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# ISOTYPE

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Otto Neurath wrote his book *International Picture Language – The First Rules of Isotype* when about ten years of chart-making lay behind him and his team. During this time the method was developed; at the end of it we felt we mastered it and could apply it in ever wider fields. Though we lost the home and support of Vienna (1934) for our "Vienna Method", we struggled to continue our work at the Hague, where we had founded the International Foundation for Visual Education in 1933. It was here that we began to call our method Isotype (International System of TYpographic Picture Education, but meaning also: using always the same type).

Here is a short chronology:

| | |
|---|---|
| 1923 | Museum for Housing and Town Planning |
| 1924 | Proposal to turn the Museum into a social and economic museum, suggested by Neurath, granted by the Council of Vienna. |
| 1925–1934 | Social and Economic Museum in Vienna; growing workshop and team; three permanent exhibitions; travelling exhibitions; visual centre (lantern slides, printed charts etc.); many articles. |
| Main books: | *Die bunte Welt* (1929)<br>*Geschellschaft und Wirtschaft* (1930)<br>*Technik und Menschheit* (1932)<br>*Bildstatistik nach Wiener Methode in der Schule* (1933) |
| 1934–1940 | Continuation of work at the Hague with a nucleus team; ISOTYPE. Travelling exhibition for Norway, on Tuberculosis for USA. "Around Rembrandt" and "Hundred Years of Railway" for Holland. Co-operation with Compton's Pictured Encyclopedia (Chicago). |
| Main Books: | *International Picture Language* (1936)<br>*Basic by Isotype* (1936)<br>*Modern Man in the Making* (1939) |
| 1940 | Escape to England |
| 1941 | A new team at Oxford |
| 1942 | Isotype Institute Ltd founded (first chairman L. Susan Stebbing). Films with Raul Rotha; Illustrations for books of |

| | |
|---|---|
| | the Ministry of Information. Production of Isotype books planned and begun. |
| 1945 | Otto Neurath dies. |
| 1948–1971 | Isotype books published by Max Parrish and successors |
| 1952–1971 | Isotype filmstrips published by Common Ground |

## Historical Background

The end of the First World War brought about great social changes in Central Europe. New measures were needed to inform a wide public of social and economic affairs, which in the newly created democracies had become everybody's concern. Visual means were widely used for quick information, on posters and in newspapers, and statistical abstracts carried pages of illustrations.

At the end of the war Otto Neurath had begun to think about visual representation for an exhibition on war economy. The next opportunity came when he was active in the housing movement in his home town, Vienna, after the war. He was General Secretary of a co-operative for one-family house settlements based on English models, and he organised a big open air exhibition to rouse general interest. It was a success; at the end he enlisted the support of town councillors and some other public personalities to create a museum for housing and town planning.

## The First Museum

The museum for Housing and Town Planning was opened in Vienna in 1923, housed in a large hall owned by an association for gardening. I saw this museum in 1924. Besides many exhibits showing the layout of settlements, groundplans and equipment of houses, the technique of building etc., there were also a number of charts. These put the local problems into wider perspectives. There was a chart showing population densities, using just areas with dots; there was another chart showing the populations of the five largest towns in different countries; there was also a chart about phases of civilisation according to Müller-Lyer. They impressed me greatly, which is why I still remember them. All of them were simple drawings in black and white; but they made their point, their message was vital and most stimulating; what one had learned in history was seen in a new light. I was at once won over: here was something of importance with great possibilities.

What Neurath felt was that the basis of the museum should be widened; that a unified method of visual representation should be created to supersede the confusing variety of methods used in publications at that

time: curves, squares, circles, larger and smaller figures, bars (plain or carrying pictures), cubes, dots . . . everybody did as he liked, and there was even a tendency to change methods for the sake of variety as if a change made the subject more interesting. The task was to use one method which could always be applied, to make the reading of the graphic representation as simple as possible, to get to the point easily, to make the subject interesting; not to hide its irrelevance behind a decorative façade.

## The Second Museum: The Social and Economic Museum in Vienna

Otto Neurath succeeded in convincing the Financial Councillor of Vienna that with his support he could create something worthwhile. His

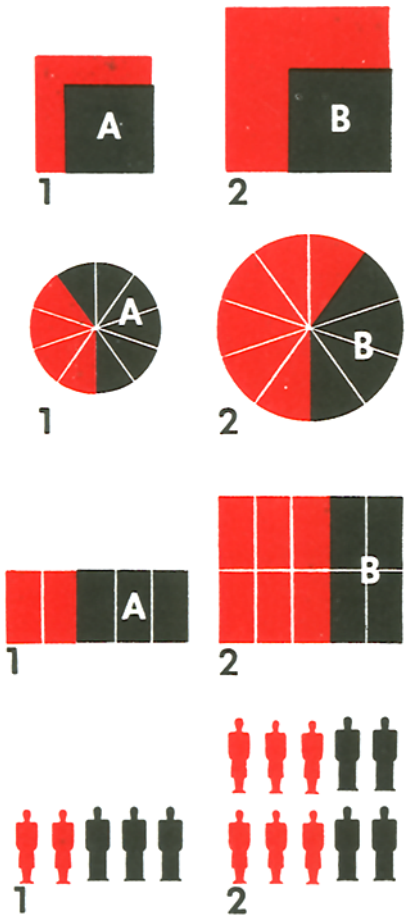



Fig. 1. Summary showing what may be said by various kinds of representation (from *International Picture Language*).

demand for funds was extremely modest, and it was granted. On the basis of this, he got the support of some other bodies; also, it was the time of large-scale exhibitions, and we became something like a semi-official exhibition unit.

Our object was to make the general public acquainted with the problems the community of Vienna had to tackle (the housing shortage, the amenities needed for children and mothers; the high infant mortality and the tuberculosis), how they were dealt with, and with what success. In colourful charts, which were like simple puzzles which everybody could solve, such problems were brought nearer to general understanding than would have been possible with just words and numbers.

Otto Neurath chose the name for this museum to show that, though the Museum was in Vienna, Vienna was not the only subject. He wanted to show in addition: Vienna's position in Austria, Austria's relations with the outside world; mankind and world economy. So, as far as time and money allowed, we made charts of general scientific or historical interest.

At first we had the hall in which the Housing Museum had been as our only exhibition room. Soon our stock of charts grew. We had taken part in many large-scale exhibitions on health, housing, education, social life etc., and were allowed to keep many exhibits for further use. In 1927 a great hall on the ground floor of the New Town Hall was offered to us as a permanent exhibition room, and later a group of rooms in one of the town's housing estates. These exhibitions were open on Sundays and some evenings in the week after working hours, free of charge. They could also be seen by groups, for example school classes, any time of the day by special appointment. Lectures could be given in a special lecture room with a projector for lantern slides and films; the museum itself could be used by the lecturers.

## The Vienna Method

Otto Neurath found that the methods in use to represent statistics were of very different merit; some were all right, for example bars: the eye can compare lengths. But it is impossible to see whether a circle is twice the size of another circle, whatever care the draftsman has taken to be correct. Even in his first experiments Neurath had decided to use units always; he set out to find ways to get, by clever arrangement of units, all the advantages which circles or curves occasionally have.

During the pioneering years Otto Neurath wrote many articles about the advantages of his method of pictorial statistics which he called "Vienna Method". We made a summary chart for *International Picture Language* as can be seen in Fig. 1.

In the first years we were groping for rules, nothing was yet fixed. Sometimes we arranged units side by side, sometimes on top of each other. Experiments were made whether such arrangement affected the understandability; no difference was found. We occasionally adhered to old conventions; we had been used to curves where time runs from left to right and the magnitudes were marked vertically upwards. But soon we discarded this mathematical convention (known only to a minority) and replaced it by the wider known reading arrangement: starting at the top and moving left to right and top to bottom. Also, we found that there are many symbols which should naturally be arranged in horizontal rows . . . think of man symbols in a population chart. For many symbols it does not matter either way: iron, coffee beans, bread, coffins etc. For a very few symbols we found the vertical arrangement necessary: water levels, height of flight etc. In spite of such necessary exceptions we decided to give preference to horizontal arrangements as a general rule, and to let time run downwards, beginning our story at the top left and ending it at the bottom. This was an advantage also for the arrangement of charts in an exhibition with a common heading above.

A rule should not be broken unless there is a good reason for it. And of course, often there is a good reason. A few examples may show this.

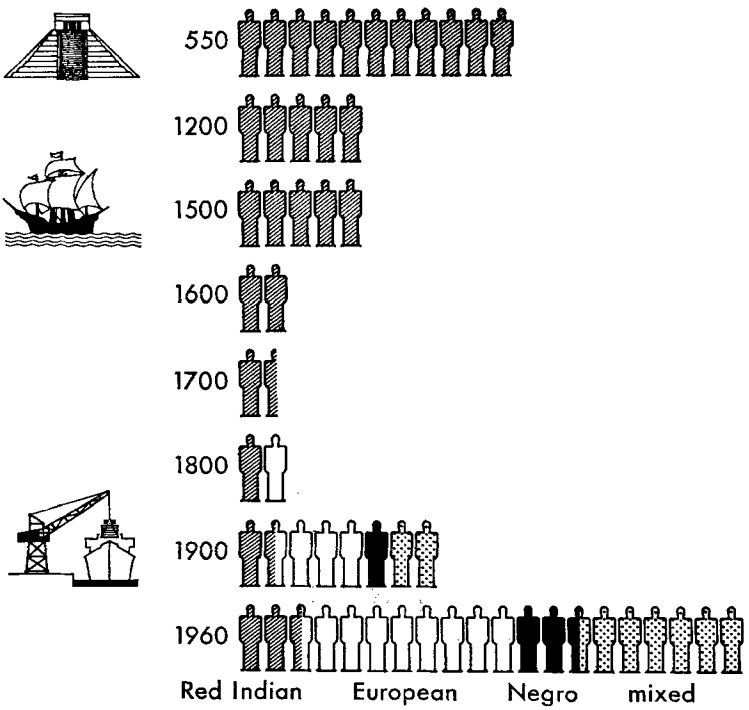



Fig. 2. Population of Latin America (from *Living with One Another*).

In this case we decided: the most important aspects are the fate of the Indian population and the total population. But in addition, other subgroups can also be clearly seen.

But if we want to stress a shift more than the totals, the use of an axis helps to bring out the point much stronger than mere colouring could do:

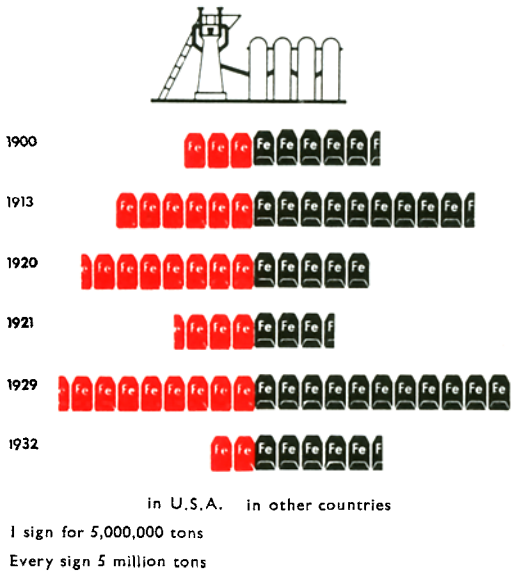



Fig. 3. Pig iron production (from *International Picture Language*).

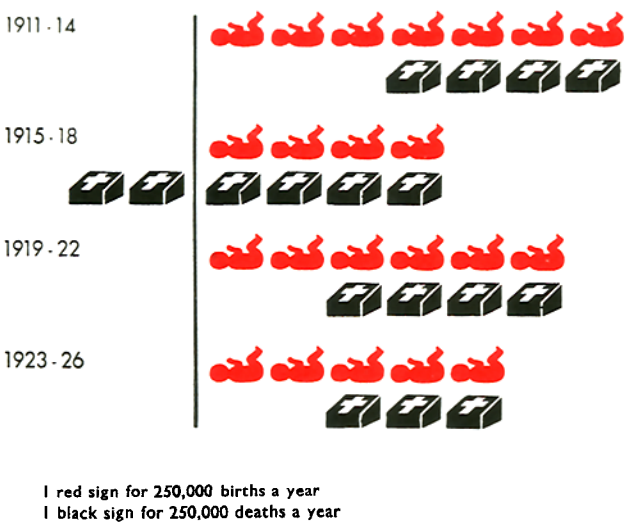
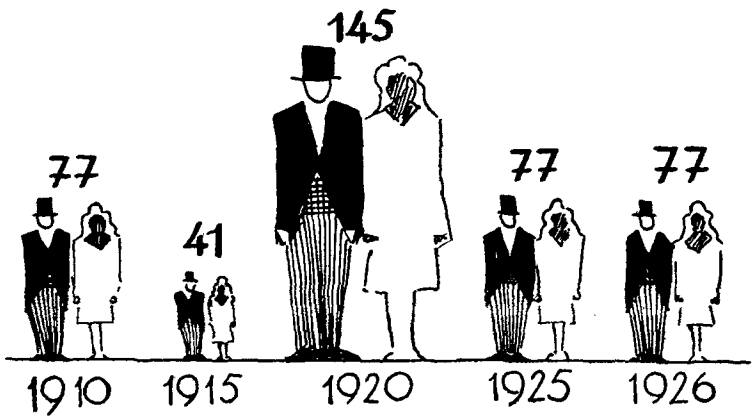



Fig. 4. Births and deaths in Germany (from *International Picture Language*).

In Figure 4 the symbols for birth and death have been arranged in such a way that their difference comes out clearly; only their difference matters for the change in population. If surplus and deficit is the subject of a chart an axis becomes important.

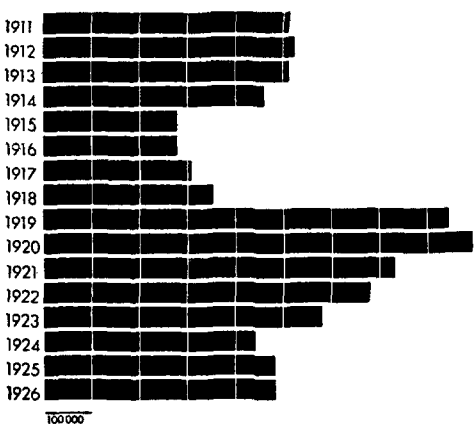
In all such charts we had to decide which years to select and which units to use to give a simplified, condensed, characteristic representation. In *International Picture Language* we gave an example which explains itself:

Number of men getting married in Germany out of every 10,000 persons




Men getting married in Germany

| | |
|---|---|
| 1911 | 512 819 |
| 1912 | 523 491 |
| 1913 | 513 283 |
| 1914 | 460 608 |
| 1915 | 278 208 |
| 1916 | 279 076 |
| 1917 | 308 446 |
| 1918 | 352 543 |
| 1919 | 844 339 |
| 1920 | 894 978 |
| 1921 | 731 157 |
| 1922 | 681 891 |
| 1923 | 581 277 |
| 1924 | 440 039 |
| 1925 | 482 792 |
| 1926 | 483 198 |



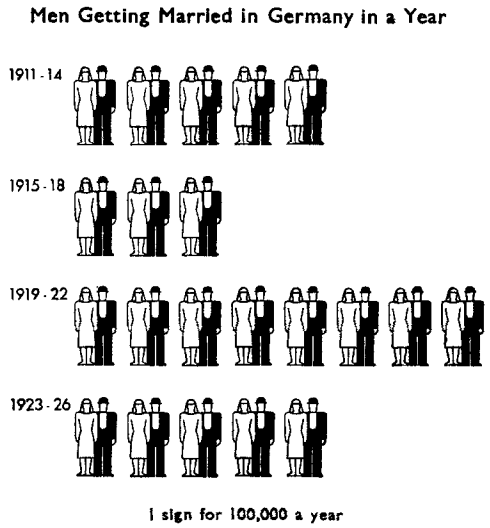



Fig. 5. Men getting married a) bad system, b) basic data, c) Isotype chart (from *International Picture Language*).

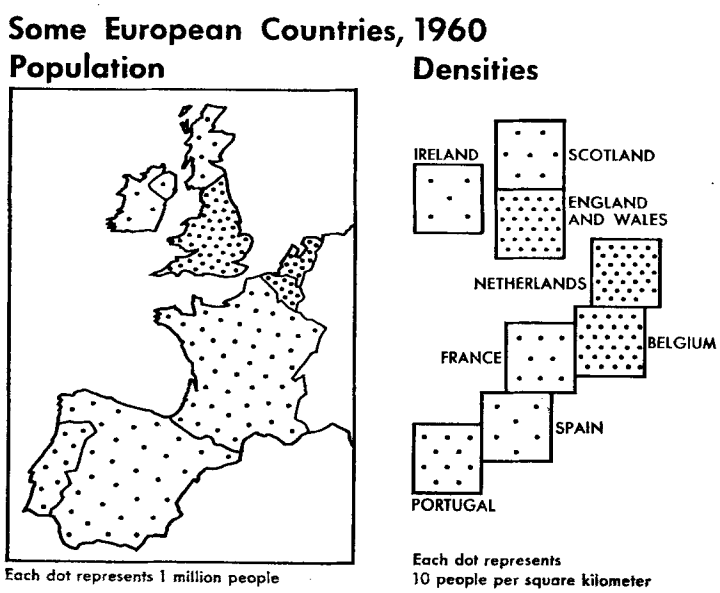



Fig. 6. One way of showing population density (from *Living with One Another*).

Population densities can be represented as shown above.

To conclude, a chart about European history in which density indicates the level of development:

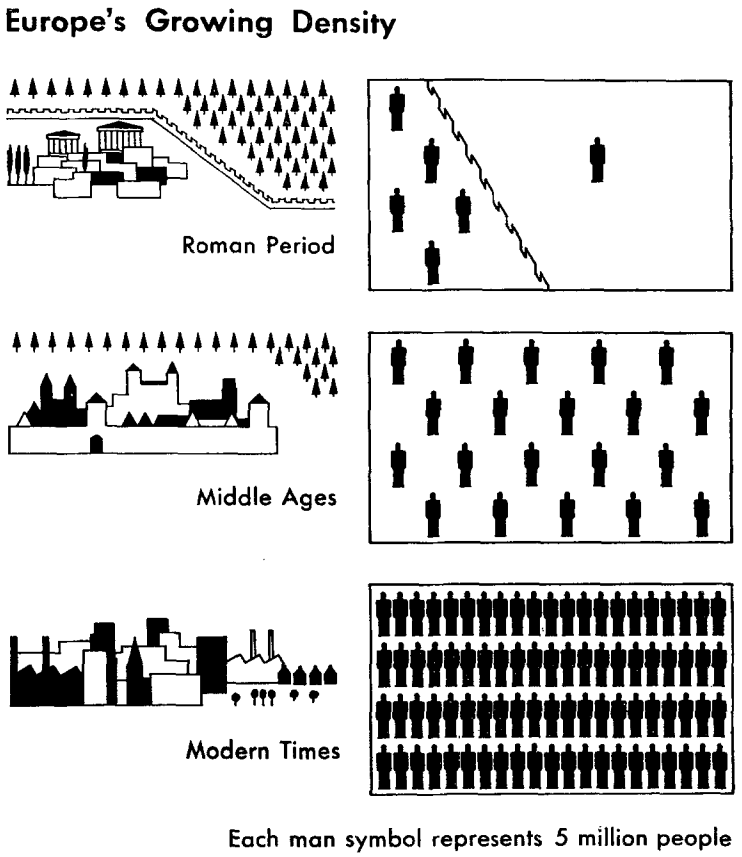



Fig. 7. Chart comparing density to level of development (from *Living with One Another*).

In this chart Otto Neurath succeeded in giving a memorable overall view of the history of nations and groups. A similar chart had been made in 1927 and new versions were made time and again, improved in layout and symbols. It is an example of the sort of visual statements Otto Neurath wished to make with the help of the language he had created; it gives a glimpse of what he hoped to create in his "Isotype Encyclopedia" or "Visual Thesaurus".

## Transformation

The rules mentioned in the previous section are the concern of that step in the total process of production which we called "transformation". From the data which are given in words and figures a way has to be found to extract the essential facts and put them into picture form. It is the responsibility of the "transformer" to understand the data, to get all necessary information from the expert, to decide what is worth transmitting to the public, how to make it understandable, how to link it with general knowledge or with information already given in other charts. In this sense, the transformer is the trustee of the public. He has to remember the rules and keep to them, adding new variations where advisable, at the same time avoiding unnecessary deviations which would only confuse. He has to produce a rough of the chart in which many details have been decided: title, arrangement, type, number and colour of symbols, caption etc. It is a blueprint from which the artist works.

In the early years, Otto Neurath had himself provided the data and made the transformation sketches which he handed over to free-lance artists. But as soon as a financial basis was secured for longterm plans he began to establish a team; what he needed was educational talent (with a visual slant), artists, skilled technicians (in printing, painting, sticking-on etc.), depending on the technique we used.

## The Technique

The simple pen and ink drawings of the earliest days were soon given up. The step from dots to pictorial drawings was already made when I arrived on 1st March 1925. But the charts were still black and white only. Then colour was introduced. At first we used coloured paper out of which shapes were cut and stuck on; a tedious job with unsatisfactory result; the charts did not have yet the typographic quality which Neurath wanted. Strangely enough the artists with whom he discussed this problem advised against linocuts. They were wrong, as we later found out by just trying.

Few artists felt willing and capable to help in symbol design; their training usually made them resentful against the demands of submitting to such a discipline. The first we found (and who stayed with us for about ten years) was Erwin Bernath, a Swiss who lived in Vienna. Then Neurath discovered Gerd Arntz in Germany. An exhibition of his work (1926) struck him as genuinely on our lines, and Arntz was indeed, from his own inclination, a most gifted symbol designer. He was also a practiced wood engraver and very good at making linocuts. From that time onwards all

symbols were cut in lino and printed in the required colours. At last we now had identical prints which could be used again and again; they played a role similar to letter type. Certain symbols attained classical perfection. Prints from all designs were pasted into a dictionary of symbols, arranged according to subject matter, and numbered; the linocuts were kept in envelopes carrying the numbers and could always be traced for further use.

Arntz trained others in lino-cutting. Technicians were found for mixing colours, printing, covering the wooden charts with drawing paper, making the pencil layouts for text and position of symbols, cutting out symbols, setting and printing the text (in Futura type). Boards, frames and glass for the charts were provided from outside; so was the expert advice and research.

## The Team

During the years in Vienna the team inside our workshop usually consisted of the director, two transformers, two chief artists, and a number of technicians skilled in the work process as described above. Among the scholars whom Neurath called in for their advice and research were experts in statistics, history, medicine, cartography, geography, engineering, industrial management, history of art, etc.

This is how the team worked (except when we had to make charts for some special exhibition): an idea was formed by Neurath; he discussed it with an expert to have his idea checked and get suitable material. The transformer was present at such discussions to get acquainted with the subject, took over the material and developed the way to present it visually. The sketch (in pencil and colour pencils) was discussed with Neurath (and somtimes the expert) until a final rough was agreed upon; this was copied into a duplicate book, and the coloured top copy handed to the artist who took charge over design and finished art work, in constant contact with Neurath and the transformer.

Additional artists and technicians, transformation assistants and apprentices were taken on when the pressure of work was high. But when we emigrated to Holland in 1934 we were only a nucleus team: in addition to Neurath, one transformer, one artist (the second leaving soon) and one technician. When Neurath and I escaped to England in May 1940 and re-started our work at Oxford in 1941 we found new artists and their pupils as assistants and carried on with a new team.

## The Symbols

Neurath had tried to influence the artists who worked for us from the very beginning. But co-operation became productive only when linocutting was introduced and Arntz was the chief artist. From then on symbols had to be created for prolonged use; it was worthwhile to spend time and effort in their design. Neurath with his urge to unify language, in visual terms as well as in the terminology of sciences, tried to look at symbols with the same critical attention as with words. He spent much time with Arntz, to create the basic man symbol, which could stand on its own, in rows side by side or in groups, which could carry symbols or be modified to show certain distinctions. Outline symbols were also needed beside the usual full colour ones. Different sizes were considered, the simplifications necessary when size was reduced, etc. With improvement of design and growing sureness of approach, certain charts were re-designed in ever new versions; among them the one on mankind. The first version was made when the world population was 1800 million; and it got its final shape in *Gesellschaft Und Wirtschaft;* the symbols were now based on the basic man symbol, and their distinction was only in the cover of the head or head dress. A simplified version of the symbols using black only is in *International Picture Language:*

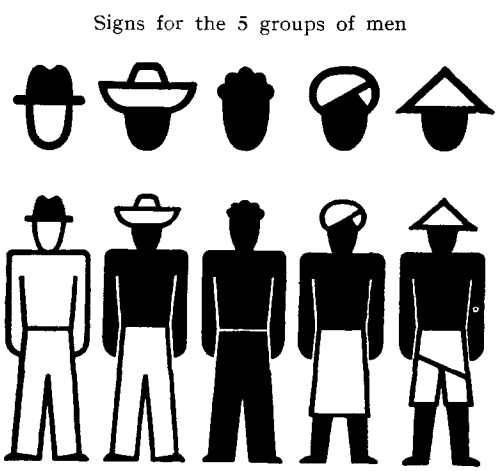



Fig. 8. Variations on the basic man symbol (from *International Picture Language*).

Other symbols received the same care, for example occupational distinctions which were often put on the men's chest:

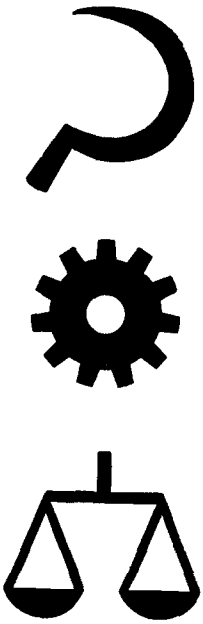



Fig. 9. Occupational symbols (from *International Picture Language*). Note that this book is written in Basic English, so for "curved knife" one usually writes "sickle".

The combination of symbols was developed along lines which are similar to the rules for combining words:

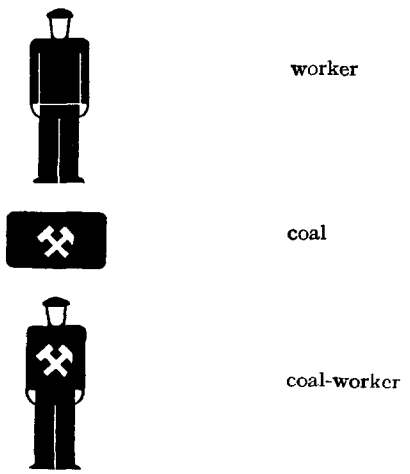



Fig. 10. Combination of symbols (from *International Picture Language*).

What our rules were for showing production and consumption, export and import, can be seen in Fig. 12 on page 141.

A ship symbol is used in combination with coffee symbols, once full and once in outline, the outline ones showing, so to speak, the places which the exported amounts will fill. So duplication is avoided; total production can be found from the chart, and total consumption too; stocks and their increase or decrease can also be shown. More sophisticated examples can be found in *Modern Man in the Making* (pp. 77 and 80).

A similar care was taken in map design. Artists know how to simplify natural shapes without losing their well-known characteristics; but we had to learn from a cartographer how to preserve essential features even in very simplified maps. Only equal area projections were used; for world maps, Neurath asked the cartographer to design several world maps with different central meridians: beside the European, the Indian, the Chinese, the Pacific, the American; so it became visually clear that the aspect of the world is different from different standpoints.

Colours are also part of the visual language. Their meaning is often traditional, but often we had to introduce our own traditions. We tried not to use too many colours with too many meanings, as pictures should be read easily and also remembered if possible; too many colours would confuse. But we lost our freedom of choice which we had been used to in the museum when we had to restrict the number of colours in printed books. We tried to adhere more and more to the rule that even in black and white a chart could still make sense.

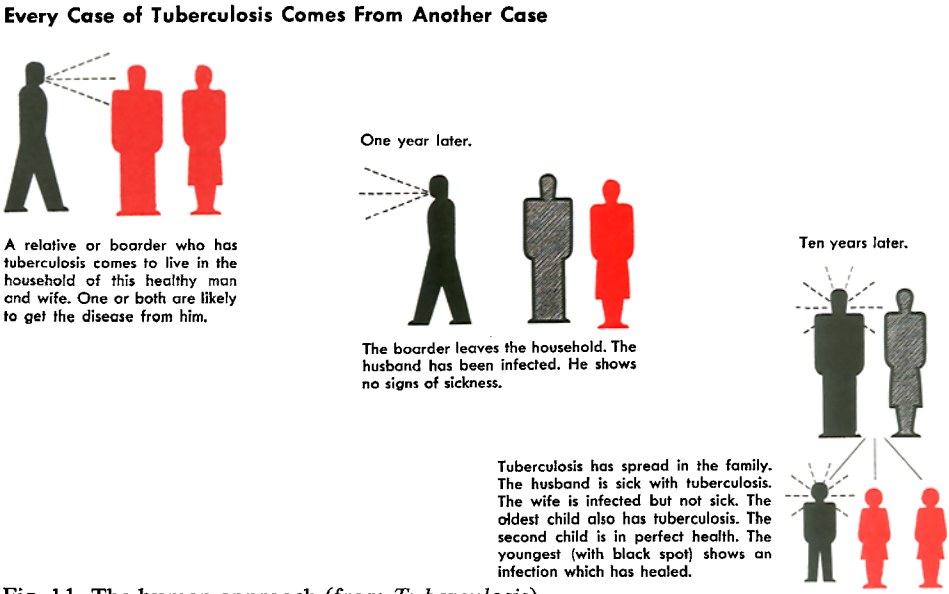



Fig. 11. The human approach (from *Tuberculosis*).

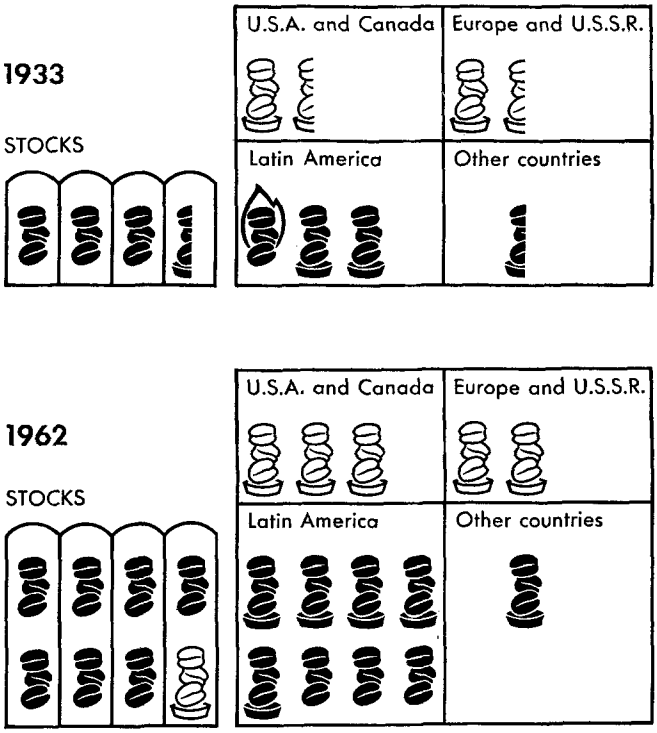



Fig. 12. Coffee trade (from *Living with One Another*).

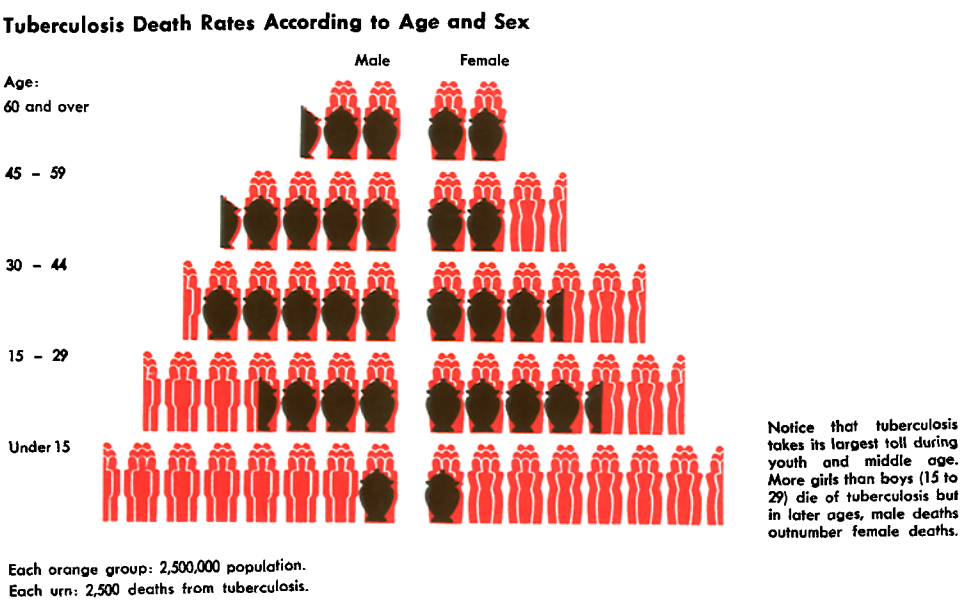



Fig. 13. One way to represent mortality (from *Tuberculosis*).

In the beginning we were essentially a museum with charts. These were grouped together, sometimes under a common heading, and arranged from left to right. Generally they were of standard size; the standard unit of four feet square could be subdivided, and different width could be used; if the depth was four feet the charts could be held by fixed rails and easily re-arranged.

At first we had black frames and stands. But our architect pointed out that natural wood colour would be preferable because then the colours of the charts themselves would be dominant. Our architect, Josef Frank, (who afterwards had great influence in Sweden) designed our museum when we moved into the vaulted hall on the ground floor of the New Town Hall, which is built in modern Gothic. The light wooden stands had lamps fixed to them throwing light on the colourful charts and the red carpets on the floor; the vaults were left in the shade, and not even an artificial ceiling was needed to make them unnoticeable.

The stands formed compartments where a group of charts dealt with some subject matter, just large enough for a group of people to stand there together and discuss the charts. Often in the mornings school classes came for a conducted tour; questions could be put to the children which made them read the charts and find the answers themselves or put additional questions. This was like a test for the charts themselves; at that time we knew better whether a chart was a success or not than at any later time. No other medium offers better chances for testing. With lantern slides or filmstrips at least single charts can be tried out. But books bring very little useful response back to the author.

In our museum we also had models which had been produced in our own workshop: housing schemes, park layouts with tree models, some with bathing pools for children, a glass model of a many-storey public bath with the groundplans in each floor, etc. At that time we had also made several experiments with magnetic charts, that is metal charts with magnetic symbols held on them; once we made a magnetic weather map in an exhibition; every day the symbols were rearranged according to the latest forecasts. The most impressive magnetic map was one of Austria, 8 meters wide and 4 meters deep, the magnetic symbols standing for industrial workers: squares in various colours with symbols (colours for the main groups, symbols for the subgroups). The mountain area above 1000 meters was cut out of a board of wood, a few inches thick, and put in position; no iron surface was needed here as no industries are situated as high as that. The colouring indicated the use of soil: fields, woods, pastures, rock, snow and ice. Even the geographer who had had serious

misgivings about the boldness of the approach was very enthusiastic when he saw the finished work.

In the same way as we kept our symbols for later use we kept a record of all our charts at least from the time when we had reached a certain stage in our development. We photographed the charts and kept a file of these photographs. This has survived to the present day and is kept at Reading University Library as part of our collection.

We soon realised that lantern slides could also be made from these photographs. But often the result was not satisfactory. To make really good lantern slides we made special black and white charts, produced a negative glass picture; bright transparent colours could be put on the clear glass symbols which, when projected, shone brilliantly out of the black background.

Also printed leaflets with charts were used for lectures. Blocks of charts were needed for many illustrated articles about the method or about social subjects, and the blocks could be reused in this way.

All these visual aids were available for teachers and lecturers; they came to us and borrowed slides etc. We became a visual centre in more than one sense: as a workshop for exhibitions, as promotors of a system, and as a lending service. We also had teachers' conferences in our office to work out how they could use our method in school teaching. We assisted teachers in their art classes, we gave them symbols for their work, also maps and magnetic symbols. A special school was put at our disposal to try out visual methods in ever more subjects. Reports about this were published in a school periodical; we were given four pages for our own use every month for a number of years. To provide more useful material we published our own small periodical for a number of years.

A few experiments with films in our method were made during our years in Vienna. But we had no financial backing and did not get very far. A chance came only during the Second World War in England when Paul Rotha approached us; at that time he had to make many films for the Ministry of Information which were documentary or in other ways informative. The first film for which he wanted our help was on bloodtransfusion, and an explanation of blood groups was needed. There followed years of close co-operation on animated diagrams, many films were made of which the best known is, I think, "World of Plenty".

Films have a limited educational usefulness; they have their own speed and you cannot turn them back like pages of a book, unless loops are used. But we sometimes had the chance of testing their effectiveness when they were shown in the cinema. We were at a public showing of "World of Plenty"; it contains an income chart. At first all ten or twenty persons stand on an average level, then each moves to his own level, a

*These pictures show how one of James Watt's steam engines worked. In answering the questions, remember that more weight rests on the right arm of the beam than on the left one.*

4 In the first picture, is the steam pressure greater above or below the piston connected to the left arm of the beam? Why is the beam tilting to the right?

5 Four valves are shown in the engine. Are all of them open?

6 Are the same valves open in the second picture? The steam below the piston is condensing into hot water. Why?

7 Is pressure greater above or below the piston? Why does the left arm of the beam move downwards?

8 Explain how the movement of the beam is used to raise water. Is more or less heat wasted in this engine than in the pump opposite? Explain your answer.

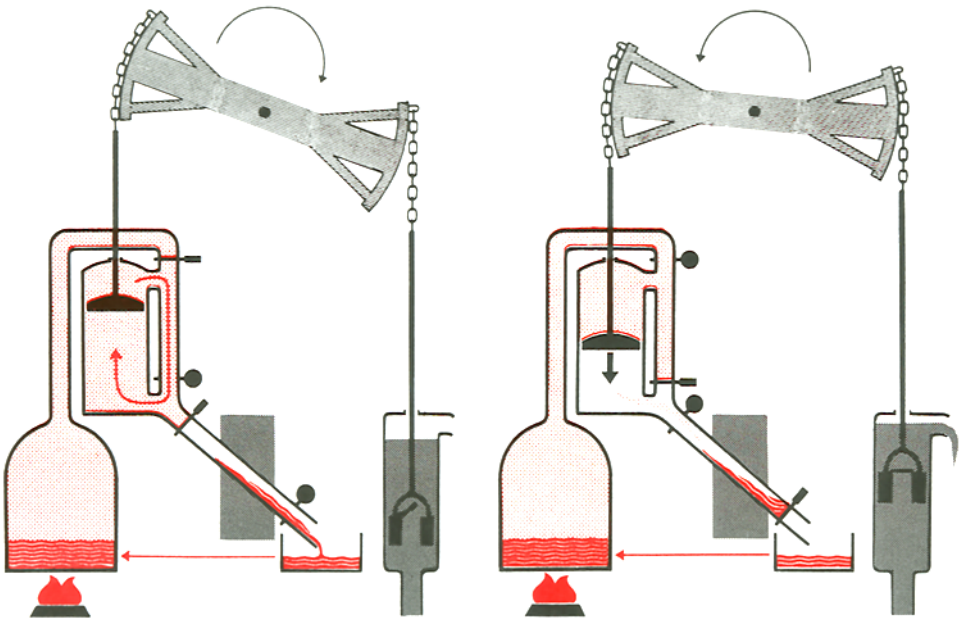


Fig. 14. Steam engine (from *Visual Science, Vol. VI*).

greater number falling lower, a few rising, one rising and rising and rising: there was quite a response from the audience.

Rousing a quick reaction is different from the long lasting influence or stimulation which is the aim of education. Our museums and exhibitions were in general of an educational type and rather severe in subject matter, though colourful and attractive. Visitors were not numerous, though certain individuals came again and again and brought friends along. Otto Neurath knew that other attractions must be added if the number of visitors should be larger. He did so at a certain corner show in Vienna where he had not only recent events in photo and diagrammatical explanation; he had certain apparatus displayed where people could test their skill

or intelligence. This place was crowded each lunchtime. We made use of this experience later in Holland when we had to make exhibitions to attract customers to department stores. The subject matter was entirely left to us. It was then that we made "Around Rembrandt" and "100 Years of Railway".

We waited a few years before we made the first book, *Die bunte Welt* (1929). It shows how we were still changing and is therefore somewhat premature. But it was a useful exercise before *Gesellschaft und Wirtschaft* (1930). When we left Austria (1934) and lost our museum, books came more to the foreground. Some of them were of a usual type, a text with a number of charts to illustrate certain points. But then we thought of a more original way to link our visual statements to the word statements. Otto Neurath was asked by an American publisher to produce for him an illustrated book on any subject he liked. Under the title *Modern Man in the Making* he and his team made a book, in the picture/text style. We had to tailor the whole in a careful way so that a chart could fall at the right place, and that a double page would make certain comparisons possible. It was a very close co-operation between Neurath, myself and Arntz. The printers followed our layouts exactly.

In the last months of Otto Neurath's life (1945) we worked on *Visual History,* picture books for school use with a number of questions at the side; the answers to the questions had, in general, to be found by close study of the chart. We also worked on the first ideas of children's books; a rough was made called "Just Boxes", another "Tips for Tots". Years later these ideas were developed, in books like *If you could see inside* and *This is how it works.* Also there were at that time some attempts at starting filmstrip production. Only years after Otto Neurath's death did a fruitful and lasting contact with a filmstrip publisher come about. The first historical strip we made was "Cavemen and Hunters"; we used scenes from our charts in *Visual History Book One,* interspersed with photographs of pictures or things which could serve as historical evidence. Gradually we got used to this new medium. A frame has to make its point somewhat faster and more definitely than a page of a book; it is made for group inspection and has to start off a discussion straightaway . . . in books you can ponder a difficult chart as long as you like.

## Intentional Limitations

From the very beginning it was clear to Otto Neurath that what he wanted to create and introduce was not a new international language of the type of the Chinese script, but an educational tool to make selective

statements. He did not want to get rid of the usual printed text, but wanted an auxiliary tool for better communication. Our charts need some words to make them fully understandable.

On the other hand, charts in their two-dimensional arrangement, transfer knowledge in a way which is difficult to reproduce in a one-dimensional string of words; though they are dependent on words to some degree, they are superior in certain respects.

There cannot be a "word by word" translation of a statement in the Isotype picture language into a word language; nor can a sentence in words be translated into a string of Isotype symbols. The Isotype representation of "a boy walking through a gate" is the symbol of a walking boy combined with the symbol of a gate; it is not a chain of symbols for: a, boy, walking, through, a, gate. The aim of Isotype is not to translate every sentence into pictures. The aim is to present some worthwhile information, show up some relationship or development in a striking manner, to arouse interest, direct the attention and present a visual argument which stimulates the onlooker to active participation.

Towards the end of his life Otto Neurath had plans which could have provided decades of work; as editor-in-chief of the *Encyclopedia of Unified Science* he planned many future volumes; he wanted to add what he called a *Visual Thesaurus* or *Isotype Thesaurus*, a compendium of parts of human knowledge which can be transferred in visual terms. In this way be believed to make his strongest contribution to "humanising" knowledge in the interest of everybody who wished to be informed.

## International Work

Our first excursion into a different world was in 1931 when we were asked to give consultation and training in our method in the Soviet Union. This went on until 1934. Five of our team were in Moscow to give such training within the workshop of the specially established "Institut Isostat"; but we exchanged places all the time; only our second transformer decided in the end to stay in that country permanently (though changing work soon).

In 1936 Otto Neurath and I were invited to work with the National Tuberculosis Association in New York on a travelling exhibition (to be printed in 5000 copies) which would carry their message to all parts of the American population from the far north to the far south. Otto Neurath has often used the charts we made on this occasion as examples of what he called the "human approach". Some of the charts are shown on pages 140 and 141.

During this work we extended our diagrammatic solutions to new fields; but the only challenge to our usual symbolism came when we were told that crosses should not be used for "death" in our statistical charts about mortality: they remind too much of death, and the Americans don't like that. After long deliberation we decided on urns instead since they seemed to be less objectionable.

On later occasions we objected to crosses ourselves; once when we had to make a chart of mortality for India; then when we had to make a chart on the death of Jews under Nazi terror.

In 1936 we were also invited to come to Mexico for a time to train the staff of a newly founded Museum for Science and Industry; here for the first time we were in a country with an ancient tradition of pictures and numbers.

Becoming citizens of the world we gradually recognised that our symbolism was often international for western man only. More than before I recognised this when I had to work out ways of informing the Nigerian people about health, education, agriculture, voting etc., in visual terms. Man, woman, house, plants, markets, trees . . . all had to be drawn in a different way to be understandable in that country. Also the approach, the speed of information, the colour scheme, the ways to catch the attention – all had to be different. What I had thought out before my departure to Nigeria was quickly discarded, and I made a new attempt. I could test my ideas in different ways: by showing something to the people in a village during my walks in the bush; by watching what happened to our posters (I saw some of them on the walls of private houses long after they had fulfilled their purpose of showing people how to register as voters); and, most important, I could try out the booklets in schools. It was amazing how quickly the children, and the teachers too, learned to "read" the pictures and accepted the rules; they did this to such a degree that they could use them for their own visual statements straightaway.

## Visual Science

The books for school use and for children's libraries which the Isotype Institute produced after Otto Neurath's death were a continuation and extension of earlier beginnings. We had made scientific charts for Compton's Pictured Encyclopedia (on heredity, carbon and nitrogen cycle, etc.). In the six volumes of *Visual Science* we got a change to apply our method to more subjects. There are examples on pages 144, 148 and 149.

There is a common approach in these charts as in those in *Visual History;* but it is more difficult, I find, to get historical data into organised shape than to express the essentials of a scientific law. In both cases it is important to find points of comparison; for all visual statements are based on comparison.

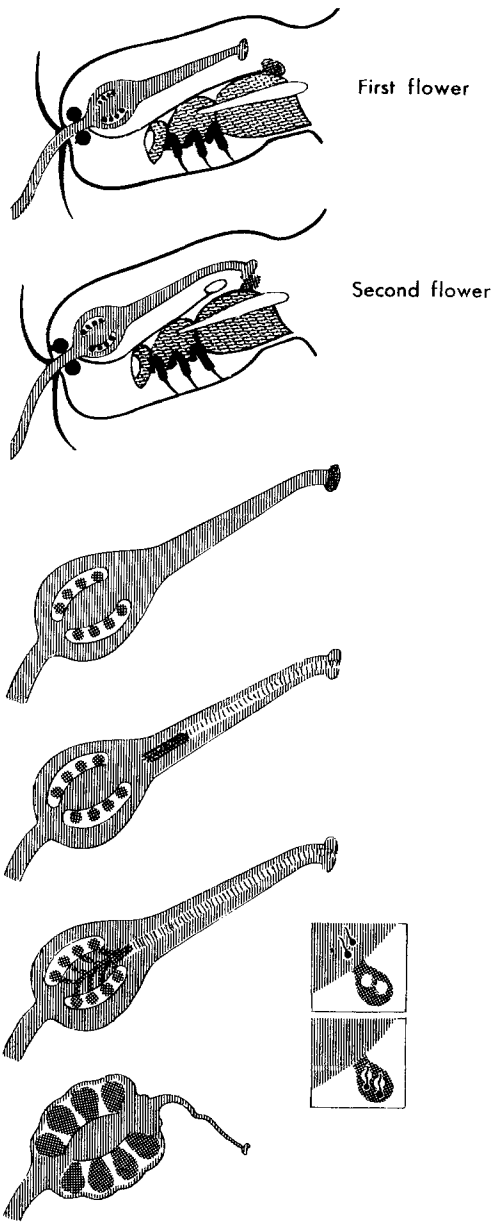



Fig. 15. Parents and young (from *Plants and Animals, Visual Science, Vol. IV*).

## Our last series

I was occasionally asked what the last series we made, *They Lived Like This*, had to do with Isotype. Certainly, there are only a few Isotype diagrams in these books. What I have done here is assemble pictures made by certain peoples in the past which can be read in a similar way to Isotype charts, and which thereby give some information about the people who made them; at the same time we could give an impression of the style in which these people worked, without even mentioning anything which reminded of a history of art. We gave a visual report about the way of life of the peoples, about magic they applied, beliefs they had, customs, working methods, houses and temples. We arranged the books in a picture/text style, making the people's own pictures part of the story. In a way, we had learned our Isotype language from the ancient Egyptians; to

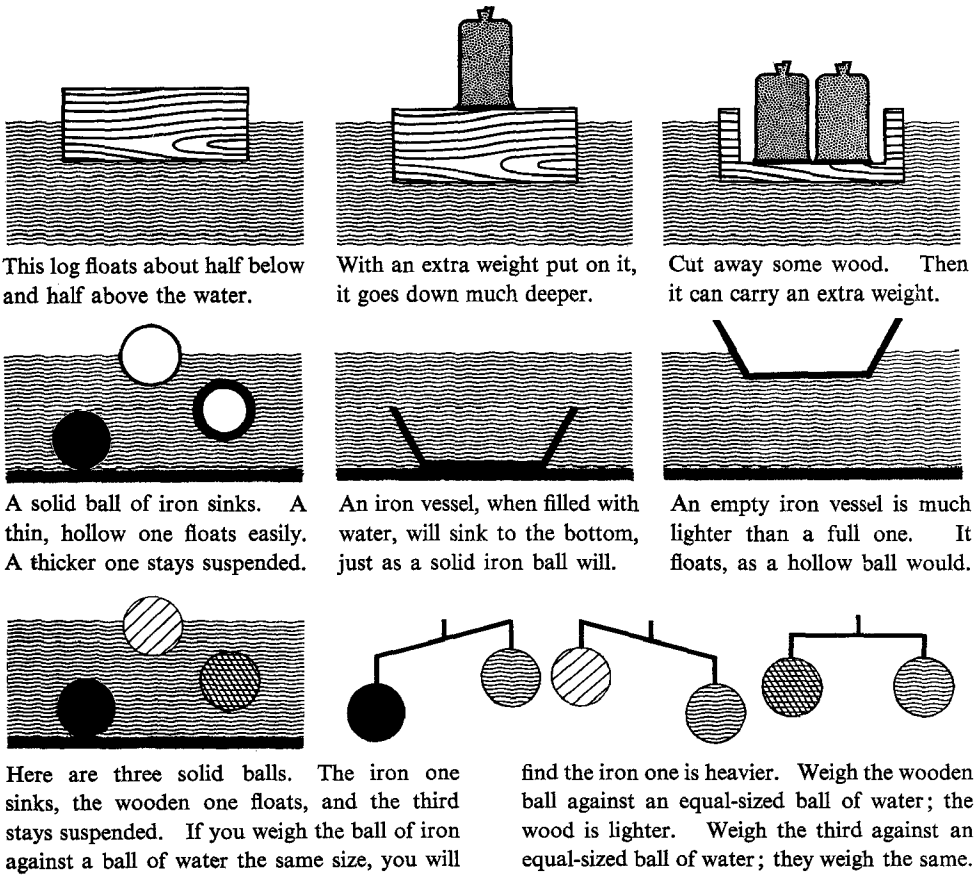



Fig. 16. Floating and sinking (from *Visual Science, Vol. I*).

make a book about Egypt with Egyptian pictures was natural and delightful. I could not fail to remember that once our method had been called "modern hieroglyphics".

Editors note: An anthology of the writings of Otto Neurath is now available (Neurath, M. and Cohen, R. S. (1973)).

Because of the number of illustrations to this article we have been unable to use more than two colours. This has meant that no figures from *Modern Man in the Making* have been reproduced. We regret this and suggest that interested readers examine the book if it is available in their library.

*Living with One Another* appears to be the only one of these books still in print.

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