic letter *ʿayn*.

[8] In contexts such as these the IPA still has utility, i.e., in identifying discrete auditory–perceptual entities against a generally accepted grid of phonetic coordinates. But this function, important though it obviously be, ought never to be confused with the goals of linguistic description and analysis on any scientifically significant level; a "broad IPA" transcription is generally little more than an incomplete phonemic analysis. (In the present paper the IPA symbols employed and the description of their auditory–perceptual coordinates follow the 1989 version printed in the inside front cover of Bright – Daniels 1996.)

[9] The fragment was drawn from *Secret History*, section 232 (= de Rachewiltz 1972, lines 9122–9123); it appears in Shiratori 1929, rpt. 1970, p. 425.

[10] Shiratori, *loc. cit.*, wrote *köɣüt*, *temeɣečin.i*, *kebteɣül*, and *basaɣalažu* for what subsequently have been understood as *kö'üt*, *teme'ečin.i*, *kebte'ül*, and *basa'alaju*.

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a careful reading of Shiratori (1929). But it is significant that while Pelliot subjected almost all of Shiratori's remarks to searching critique, to the contrary he passed in silence over this, the Japanese scholar's striking departure from his own by-then canonical interpretation of the Middle Mongolian hiatus.

As it happens, Shiratori's views were not always to remain in obscurity in the world outside Japan. In his reconstruction and translation of the Middle Mongolian text of the *Secret History* (1942[11]) completed just before his death, the Japanese scholar extended his analysis of this feature rigorously throughout the entire text, using the symbols $\dot{\gamma}$ and $\dot{g}$ to mark its graphic evidence (as he understood it) for the existence of a voiced uvular spirant and its velar partner, similarly the symbols γ and g for a uvular voiced stop and its velar partner. Working with Shiratori's 1942 reconstruction, G. Doerfer was unique in the West in first recognising both the essential validity and the importance of this analysis of the phonology of the text, and moreover took the bold step of basing his own interpretation of the Middle Mongolian materials from various sources largely upon it (1964a, pp. 35–36; 1964b, p. 54 with note 5).[12] In this fashion he also gave concrete evidence that, so far as this feature of the language was concerned, he believed it necessary to depart from the canonical Pelliot analysis that had in effect dismissed the texts' evidence for the so-called hiatus "als reine Graphie" (1964a, p. 35). For Doerfer, as for Shiratori, the Chinese transcriptions of the *Secret History* provided graphic evidence for something, not for nothing.

[11] In contrast to the well-documented transmission of the *Secret History* text to Europe (Hung 1951; de Rachewiltz 1972), its path to Japan and its scholarly vicissitudes there have been somewhat neglected in the literature, apart from a single laconic notice (Hung 1959, p. 445, note 31). Nor does Hung's dismissal of Shiratori's reconstruction of the text as being no more than "the retranscription of Mongolian words in Latin letters" (1951, p. 447) begin to do justice to its subject.

[12] As the result, a somewhat involved system of graphic equivalencies evolved, details of which tend to obscure the linguistic evidence they were designed to illustrate: Shiratori's $\dot{\gamma}$ and $\dot{g}$ correspond to Doerfer's γ and $\acute{\gamma}$, but Shiratori's γ and g correspond to Doerfer's $\dot{g}$ and g. This largely resulted from the fact that to some extent the Shiratori system, and to a greater degree that of Doerfer, conflated themselves with an irrelevant historical level of discourse, in a Pyrrhic attempt to solve the *conundrum* that "the consonant *γ exists in [Mongolian] spoken languages in intervocalic position only in cases where it has not disappeared" (Poppe 1955, p. 147). This long-standing problem has traditionally been approached from a variety of directions, sometimes with a view to correlating it with absence or presence of original vowel length in proto-Mongolian, and/or in terms of a stress- or pitch-accent which in turn may or may not have triggered vowel length (e.g., Kobayashi 1954, pp. 251–152; Hattori 1959; Poppe 1960, pp. 40–49). The cautions expressed by Ligeti (1963, p. 160, note 34) concerning these explanatory attempts were well taken and deserve attention even today; only his implicit equation of the Q "hiatus" writings with original vowel length seems to be questionable. Once more the solution is more likely in recognising separate and distinct levels of historical morphology in the forms concerned, rather than in the necessarily gratuitous assumption of vowel quantities or suprasegmentals not directly attested. In such terms, a word like WMo. *büge*, MMo. [böñe] 'shaman' represents the regular development for nouns, while the apparently aberrantly preserved *-g-* examples such as WMo. *üge*, MMo. [üge] 'word' are historically deverbals (cf. *ög-* 'to give (a name, a notice)', *ügüle-* 'to speak, say'). The different historical–morphological level of the *-g-* forms, rather than a suprasegmental difference in the proto-language, is apparently what accounts for their different phonological structuring; similarly also *bügü*, *bügüde* 'all', < *bü-* 'to be', cf. *büged-* , perf. converb.

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Between Shiratori (1929) and Shiratori (1942) further light had been shed upon this question in a paper by Hattori Shirō (1939), much of which was recapitulated in a volume of *Secret History* studies by Kobayashi Kōshirō (1954, pp. 247–264). Hattori and Kobayashi both argued that, in the Q script and the Chinese transcriptions alike, the original phonological element underlying the so-called hiatus was unlikely in the extreme to have been a phonetic zero. They also were of the opinion that, given the inherent difficulties of the Chinese transcription evidence, the surest way out of this analytical *cul-de-sac* was to rely upon the better understood Q materials. Accordingly, the essential first step was to arrive at a clear understanding of what the phonetic value of the graph Q <h̲> had been at the time of the formation of the Q script (Hattori 1939, p. 16–17; Kobayashi 1954, p. 255). Hattori realised (correctly enough, in our opinion) that the Written Tibetan (= WT) <h̲> upon which the Q graph <h̲> had been based[13] was, at least in the critical intervocalic position, a writing for a voiced [ɦ]; but he hesitated to make much of this evidence, arguing that this value was to be identified only in the writing of modern Tibetan languages, and "we do not know what it represented in the Mongol period" (1939, p. 22 and note 32). Kobayashi for his part was somewhat bolder on this score, finally extrapolating upon both Shiratori and Hattori to conclude that the graph Q <h̲> when employed to transcribe Middle Mongolian represented a "voiced palatal trill consonant" for which he further suggested IPA [ʁ] as a suitable equivalent symbol (1954, p. 264), or in the current (1989) IPA terminology, a voiced uvular fricative.

It is obvious that the central problem in almost all discussions of the evidence for the Middle Mongolian hiatus believed to be found in the Q script has been, and continues to be, the nature of the phone (or phoneme?) with which the inventor(s) of the script sought to juxtapose the graph Q <h̲>, and also the equally obvious fact that this question is inherently involved with the role of the WT graph <h̲> from which this Q graph was fashioned. Certainly one reason why the Pelliot interpretation of these supposed hiatus writings has held the philological hegemony for as long as it

[13] On the history of the Q <h̲> graph and its epigraphical derivation from its WT prototype, see Francke (1910, p. 1208); Clauson (1959, p. 322); Rintschen (1952, p. 69, no. 88). Informative are also the data on related Indic graphs for writing voiced or murmured glottal fricatives of the type IPA [ɦ] in Daniels – Bright (1996, pp. 385, 400). Much of the continuing western scholarly confusion concerning WT <ʔ> and <h̲> and their Q derivatives has arisen from the accident that many Tibetanists have traditionally used the writing <ḥ> to transcribe WT <h̲>; but in Indology generally <ḥ> has long been the transcription for the Devanāgarī *visarga*, which was instead a feature of voiceless breath. In other words, the canonical graphic praxis for transcribing WT simply reversed the values of the symbols. Small wonder, as a consequence, that after three full decades of pondering these matters Sir Gerard could only conclude that it was still best to write "the traditional (British [*sic!*]) transcription of their Tibetan prototypes, viz. h̲ and '… on the understanding that this is a purely graphic convention without phonetic implications" (Clauson 1959, p. 314); in other words, he had by then decided that nothing could be learned about the subject. Meanwhile, the frequent hints that Pelliot dropped (e.g., *JA* 210 [1927], p. 372; *T'P* 29 [1932], pp. 167–168) suggesting that the Q script was not only in debt to WT but also to Brahmī originals, and that "le lama 'Phags-pa n'a rien apporté de nouveau" have unfortunately not been followed up, with the possible minor exception of Rintschen (1952); otherwise, though attempting to deal with this problem, Denlinger (1963) is impossible to understand, and Hashimoto (1967) is useless.

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has, may be traced back to what may only, in all charity, be described as a genial lack of information concerning the modern Tibetan languages and the information that their pronunciation may shed upon the various elements of the WT script, a situation that obtained in Paris far longer than it might have been expected to do. In mid-century, WT <h̲> was still being described as a "semi-voyelle", while its transcription by "--'--", and by implication also the similar treatment of the related Q graph, was still being eulogised on the grounds that "l'apostrophe ... indique bien la nature de ce phoneme qui apparaît ... comme la notation d'une sorte d'écho, d'une suggestion sonore très peu articulée" (Lalou 1950, p. 2). But even at the time that this was being written, other, more serious information had been available (Dragunov 1939, p. 292, note 1); and soon thereafter the literature began to provide more than adequate linguistic information concerning this once-mysterious "semi-voyelle" or "support vocalique" whose pronunciation was supposedly so well represented by "l'apostrophe". Before long it had become clear[14] that WT, and following it the Q script also, had made provision for writing three different glottal phonemes. One was a plosive, IPA [ʔ], while the other two were fricatives; and of these fricatives, one was voiceless, IPA [h], and one was voiced, IPA [ɦ]. The [ʔ] was written with the so-called WT *"a-čhen*[15] and its Q derivative; the [h] was written with WT <h>; and the [ɦ] with the so-called WT *'a-čhung* and its Q derivative, all of which finally brings us back full circle to the same entity that has so long appeared in the discussions of the Middle Mongolian hiatus as "--'--".

With this summary of the present state of the literature on the phonetic and phonological correlatives of the WT script, we have also in one sense ventured a reply to a critical question that Hattori posed many years ago (1939, p. 22 and note 32). He asked how can we know what WT <h̲> represented in the 13th century, at the time of the fashioning of the Q script, even though we now know, e.g., what WT <h̲> represents today in this or that living Tibetan language? The answer, of course, is that in one sense we know nothing, but in another we know quite enough to go ahead with our historical–linguistic investigation of the documents at hand.

We know nothing, in the sense that a dead language is a dead language. No one now living, or even anyone living a century ago in Paris, ever heard 13th century Tibetan pronounced. But in another sense, we must surely recognise that in every

[14] Denwood (1999, pp. 69, 72) now offers a concise statement of the IPA equivalents of the three glottals of Modern Tibetan; the earlier literature includes Dragunov (1939, p. 292, note 1); Miller (1955, p. 481); Róna-Tas (1966, pp. 129, 143); Miller (1967, p. 124, note 6). More recently, the excellently documented discussion of the literature on this question in Róna-Tas (1992, p. 699) became available, and covers virtually every aspect of the problem. In connection also with this contribution, it should be noted that the apparent anomaly cited by Róna-Tas from Csongor, *loc. cit.*, is readily resolved by the phonological–structural considerations exhibited in the present contribution.

[15] The names *"a-čhen* and *'a-čhung* ('big *a*', 'little *a*') are "a late, secondary innovation of probable non-Tibetan origin" (van der Kuijp 1996, p. 432); they are unknown to the Tibetan grammarians' tradition, and indeed to any modern educated Tibetan unless he or she has had to learn them in the process of trying to teach Tibetan pronunciation to foreigners. The Tibetans have never needed such names, since it is sufficient for their purposes to identify the letters by pronouncing the initial consonant at issue followed by the vowel *a* in the proper tone depending upon the initial. This is what the Chinese have called, quite simply, "pronouncing the letter as itself" (cf. *infra* and note 19).

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other branch of the phonology *except* for the realm of the glottals, or laryngeals, or whatever we choose to call the elements in question, no one working with these languages and their early texts has ever had a moment of hesitation assigning present-day attested values to other graphs worked out centuries ago. We know from his publications that Hattori, for all his careful caution concerning WT <h̲> and its Q equivalent, had no hesitation in assigning the value of an unaspirated unvoiced dental or palatal affricate to WT <c>; and so forth through the entire repertory of the script. If we cannot, as he suggested, say anything of historical value concerning WT <h̲>, then we cannot say anything about any of the other graphs of the script either.[16]

The preliminary philological spade-work must always be undertaken before written records documenting earlier stages of a language may be placed under contribution by the linguist, particularly by the historical investigator of language. This constantly confronts us with a basic problem that might fairly be described as that of attempting to solve an equation involving two unknowns. Typically we have in hand earlier written records of a language concerning the phonetics and phonology of which we desire further information; these data are one unknown. But most often in Asia our written records are transmitted in a script or writing system originally devised for some other, and frequently even unrelated language; accordingly the extent to which and the manner in which these records reflect the language in which we are interested constitute a second unknown. Furthermore, the extent, degree, and manner in which written records may or may not reflect the language for which the script or writing system was originally devised also frequently constitute yet another, third unknown. As a theoretical proposition such a problem is impossible of solution, to be sure. But fortunately for our work pragmatic procedures may generally be devised in order to find a way out of this logical dilemma: in a sense, the situation might well be described as "hopeless, but not serious".

In the present instance, one cannot avoid the conclusion that the hesitation of Hattori and certain others to assign values to such graphs as WT and Q <h̲> does not

[16] The choice is between saying nothing, since we actually know nothing in the sense of having heard it, and making careful estimates on the basis of what we can derive from such sources as written records; philology has always taken the latter way. Unfortunately much western orientalism has become fixated on the transcriptions of Indology and the text-book descriptions of Sanskrit. Nevertheless, WT transcribes the Indic palatals with its own dental affricates, a quirk that finds its explanatory clue in the modern Nepalese and Kashmiri pronunciation of the palatals (Butzenberger 1988, p. 53, note 91). So we must even ask what the graphs WT < c, c', ǰ> and their Q derivatives represented at the time that they were evolved: the authors of the script hardly got their pronunciation from Whitney's grammar. Not unrelated to this fixation upon the received transcriptions and phonetic interpretations of Indology has been a tendency to focus studies of the language of the *Secret History* not upon the text itself (i.e., upon the Chinese transcription text, which is the only genuine text-*qua*-text that we have), but rather upon interpretative versions of the same as they are found in the secondary Mongolist literature. Though very different in their approach, both Street (1957) and Weiers (1969) share this failing. While there is much of value in both studies, they have in common the drawback that they are studies of studies of the *Secret History*, rather than studies of the text itself. This is particularly evident, and virtually fatal, in their approach to all phonological problems, but especially that of the so-called "hiatus" (e.g., Street, pp. 3–4 ["historically a Hiatus-tilger"], and Weiers, p. 14 and *passim*, esp. the long note 1 to p. 16).

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reflect the nature of the evidence so much as it does a general unfamiliarity with the laryngeal, or glottal, or uvular regions of human articulation. For speakers who have these elements in their languages, they are not "difficult to pronounce", nor, when such speakers evolve script and writing, are they "difficult to write". The Tibetans have had no difficulty with any of these for centuries, nor do they today. Difficulty is only experienced by linguists who are unfamiliar with such sounds, and who as a consequence generally lack familiar symbols with which to record them. Only then do we begin to read of "la notation d'une sorte d'écho…" and the like.

As a matter of fact, early documentary evidence for the specific juxtaposition of a sound close to if not identical with IPA [ɦ] with the graph Q <h̲> is by no means lacking. Describing the Q script in chapter 7 of his *Shū-shǐ huì-yāo* 書史會要 of 1376, Táo Zōng-yí 陶宗儀 explicitly states that the graph Q <h̲> is to be pronounced as Chin. *hé* 何 < MChin. **ya* (Karlgren, with *γ to be understood as [ɦ]).[17] It scarcely need be pointed out that this phonetic gloss completely agrees with the inference independently reached through inspection of the attested Modern Tibetan values for the WT original of the Q graph in question. Also significant is the early date of the text in which this information is found; the bulk of the Q text corpus is generally placed in the period 1269–1368 (Poppe 1964, p. 96).

Somewhat more difficult but in its own way perhaps equally if not more informative is a much discussed passage in the significantly earlier *Měng-gǔ zì-yùn* 蒙古字韻 of 1308 by Zhū Zōng-wén 朱宗文. Zhū says that the Q equivalent graph for WT <h̲> is *běn yīn* 本音, 'pronounced as itself' (Kobayashi 1954, pp. 262–263). This admittedly somewhat laconic statement has recently given rise to yet another serious misunderstanding of the phonetic (and phonological) role of this graph in the Q script. Rendering the Chinese correctly enough, if a little ambiguously, as meaning 'the pronunciation of itself', Hugjiltu (1999, p. 127) goes on to comment: "This obviously [*sic!*] means that the letter actually had zero pronunciation…"[18]. From what we have seen *supra*, we may easily refute this entirely unwarranted reading of the text.

[17] This is without question the reading of the MS exemplar of *the Shū-shǐ huì-yāo* in the collection of the SOAS (London) reproduced in Clauson (1959, p. 321). Kobayashi (1954, p. 263) cites a "photo-facsimile" in the Tōyō Bunko (Tokyo) of an otherwise unidentified exemplar (MS? print?) as having instead the graph 阿 as its transcription of Q <h̲>. One suspects a graphic muddle in the Tokyo text (何 and 阿 being easy to confuse in cursive writing), with the London MS preserving the original reading.

[18] This is by no means the only supposedly "obvious" claim concerning the historical phonology of Chinese, Mongolian and Tibetan in Hugjiltu (1999) that on inspection turns out to be far from "obvious": his paper abounds in simple misunderstandings and arrogant errors. Two examples among many require special notice. It is impossible to be sure whether he is writing about Chinese or Mongolian when he says (p. 127) that Q <h̲> "marks the zero initial, also known as the 'shadow initial' (影聲母)." But Chinese phonology dubbed the glottal stop of Middle Chinese "the initial *yǐng* 影" only because the morpheme *yǐng* (which to be sure does mean, among other things, 'shadow') had an inital glottal stop in Middle Chinese, not because, as Hugjiltu alleges, its initial or any other part of its phonology was a zero, or in any way a 'shadow' of anything else. Similarly off-target are his related remarks about Tibetan orthography (p. 127 and p. 131, note 5), entirely misleading and based upon nothing other than the inability of modern Chinese linguists (like most non-Tibetans) to hear the sounds involved.

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Rather than saying that the graph "had zero pronunciation", it in fact says quite the opposite; it says that it had a "pronunciation", and that "pronunciation" was "itself".

In other words, what we have here in this text of 1308 is a succinct description of how the Tibetans (and others?) of the period pronounced the Q graph <h̲>. They did it just as modern Tibetans "pronounce" the graph WT <h̲>, i.e., as the syllable [ɦa] carrying a low tone, in the same way as they "pronounce" the WT graph that non-Tibetans call *"a-čhen* as [ʔa], a syllable carrying a high tone[19]. The Tibetans have never needed names for these graphs. They simply pronounce each of them "as itself", which is precisely what Zhū Zōng-wén was describing when he wrote of the Q script in 1308.

Transcription evidence drawn from the *Secret History* and other Middle Mongolian written records transmitted in Chinese characters used as phonograms is of a rather different degree of difficulty from that of the Q script. The phonological structuring and phonetic inventory of the variety (or varieties) of Old Mandarin (= OMn.) involved in these transcriptions both appear to have had a sufficient (or nearly sufficient) repertory to make it feasible for those doing the transcribing to cope with the "target language", i.e., Middle Mongolian – at least as well as this is ever possible when a system for representing the surface structure of one language must be used for another for which it was never intended. But in many important instances, the transcription capability of the authors of these documents was severely compromised by the necessity imposed upon them by the nature of the Chinese "one-graph to one-morpheme" script. This meant that mostly they were forced to work in terms, not of structurally contrastive phonemes, or of aurally perceptive phones, but of whole Chinese syllables. The result has been that despite nearly a century of study of these Sino-Mongolian transcription texts, much remains to be done in the task of clarifying the phonological content of their Chinese components; and so complex are some of the issues involved that even a fair introduction to the issues at stake would take us here too far afield.

Accordingly, all we may do is to note in passing that the most frequently encountered Chinese transcription syllables found in these texts in positions corresponding to the so-called Middle Mongolian intervocalic hiatus are Chin. *é* 額 < MChin. ***ngə***,[20] and Chin. *wù* 兀 < MChin. ***ngu***[21], i.e., both morphemes in an earlier

[19] Kuijp, L. van der (1996, pp. 432, 433 and Table 40.1) incorrectly states the suprasegmental coordination of these phonemes with their following vowels in the formation of their "names".

[20] The initial of the Chinese morpheme involved is registered in the *Táng-yùn* and all successive phonological sources for Middle Chinese as the velar nasal (citations in the *Kāngxī zìdiǎn*, s.v.). It is curious to note that throughout his work Mostaert (1927), using the Scheut Mission transcription for modern Chinese, always carefully noted the non-standard Mandarin survivals of this nasal velar as *ng-*, and also the traces of the shifted original glottal stop initial to *ng-* in such forms as Chin. *ā* 阿 (his *ngo*); but apparently he never took these phonological (or phonetic?) entities into consideration in his postulation of Middle Mongolian structures. Perhaps the question did occur to him (see the enigmatic note 19 in 1927, p. 237); if so, he did not pursue its solution.

[21] Here too the historical nasal velar initial is equally secure; see the remarks immediately *supra*. Further relevant here is another aspect of the "hiatus" problem, namely the labial stop or spirant variant(s) frequently assumed in the literature for this same feature; this hypothesis goes back to Ramstedt (1912) and was initially made canonical in Pelliot (1925). The question requires more

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stage of the language had been syllables with an initial nasal–velar consonant. In attempting to estimate what initial they may have had in the variety of OMn. directly relevant to the Sino-Mongolian transcriptions, we of course again run the familiar risk of explaining one unknown with another. But working with the evidence that we do have at hand, specifically that concerning the value of Q <h̲>, and drawing also upon evidence from certain modern Mandarin dialects that have here retained an initial velar–nasal consonant generally absent from the present-day prestige dialect(s) (on which, see *infra*), we may conclude that no bold leap of the imagination is required in order to equate a survival of this initial into OMn. with the [ɦ] attested in the Q sources.[22] And at the very least, it is surely as useful, in speculating about the pronunciation of OMn., to look backward a few centuries into the history of the language, as it is to focus exclusively on a stage of linguistic development that was at the time of these transcriptions still many more centuries in the future.

The choice of the written symbols that we employ in linguistic discussion, whether on the synchronic or the diachronic level, is scientifically an essentially trivial matter. Any symbol will, in theory at least, do as well as any other, so long as we all agree on what it stands for. But this remains true only so long as we do not permit fortuitous coincidences in the shapes of our symbols to derail our discourse. Needless complications have arisen in the literature concerning the Sino-Mongolian transcriptions due to nothing more than accidental coincidences between originally different sets of symbols. One involves Karlgren's *γ. This for him was always intended to represent a voiced velar ("guttural") fricative, not the voiced back or deep velar that it conventionally represents in orientalist transcriptions of Mongolian. The other concerns Karlgren's symbol of the raised dot, ˙, which for him always represented a glottal stop, *à la rigueur* a glottal plosive, IPA [ʔ].[23] Potentially dangerous confusion has risen because this same raised dot symbol has often been used to transcribe Q <h̲>, a graph that represented not a voiceless initial glottal stop but rather a voiced velar

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consideration than may be devoted to it here. A fruitful point of departure might be the word generally transcribed as MMo. *ba'urči* 'cuisinier', already well discussed in the literature, e.g., Mostaert (1950, p. 345); Ligeti (1963, p. 171, note 39). At the present state of the question one is free to choose among *baγurči* (Shiratori), *ba'urči* (Mostaert), and *bawurči* (Ligeti); but it seems unlikely that any cook, even a Middle Mongolian, would answer equally well to so many different names. Perhaps a clue to the solution lies in a Middle Korean transcription of the same word in Chinese characters that renders the middle syllable, with its supposed hiatus, by means of the graph Chin. *wú* 吾, again reverting to an earlier initial nasal velar (Miller 2000).

[22] This hypothesis is enhanced by recalling the well attested nasal allophones of WT <h̲> when found not in intervocalic position but instead immediately before a stop consonant. This allophonic split, i.e., /h̲/ = {[ɦ] -V- ~ [n] -C}, was first described in Dragunov (1939); it survives in Modern Tibetan, thus <mi.h̲dug> [mindu:] 'is not'; <mi.h̲dra> [minḍə] 'is different'; <ga.h̲dras> [kanḍɛ] (Denwood 1998, pp. 83, 93, 95).

[23] To add "voiceless" to the description of the phonetic coordinates of this feature would be pleonastic, since the glottal position admits of only one plosive (and is so treated, e.g., in the IPA). One must still read with admiration for its precision, clarity and accuracy H. A. Jäschke's description, now over a century old, of the modern Tibetan versions of WT <ʔ> that he had heard: "the consonant … is formed in the lowest and hindmost part of the organs of speech, being produced by the opening of the glottis, like the Greek spirtus lenis, the Hebrew Aleph and the Arabian Elif' (1881 [rpt. 1934], p. 603a).

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spirant. Chin. *ān* 安 was Karlgren's MChin. **·ân*,[24] [ʔan]. In the Q transcriptions this same morpheme is transcribed as <h̲an> (Ligeti 1956, text folio 2a9). If we transcribe this Q writing as *·an*, we run the risk of creating a potentially misleading superficial equation between Karlgren's glottal stop and the very different initial of the Q transcriptions, by using the same symbol of the raised dot for what we now know to have been two different phonetic entities. But of course there is no way to equate a voiceless stop [ʔ] with a voiced spirant [ɦ], no matter how often we write both with the same symbol.

With this detail clarified, we may make some progress in explaining two sets of otherwise persistently puzzling Sino-Mongolian transcriptions, along with a number of questions (mostly scientifically trivial) that have arisen about Middle Mongolian phonetics and phonology, largely but not exclusively concerned with the pros and cons of the existence or non-existence of original long-vowels in proto-Mongolian.

For the first set, i.e., the Q writings of <h̲> for morphemes with Karlgren's initial raised dot, i.e. [ʔ], a ready explanation is fortunately at hand. In the principal variety of OMn. underlying the Sino-Mongolian transcriptions, the initial phoneme /ʔ/, i.e., the descendant of Karlgren's "raised dot" glottal stop, was pronounced not as a voicless occlusive but instead as a weakly articulated voiced spirant or fricative of the order of IPA [ɣ]; moreover, this allophone regularly appeared when the "raised dot" initial was found before Karlgren's MChin. **â* vowel. Karlgren himself was perceptively troubled by the evidence for modern survivals of this feature in "many Mandarin dialects", a problem to which he drew attention more than once in his two comprehensive summations of Chinese historical phonology (1940, pp. 46, 49; 1954, p. 227, note 1). In those passages he suggested that this had resulted from the operation of analogy between these /ʔ/ words and others in original /ng-/. But this explanation is neither necessary nor convincing; no semantic link was ever suggested on the basis of which the putative analogy might have operated. Moreover, decades earlier Karlgren had already recorded implicit evidence for this OMn. allophone for a significant number of his original **·â* words (1926, s.v.v.);[25] the many forms with initial velar–nasal or velar–spirant initials recorded there have a sufficient variety of overall morpheme shape also to demonstrate that the phenomenon in question had not been

[24] Karlgren (1940, p. 49) had one of his rare misprints for this form, which appeared there as * ·*âm*; but this was corrected in the body of the dictionary (no. 146a) and in his subsequent publications. For Mostaert the morpheme was always modern Chinese *ngan*, but again its initial nasal–velar survival, which he carefully recorded, did not appear to concern him as historical linguistic evidence.

[25] E.g., as recorded in the *Dictionnaire...* (1926), § 18 of Karlgren's *Études sur la phonologie chinoise*, for Chin. *an* 'peace' < **·ân*, X [ngą], K [ɣən], S [ngan], F [ɣä] (p. 764); for Chin. *ēn* 恩 'emotion' < **·ən*, X [ngä], K [ɣən] (p. 782); for Chin. *āi* 哀 'cry of grief' < **·ai*, X [ngä], K, F [ɣai] (p. 738). (Dialect abbreviations: X = Xi'anfu; K = Kaifeng; S = Sichuan; F = Fengtai.) Long after recording these forms in his "notation grossière", Karlgren returned to the unresolved question of the origin of these initials, to write: "Curiously enough a whole range of Mandarin dialects have here initial *ng-* (or initials derived from *ng-*), e.g. [*an*], Sïch'uan *ngan*, etc. ..." (1954, p. 227, note 1).

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triggered by or dependent upon the occurrence of a final nasal in the morphemes in question.[26]

This in turn must mean that these morphemes, for which our dictionaries and other modern reference sources record only a canonical Beijing pronunciation with an initial zero, more likely than not did not display anything of the sort in the OMn. behind the Sino-Mongolian transcriptions. Instead of initial zero they had initial [ɦ], regularly recorded as Q <h̲>. From this it also followed that the Middle Mongolian words whose Chinese morpheme graph transcriptions have customarily been invoked as evidence for a zero-hiatus feature most likely did not themselves have such a feature of pronunciation. Hence the sequences of two vowels generally supposed to have been separated by that "nothing" were in fact separated by "something", in the form of a voiced velar or uvular fricative or spirant.

It also means that such a transcription as the well-known and often cited Chin. *bā ān* 巴安 for the reflexive–possessive suffix, generally understood as representing MMo. *ba'an* (Mostaert 1927, p. 257), is instead to be taken as representing MMo. [baɦan], since the Chinese *ān* phonogram here implies the OMn. [ɦ] allomorph of its MChin. glottal stop initial /ʔ/, and consequently agrees completely with the transcription in Q <baḥan>. Much the same was also probably true of the much-discussed transcriptions of "Khan" that show Chin. *ān* in the second syllable, concerning which it has been remarked that such Sino-Mongolian writings would record a form of the shape *qa'an* "comme en 'phags-pa…" (Mostaert 1927, p. 259).[27]

[26] But such morphemes as Chin. *yīn* 殷 (PrN) (*Dictionnaire*, p. 738) and Chin. *yīn* 音 'sound' (p. 761) have no [ng] or [ɣ] initials in Karlgren's dialect materials. This demonstrates that the initial glottal plosive was the conditioning factor but only when it was not, as in such forms, immediately followed by a yod; nor was the final nasal in most of these forms the conditioning element, as shown by Chin. *āi* 'cry of grief' (in note immediately *supra*). Even before Karlgren, Jäschke had recorded cases where WT initial <h̲> had been, as he put it, "hardened to ɣ in Khams, [and] to [the glottal plosive] in Western Tibetan" (1881, p. xiv). Given the geography involved, this tends to put one in mind of an areal feature, operative in both Chinese and Tibetan (but of course without any genetic implications for a possible relationship of the two). Also relevant and again pointing in the direction of an areal feature is the important observation of Róna-Tas that a Monguor loan-form of the place-name 'Amdo', recorded as [xamdo], appears to indicate that the original Tibetan form, "generally written with <ʔ>", also had a variant with the <h̲> initial (1966, p. 129 with note 143).

[27] It is also anything but certain that this particular Chinese phonogram usage in fact reflects the same treatment as that found "chez les écrivains musulmans" (Mostaert – de Rachewiltz 1995, p. 16); the three forms with medial *-h-* that may be cited were first noted by Pelliot (1925, p. 249, note 2), who took them over from Melioranskij. But his discussion was predicated on the now questionable assumption that both the Q and the Chinese transcriptions were identical ("le 'phags-pa et la chinois lassaient un hiatus"). Before more can be said on this score a thorough philological reworking of the sources is needed. Meanwhile, in his comments on the form that he treated as MMo. *qa'an*, Mostaert made the important observation that though it only occurs 41 times in the *Secret History*, there it is "*toujours* [his italics] suivie par les suffixes désinenciels" (*loc. cit.*). This opens the exciting possibility of correlating this seemingly aberrant feature of the Middle Mongolian phonology with a specific level of syntactic occurrence, the probable conditioning factor here being the existence of close-juncture between a noun and its following case-suffixes. It is probably also along these lines that the important suggestion of de Rachewiltz (1983, p. 277, note 3) concerning the evidence of the *Secret History* for these forms will eventually prove to be rewarding.

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But in light of the present discussion, it appears that thus suggesting a direct, one-to-one correspondence between these different forms is historically oversimplified; indeed it has little to argue in its favour apart from its unfortunate employment of a single symbol, or at best several all-too-much alike symbols, for a number of different things. On one level, the problem is not by any means as simple as might be implied by equating a raised dot or a single quote-sign in one system with similar marks in another. But on a different level, it is less complicated than it at first appears. In the final analysis it comes down to nothing more than /ʔ/ = [ɦ], with this last allophone as in Q <h̤>.

Unfortunately, similarly seductive simplicity-of-solution arguments may scarcely be advanced in the equally important second set of problems involved with Q transcriptions of OMn., where the Q graph <ʔ> was used in what at first (and even second) glance must appear to be an erratic if not irresponsible fashion. Again, as *supra*, the full explanation would take us too far afield, and tell more about Chinese than about Mongolian; even a brief epitome of the situation must be fairly involved. In his long career Karlgren wrote much that was surely correct, along with a little that later proved not to be; but of all his remarks probably the one that will longest stand the test of time is his reflection that "linguistics, like mathematics, is not easy reading" (1954, pp. 221–222). This last was never more true than with respect to what must here follow.

We begin with Ligeti's meticulous and extremely useful tabular summation of the Q transcriptions in the *Bǎi-jiā-xìng* (1956, pp. 47–48). This provides an essential point of entry into the phonological labyrinth that awaits us. Ligeti's tables show that the OMn. development of MChin. **ng-* was rendered, as one might well expect, with Q <ng> in morphemes with original Chin. **â*, **a*, and so also in one morpheme with **-i-*; but that unexpectedly, and somewhat puzzlingly, (1) by Q <ʔ> in a series of other words with original, post-initial, pre-nuclear **-j-* e.g., Chin. *wei* 魏, MCh. **ngjwe̤i*, Q <ʔui̤>, and (2) by a specially altered version of the Q <ʔ> graph that apparently no one before Ligeti had noticed ("un signe fort simple, il est vrai, qui est composé d'une barre horizontale avec un petit trait vertical au milieu qui se rattache au signe suivant", 1956, p. 13, note 12), a sign moreover that was to be found in his source in only two morphemes, each with Q <…u> and each reverting to MCh. **nguo*.[28] Furthermore, a strangely parallel split of Q transcription initials is to be

[28] This altered version of the Q <ʔ> graph appears elsewhere, e.g., in the text reproduced in Bosson (1985, p. 17), where it writes the first syllable of an etymologically Mongolian (as contrasted to a Chinese) form, MMo. *ula* 'relay mount(s)', WMo. *ulay.a(n)*. Nor is this the only attestation of the graph in question. Another consisting of a vertical line with two saw-tooth-like points depending from it is found three times in Ligeti's text (his folio 3b), all cases transcribing the same Chinese morpheme; and this is the only version of the graph that is attested in the London exemplar of the *Shū-shǐ huì-yāo* (Clauson 1959, p. 321, where it is the last graph in col. 5 from the right in his reproduction of the MS). But a full, unaltered version of this graph, almost identical with its WT original, is also found in Ligeti's text (his no. 97, Finding List 127, folio 2a 12, and his no. 189, Finding List 179, folio 2b 8); so also in the Q writing of the first of these two, Chin. *yuán* 元 in the ornamental Q script "cap" of the Sino-Mongolian inscription of 1335 (Cleaves 1950, p. 71, p. 109, note 34, and Plate xviii). These last two Chinese morphemes had initials deriving, respec-

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noted in the case of the traditional Chinese phonologists' initial *yù* 喻, where the expected Q <y> appears with morphemes in Karlgren's initial [i̯], but against Q <ʔ> in morphemes with his initial [j], together with a single case of Q <ng> with his [ji̯ o̯u].

This (among other problems) was the apparently chaotic pattern of Q transcriptions that early led Clauson and Yoshitake (1929) to conclude that they "could not find any evidence for the survival of [the ʔ/ɦ] distinction in ḫPhags-pa, and it seemed to us that the distribution between the two letters was more a matter of orthography than one of phonetics". Restudying the whole matter three decades later, and even in the light of subsequently available documentary sources and secondary literature, Sir Gerard Clauson held firm, as was his custom: "So far as Mongolian is concerned this conclusion still holds good ... [the difference between ḫ and ʔ] clearly has no phonetic value" (1959, p. 313).

But what was actually at issue here, and what was unclear to both Clauson and Yoshitake,[29] was a well-known if admittedly intricate pattern of phonological structuring in Middle Chinese, moreover, one that was inherited from that earlier stage of the language into the variety of OMn. most intimately involved in the Sino-Mongolian transcriptions with which Clauson and Yoshitake attempted to work. Ignoring this pattern led them directly to their incorrect conclusion cited *supra*. Again, it must be stressed that what follows cannot attempt to tell the whole story; but it will document enough both to refute Clauson and Yoshitake, and at the same time to clarify the otherwise puzzling Q transcriptions revealed by Ligeti's tables.

As early as his *Analytic Dictionary*, Karlgren had implicitly identified the essential dimensions of an important allophonic distribution long available, albeit in cryptic form, in the traditional Chinese phonologists' literature. This he did when he remarked that the [ʔ] initial was found before all varieties of vowels in all rhymes with the exception of the rhyme Chin. *yù*, where instead a yod, his [i̯] or [ji̯], was found as "first phonem" (1923, p. 20). Of course Karlgren did not then or later elaborate upon

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tively, from MChin. *[ng-] and *[ji̯-]; when as here both are written with a single version of the Q <ʔ> graph, we must consider the possibility of an original complementary distribution of a voiced velar spirant and a yod initial in the target language having been reduced to a single phoneme by the time of the Q transcriptions. There can be little question that these altered writings of the Q <ʔ> graph attempt to record allophones perceived in the vicinity of various vowels (and semi-vowels?); this too must eventually be studied together with what we know of the complementary distribution of the relevant morpheme initials in Chinese, after a complete inventory of the epigraphic evidence correction, *inter alia*, of the misleading transcription data of Kara that conflates Q <ʔ> and Q <ḫ> in Daniels – Bright (1996, p. 438, and Table 40.5).

[29] Apparently Poppe wrote a new preface for a 1986 Chinese translation of the 1957 English translation of his 1941 Russian-language monograph on the Q monuments. Hugiltu (1999, p. 129) quotes an "adapted retranslation from the Chinese" of a section from this preface purporting to set forth Poppe's final views on the subject of the Q <ḫ> and its role in writing Middle Mongolian. But what is said there cannot possibly reflect Poppe's views; and the incompetence of the translators involved is revealed by a solecistic reference, put into the mouth of Poppe, to "Clauson and Yoshibu" – the last name of course can only have resulted because the first translator into Chinese wrote "Yoshitake" with incorrect Chinese characters, and the second translator into English in turn misread this incorrect writing.

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the phonological–structural implications of this distribution pattern. He was only interested in the clues (important, to be sure) that it provided for the pre-history of his Middle Chinese; and indeed to the end of his life he remained staunchly opposed even to the terminology relevant to a phonological–structural approach to the history and description of Chinese of any period.[30]

Nevertheless, it was not long before several Chinese scholars took up this issue, notably Ku Ye-ching (1932), Y. R. Chao (1940), and Lo Ch'ang-p'ei (1951). Thanks to their familiarity not only with the letter but also with the spirit of the traditional Chinese phonologists' approach, which was essentially phonemic rather than phonetic, they were able to give a clearer picture of what was actually happening in this inordinately involved segment of Chinese linguistic history; and it is a picture that will help clarify our study of these Sino-Mongolian transcriptions.

In brief, these Chinese phonologists showed that in Middle Chinese, Karlgren's **j-* was a phonetic [i̯] but a phonemic /ɣj-/; his [ji̯] was /ɣi̯/; and his /jw/ was [ɣw] (see esp. Lo Ch'ang-p'ei 1951, p. 290). Keeping in mind the OMn. allophone survivals of MChin. *· as the spirant [ɦ] already noted *supra* (**ɣan* for **·ân*, etc.), and at the same time recalling the wholesale initial devoicing that characterised the shift between late Middle Chinese and the modern dialects, particularly in the so-called Mandarin area, we are able to understand why, in Ligeti's corpus, Q <ʔ> is used for the principal one of the three categories of transcriptions that he tabulated for the MChin. initial *yù* that he records: this was because after its obligatory unvoicing, the spirant in this environment became a stop, i.e., [ɦ] > [ʔ], because it assimilated to Karlgren's [j, w, jw], all of which were of course "semi-vowels" but here functioned on the structural level as consonants, in other words, as phonological stops. Meanwhile, in the first of Ligeti's four categories dividing up the Q transcriptions for the traditional initial *yǐng* 影, where Chinese had an original glottal stop, we find Q <h̲>, which in turn shows that the Q transcribers distinguished between a secondary phonetic ("surface")

[30] Responding to the attempt of Martin (1953) to establish a phonemic analysis of his reconstruction of Middle Chinese, Karlgren wrote, "…the 'phonemic' linguistic description is often one-sided and oversimplifying. It is my conviction that it will soon have seen its last days…" (1954, pp. 366–367); and later, attempting to refute Malmqvist's elegant demonstration of an example of complementary distribution in Old Chinese (1962), he went so far as to suggest that instead of phonemes, "some Proto-Chinese [sounds] skulk in the Arch. category" (1962, p. 126). Martin for his part subsequently dismissed Karlgren's work as an attempt to "interpret … the distinctions of Middle Chinese in terms of the Swedish Dialect Alphabet" (1992, p. 95). Pulleyblank (1999, p. 124, note 43) unfortunately still labours under the all-too-common London School misunderstanding of the "phoneme" as somehow representing a dangerous American artifact. This not only leads him to denigrate the historical–descriptive advances that Y. R. Chao and his peers introduced into Karlgren's system, but also to ignore the fact that all these scholars were fully as much in debt to the essentially phonemic basis of Chinese traditional phonological studies as they were to the "framework of American structural phonemics" to which he so strongly objects. Nor is it possible, without further evidence, to share Pulleyblank's conviction that "the advent of generative phonology" has rendered the phoneme obsolete. Far more satisfactory is the clear statement of the phonemic principles involved in the analysis of Chao *et al.* concerning the complementary distribution principle at issue in Starostin (1989, pp. 10–12).

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OMn. [γ-] < MChin. [ʔ-] written with their Q <h̲>, and a phonological ("underlying") OMn. /γ-/ < MChin. [ji̯-, jw-] written with their Q <ʔ>.

As already suggested, all this tells us more about Chinese than it does about Mongolian; for the present discussion it is also important to note that this is only the tip of a further iceberg of a still more complicated segment of Chinese historical phonology. Little wonder that Clauson and Yoshitake went astray here; poignantly, the evidence they had at hand actually reveals that, contrary to what they believed, there indeed was an important "distinction between the two letters" Q <h̲> and Q <ʔ>, moreover, this distinction was indeed one of "phonetics", or more correctly, of phonology.

There is still more here to be learned over and above the elucidation of the Q transcriptions of Middle Mongolian. Even on the purely practical level of identifying early Chinese transcriptions of Central Asian place-names, the phonological analysis of Karlgren's [ji̯-] as /γj-/ plays a role and finds pragmatic vindication; it even explains correctly the otherwise obscure connection between the Chinese historians' transcriptions for the name Khotan, Chin. *yú-tián* 于闐, MChin. [ji̯u-d'ien], i.e., /γi̯u-dien/, and its WT transcriptions as < h̲u.t(h)en>,[31] cf. Sog. γwδn-.[32]

Everyone, west and east alike, who has had to work with glottals, laryngeals and uvulars has experienced trouble in hearing, recognising, and rendering such sounds unless they themselves spoke a language well endowed in this segment of phonology. Even the Indo-Europeanists have had their problems of this variety. The Chinese phonologists were excellent at recognising phonological patterns and complementary distributions; where they fell short was in the area of phonetic detail and definition. Behind the Q script there ultimately lies another far more sophisticated and more balanced scientific tradition, that of the Sanskrit grammarians with their mastery of both sound and structure. The fortunate if too brief encounter of the one tradition, that of Chinese phonology, with the other, that of Indic-based phonetics-*cum*-phonology (to the extent that it survived in the Q script), must be admired for the manner in which it has left us intricate if sometimes still enigmatic documentary traces of the linguistic evidence "as they found it". And the more we learn about these matters, the less likely it appears that any of the marks that these scholars from other academic traditions left for us in their texts "clearly [have] no phonetic value" (Clauson 1959, p. 313).

With the above, we have come full circle. We have proposed a plausible phonological as well as a possible phonetic solution for the problem first posed in the literature by Hattori (1939), when he drew attention to the Middle Mongolian forms (some syntactically free, some involving either case-suffixes or other elements of derivation) that appear in the Q corpus with intervocalic <h̲> corresponding to a WMo. voiced velar stop. For a list of eleven of these forms, which included <cerih̲udun> 'soldiers', Hattori was unwilling to agree with the usual "hiatus marker" interpreta-

[31] These transcriptions are now documented in detail in Takeuchi (1998); he records, from the Stein Collection, one case of *h̲uden*, one of *h̲uthen,* and ten of *h̲uten* (with the final *-n* restored in one case).

[32] On the attestations of this place-name in the Chinese histories, see Miller (1959, pp. 29–30, note 71).

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tion; instead he proposed to interpret these writings on the phonetic level as having a voiced uvular spirant [ʁ] (1939, p. 21). Our solution, though coming well over half a century after Hattori's pioneering publication, suggests much the same interpretation of the data. Because the Q script writes its <h̲> consonant here, and also because of what we now know of the attested phonetic value of its WT original <h̲>, we conclude that this particular intervocalic *-g-* did not disappear but rather was spirantised; so also in the other Q cases cited as well as throughout the Middle Mongolian corpus of written records, the Sino-Mongolian transcription exemplars included.

This solution has further implications on several levels. For Middle Mongolian in particular it suggests that we should continue our studies keeping in mind that "phonology recapitulates morphology", an axiom that sums up a phenomenon that we have now detected as operative in three different environments, and hence on three different levels of linguistic structure. In the first, it is by no means trivial to observe that the preservation of the intervocalic *-g-* in the most striking cases that we have investigated – or to put it more precisely, the spirantisation of this archiphoneme in certain cases in contrast to others in which this spirantisation apparently did not occur – correlates with differences in the levels of morphological structure of the forms involved, i.e., it took place between the noun-stem and the plural suffix when a case-suffix immediately followed, but it did not occur when the plural suffix did not interpose itself between the stem and the suffix. In other words, one variety of morphology predicated one variety of phonological change, while another did not. Similarly in the second, illustrated by the apparent phonetic differences in the Sino-Mongolian transcriptions of "Khan". Here we also find one variety of phonological change when the noun was followed (probably in "close juncture") by case-suffixes, but the same change is not observed when the noun was syntactically isolated. Finally, and in the third and last category, we have seen that recognition of the manner in which "phonology recapitulates morphology" may assist in a solution of the most persistently vexing phenomenon of Mongolian historical phonology, i.e., those often discussed cases where "the consonant *γ exists in spoken languages in intervocafic position only in cases where it has not disappeared". And in this same connection, it appears that several ingenious attempts to solve these cases by reference to postulated earlier systems of suprasegmentals and/or original vowel length were both ill-advised and unnecessary.

One of the unfortunate consequences of the virtually universal agreement in the secondary literature to overlook, if not to deny, the graphic evidence of the Q script for the various glottal phonemes has been to obscure in turn the way in which the Q script, in its application to writing various languages during the Mongolian hegemony, functioned simultaneously on two different (but not mutually exclusive) levels, the phonemic on the one hand and the phonetic on the other, at one and the same time. All practical orthographies have blind spots and left-over anomalies; but essentially they all "work" on the "phonemic principle", Karlgren and Clauson to the contrary notwithstanding. Sir Gerard was surely not far from the mark when he alleged that "Qubilay … wanted urgently … a good 'one letter, one sound; one sound, one letter' alphabet" (1959, p. 301). This is an excellent description of the sort of orthography

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that he himself would have understood and warmly approved of. But does any such orthography really exist, and has one ever existed? The collcagues at SOAS in their continued devotion to the IPA feel that the answer to both questions is positive; others of us must stress the negative. But there can be little question that, so far as the Q monuments of Middle Mongolian are concerned, putting the issue in Sir Gerard's simplistic terms unfortunately only further obscures the whole matter.

The "one sound" that any alphabetic script attempts to correlate with "one letter" must necessarily be the phoneme (or something near it) if the number of signs in the system is to be kept within practical limits. If those limits are not enforced (which is, roughly, another way to say "phonemic analysis"), then the number of signs will multiply exponentially. The rule of "one sound, one letter" does not describe a true alphabet, but instead something like the IPA – and in fact it was something somewhere between an alphabet and the IPA that Qubilay got when he ordered up the Q script. Like all alphabets, the Q script was essentially phonemic in principle. Nevertheless, it frequently also fell into the expedient of writing auditorily striking allophones in this or that language by devising alterered or reshaped graphs. After all, it is "foreigners", i.e., non-speakers of a language who initially recognise the existence of allophones in a language with which they are not familiar; those who know and speak it generally are unaware of their existence. The Q script was constantly encountering "foreign languages" and "foreigners"; hence its attention to allophones as well as phonemes. In a word, in most (perhaps all) of its applications to the languages of the realm, Q was, in fact, mainly phonemic; but it was also, here and there and in bits and pieces, phonetic as well.[33]

Nowhere is recognition of the dual phonemic/phonetic nature and application of the Q script as it was used in writing various languages encountered by the Mongolian hegemons more important than in the historical elucidation of the origins of the Korean writing-system, generally known today as *hankŭl*. (The term is a recent coinage, anachronistic for the Middle Korean period when the script in question was first evolved; according to traditional accounts this took place in 1443/44[34]). Patriotic pressures and the understandable desire of certain modern Korean scholars to see a "native culture hero" in King Sejong, the putative inventor of the script, have had

[33] Relevant also for study in this connection are sporadic examples of the WT script itself being used to write other languages such as Old Turkish, e.g. Bibl.Nat. MS P(elliot) T(ibétain) 1292, published in Maue – Röhrborn (1984). They note what appeared to the authors to be free variation of WT <ʔ> and WT <h̲> (p. 304), a phenomenon with obvious parallels to certain of the Q transcriptions studied *supra*, one which may on closer scrutiny rather prove to be a case of complementary distribution. Most interesting in this document is the use of WT <h̲> as prefix to WT <d> in order to write a foreign [d], thus <h̲drim> = 'dharma', <h̲dyan> = 'dhyana', a graphic praxis employed in writing the modern Central Tibetan dialects today.

[34] This date is generally found as 1443 in the secondary literature; but it is necessary to write it as "1443/44" because the Korean source records no day for the event, and most of the 12th lunar month in King Sejong's 25th year occurred in the first solar month of the year 1444 Julian; the 13th day of that month was 1 January 1444, and this 12th lunar month extended from 21 December 1443 to 19 January 1444 Julian. See Ledyard 1997, p. 74, note 2.

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their negative effect upon western scholarship as well.[35] But more and more the obvious origin of the *hankŭl* in the Q script, with which the Koreans necessarily became acquainted during their century and more of occupation by the Mongol armies,[36] has come to be acknowledged by many students of the problem.

In evolving the Korean script from its Q original, two new vowel signs, today generally transcribed *ă* and *ŭ*, were added (this was in contrast to the single new vowel sign for [ė] that had been felt to be necessary in order to write Middle Mongolian); the question of whether and to what extent these signs recognised phones or phonemes is a vexing one and still insufficiently investigated (Miller 1994, pp. 87–90).[37] With the laryngeals, as we might expect, matters were somewhat more complicated, in part but not entirely because the inventor(s) of the script were under the compulsion to provide signs not only for Middle Korean forms but also for loans from Middle Chinese into Korean, and these words more likely than not made it necessary to provide ways to write phones, if not phonemes, originally not part of the non-Chinese lexicon of Middle Korean.

At any rate, the Q-based Middle Korean script provided separate signs for four laryngeals. The first three are generally recognised today as writing [ʔ], [h], and [χ], while the last wrote the initial (whatever it may have been) of the Chinese loan words in the *yù*-rhyme category initial that, as we have seen *supra*, was in Middle Chinese in complementary distribution with the initial glottal stop. To add to the complications of this situation, this last of these four laryngeals was written with a symbol, a small centered circle, derived from the epigraphic originals of Q and WT <h̲>.

[35] Two contributions in Kim-Renaud (1997) document the continuing sharp difference of opinion on the question of whether or not a Q prototype lies behind the *hankŭl;* see Lee Ki-moon, for whom the king's work with the script was "a completely new creation" (1997, p. 19), in contrast to Ledyard, who views it against an "international linguistic background" (1997, p. 40), this last to be understood as a "politically correct" circumlocution for the Q script. Finch (1999) attempts to write a comprehensive account of the invention (or adaptation) of the script and the present state of the literature concerning it, but what he says is almost entirely misleading and largely incorrect.

[36] The Koryŏ state capitulated to invading Mongolian armies in 1259, just ten years before the invention of the Q script; and Mongolian forces occupied the Korean territory until 1368, when they were finally driven out by the Ming armies.

[37] There has been a general if mostly unverbalised assumption in the literature to treat Middle Korean <ă>, <ŭ> as phonemes rather than as phones, and then to work with them in those terms on the comparative level; this is a representative example of the problems that arise when the dual phonemic/phonetic nature of the script is ignored. Also in connection with the Q (and derived Middle Korean *hankŭl*) signs for certain vowels, it is important to follow up the remarks of Pelliot at the 11 March 1927 meeting of the Société Asiatique in which he explained that, in his view, the Q graphs for writing a number of vowels showed evidence of derivation from Central Asian Brahmī digraphs (*JA* 210 [12:9], 1927, p. 372). Lee Ki-moon's attempt (1972, p. 137) to draw up a table of correspondences between the vowels of Middle Korean and those of Middle Mongolian in the Q script is philologically flawed beyond repair; the text he cites is, as he himself notices some pages earlier (1972, p. 107), long lost to scholarship; instead he can cite only a later compendium's epitome of that text, which at best merely represents a late, and essentially circular, juxtaposition of Q with *hankŭl*. Finch (1999, p. 86 and p. 99, note 42) adds to the confusion, citing the same non-existent text under yet another title, which also has never existed; one can only be reminded of da Ponte's Arabian phoenix, which no one had ever seen but which everyone was able to describe.

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Somewhat surprisingly, the putative phonetic (or phonemic?) value of this graph in Middle Korean has been postulated in the literature in terms that correlate closely with what we have described above for both these <h̲> graphs. It has been described as "a voiced laryngeal continuant that we may transcribe [ɦ]" (Sampson 1985, pp. 126–127)[38], and as "a voiced fricative (velar or laryngeal) or at least a glottal squeeze [*sic*]" (Martin 1992, p. 54). And it is important to note that neither of these statements is based upon any knowledge of the Q script-original for this sign, or upon any evidence from historical–phonological analysis of written records of the sort that we have introduced *supra*.[39] Details of the epigraphic origin of the *hankŭl* script in the Q writing system necessarily complicate the study of the handful of Middle Mongolian loan words that may be identified in the early Korean texts;[40] here once more

[38] This is a partial running paraphrase of the translation in Lewin (1977, pp. 151–152) of Lee Ki-moon (1972, pp. 128–129); but the Korean original is somewhat more involved than Sampson's version suggests. Lee proposes that the Korean <G> graph was used in two different ways in writing Middle Korean: (a) to write a "zero", i.e., to write nothing; (b) to write a voiced laryngeal. His second category is established by internal reconstruction, mainly drawing upon the verbal morphology (the same technique is used by Martin for the same end). His first category, for which he cites only two forms, seems less well thought out. He cites (1) MKor. <GaGok> 'hollyhock' as an example of <G> = zero both in initial and medial position. But Middle Korean texts also have <Gahok> for this word (Nam 1997, p. 1017b), so at least the medial consonant seems to have been real enough; (2) MKor. <:GŏGyŏs·pi > 'pitifully', but here the modern language has *kăyŏps-* 'to be pitiful', which again would seem to indicate that the initial <G-> was real enough. (Old Japanerse *aFuFi* 'hollyhock' is probably cognate with the Middle Korean forms cited *supra*; the phonological correspondences involved are too complex to be treated here, except to note that they too hardly point to a zero value for the <G> graph.)

[39] Ledyard (1997) attempts to draw up correspondences between Middle Chinese, Middle Korean, and the Q script, but his results can hardly be considered useful, in part because the written Q signs in his text are deformed beyond recognition, but also in part because he has been ill at ease in the more important sectors of the phonology, particularly among the laryngeals. Instead of analysis he offers complaints: "The 'Phags-pa equivalents in the laryngeal class are too complicated for description" (Table 2, p. 45); "... the 'Phags-pa orthographers had great difficulty in dealing with the laryngeal [initials]" (pp. 58–59); and "[h] is silent" (Table 1, p. 38) – but how can one describe a phonetic notation such as [h] as 'silent'? Kim-Renaud herself is equally at sea in this area. She would ask us to believe that the small circular *hankŭl* graph here transliterated <G> is "the letter 0 (circle or zero)" (1997, p. 163), i.e., that it is the Hindu–Arabic cipher-digit, which is as absurd as it is anachronistic.

[40] Ogura Shinpei first collected and studied a small but important corpus of Middle Mongolian loan words in Middle Korean texts in a series of papers published in 1934/35, later collected and reprinted in Ogura (1975). These, plus a few additions, were studied again by Lee Ki-moon (1972), and reproduced (with the addition of several errors of transcription and translation) by Finch (1999, p. 98, note 33) from the carefully correct translation in Lewin (1997, pp. 115–117). Though this corpus of forms is small, it contains much that awaits further careful study. E.g., the Middle Korean forms show a single contracted vowel for cases in which the presumably earlier Mongolian had what is usually understood as -V_1 g V_1-, but retain the two original vowels, when dissimilar, intact and separated by <G> in cases of -V_1 g V_2-. But Lee's argument (1972, pp. 100–101) to the effect that these loans show that *hankŭl* <c> was [t^s] and not [t^š] (paraphrased in a misleading mamer in Finch [1999, p. 85]) is insufficiently supported by the evidence; in particular it overlooks the use of the *hankŭl* digraph <yŏ> to render MMo. [e] so that the <y> in MKor. <cyŏr·ta> 'Fuchs, rotes Pferd' < MMo. *je'erde* is not, as Lee would explain it, used to palatalise the initial but simply to write the first-syllable vowel.

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one runs the risk of attempting to deal simultaneously with two (or three?) unknowns. Clearly much remains to be done toward clarifying the orthographic as well as the phonetic and phonemic details of these forms; unfortunately, the necessary first step, which must involve abandoning patriotic prejudice and recognising the foreign origin of the *hankŭl* script, still appears to be the most difficult.

As we go about the necessarily slow work of restudying and perhaps eventually even revising the accepted accounts[41] of the circumstances and nature of a Middle Mongolian intervocalic hiatus in the light of the documentary evidence in the Q texts and the Sino-Mongolian transcriptions, it might be well to keep in mind that hiatus *per se* is neither impossible nor unlikely as a purely phonetic phenomenon. What may occur, and what indeed has been observed *in vivo*, has been described in the following explicit definition of "hiatus": "... at the boundary between sounds in a hiatus no glottal stop occurs ..., but an acoustic boundary, e.g., weakening of intensity or a gap of sound quality [*sic!*] might be heard. In a sound spectograph we can see such a boundary mark quite clearly" (Onishi 1981, pp. 246–247). But of course the Q scribes, like the Sino-Mongolian transcribers, hardly had access to any such refined a device.

Namque est in rebus inane was how Lucretius Carus tried (not very successfully) to convey the Greek teaching of "a void in things" to the Romans (*De rerum natura* 1.330). He even held out the hope of benefits yet-to-come if they managed to master the idea (*quod tibi cognosse in multis erit utile rebus*, 1.331). Whether the notion of a linguistic void in the words studied here has ever been of much utility to Altaic linguistics remains an open question, despite Lucretius' implicit promise. But perhaps the time has come at least to ask if this particular *inane* ever existed, and if so how and why did it come about. In the meantime, the question must remain a veritable *quaestio subtilissima*, not unlike that described by Fr. Rebelais in *Pantagruel* 2.7: *... utrum chimera in vacuo bombinans possit comedere secundas intentiones.*

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[41] In this work the lack of a comprehensive bibliographical survey of the subject will be keenly felt, especially in view of the century-long interest in the subject. Failing such a compilation, the notes in Mostaert (1927, pp. 256–259, § 5, esp. p. 256, note 76) and Mostaert – de Rachewiltz (1995, pp. 16–17, 43–44, and 102) will be a first resort. For the *Secret History* Erdengtei (1980) provides a complete inventory of the different types of syllables at issue, together with a detailed etymological study of specific examples; a complete inventory of the relevant forms in this text may be collected from de Rachewiltz (1972).

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