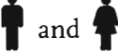

































Modern Hieroglyphs





 and  are from the standard symbol set designed by Cook & Shanosky Associates in collaboration with the American Institute of Graphic Arts in 1974.  and  are endorsed by the U.S. Department of Transportation (D.O.T.). They belong to an international hieroglyphics of public information.* Their ancestors,  and , were created by the Viennese philosopher and social scientist Otto Neurath in the 1920s. Neurath and his colleagues constructed a universe of people , , , , , places , objects , , , and actions , . He called his system Isotype , the International System of TYpographic Picture Education.**













Although Neurath advocated the use of  in transportation signs, his primary interest was in presenting social statistics in textbooks, posters, and educational museums. In Neurath's charts, a given symbol, such as , represented a quantity of people or things; a series (   ) of symbols represented a larger number of objects. Thus a visual, perceptual Gestalt replaced abstract numerals in  charts. Anticipating Edward Tufte's later writings on the display of data, Neurath developed practical guides for representing #'s in a visually accessible way.









As a member of the Vienna Circle of philosophers in the 1920s, Otto Neurath was a founder of logical positivism, a theory that brought together two opposing modes of inquiry: *rationalism*, which studies reality through logic, geometry, and mathematics; and














empiricism (or positivism), which claims that observation is the key to knowledge.***





The  and its associated equipment—such as  and —are the primary tools of empirical knowledge. The logical positivists attempted to analyze language into a minimal set of direct experiences, claiming that all languages can be reduced to a core of observations, such as **big**, small, ^{up}, **down**, **red**, or **black**. With , Neurath translated a philosophical theory into a visual practice. The sign  is *positive* because as a picture, it is based in observation;  is *logical* because it concentrates the details of experience into a schematic mark. Neurath aimed to combine the mechanical empiricism of photography  with the rational structures of mathematics and geometry ●.


Although Neurath believed that pictures are objective and universal, the meanings of international signs are culturally specific. We understand, for example, that  and  represent *lavatory for men* and *lavatory for women*. Yet the reference to toilets is left unstated. A functional description, such as  and , might denote the difference between these facilities more directly, but the signs' conventional meaning still would have to be learned.

We distinguish  as male because he is contrasted against the figure , whose gender is marked by a stylized reference to a garment sometimes worn by Western women. In the D.O.T. system,  refers to “people” in general except where he is contrasted with . Thus  does not mean *drinking fountain for men*; nor does  mean *elevator for men*; and nor does the sign  mean *waiting room for men*— stands in for *man* generically. The only place  appears in the D.O.T. system besides on lavatory doors is in , the sign for *ticket sales*. Here, where one person is offering a service to another, the designers deemed it appropriate to show  assisting .









The stylistic principles of Neurath's  remain the basis of international pictograms today: *reduction* and *consistency*. Many Isotype signs are flat shapes with little or no interior detail, as in , , and . These flat silhouettes suggest a rationalized theater of shadows, in which signs appear to be the natural imprints of material objects—Plato's cave renovated into an empiricist  laboratory. When depth is expressed in , isometric drawings  are used instead of traditional perspective. Parallel lines do not converge, and dimension is fixed from foreground  to background.











Consistency governs the stylistic uniformity of a symbol set. The D.O.T. system, for example, is a world of coordinated objects, including , , , , and . The sign system designed for the Munich Olympics in 1972 was the semiotic climax of international pictures: a geometric body alphabet  is deployed on a consistent grid: , , , , , , and .






The reduction and consistency of international pictures heighten their alphabetic quality. Neurath's  and  were a critique of writing that resembled writing, a utopian effort to transcend the limitations of letters by exploiting the visual characteristics of typography. **** Neurath's preferred typeface was **Futura**, designed by Paul Renner around 1926-27. Paralleling the machine aesthetic in architecture and industrial design, **Futura** is stripped of references to handicraft and calligraphy. Neurath conceived of  as clean, logical, free of redundancy: writing as a machine  for living in.

The current figure  might be called **Helvetica Man**, his style coordinating with the favorite typeface of post-war institutional design culture. A more inclusive pictographic land

scape might be inhabited by variants of **Helvetica Man** that harmonize with other typefaces, such as **Serif Man** , *Italic Man*  and *Cursive Man* .

 and  are neither universal, self-evident, nor purely informational—like linguistic signs, they must be learned; like other styles of drawing, they are culturally specific. When we see  engraved over an airport door, we know she belongs to the language of public information, not the language of commerce. Thus we do not mistake  for, say, *brothel*, where  might purchase the services of . The clean, geometric character of  and  is loaded with cultural associations—“public,” “neutral,” “modern.”

An international picture functions as a memento, a token for memory, a souvenir for words.  is *restaurant* as  is *Paris*. The very American  is hardly the geometric essence of *drinking alcohol in airports*, but like , a cocktail is a useful cliché for storing a range of experiences. Likewise, , , , , , and , taken from different international picture sets, are helpful tags for remembering objects we tend to forget.

Otto Neurath believed that  could transcend national boundaries and unify global social life. By translating a philosophical theory into a popular medium, he fathered a new breed of **ABCs**, whose progeny have populated public spaces across the industrial world. Since the birth of Neurath's  and , designers and critics have framed new questions about visual and verbal writing that acknowledge the cultural basis of images, symbols, and experience. As we rethink the boundaries between words and pictures, Otto Neurath could serve as a model for the graphic designer of the next millennium,  the language worker equipped to use design and theory as tools for unearthing new questions and  constructing new answers. *****

* This essay is based on research and writing initiated at The Cooper Union in 1986, with the exhibition *Global Signage: Semiotics and the Language of International Pictures*, curated by Ellen Lupton. The essay "Reading Isotype" was published in *Design Issues* 111/2 (1986): 47-58; and in *Design Discourse*, ed. Victor Margolin (Chicago: University of Chicago Press, 1989). The global iconography of pictograms and logotypes was further explored by Ellen Lupton and J. Abbott Miller in "Critical Wayfinding," *The Edge of the Millennium*, ed. Susan Yelavich (New York: Whitney Library of Design, 1993), 220-32.

The pictorial symbols endorsed by the D.O.T. are documented in *Symbol Signs* (New York: American Institute of Graphic Arts, 1974). International symbols became a major interest of modernist graphic designers during the 1960s and 70s. Martin Krampen surveyed the theory and practice of the movement in "Signs and Symbols in Graphic Communication," *Design Quarterly* 62 (1965). *Print* devoted a special issue to the subject, November/December, 1962. On signage for the Olympic games, see Heiner Jacob and Masaru Katsumie, "Sign Systems for International Events," *Print* (November/December 1969): 40. The industrial designer Henry Dreyfuss published the encyclopedic *Symbol Source Book: An Authoritative Guide to International Graphic Symbols* in 1972 (New York: McGraw-Hill); an archive of his research materials is housed at Cooper-Hewitt, National Design Museum.

*** Otto Neurath's colleagues included his wife, Marie Neurath, the Dutch graphic designer Gerd Arntz, and the American graphic designer Rudolf Modley, who brought Isotype to the United States after working with Neurath in Vienna. The Otto and Marie Neurath Collection is housed at the Reading University Library, Reading, Great Britain. Neurath's writings on Isotype include *International Picture Language* (Reading: Reading University, 1980), facsimile of the 1936 edition; *Basic by Isotype* (London: Kegan Paul, 1937); and "From Vienna Method to Isotype," in *Empiricism and Sociology*, ed. Marie Neurath and Robert S. Cohen (Dordrecht, Holland: D. Reidel, 1973). Critical works on Neurath and Isotype include *Graphic Communication through Isotype*, ed. Michael Twyman (Reading: Reading University, 1975), 7-17; and Robin Kinross, "On the Influence of Isotype," *Information Design Journal* 11/2 (1981): 122-30. Works by Rudolf Modley include *How to Use Pictorial Statistics* (New York: Harper and Brothers, 1937); *A History of the War, In Maps, In Pictographs, In Words* (New York: Penguin, 1943); and *Handbook of Pictorial Symbols* (New York: Dover, 1976).

**** Neurath explained his philosophy in "Empirical Sociology: The Scientific Content of History and Political Economy," in *Empiricism and Sociology*, cited above. On logical positivism, see Peter Halfpenny, *Positivism and Sociology: Explaining Social Life* (London: George Allen and Unwin, 1982). On Neurath and his context, see William M. Johnston, "The Eclipse of a Universal Man," in *The Austrian Mind: An Intellectual and Social History, 1848-1938* (Berkeley: University of California Press, 1972), 192-95.

***** Attempts to reform the alphabet into a more accurate reflection of speech were documented by Herbert Spencer in *The Visible Word* (New York: Hastings House, 1968). Herbert Bayer discussed his own writing reform efforts in "Basic Alphabet," *Print* (May/June 1964): 16-20. Charles Bliss proposed a new hieroglyphic script in which each character would "show the outline of the real thing, directly connected with meaning" in *Semantography (Blissymbolics)* (Coogee, Australia: Semantography Publications, 1949).

***** Whereas Otto Neurath saw pictorial communication as an antidote to writing, other writers and designers have addressed the overlaps between visual and verbal forms. On rhetoric and visual practices, see Roland Barthes, "The Rhetoric of the Image," in *Image/Music/Text*, trans. Stephen Heath (New York: Hill and Wang, 1977); Gui Bonsieppe, "Visual/Verbal Rhetoric," *Ulm* 14/16 (1965): 23-40; Hanno Ehses and Ellen Lupton, *Design Papers 5: Rhetorical Handbook* (Halifax: Nova Scotia College of Art and Design, 1988); and Katherine McCoy and David Frej, "Typography as Discourse," *I.D.* 35 (March/April 1988): 34-7.

Language of Dreams



According to Freud, dreams are organized or “written” according to the principle of the rebus, a form of expression employing both words and pictures. An image of a glove might stand for another object with a similar structure, such as a sock or an envelope, or it might stand for a memory associated with gloves, such as bad weather or polite manners. The dream-glove might stand also for a word whose sound or spelling resembles the name glove, such as love or grove. Freud argued that to decipher a dream one must exchange the direct, literal meaning of its images for indirect substitutions.

This principle, called the *rebus*, is a feature of numerous written languages, from Egyptian hieroglyphics to modern Japanese. According to many historians, writing naturally evolves from pictographs through various phonetic systems, climaxing in the alphabet, which analyzes the sounds of a spoken language into tiny repeatable elements. Discovery of the rebus principle enables a culture to invent a phonetic script.¹

Japanese writing is built upon that of Chinese, a logographic system that has separate symbols for words and parts of words, resulting in over 40,000 signs. Chinese has numerous words that sound the same but have different meanings, called homophones. Thus Chinese writing, while it appears cumbersome to Westerners, is well-suited to the Chinese language, because even though many of its characters have similar or identical pronunciations, they are graphically distinct.

精神分析学の創始者ジブモント・フロイトによると夢とは「リープス」の法則(rebus = 判じ絵)、すなわち言語と絵とを使った表現の仕方によって、構成あるいは「書かれて」います。手袋のイメージが、例えばくつ下、封筒等他の構成がよく類似した物を意味しているかもしれません。又は、悪天候や上品なマナー等、手袋と関連した個人的な思い出に関係があるのかもしれませんが。夢の中の「手袋 (glove)」は又、「言葉」の音と読みが似ている「愛 (love)」や「小さい森 (grove)」を意味するかもしれません。フロイトは夢を解読する為には直接的である夢のイメージの文学上の意味を間接的な代用物に交換することが必要だと論じています。

リープスの法則はエジプトの象形文字から現代の日本語へと、色々な言語の特色となっています。数々の西洋の言語の歴史家によると、書法とは多くの異なった音声法を通じた象形文字から自然に発展したものです。その頂点がアルファベットで、口語の音声を分析してこまかい繰り返し可能な要素となったものです。リープスの法則の発見によって音声筆記体活字の発明が可能になりました。

日本語の書法は記号を語、又は語の一部に分類した語標法である中国語を基礎に出来た言語です。そしてこの結果として莫大な(4万個以上の)個々の記号になりました。中国語では「同音異義語」といって同じ音で異なる意味の単語が数多くあります。すなわち西洋人には見た目はわずらわしい中国語書法も中国語という言語面から見ると良く出来ているということになります。なぜなら、良く似たり同じ「発音」の言葉は多くても、図解的には見分けることが出来るからです。

1 Comparative studies of writing include I.J. Gelb, *A Study of Writing* (Chicago: University of Chicago Press, 1952, 1963); Albertine Guar, *A History of Writing* (London: The British Library, 1984); and Roy Harris, *The Origin of Writing* (La Salle, IL: Open Court, 1986).

The Chinese script already had been in use for around 2,000 years when Korean scholars introduced it to the Japanese court in the fourth and fifth centuries AD (Western time). The Japanese acquired deep respect for Chinese civilization, and some took on the ambitious task of learning its script. Initially, the Japanese used Chinese characters to read and write in Chinese, which became the official written language of Japan's imperial court. By the seventh century, however, more attempts were made to write the *Japanese* language with Chinese characters.²

This was no simple task. The Japanese and Chinese spoken languages are totally different in their grammar and phonology. While many Chinese characters could be exchanged directly for Japanese words, some features of Japanese are impossible to translate. For example, Japanese is heavily inflected, meaning that the basic form of a noun, verb, or modifier changes in different grammatical settings. Chinese, in contrast, has few inflections. In this sense, Japanese resembles Latin more than Chinese! The principle of the rebus arose to address such difficulties of translation: a Chinese character could be used to stand for a Japanese word or syllable unrelated in *meaning* but similar in *sound*.

中国書体は4、5世紀に韓国の学者によって日本の皇室に紹介されるすでに2千年程前から存在していました。日本人は中国の文明に強い尊敬の念をいだいていました。そこで中国書体を習得しようという希望を持った人が何人か出てきたのです。初めに、日本の皇室公認の文語になった漢字は、日本人が中国語で読み書きするのに使われました。しかし7世紀に入ると、漢字を使って「日本語」を書くことが試みられました。

これは容易い作業ではありませんでした。日本語と中国語の話し言葉では、文法と音声学が全く違うのです。多くの漢字はそのまま日本語に置き換えられますが、日本語の特徴として漢字に置きかえることは不可能なものもあります。例をあげると、日本語は語尾の変化が激しい。つまり基本形の名詞、動詞、又は修飾語句が異なる文法の状況によって変化するということです。これに比べると中国語には語尾変化はほとんどありません。いわば日本語は中国語よりもラテン語に似ているということです。リーブスの法則はこれらの難しい訳に着手する為に発生したのです。すなわち意味的には関係がないのに「音」が似ているために、日本語一語や一音節を一つの漢字で表すことが出来るということです。

2 For discussions of the Japanese script, see Yaeko Sato Habein, *The History of the Japanese Written Language* (Tokyo: University of Tokyo Press, 1984); Wolfgang Hadminky and Mark Spahn, *Kanji and Kana: A Handbook and Dictionary of the Japanese Writing System* (Rutland, VT and Tokyo: Charles E. Tuttle Company, 1981); and Roy Andrew Miller, *The Japanese Language* (Chicago: University of Chicago Press, 1967), Chapter 4 "Writing Systems," 91-140.

The chart at right is a thought game that invites the English reader to imagine designing a written form for English if the Latin alphabet did not exist. Imagine that a sophisticated neighboring civilization has a writing system, but that we have none. We will call this writing system *Airport-moji* (or *Airport-script*). We will pretend to invent an English writing system out of these hieroglyphs.



pictograph
象形文字



We begin our task by trying to guess the meaning of *Airport-moji*. Some of the characters appear to be simple, direct depictions of objects (man and woman, or knife and fork). Others, however, are more obscure. Consider, for example, the character that shows a giant key floating above a car: if we interpreted this sign as a literal depiction of a scene, we might read "a car dreams of key." A figurative sign interpreted for its literal meaning is called a pictograph. A pictograph does not refer to a word in a particular language, but to a physical object in the real world.

While such fanciful scenarios as "a car dreaming of a key" have an appealing charm, we would find little use for such a specific sign in writing the English language.

「空港文字」の意味をあてることから作業を始めましょう。単純に物をそのまま表わした文字もありますが、意味がはっきりしないものもあります。例えば「大きな鍵が車の上に浮かんでいる文字を考察してみると、その現場(鍵を夢みる車)をそのまま表わした様に解釈できます。そのまま事実にも忠実な意味を解釈した形象的な記号を「象形文字」といいます。「鍵を夢みる車」の様な空想上のシナリオは、魅力的ですが、実際に英語の文語としてはほとんど使い道がありません。

ideograph
表意文字



Perhaps instead we should combine the individual meanings of the two pictures (car and key) to create a third meaning. The whole sign could mean car key, parking, or "Please lock your car," but upon consulting with native writers of *Airport-moji*, we discover that the real meaning of the sign is car rental. Such a sign is called an ideograph, because it stands for a concept or "idea" rather than a material object.

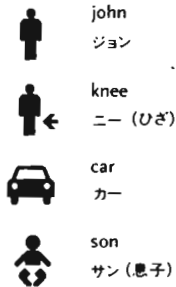
Chinese characters borrowed to write the Japanese language are called *kanji*. A *kun* reading of *kanji* employs the Chinese character for its Chinese meaning, but assigns it a Japanese pronunciation.

その代わりに2つの絵の個々の意味をまとめた文字から他の意味に訳してみるべきでしょう。その文字は「車の鍵」、「駐車場」又は「車の鍵をしめてください」という意味になります。しかし、この「空港文字」の筆者たちによりますと、この文字の本来的な意味はレンタカーだということです。この様な文字は「表意文字」と呼ばれます。概念又は「アイデア」を表わしているからです。

日本語が借りた中国文字は「漢字」と呼ばれています。「漢字」の「訓読み」とは、その文字が中国語の意味を使い日本語読みをすることをいいます。

rebus

リース(判じ絵)



john
ジョン

knee
ニー (ひざ)



car
カー



son
サン (息子)

syllabary

音節文字



car
カー



cup
カップ



cut
カット (切る)



cat
キャット (猫)

alphabet

象形文字



A is for alcohol
アルコールのA



B is for boat
ボートのB



C is for car (and key)
カー(とキー)のC



C is for cigarette (and smoke)
シガレット(とスモーク)のC

We soon run into difficulty, however, using Airport-moji to write English. Consider, for example, the familiar English proper name Johnny Carson. Rather than invent a new ideograph for it, we could use existing characters to stand for the sounds of the spoken name. (The rebus above relies on an English slang word for toilet — john.) The whole rebus reads “john-knee car-son.”

In Japanese, some readings of *kanji* (called *on* readings) employ the Chinese rather than the Japanese pronunciation of the character. For example, the *on* reading of the *kanji* for “mountain” is *san*, a Chinese word, while the *kun* reading of the same character is *yama*, the Japanese word for “mountain.”

「空港文字」を使い英語を書くのは困難だと間もなくわかるでしょう。「ジョンニーカーソン」という英語で実在する名前を例にとって考察してください。新しい表意文字を発明する代わりにすでに存在する英語の名前の「音」を使用して「ジョンニーカーソン」という言葉を表現することができます。(上記の判じ絵の「ジョン」とは英語の口語でトイレの男 (john-knee Car-son) 絵をつなぐと「ジョンニーカーソン (John-knee Car-son)」と読めます。

日本語では漢字の読み方(音読み)がリースの法則にしたがうことがあります。音読みは漢字の発音をつかいます。例えば「音読み」の「山」は中国読みで「さん」、訓読みでは日本読みで「やま」と読めます。

By employing the drawing of a car to stand for the English syllable *car*, we begin to create a syllabary, a set of symbols representing all the consonant-vowel pairs of a language.

Modern Japanese *katakana* and *hiragana* (together called *kana*) are indigenous phonetic sign systems used in addition to the Chinese *kanji*. Both *katakana* and *hiragana* are syllabaries.

In theory, *kana* could have replaced the unwieldy collection of *kanji*, but because of Japan's continued respect for Chinese culture and attachment to the subtle connotations and graphic variety enabled by its characters, *kanji* have remained a central element of Japanese writing.

もし英語の「車(car)」という「音節」を車のドローイングに毎回おきかえて使うとすると、「音節文字」、すなわちその言語のすべての音節を代表することのできる記号の一組を作ることが可能です。

現代日本語の「片仮名」と「平仮名」(双方はまとめて仮名と呼ばれています)は中国の「漢字」に加えた日本国産の文字の集まりです。個々は音節文字で日本語の音節を表わしています。

理論上では仮名は、使用しにくい「漢字」の全てに代わって使うことができたはずですが、日本の中国文化に対する尊敬の念と、「漢字」によって微妙な語感と写実的、図解的变化に富む事が可能になったので「漢字」は日本の文語の中心として残ることになったのです。

An alphabet abstracts the sounds of a spoken language into even smaller units, assigning separate symbols to consonants and vowels. Western culture reveres its alphabet as the most rational of all writing systems, but in practice, the Latin alphabet is full of irregularities: The letter C, for example, can sound like the initial letters in either car and key or cigarette and smoke.

Attempts to reform such irregularities in English, like efforts to eliminate *kanji* from Japanese, have largely failed. It is unlikely that our spelling system will ever become more rational. The alphabet is not the perfect climax of writing's “natural” evolution, but it has seeped into the pores of our culture.

アルファベットとは口語の音をもっと小さな単位で抽象的に表わしたもので、子音と母音を別々の記号で割りあてたものです。西洋文化では全ての文語の中でアルファベットが一番合理的であると尊敬されていますが、実際問題としてラテンアルファベットには多くの変則があります。たとえばCは「車(カー)」と「鍵(キー)」又は「たばこ(シガレット)」と「煙(スモーク)」のようによく似て聞こえます。

日本語から漢字を減らそうとした標に英語から変則を改正しようという試みは大きな失敗をおりました。我々のつづりの法則がもっと合理的になるということはないでしょう。それはアルファベットが文語の「自然」進化的に定着した最高頂のものであるからではなく、私たちの文化の底辺まで行き渡ったからです。