THE EFFICIENCY OF THE CHINESE LANGUAGE

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by YUEN REN CHAO

You doubtless know Charles Dickens' story of the old schoolmaster who was going to give a lecture on Chinese metaphysics. He took down the *Encyclopaedia Britannica*, and looked up, first the article on metaphysics and then the article on China; then he put the two together, and there was his lecture on Chinese metaphysics.

In the same way I am going to say something about symbolic systems and then something about the Chinese language. That will be my lecture on the Chinese language as a symbolic system.

First, let us look at the symbolic system, or rather, the sciences of symbology.

By the term 'symbol' I do not mean only symbolism in the popular sense, as one says that the leaves of a certain plant are symbols of the human body, on account of their resemblance to it in shape, or the bat, by a Chinese pun, is the symbol of good fortune. It is true that these are examples of the use of symbols; but they are only very special cases.

The more important kinds of symbols are those used in everyday life; the conventions of social behaviour, language, writing, musical notation, mathematical and other scientific signs, etc. These are symbols in the wider and more important sense. One meets with them and uses them constantly without even being aware of it.

Now a distinction must be made between the terms 'sign' and 'symbol'. For a living organism anything at all may be the sign of something else, if, as a result of perceiving the one, the organism is made aware of the other. Thus symptoms are the signs of disease; black clouds are the signs of a storm; the letters x, y and z can be signs for numbers.

All symbols are examples of signs; but the opposite is not true. A sign is not a symbol unless it fulfills two necessary conditions: (a) that it can be produced and reproduced at will by whoever uses it as a symbol; (b) that it is an element forming part of a whole system.

The letters x, y and z are symbols as well as signs; but disease-symptoms and clouds are only signs and not symbols.

When I speak of a system of symbols, it must not be concluded that all symbolic systems are created by artificial conventions. Language and writing, all over the world, are natural systems, at least for the most part, and mathematical symbols are artificial systems. All symbolic systems, natural or artificial, serve extremely varied purposes in human life. It is here that the problem arises of the symbol's efficiency for the

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purposes which it is meant to serve; and it is along these lines that I shall come to the problem of the efficiency of the Chinese language as a symbolic system.

But before turning to that subject there still remains something to be said on the second of my subjects from the encyclopaedia: the Chinese language.

What we call the Chinese language is a great collection of different things. It is the same with all languages in the world, of course, but it is still more markedly true of Chinese.

In order to study a people's linguistic phenomena exactly and scientifically, modern linguists have developed a clear and exact technique, creating for each little group of the population the fiction of a community of speech by means of which, according to this analysis, each member speaks a homogeneous language consisting of an exact list of a small number of elements called phonemes.

I will not weary you with technical details; enough to say that from a restricted point of view this method of description has contributed much to scientific research.

But science is long. While scholars are busy slowly and laboriously examining infinitely complicated details, the man in the street continues to talk and write on the supposition that there is only one Chinese language. He is often embarrassed by the unintelligible accent of distant provinces, but instead of regarding the other person's speech as not Chinese, he blames himself for not knowing the Chinese language well enough. And for ordinary people the most important thing is not an absolutely homogeneous dialect, but the whole realm of Chinese culture.

While the proper study of Chinese remains (doubtless inevitably) a strict and detailed method, everyone in China will go on talking, rather unscientifically perhaps, of the wider problem, above all with regard to efficiency in communication and education among a people who, with all their varied accents and external conflicts, still feel themselves one nation.

Now that I have said something about symbolic systems and something about the Chinese language, I am ready to put them both together. As I have indicated, my approach is that of applied symbology. I am going to try to define the conditions for an efficient symbolic system, and then to consider how far they are fulfilled by the Chinese language.

In considering the requirements of an efficient symbolic system, we must first of all decide what the symbols are used for and who uses them, that is to say, who is going to make use of them by interpreting them. If for example I wished to carry on a conversation with someone from my home town the best system of communication would naturally be my local dialect. If one wanted a secret language for a very special, limited group, it would be better to make it as difficult as possible for those outside the group.

But here I am only considering the whole Chinese language, as the symbolic instrument of the whole people, and I shall include in that not only the spoken but the written language as well.

Now let us look at the requirements of an efficient symbolic system.

The first requirement of a good symbol is that it should be easy to produce. You remember that a symbol is a sign that one can produce and reproduce.
A person born in a place finds nothing easier than his native accent; but from my experience in teaching Chinese to foreigners, I have discovered that the accents of different Chinese dialects which are equally strange to all students are by no means equally difficult.

I have discovered, for instance, that the pronunciation of the sibilant consonants in Mandarin, which is the national language, is much more difficult than that of the corresponding sounds in Cantonese. While the latter has only one series of sibilant consonants, the national language has three.

But that is a difficulty which I believe to be objective and not merely relative. When, on the other hand, one considers that Chinese children have generally learnt all the constructions of the Chinese sentence at an age when European children are still stumbling over grammar and syntax, it must be concluded that Chinese grammar is easier than that of European languages for those who are strangers to both, as children are.

By and large, I believe that among the major languages of the world the national language of China is of more or less average difficulty.

The second requirement of good symbols is that it should be possible to communicate them easily and clearly to the person receiving them. Here there are numerous factors to be considered, and I shall confine myself to mentioning only the most important.

One element of the Chinese language which renders it particularly suitable for physical communication is the use of tones as phonemes. All languages have variations in musical pitch from sentence to sentence from word to word and from one part of a word to another, to express attitude or feeling. But in Chinese, tones as well as consonants and vowels are essential elements of words.

As you know, the tones correspond to the fundamental frequencies of the voice, and it is these fundamental frequencies which are the easiest elements to transmit under favourable acoustic conditions.

A second factor, one working against facility of communication in the Chinese language, is the great diversity of dialects, as I have already mentioned. While there is a relative uniformity of language in two-thirds of China and among three-quarters of the Chinese population, i.e. in the sphere of the national dialects, the variations between the other dialects are sometimes as great as between French and Spanish. As you know, the propagation of knowledge of Mandarin during this century is one of the main educational activities in our country.

But while there is a great diversity of dialects, there is one compensatory element: the existence of a literary idiom which is the same throughout the whole country.

Yet unity of language exists only on paper, for when pronounced the sounds vary according to the reader's dialect. Thus, although visual unity has been achieved, when for instance a newspaper published in Canton can be understood by a reader in Pekin, without his knowing what dialect the author himself speaks, this is admittedly only at the price of using an idiom that nobody speaks naturally and which must be learnt in several years of laborious study.

A characteristic feature of this literary idiom is its poverty of sounds. In an earlier age, say at the beginning of the seventh century, the Chinese language had a great diversity of phonetic distinctions, but a large number have already disappeared as a result of natural phonetic changes. The modern dialects have been readjusted in various ways in order to maintain more or less the same degree of auditory intelligibility in oral
communication. But the literary idiom, being mainly a system of visual symbols, has not been subjected to such readjustments, so that it is no longer suitable for oral communication.

The third requirement is economy in size. A good symbol must be of convenient size, in space or in time as the case may be. Thus a very weak, small red light at the corner of the street, among intensely brilliant advertisement signs, is not an efficient symbol for stopping cars (this example perhaps applies more to New York than to Paris). Further, a dot above the line to indicate a velar explosive at the beginning of a vowel (for instance 'a') is not as clear a sign for the reader or the printer as ‘ ’a’.

In general, a symbolic complex must be such that it occupies a considerable part of the visual or auditory field, for then the exterior elements round the symbol are relatively less distracting. But since we have more occasion to deal with symbolic complexes than with isolated symbols, and also since one of the most important functions of symbols lies on one's ability to see and examine relations between the parts of the group of symbols, it will be of more advantage to have small symbols, in order to be able to bring as many as possible into relation with each other.

There are several things to be said about the size of symbols in Chinese.

First of all, the use of the Chinese tone results in a great saving of time. Because of it, one can put a greater complexity of elements into a given unit of time; or, what is the same thing, one can express a unit of the same complexity in less time.

For the sake of example, take the French word ‘mêler’. A form of the word which is very frequently used is ‘mêle’, as in the sentence ‘je les mêle’. In order to distinguish this action from the state resulting from the action, in the past participle one adds an element, ‘é’, which takes up a little more time, and says: ‘mêlé’. You see that while the word ‘mêle’ consists of three elements, ‘m-ê-l’, the word ‘mêlé’ consists of four, ‘m-ê-l-é’.

Let us now consider the case in Chinese. The word for the action is ‘hùn’, which contains three elements. To express the state of having been mixed (mêlé), one does not add either vowel or consonant. One simply changes the tone, and instead of ‘hùn’, one says ‘hún’, with the same three elements.

Now the fact that ‘hùn’ and ‘hún’ are different and distinct words proves that the element of tone is an essential, formative element in these words and hence that each of these words comprises not three elements but four: that is to say, the three elements ‘h-u-n’, plus the tone, ‘`or´.

But this is not yet the idea that I am trying to explain to you. The idea that I want to emphasise from the point of view of the science of applied symbology is that the intonation of the voice does not take up more time than that already taken up by the word's phonetic elements. Since every word contains shifts of modulation, i.e. changes in the pitch of the voice, these should be used for useful ends. In not using the elements of voice-pitch except to indicate attitudes and moods (which the French express much better by shrugging their shoulders), the non-tonal languages, such as the majority of modern Indo-European languages, have squandered a whole series of valuable elements.

The Chinese language, on the other hand, uses them as formative elements. One can express more things without spending more time. In a word, the space occupied in time by Chinese symbols is smaller than that of other languages.

What is the advantage of brevity? What is the use of saving time?
Well, the purpose of brevity is to have the chance of bringing as many elements as possible together in complicated relations, without being hindered by the weight of symbols, as happens if they are too unwieldy.

Let us take for example the Chinese words for the numbers, which are beautifully short and simple. One can count from one to a hundred in Chinese in, I think, twenty seconds. Let me try. One, two three etc. It took me twenty-two seconds. Indeed, I think it will not be fantastic to say that this is at least one of the reasons why China has more outstanding experts in the mathematical field than in all other branches of science. It is for this reason that we have proposed that UNESCO should establish an international mathematical centre in China.

There are still other factors contributing to make Chinese shorter and more concise than other languages, but I am afraid I shall not have time to tell you about them, because I must speak to you in French.

All that I have just said concerns only the spoken language. The question of writing is quite another thing.

First of all a secondary question must be explained. The written style, the language of books, newspapers and the majority of letters written today, as it is pronounced in the modern language, has, as a result of phonetic changes through the centuries, very short, clipped syllables and hence contains many homonyms, that is to say, different words with the same pronunciation.

The extreme brevity of this literary idiom is in fact gained at the expense of not being able to write the spoken language. But I only mention this point in passing. Even when one writes in the vulgar style, as is being done more and more nowadays, following the 1917 ‘literary revolution’ of Hu Shih and other writers, the most important fact concerning Chinese writing is that the elements of each symbol (i.e. the Chinese characters) are arranged in two dimensions and not in a successive order as are the letters in alphabetic writing.

Let us take for example the two elements ‘sun’ and ‘tree’ – a grill-shaped character and a tree-shaped character. When the sun shines through the trees – the grill-shaped character drawn on top of the tree-shaped character – it means ‘the East’. When the ‘sun’ is placed just above the ‘tree’ it means the phenomena of the sun risen high, i.e. ‘in broad daylight’. When the ‘sun’ is placed just under the ‘tree’, the resultant character means ‘vanished’.

This example that I have just given you is perhaps more interesting than typical; for even if there is no semantic relation between the elements of a character, as is the case with most characters, the essential feature of Chinese writing is that the arrangement of symbols in two dimensions has made possible a high degree of variety and brevity.

I will not bore you by giving details. It is enough to tell you that a page of printed text in Chinese corresponds, in degree of comparable legibility, to an average of two pages of French text.

Another advantage resulting from this state of things is that it is much easier to find something on a page of Chinese than in a language written in the alphabetical form. Here we have a high degree of physiognomic individuality, and the thing that you are trying to find will stare you in the face when your eyes slip across the page.
Finally, one of the results of the compact nature and square form of Chinese characters is the possibility of arranging a great number of different things in tables, in columns and in lines. In a Chinese book of statistics one finds far fewer pages than in a similar French book, it being understood, of course, that there is still the same degree of legibility.

This would not be of much importance if it were only a matter of saving paper or of aesthetics; but when it involves the possibility of a greater comprehension of a group of given complexes, we have an essential point from the symbological aspect.

Fourthly, there is the economics of numbers.

If Chinese characters make such wonderful symbols, why then is it that so many people want to abolish them in favour of another system of writing, for instance an alphabetical system?

The answer is that all the advantages which I have just enumerated have been achieved by an enormous expenditure of numbers. In order to read an ordinary newspaper, one must know five or six thousand different characters. A typewriter which has recently been invented for Chinese contains 5,400 characters arranged round a revolving cylinder; and the characters for all proper names are not yet included.

Now, you have seen that the size of a group of symbols representing a given number of things is generally in inverse proportion to the number of different symbols used. Or, if you prefer to express it rather more exactly: the size is a decreasing function of the number.

Thus, with ten different symbols you need only write a 6 in order to express the number 16. It is to the base 10. But if you have only two, 1 and 0, that is to say, the base 2, you must write 10,000 in order to express the figure 10, because you have only two symbols, 1 and the first power of 2: 10. Then the second power is 100, the third power 1,000, which is eight, and then 16 – 10,000.

To take another example: with all the letters of the ordinary alphabet one can transmit words by mechanical or electrical means, quite rapidly, as by means of the teleprinter. But if one is limited to three elements, those of dot, dash and silence (that is to say, the telegraphic code), it will take much longer than with the letters of the alphabet.

There are very interesting examples of this principle in linguistic phenomena. The language of Hawaii has great phonetic poverty and in compensation it has to use very long words. The name of a minute fish, as everyone who has visited the aquarium at Honolulu may have seen, is ‘homomomonukunukuagua’. Not that all the names of Hawaiian fish are like that; there is on the other hand a fairly long, large fish called ‘o’. But it is nevertheless true that Hawaiian words are on the average longer than those of the majority of languages which we know.

The Japanese language is also very poor in sounds. In order to say ‘I’ or ‘me’ one needs four syllables, ‘matakushi’, and the polite form for ‘thank you’ is ‘arigataguzaimasu’.

A still more significant example is the comparison made by S. W. Williams in the introduction to his Chinese Syllabic Dictionary. He chose a passage from the Hino-King, the classic on filial piety, and translated it into seven different Chinese dialects. The interesting thing about this work of Williams is that when the seven dialects are classified in descending order of the number of syllables needed to translate the same passage, the degrees of their phonetic richness automatically become classified in ascending order. For example, the Hankow dialect, phonetically the poorest among the seven dialects compared, has the longest translation. At
the other extreme, the Cantonese dialect, which is the richest in phonetic sounds, has the shortest translation; and so on.

I come now to the fifth and last requirement of good symbols: the correspondence of the symbol to the object.

As a symbol generally represents the object by an arbitrary convention, it is not necessary that there should be any similarity between the shape of the letter $x$ or $y$ and the idea of variable quantity, or between $a$ or $b$, on the one hand, and the idea of constant quantity on the other. That is the case where individual symbols are concerned, but where we have a group of symbols, it is important that the systematic relation between the symbols should be in definite conformity, if not altogether in parallel agreement, with that between the objects represented.

Let us take the Chinese numerical system once again. When two figures are pronounced in succession, the rule is that if the first is larger than the other, the two numbers will be in an additional relationship. For example, 10-3 means 13, and 10-9 means 19.

Conversely, if the order of size is reversed, the relation is that of multiplication. For example, 9-10 means 90.

But this is only one instance of the principle of systematic correspondence as one of the desiderata of good symbolism. It must not be inferred from this that the Chinese language is superior in all respects in this matter of systematic correspondence.

It is rather a grave problem when we come to the correspondence between the written and the spoken language in China. The written word is the symbol of the spoken word; and if the spoken word is the symbol of the idea, the written word is therefore the symbol of a symbol. It is a symbol of a secondary order.

Now the correspondence between the spoken word and its symbol in character form is very complicated and arbitrary; or, in popular terminology, Chinese writing is not phonetic.

Admittedly, the relation between the two is not utterly without rhyme or reason. If one goes back to the origins of Chinese characters, one can find many interesting and even illuminating facts about the phonetic and semantic development, from which one can glimpse the causes and reasons of so many present-day irregularities. But from the practical point of view of applied symbology, the lack of correspondence between the written and the spoken word still remains a lack of correspondence.

But – you will ask – is it not often said that a system of writing like the Chinese consists of pictograms and ideograms, representing ideas directly without the intervention of the spoken word? Does that not therefore make a symbolic system even more efficient than the spoken language?

Yes. But unfortunately this was true only at a very remote era. On the divination shells and bones dating from about three thousand years ago, which have recently been discovered by archaeologists, there are some characters (I do not say all characters) which are purely pictographs or ideographs, that is to say, symbols of ideas that were not finally linked to words in the spoken language. But that is no longer true for the bulk of the history of Chinese writing. Let us take for example the word for ‘shining’. The character consists of ‘the sun’ with ‘the moon’ alongside. Hence emerges the idea of ‘shining’, because in the old days there was nothing that shone more brightly than the sun and moon.
But that is not the whole story, for there are other words, synonymous words, which also mean ‘shining’. The character that I have just described is the form for only one of the words with this meaning, namely the word pronounced ‘ming’. One of the other synonyms, for instance, is ‘liang’, written quite differently.

So Chinese characters are neither pictographs nor ideographs, but, as P. S. Duponceau said in 1836, locographs, that is, symbols of spoken words. And, to return to the question of correspondence between symbols and objects, the relation between Chinese writing and the spoken language is sufficiently complicated and arbitrary to be not very efficient.

There are other requirements of the efficiency of a symbolic system, such as uniformity among those using it, the question of dialect, suitability for processes of reproduction and transmission, and so on. But I have not the time to discuss these points.

In giving this talk on an aspect of the culture of China, under the auspices of UNESCO, I have tried to think and speak from a general and not from a national point of view.

I know Chinese culture. I love Chinese culture, and I should like to be able to share it with you.

I do not know French culture well, but well enough to love it, and I should like to know it better.

Mutual exchange in order to achieve greater understanding among ourselves is, as we are agreed, one of UNESCO’s most important objectives. But a purely mechanical exchange of information, even if concerned with the literature and arts of all countries, is not enough. That exchange could become a muddle of ideas. In order to attain real mutual understanding of the cultures of the world, and in order to attain a common solidarity of the human mind, we must take problems we have in common, exchange points of view and methods, and work together as citizens of the world.

That is why I took as my subject the Chinese language, with its advantages and disadvantages. And that is why I approached it from the Western point of view as to the efficiency of symbolism.

I hope that I have now combined the two articles in the encyclopaedia.

Translated by Eithne Wilkins
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Poet, best known for having invented a phonetic alphabet for translating Chinese into English, he was, from 1925 to 1929, Professor at the Chinese Tsing Hua University, and subsequently research fellow and Chief of Section of Linguistics at Academia Sinica.

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