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NATIONAL COLLEGE OF ART AND DESIGN

PICTOGRAMS

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THE WORDS OF A VISUAL LANGUAGE

WITH REFERENCE TO OTTO NEURATH AND HIS ISOTYPE METHOD

A Thesis Submitted to The Faculty of History of Art and Design And Complementary Studies

by

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- 3. water transportation terminal,
- 4. air terminal, 5. telephone, 6. Post office,
- 7. women's WC, 8. men's WC.

Icographic 12. 1978.





INTRODUCTION

INTRODUCTION

'It is obvious that our culture and civilization has become so complex that no one language will suffice. In other words we cannot make do with only one of our senses we must learn to use sign-language not as a substitute but as a point of entry into the world' 1. Otl Aicher, 1978.

This thesis is about language. A visual language which aims to act as an aid to verbal language in an attempt to overcome problems of communication and understanding that arise in a complex society as Otl Aicher suggests. For this reason significance is placed on the Viennese philosopher and social scientist Otto Neurath. Neurath laid the foundations of a visual language which would become a basic system for learning, using messages that are negotiable by all.

As Aicher describes, no longer is one language, a verbal language, sufficient to communicate. The complexity arises from, first, differing languages, both in terms of people who have no knowledge of each others national tongue and specific discourse confined to a particular subject. Secondly, in an image-based society the language that dominates is in verbal form. The visually literate are a minority of people, usually with some form of artistic education.

Although Aicher's words refer to the 1970's, Neurath recognised these developments in his time and believed that the solution lay in a defined visual language and that extensive visual literacy in a basic sign-language would overcome these difficulties.

While language, or the ability to acquire one, is an innate quality in the human, the vocabulary of a language has to be learnt. Not only must we be able to speak, but we are also obliged to be literate.

It has been suggested that in the way a verbal language and the subsequent reading and writing of it is initially taught through learning the Alphabet by rote, so should a visual language be learnt. While we are expected to be visually literate in terms of art, design and mediazed images on television and film, the general public is given no formal education in the vocabulary of images.

This is what Otto Neurath aimed to do. He wished to educate the public in a specific genre of visual language that functioned as a informative sign system, the legacy of which can be seen in international pictographic systems today.

Neurath devised a basic vocabulary of signs. These 'words' formed the language of 'Isotype' (International System of Typographic Picture Education). **Figure**. 1.

As the basic unit or words of an informative language, the sign will be discussed throughout. While a correlation can be made between visual and verbal words, it will also be made clear that for pictographic language to be successful knowledge of the signs and their intended meaning is essential.

With this theme of visual literacy dominant throughout, a selection of signs will be assessed. Much confusion arises through the naming of signs. Throughout this essay the images Neurath used will be described as signs. Signs in general public use will be referred to as pictograms. Based on theories of perception it will be shown that some more than others are more suitable in terms of communication.

On the basis of this argument the need for standardization is discussed. **Chapter III** contains the procedures followed in an attempt to establish a definitive sign language, showing that while Neurath's proposals were justified they have not developed as he hoped.

> 'An International language has to take into account International needs and at the same time it has to be simple as possible' 2.

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CHAPTER I

CHAPTER I

The Importance of a visual language

Neurath's motivation in creating a pictographic language undoubtedly stemmed from his belief in Logical Positivism. This was a philosophical theory created by the group he was involved with, the Vienna Circle, which they used to analyse language. Logical Positivism is a combination of two previously contradictory ideas : Rationalism and Empiricism. Rationalism is that which is concerned with studying reality through logic and mathematical methods as opposed to Empiricism which is the belief that knowledge is attained by direct human observation.

The Vienna Circle borrowed the idea of Rationalism. Their aim was to analyse language and they did so in a method similiar to that of symbolic logic - a theory created in the nineteenth century by Guisseppe Peano and Gottlob Frege. Through symbolic logic they had previously presented relationships between objects in an abstract form. They formed statements through a defined set of symbols (similiar to those of arithmetic); each statement was a derivative of an observation of the natural world but bore no relation to it in physically descriptive terms although it was analytically true.

The Vienna Circle adapted this method to analyse language into a basic set of direct experiences which reflect a logical and consistent mirror of nature. They believed that the vocabulary used in all languages including those that referred to specific terms used in science etc. could be minimized to a limited set of observations. They wished to create a language which would contain words common to all experiences.

Neurath believed that a statement within this system should fit into a particular structure, that ...

'Each statement that does not rely on formulations, that relate to 'data' is empty, it is metaphysics....all statements lie on one plane and can be combined like all parts from a workshop that supplies machine parts' 3.

Neurath's interest in education presented him with the means to put his theory into practical use. His interest lay in a visual language which would act as an auxiliary language. This would aid the educative process not only in a social context but at a more basic level in school fulfilling the normal educational role.

After the First World War Neurath was General Secretary of a co-operative for one family house settlements in Vienna. In an attempt to create interest in the scheme he organized a public exhibition. Following its success he approached town-councillors and other associated individuals with the idea of creating a permanent exhibition of housing and town-planning.

After a few smaller projects of this sort, Neurath finally founded the Gesellshaft und wirtschaftmuseum in Wien (Social and Economic museum in Vienna) in 1925. His aim was to create a comprehensive collection of educative information in the form of statistical charts and other visual representations. In doing so, he hoped it would pave the way for social change, after the destruction of the war.

Neurath was not the first to create statistical charts. The earliest records of graphs, bar and pie charts date from the end of the 18th century. A significant contributor to the design of statistical charts was William Playfair (1759 - 1823). As a political economist he dealt with topics similiar to Neuraths.

Obviously statistical charts by their nature are presented in some visual form. Neurath's achievement derived form his distinctive presentation of information. **Figure** 2 shows one of Playfair's charts showing diagrams relating to wheat, bread and labour in Britian over a period of 250 years. Although graphs today do bear a resemblance to Playfair's charts it was their inaccessibility to the general public that Neurath wished to change.

The solution came in the form of Isotype. This system replaced the use of abstract forms as representational units with signs bearing direct relation to the subject of reference. This made understanding of the charts clearer to the general public who might have otherwise found the charts complicated and unappealing to look at. **Figure 3**.



fig. 2





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Neurath's philosophy of Logical Positivism correlates directly with the importance he placed on the use of Isotype in education. He believed that images could substitute words in certain circumstances. He did not want to abolish verbal language but believed that some things could be more clearly said through pictures.

'Words make Division Pictures make connection'. 4.

By creating a language in visual form, with a limited vocabulary of images he believed he was creating a form of communication common to all, irrespective of experience.

His method and principals of Isotype are clearly outlined in *International Picture language.* These are elucidated not only in written form but by the language in which it was written - Basic. Basic was a form of English created by C.K Ogden in which a limited vocabulary with no superficial words existed. There were three main groupings; Operations, things and qualities. A series of seven rules governed the order of words and certain figures of speech. **Figure** 4

Neurath foresaw a language, standardized to the rules of Isotype, where Isotype signs would be taught in schools world wide in the eventual creation of a universally understood language.

He believed that such a system within schools used as a method of understanding of the subject being taught. If teaching in pictures could give a 'general view' then education was successful.

'To remember simplified pictures is better than to forget accurate figures. 5.

The Development of the Isotype system

As a public educator, Neurath was more successful than many designers today who often seem to forger their informative role. Quite often the message is lost in the attempt to conform to 'fashionable' design. Neurath did not consider himself a designer but as a teacher whose main priority was to present information in the best way possible for the individual to gain the most effect.

The pictorial image was of utmost relevance, so also was the presentation of it. As a teacher he believed that pictographic signs should not contain any unnecessary details, that might impede understanding of the message.

The Importance he placed on these two requirements led to the development of pictorial signs. These signs should be presented in a way that increased ledgibility. They were placed horizontally along the plane, while elements such as time ran downwards. Other approaches had previously been used, but this approach emphasized the comparative function and had, in the case of exhibition display, the advantage of displaying a headline running across the top. Furthermore a vertical axis could be placed through the information when surplus or deficit occurred. **Figure** 5

The use of signs in this way has a further position in an historical context. Neurath, along with artists, designers and architects of the time believed that a more egalitarian culture would arise out of an International programme of visual Education. Through Isotype signs a language could develop that would not only disregard cultural language but cultural differences.

> 'To the theorists of constructivism, de Stijl and the Bauhaus, geometry held the promise of synthesizing art and technology, and offered a visual "language" that would exist independently of particular cultures'. 6.

Isotype can be seen as the attempt to interect interpretation with perception that is, the combination of two aspects of a sign system. One, which demands interpretation relating the signs of a system to signs learnt in a particular context. In Saussurian terms, the signification. The other is experienced in terms of perception, the inbuilt reactions of the brain to given information.





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Neuraths system of displaying information seems to be a model for the gestalt theory of perception that

'We make sense of our environment contextually by differentiating the elements one from the other'. 7.

The theory describes how our mind creates structures and recognizes structures in what ever it sees taking more attention perceptually of images that are formed in a systematic way. This will later be expanded in terms of structuralist theory. The suggestion has been made by the psychologist Wolfgang Kohler that structuralism is inscribed in our bodies because of the manner in which the central nervous system works.

Therefore in the case of Neurath's signs the underlying structure can only be beneficial to communication.

Isotype; an early design method.

The Isotype method was a result of good organizational methods on Neurath's part. Even by todays standards his design team was large consisting of 25 people, with Neurath at the head. The other members consisted of four main groups.

First, the data collectors consisting of economists, Historians and statiticians.

Second, the transformers, who compiled the information in visual terms.

Thirdly, the graphic artists who drew the symbols and specified other decisions relating to the placing of the elements. Finally the technical assistants, paste up artists of today who put the charts together for their eventual printed form.

Such an organised system was successful because the definite stages of production created an opportunity for adjustments to be made at any point when needed. Because defined graphic rules and methods could be taught, the team worked as a whole so a consistent method of treatment was evident. Although such an approach may seen obvious today, it must be remembered that Neurath was successful as a designer because his approach was as Michael Twyman describes. . .

'a means to an end rather than an end in itself '...8.

Neurath formulated the system to suit his own needs and the needs of the people he was designing for, without the burden of stylistic expression that many designers feel that need to display.

Once a formulation was established, more and more importance was placed on the signs themselves. Marie Neurath, Neurath's wife, in the role of the transformer, was not only the link between scientific facts and graphic representation but was responsible for the formulation of the signs.

Her role was, as Neurath put it, 'Trustee of the public' **10**. having the ability to assess the information and to find the most appropriate sign to represent it.

These visual representations, the basis of today's sign systems, were compiled by Neurath with the eventual aim of producing a 'Visual Thesaurus' of Isotype signs which would contain the basic vocabulary of his universal picture language.

The Influence of Isotype

'The Isotype signs are dependent on their times like these old sign languages, later times will see what their specials qualities are and what the conditions are which made them'. .. 11.

Neurath was aware of the effect time has on the comprehensibility of signs. Most of them contained in his 'Thesaurus' compiled with the aid of Gerd Arntz bears no relation to the equivalent objects they would represent today. The *Washing Machine* or *milk* in Figure 6 have no significance at present.








Some signs, such as *television* resemble the contemporary pictogram for *train*. **Figure** 7. and Neurath's *coal* sign has been used by Adrian Frutiger in his Air France time table to represent *week-day* on *Daily* Figure 8.

Other signs, however, seem to have become standard representation. **Figure** 8, shows the sign for restaurant which continues to be used. **Figure** 9 a, b.

During my reserarch for this thesis I have come across up to 25 different sign languages. Some were specifically commissioned for events such as the Olympics but others created for general public are still visible today.

The work of Rudolf Modley is directly influenced by Isotype, because he worked with Neurath in the creation of the Isotype signs. He is best known for his compilation of pictorial symbols in *The Handbook of Pictorial Symbols*, where the influence of Neurath is extensively evident.

Otl Aicher is also a prominent designer of International Pictograms. Having completed a system for the Munich Olmpics in 1972, he was commissioned by the lighting firm ERCO to create a larger system to be used in a wider variety of situations.

His collection is representative of other sign languages, and while many of the referents portrayed were not visualized in symbol form by Neurath, his influence on representation, particulary the silhouette form, find their source in Isotype.













CHAPTER II

CHAPTER II

Pictograms as linguistic signs

'Any material can arbitrarily by encoded with meaning, we can therefore take language, discourse, speech to mean any signifigant unit or synthesis, whether verbal or visual'. *12*

Having previously alluded to the theories of structuralism in suggesting that pictographic languages are suited to human perception because of their systematic make-up, I wish to extend this corelation further with the theory expounded by Noam Chomsky.

Chomsky, extended this view to suggest the human mind is structuralist in nature. It recognizes structures in what it analyses that match in-built mental structures. Believing that we are at birth biologically capable of acquiring any language at all, once a language is acquired a restriction is imposed and not a growth as one would assume. However, which ever language is acquired in the case of a human, normally one in a verbal form, it can be said that a requirement of language is that which functions with an underlying system - a structure.

Having established this, I wish to equate the elements of such a system which co-exist within the sign systems of Neurath and subsequent systems as described. I will refer to the theory of Semiotics throughout, although the theory of signs developing from Saussure's theories of linguistics extends further than the verbal framework he describes. However, the framework of a pictographic system is linguistic in nature. Unlike the American viewpoint of Structuralism in which the basic unit of a language is a sentence, Saussure regarded the basic element as the word. The Structuralists followed this theory in extending the function of the word to that of the linguistic sign.

The words or vocabulary of a pictographic language are the signs themselves working within the parallel system of interpretation and perception which lends itself to Saussure's theories on the latent and manifest function of the sign In his terms the sign has two aspects; 'the signifier' and the 'signified'. The sign as he perceived it is an abstract entity from its referent. In his view, developed later by Barthes with reference to myth, the sign has a 'value' and a 'signification'. The value he refers to is its position within a system. Its value can only be assessed as part of a co-existence with the other signs in the system.

Charles Pierce, in an attempt to understand the 'signification' of signs, divided signs into 3 groups; symbols, indexes and Icons. The symbols Neurath used were primarily icons. Because of the principles of his philosophy his signs had to bear direct physical similarity to the object they represented.

Figure 10. is an example of a symbol within pictographic terms. It is similiar to the signs of a language. According to Pierce, the signification of a symbol is not directly tied to the appearance of the referent, that is its meaning must be learnt by those who employ them. The conventional sign depicting a man or a woman as shown is such a sign bearing no relation to the toilet of which it is actually a sign, but its meaning has been learnt by those who use it in a public context

The index is similiar to a symbol as it does not visually depict the referent. Its meaning is created through its proximity to a particular object.

Figure 11. illustrates an arrow whose directional meaning has already been learnt, when placed in a particular context, functions as an indexical sign.

With this in mind, how do such systems function as a communicative mode? It is not as straight forward as Neurath predicted. Pictographic language has evolved with its own collection of signs each with a value and signification. How does this effect their function as informative signs? do signs convey the 'correct' signification as signs existing within a linguistic system intending to inform ?

Semioticians describe systems of signs as 'codes'. Only those familiar with the rules within the codes can receive coherent messages. Even within language there are extensive sub-codes, or, as John Sturrock points out ...

'conventional means of conveying information to some rather than all our addressees'. 13.







fig. 10





An important element of verbal language is the addition of signs to the normal linguistic message. Facial gestures or vocal intonation can be regarded as signs which will effect the interpretation of a message. These signs are part of the linguistic code and can be accepted as such, while others such as gestures and word intonation peculiar to a particular individual are not part of the accepted code - not being understood except by chance.Within a verbal message relayed by a linguistic sign system,

'understanding in this context involves a complete integration of information of which only part depends on the structure and content of the verbal message itself '. 14.

Neurath believed his pictographic language was free of added signifigation as described above. While no additional signs such as gesture or intonation come into effect, interpretation of signs are effected by their position within a system, whether they take the form of an Icon, Index or Symbol.

While an Icon, as described above bears direct relation to the object, it represents another factor which comes into effect: **Semiotic Convention**.

This was a term coined by Umberto Eco to describe the appearance of an image to be read as a sign. An Icon may depict an object, but where or how does it tell the reader of the sign what its purpose is, what action or procedure is it conveying? To illustrate this point I will use an example given by Hanno Ehses in relation to this subject.

Coinciding with the vocabulary of signs, certain assumptions are made about the reading of pictograms. Pictograms differ from words in the way that they must be read in the same way that a direct question when posed must be answered. How does this occur? This obligation can be correlated with the inferential qualities of words. Stylistic qualities which effect the 'look' of a symbol are part of an intergrated system within pictographic language that functions within verbal language.

'a pictogram functions by connecting with the culturally bound expectations of the people using it'. 15. Hanno Ehses discusses the question in relation to safety information pictograms He states that such signs, because of their generic status, have an in-built message not readily visible by the sign alone. **Figure** 12,. instead of simply reading as *bard-bat*, *goggles* or *ear-muffs*, are interpreted as 'for protection wear hard-hat'. Pictograms do not contain the meaning in themselves - only people using them give them meaning.

Figure 13.has a similiar effect. The signs used are iconic showing umbrellas gloves etc. However, the meaning of these signs is an extension of the images. The signs used to represent items that are typically lost, are combined. They become a sign for lost objects. The message can be read that these lost objects are representational of an office where such objects can be retived, even through nothing of the sort has been shown in visual form except by implication.

Although Neurath was not primarily involved with a signage - system as we know it today, he did create signs that inferred action. **Figure** 14. shows how he made use of Iconic and indexical signs to show on which side of the road a car must drive. However, Neurath's sign system was sometimes misrepresentational in that he did not really regard cultural factors influencing interpretation of a sign.

His limited vocabulary, apart from differing cultural significations, has evolved similarly to verbal language in that many words represent the same object. This occurs in a sign system Saussure believed that the linguistic sign is arbitrary.

> 'That the form is not determined or motivated by the thing it is a sign of. '16.

In today's sign-language this is true. Many signs represent the same referent, but it is essential to remember that the signified is not always the same.

Figure 15. illustrates the commonly used pictogram of *man* and *woman* which represent *public lavatory*. However, the signification of these figures can change when shown with a stairs or elevator. In **Figure** 16. the pictogram does

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fig. 12

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fig. 13













СНАРТЕК Ш

CHAPTER III

Perception of pictograms in a public context

In the previous chapter I mentioned how Neurath's method of presenting information and current frameworks of sign-systems is particularly suited to the needs of the human. The human eye and brain, according to Gestalt theory of psychology, are more receptive to images that fulfil requirements of overall unity and harmony in the search for a whole.

Pictographic sign-systems, therefore, lend themselves to good perception, because they consist of unifying elements. Once this is established the individual signs must be assessed.

To understand what is required an explanation can be found in written language. It must be presented in a coherent manner. A hand-scripted work is often quite difficult to read, unlike a typed essay, which is consistent in letter and word form.

However, in saying this I do not imply that pictograms should vary in style depending on the 'writer' or designer. It has been suggested that pictograms should be designed in a standard style that can be universally implemented and learnt.

Visual sign languages seem to follow rules of organization of elements as defined by the Gestaltists. In Gestalt theory the law of Pragnanz defines the psychological theory mentioned above as 'good'. Good being that which is the emotionally least complicated, least provoking. The image which would be best perceived is one which follows this description.

The human brain searches for this unity and harmony because of its in-built need for stability. The eyes see what the brain desires for a harmonious state of being. If what is perceived is not consistent with our needs, it causes uneasiness, and in turn effects the success of perception and understanding.

If visual images, in this case pictographic signs are created to fulfil these perceptive needs it will aid the communicative function and set a standard for visual literacy. With this in mind I wish to assess some of the signs in use;

Proximity

Although Neurath's signs did not appear as information signs as we know today he did, however, make use of the positioning of elements in proximity to one another to create a unity that could be easily read.

Figure 17. shows how elements, when placed in proximity, create larger units and this is what attracts the eye. A larger space creates a separation large enough to distinguish between groups of units but still gives the effect of groups of units belonging to a larger whole.

A further example of this theory is illustrated in the use of 'reduced' elements to create a figure. The same occurs in the EXPO '70 *'envelope'* **Figure** 18. The positive elements are seen as overlapping sections of the envelope creating one object that is identifiable rather than four forms of abstracted triangles.

When elements are placed too close together, or overlapped, but with no space defining the 'edge' of the element, an object can become unidentifiable and understanding is made difficult.

Balance

Balance, in terms of a psychological requirement of the human, is of great importance. If an image appears to be unstable it creates an uneasiness within the viewer and can have the effect of a message being unsuccessfully relayed or received.

In the case of pictograms, figures are generally in vertical stable positions. Even when conveyed in an action - running or walking up stairs they appear stable. This is achieved through the recognition of a vertical axis which the brain imposes on the image in the process of stabilization. Even if an image does not follow identifiable rules of symmetry, i.e. each element balanced equally on either side of the axis, the brain can find the point of symmetry and fulfill its need to find a harmonious situation. **Figure** 19.

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fig. 17



fig. 18





However, while this is acceptable it could be argued that the signs which are most successful are those which follow direct symmetry. It has been suggested that asymmetrical symmetry can be used but should be confined to create feelings of dynamism or to attract attention.

If a struggle occurs for the eye and the brain to analyse the elements, it has an adverse effect the viewer, who loses interest and understanding. However, it can also be beneficial in causing stress, which will add more weight to one element or the another. This is connected to the view by psychologists that the human eye generally reads from left down to the lower left area of the visual field. As in the case of **Figure** 20. this can create movement ensuring that the reader reads the correct message that one must exit through the open door.

Area

Pictograms, like most paintings or visual images, create a ground on which the elements of the sign can be viewed. However, depending on the form these elements take, whether one is perceived as being the object on the 'ground', the eye will be attracted to the simplest that fulfill its perceptive needs.

Pictograms usually take the form of being within a square or an enclosed space. Not only does this add to its figural form, but the subject placed within it is focused upon.

Most pictograms are black and white, and while colour does influence perception it is usually more effective if a dark and light colour are juxtaposed to create contrast and a clearer reading.

Julian E. Hochberg uses an example of a white cross on an 'intended' black ground, the effect in **Figure** 21, he claims, is that a black cross appears on a white ground. However, if the white space is decreased a white cross appears. Personally I do not agree. It appears that the clearer colours will dominate, creating the 'positive' space and the lighter the 'negative'.

In the way that in **Figure** 22. the telephone appears as a black object on a white ground and not as a white surface with a black 'telephone' shaped hole.



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While some pictographic systems use white on black, the opposite method is recommended by the A.I.G.A. (American Institute of Graphic Art) in an attempt to create guidelines by which pictograms should be designed. They stress the use of black on white which they claim creates easier reading and clearer understanding.

Although the individual elements, do follow rules which aid perception, the pictographic system as a whole must again be looked at. For a sign system to work successfully as a coherent 'language' it must have an overall consistency.

It is essential that when pictograms are positioned together they appear to have equal visual weight. When varying typefaces appear in a sentence some stand out more than others. This should not happen in the case of pictograms. In a sign language the aim is to communicate, not to confuse. If they are to work successfully they should attract equal attention.

Reduction and consistency

3.3

Neurath laid down two rules by which the vocabulary of a sign language must follow in order to create this effect. These two requirements are *reduction* and *consistency*. These methods have the effect of creating similiar style which determines the appearance of signs as a unified whole.

This strengthens the semantic function of the sign within the system (or sentence), so that it can be read in relation to the sign in the same context.

Pictographic signs today have the same reduced quality that the Isotype system promoted. Reduction, in Neurath's terms, was the means of finding the simplest expression of an object by presenting it in a manner that would render its mechanically produced appearance.

Quite often Neurath's method weakened the link between referent and sign by creating symbols that were too abstracted to be read.

A correlation can be made between the written form of a verbal language in that the sign bears no relation to the referent in size. When compound pictograms are created through the combination of two signs the size of the sign is irrelevant. As in Neurath's charts **Figure** 23. the size similarity between signs is in no way an attempt to depict the actual physical relationships between objects.

> The signs are unified in terms of other signs, like letters in a type face , rather than in terms of the object the represent'. 17.

consistency works in away similiar to the method of reduction. However, it works in terms of style rather than signification.

the semantic value of a picture sign is tied to its being a picture not to its style ... Stylistic consistency works semantically at the level of connotation not denotation projecting an image of grammatical coherence rather than functioning as a logical linguistic rule'. 18.

Neurath encouraged consistency, believing that it would help Isotype reach its status as a Universal language in aiding standardization of the visual vocabulary.

Stylistic consistency is illustrated by the sign systems for the Munich Olympics designed by Otl aicher. **Figure** 24. shows the Tokyo system, which contrasts with the Munich system in that it is drawn. Aicher's pictograms are created through a consistent body 'alphabet', the elements of which can be considered as letters making up the 'word' or visual sign. **Figure** 25.

Standardization and comprehension

Unlike Neurath's proposed Isotype vocabulary, the words of a pictographic language in use today have increased and evolved in a way similiar to verbal language. For a visual language of this genre to exist in a formalized way and fulfil its functional role, the vocabulary must be defined and in turn recognized by the general public.

In a recent article on the standardization of signs, Christof Brugger shows how many different pictograms can represent one meaning. It has already been discussed how confusion can arise due to the varying significations of particular





- T. R. J. 下すする

fig. 24



fig. 25

1 a and a second ards are the 169' 0 '''' no cili -

sign but in this case the extremities of stylistic approach will be described.

Figure 26. shows a selection of pictograms denoting **'batb'** while the same basic Iconic sign is used, some are more effective than others in terms of perception.

For a visual language to work successfully in communicating a particular message, the vocabulary must be standardized in terms of visual representation as well as the signification of the sign used. Unlike verbal language in which the different words used to convey an idea are known or recorded, a similiar system is not in force in the case of public information signs. The vocabulary of a pictographic language must be compiled and the most suitable sign isolated, this would create a known vocabulary which could be learnt, while also ensuring to a degree that comprehension is successful.

In 1973 the I.S.O. (International Standards Organization) proposed a system which would do just that. By means of a series of tests, the sign which they felt would best signify a given object or action would be chosen.. Similiar attempts have been made by other organizations, particularly the A.I.G.A. (American Institute of Graphic Arts). Using international pictographic systems as a reference were more concerned with creating a frame-work of signs that would suit their own needs rather than the international need of a universally known language.

The I.S.O. while conducting comprehension tests, which do have some discrepancies, which shall be later discussed, of individual signs are in effect creating a set vocabulary of pictographic 'words' that will be understood.

The pictograms are chosen on the basis of past use, that is no new pictograms are created except in exceptional cases where no sign exists. Instead a collection of pictographic variants are compiled from existing sign systems in order of rank. Following this they are again assessed and the three most appropriate variants are selected and assessed in the comprehension and recognition test. **Figure** 27.

In this test 100 respondents from each of the countries are presented with a sign and must assess its meaning.


fig. 26

	1	2	3	4	5	6
		22	°	2	Ń	Å
Reference	MG	MB	MA	MF	мс	MD
Origin	NRR	BR	UIC	UIC	ATA	СНВА
Scale value	0	36	54	59	80	96
	1	2	3	4	5	6
	0	0	ÛÌ	21	Í	INF
Reference	BE	BB	AK	BG	AY	AM
Origin	NRR	BR	0.68 Port	ICAO	ADV	
Scale value	0	41	41	12	11	11

fig. 27



Their comprehension is categorized into one of seven categories of understanding as laid down by the I.S.O. in 1973.

These are as follows:-

- correct understanding is certain.
- correct understanding is likely.
- correct understanding is marginally likely.
- the stated meaning is opposite to that intended.
- the response is wrong.
- no response was given.

These responses are compiled and a variant is chosen from the 'certain' or 'likely' categories. A 66% correct average must be achieved if a sign is to be defined as comprehensible.

although extensive research has been undertaken in the last 15 years. There are certain procedures and conditions within this system that could be at fault. The problem lies with the testing of the pictograms.

As a language which is intended to inform it could be considered inappropriate to test these signs out of context. While the A.I.G.A. stresses the need for 'in situ' testing, the I.S.O. do not seem to consider it important. Although in some cases the respondents are actually approached in the environment where the pictogram is to be placed, they do not experience the pictogram in its intended position. This method has two shortcomings. First, the pictogram is not seen in relation to a background of what could be described as visual 'noise', not being seen in a context where it may have to compete against other factors such as advertisements, lighting etc. Secondly, while Brugger believes that contextual information is not necessary for judging symbol performance, he does see its importance of its application in relations to signs such as 'push' and 'pull'.The pictograms which represent these actions may actually work well in real use. However, within a non-contextual situation they may not attain positive results and may be substituted by other signs which are less appropriate.

Another factor overlooked within these tests is behavioural effectiveness, particularly in the case of safety and emergency signs. As in a verbal context certain expressions would have differing effects in an emotive situation. It must be assumed that such a situation would demand a different level of comprehension of visual signs than those provided within the context of the test.

Finally, in addition to these methodological discrepancies it could be argued that the form in which the final standard is presented in inadequate. Once a decision has been made about the form the pictogram should take, the standard is described in verbal terms.

Although this in itself is an attempt to facilitate language barriers, in an attempt to create a pictorial language to verbalize the description of it, is in effect defeating the purpose as it in turn must once again be visualized by a designer.

In a recent Issue of *Information Design Journal* 20., Jeremey Foster discusses the need for a reassessment of the current procedure and although some of the discrepancies mentioned above are subjects of concern, no attempt has been made to implement standardization in a formal way. The conditions laid down by the I.S.O. are not considered a standard which must be adhered to, learnt and implemented, if universal communication in a limited form is to evolve. **Figure** 28.

4.	SCHEDULE		
001	Direction	Standard image content	Arrow with Belgian head, with angle at apex of between 840 and 860
		Function	To indicate direction
		Field(s) of application	Buildings, services and places of interest used by the public
002	Smoking	Standard image content	Cigarette with smoke
		Function	To signify where smoking is allowed
		Field(s) of application	Buildings, services and places of interest used by the public
003	Helicopter	Standard image content	Side view of helicopter
		Function	To signify a transport facility by helicopter
		Field(s) of application	Buildings, services and places of interest used by the public. Maps, guides Timetables
004	Tram (streetcar)	Standard image content	Electric tram (streetcar) in side view
		Function	To signify transport facility by tram
		Field(s) of application	Buildings, services and places of intere <mark>st used</mark> by the public Maps, guides Timetables
005	Bus	Standard image content	Bus side view
		Function	To signify transport facility by bus
		Field(s) of application	Buildings, services and places of interest used by the public Maps, guides Timetables
006	Male, man	Standard image content	/ Male figure
		Function	To signify a facility reserved for the male sex
		Field(s) of application	Buildings, services and places of interest used by the public
007	Female	Standard image content	Female figure
		Function	To signify a facility reserved for the female sex
		Field(s) of application	Buildings, services and places of interest used by the public
008	Telephone	Standard image content	Telephone receiver in profile
		Function	To signify communication facilities by telephone
		Field(s) of application	Buildings, services and places of interest used by the public
009	Gasolene station	Standard image content	Gasolene pump with hose and nozzle
		Function	To signify the availability of motor fuel
		Field(s) of application	Buildings, services and places of interest used by the public Maps, guides
010	Deisting water on the	Constant in the second	Timetables
010	Uninking water on tep	Standard image content	Tap above glass with water indicated by wavy lines
		Function	To signify drinkable tap water Buildings, capies and places of interact used by the public
	2	rieu(s) of application	buildings, services and places of interest used by the public
011	Stairs	Standard image content	 Where no direction is required: staircase with two human figures, one walking up, one walking down. (ii) For staircase restricted to idown in the file
			with one figure walking down.
			with one figure walking up.
		Function	To signify access facilities via a fixed staircase
		Field(s) of application	Buildings, services and places of interest used by the public
012	Taxi	Standard image content	Front view of taxi cab with ward it A VII
	a consti		into the symbol
		Function	To signify a transport facility by taxi
		Field(s) of application	Buildings, services and places of interest used by the public
013	Waiting room	Standard image content	Two persons in side view with a clock overhead
		Function	To signify areas where people may wait
			e.g. in stations of hospitals









CONCLUSION



CONCLUSION

Throughout this thesis conclusions have been made as arguments and the various subjects of discussion arose. At this point it seems appropriate to acknowledge, the work of Otto Neurath and view his aspiration to create a universally known language as reasonable. It can be clearly seen that his attempt to create a defined vocabulary is essential.

While confusion can arise through the use of previously learnt symbols, these would be preferential to signs, perhaps in an abstract form that have no cultural status.

Attempts have been made to create visual sign-languages that must be learnt contextually. These bear no similarity to the objects or actions they represent in physical terms. These systems such as those shown in **Figure** 29 a / b.designed by the Yugoslavian architect, Radomir Vukovic, are not in extensive use and many remain only in experimental form.

Attempts by the I.S.O.to standardize signs have been constructive and it is possible through their attempts, to envisage an International picture language as Neurath hoped.









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