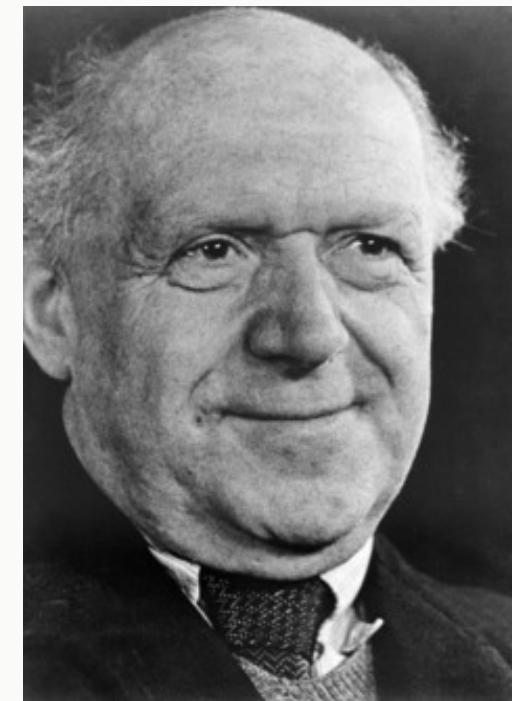


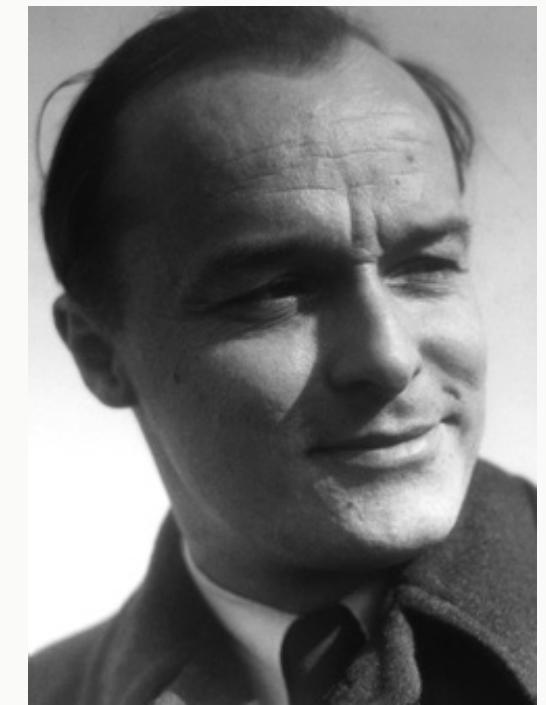
**TRANSFORMING SOCIETY
THROUGH STATISTICS AND EDUCATION.
ISOTYPE**



Otto Neurath
1882 – 1945



Marie Neurath
1898 – 1986



Gerd Arntz
1900 – 1988

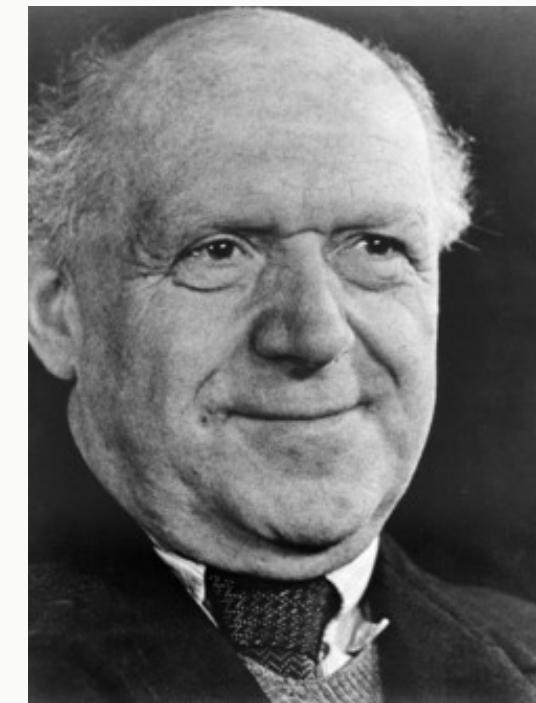
OTTO NEURATH

There is no tabula rasa. We are like sailors who have to rebuild their ship on the open sea, without ever being able to dismantle it in dry-dock and reconstruct

it from its best components. Only metaphysics can disappear without a trace. Imprecise 'verbal clusters' [Ballungen] are somehow always part of the

ship. If imprecision is diminished at one place, it may well re-appear at another place to a stronger degree.

– Otto Neurath



'Protocol Statements', in Philosophical Papers 1913-1946, R.S. Cohen and M. Neurath, eds., Dordrecht: Reidel, 91-99.

Philosophy

Logical empiricist

Pragmatist

Member & leading voice in the Vienna Circle

Politics

Avant-garde socialist democrat

Argued for *Vollsozialisierung* and planned economy.

Economics

Ph. D. in Political Science and Statistics

Advocate for *in-kind* economic accounting

History

WWI (*Director of the Department of War Economy in the War Ministry*)

Bavarian Soviet Republic (*President of the planned economy office, went to prison for his attempt to abolish money*)

Pedagogy

Museum director (*Museum of Society and Economy, Vienna*)

Invested in child & adult education

MARIE NEURATH

Invented the name
ISOTYPE
International
System
Of
TYpographic
Picture
Education



Worked at
the Social and
Economic Museum
of Vienna from its
beginning

Married Otto
in 1941

Was the principal
"Transformer"

Published Otto's
work posthumously
as director of the
Isotype Institute

Continued to
publish educational
books according to
ISOTYPE rules

GERD ARNTZ

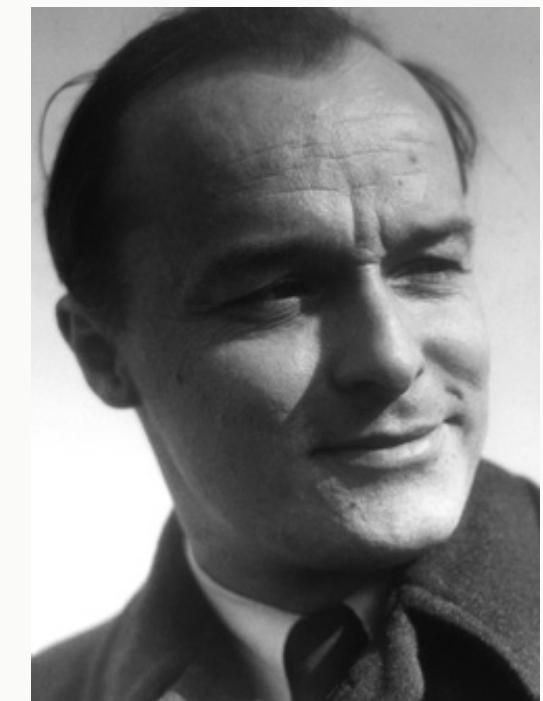
**Was the leading
visual designer of
ISOTYPE**

Expressive
modernist clear-cut
figures

Dramatic contrast

Simplicity of
woodcut and lino-
cut techniques

Combining
German expressionism and
the geometrical
clarity and
order of *Russian Constructivism*



Shared Neurath's
revolutionary spirit



ISOTYPE

Principles

Philosophy

Humans and their well-being are central

Politics

Agenda for social change
Global & contextual perspective

History

Historic context is important

Economics

No higher levels of abstraction

Pedagogy

Didactic material should be as appealing and easy to read and understand as possible

ISOTYPE

Example

Säuglingsterblichkeit und Einkommen

U.S.A.



GROSSBRITANNIEN



KANADA



AUSTRALIEN und
NEUSEELAND



ARGENTINIEN



DEUTSCHES REICH



SÜDAFRIKA



SPANIEN



BRASILIEN



JAPAN



RUMÄNIEN



U.d.S.S.R.



ÄGYPTEN



BRITISCH-INDIEN
oder CHINA



FRANZ.-WESTAFRIKA



Jeder Sarg ein Todesfall im 1. Lebensjahr auf 10 Geburten

Jeder Kreis 100 Mark Jahreseinkommen auf einen Einwohner (1929)

Example:
Child death
and income

Each coffin represents
one death per 10 births
until the age of 1.

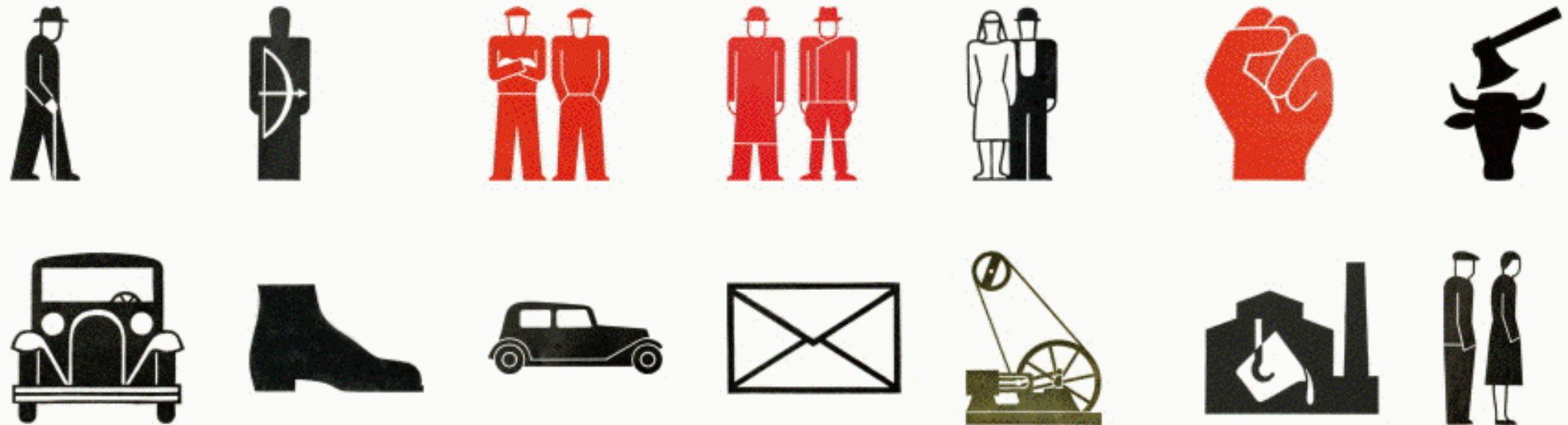
Each circle represents
100 Mark annual
income per inhabitant

ISOTYPE

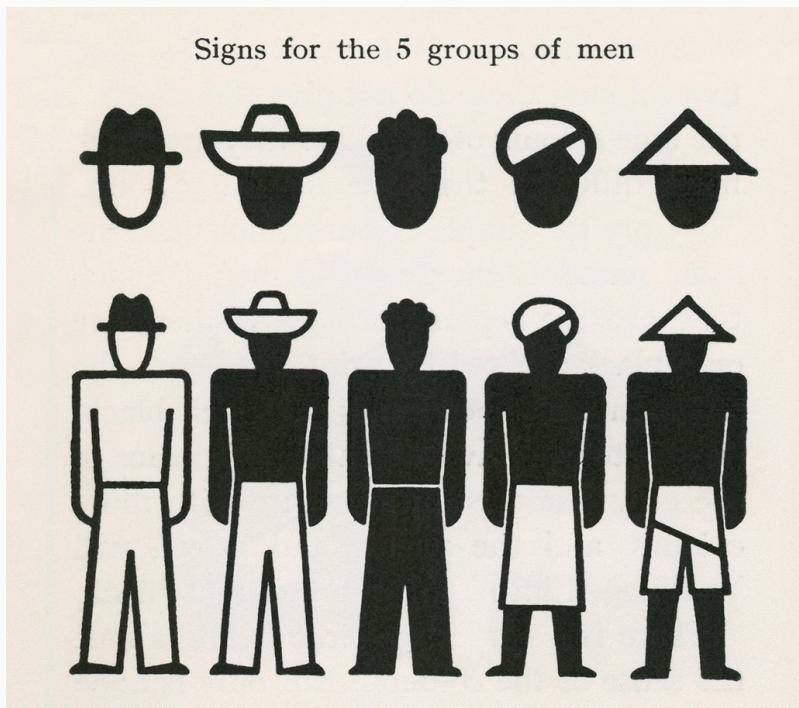
Rules

1.

**Basic symbols must
be self-evident,
clear in themselves,
representatives of
a general concept
or type**



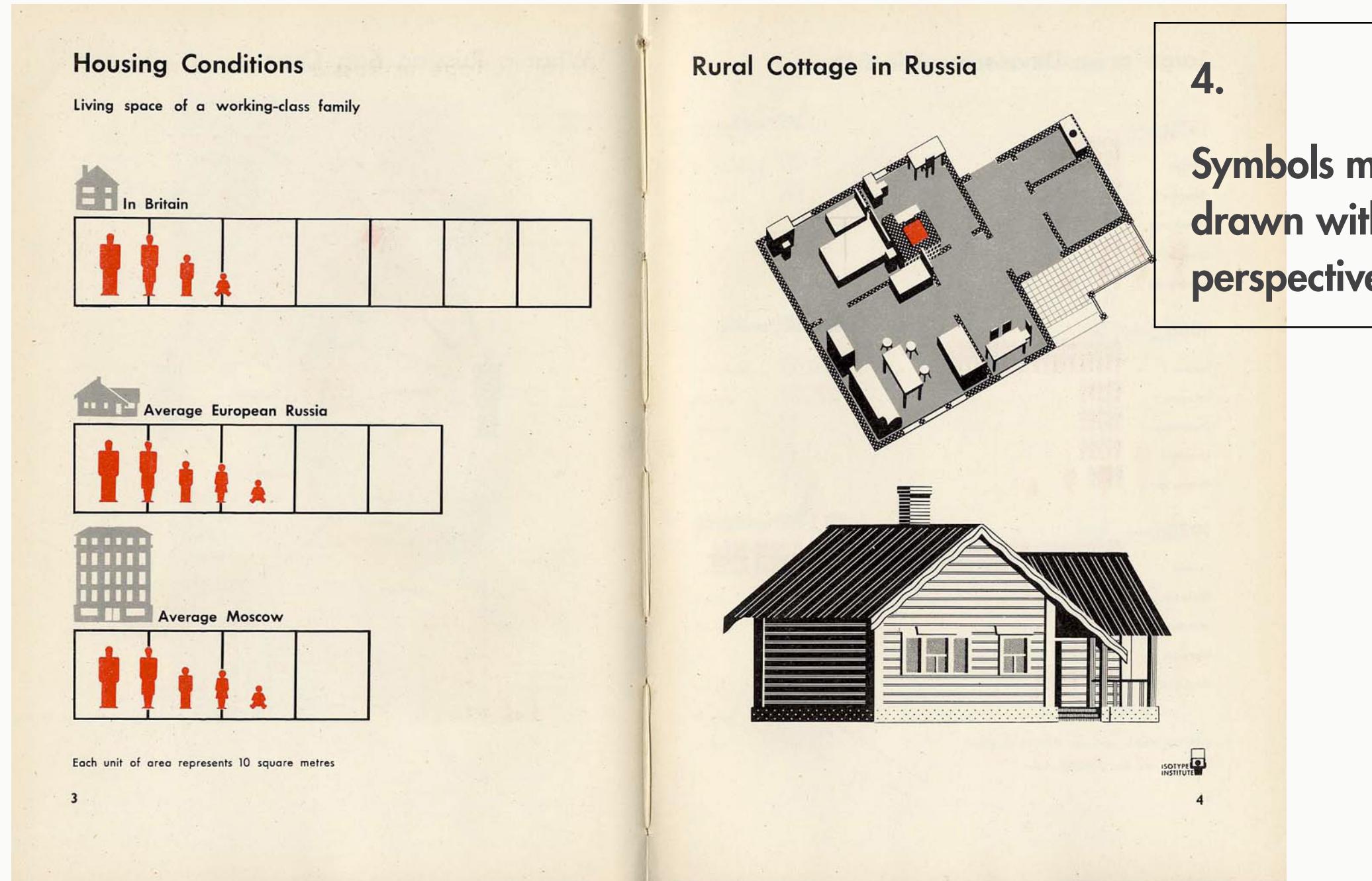
2.
**Symbols
must be
independent of
color**

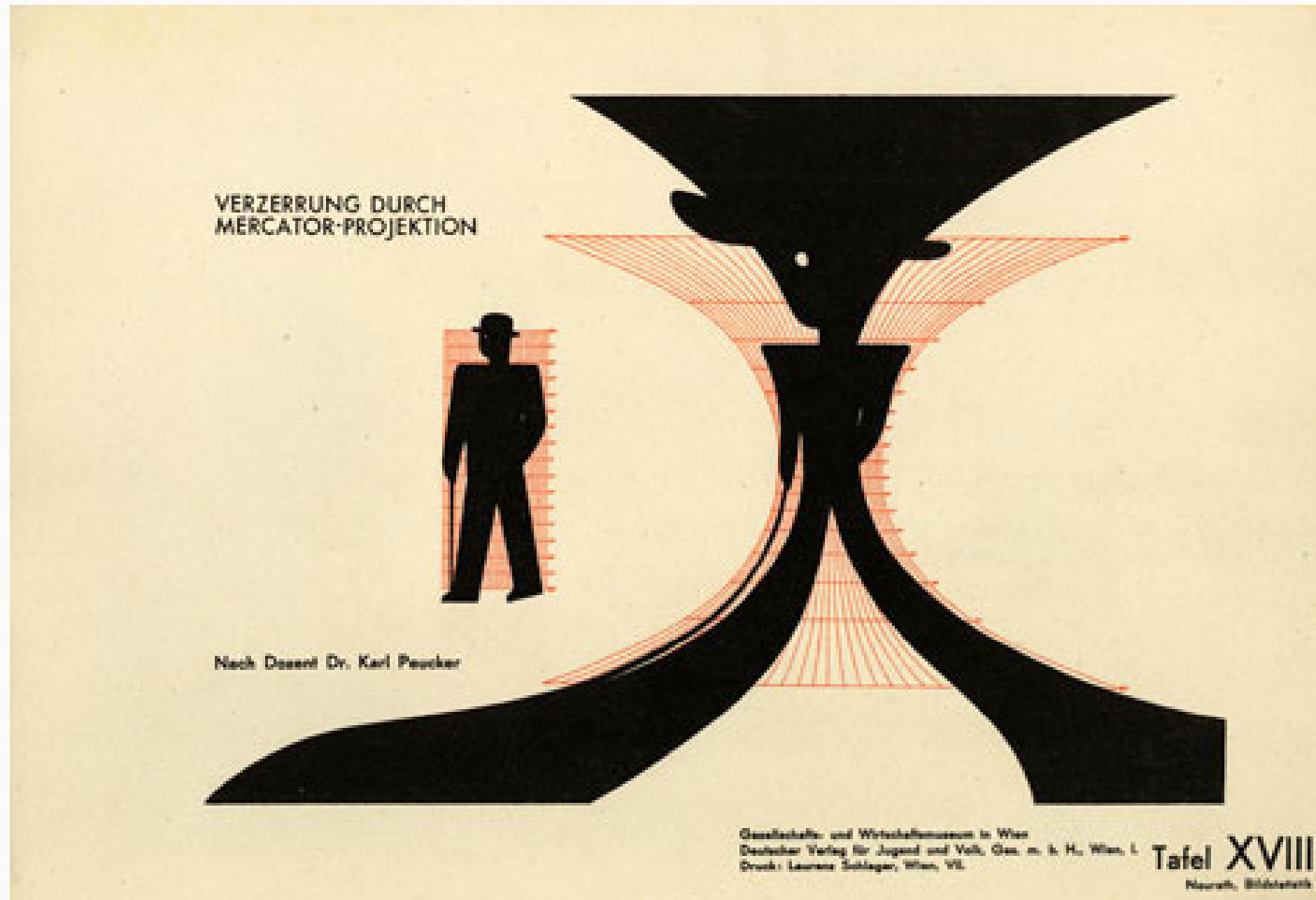


3.

The use of color
is not regulated
in general



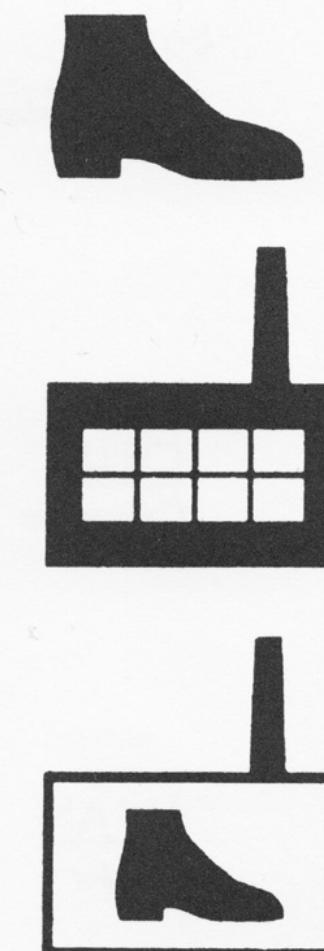
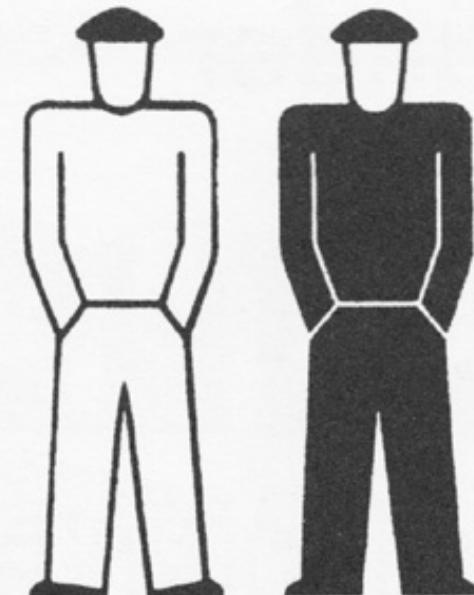
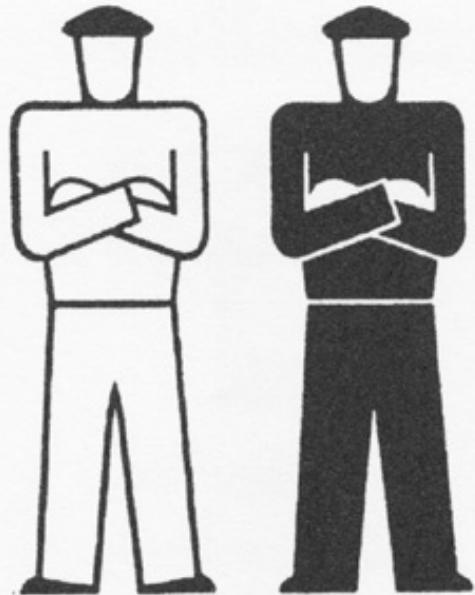


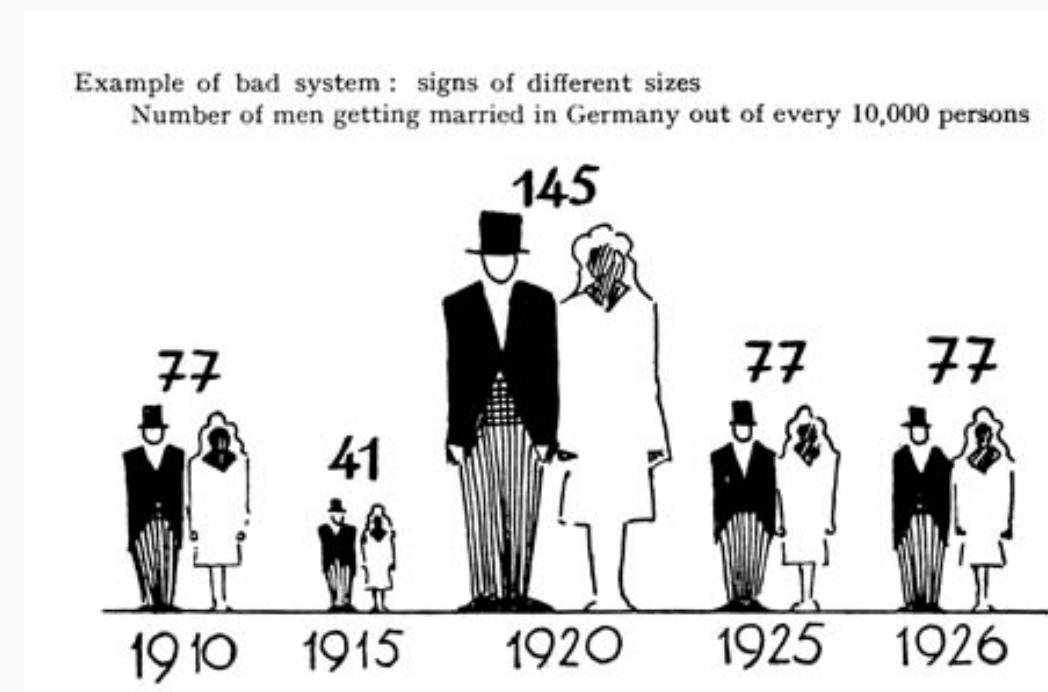


5.
Symbols must leave a vivid lasting impression on the mind

6.

Symbols must
be combinable

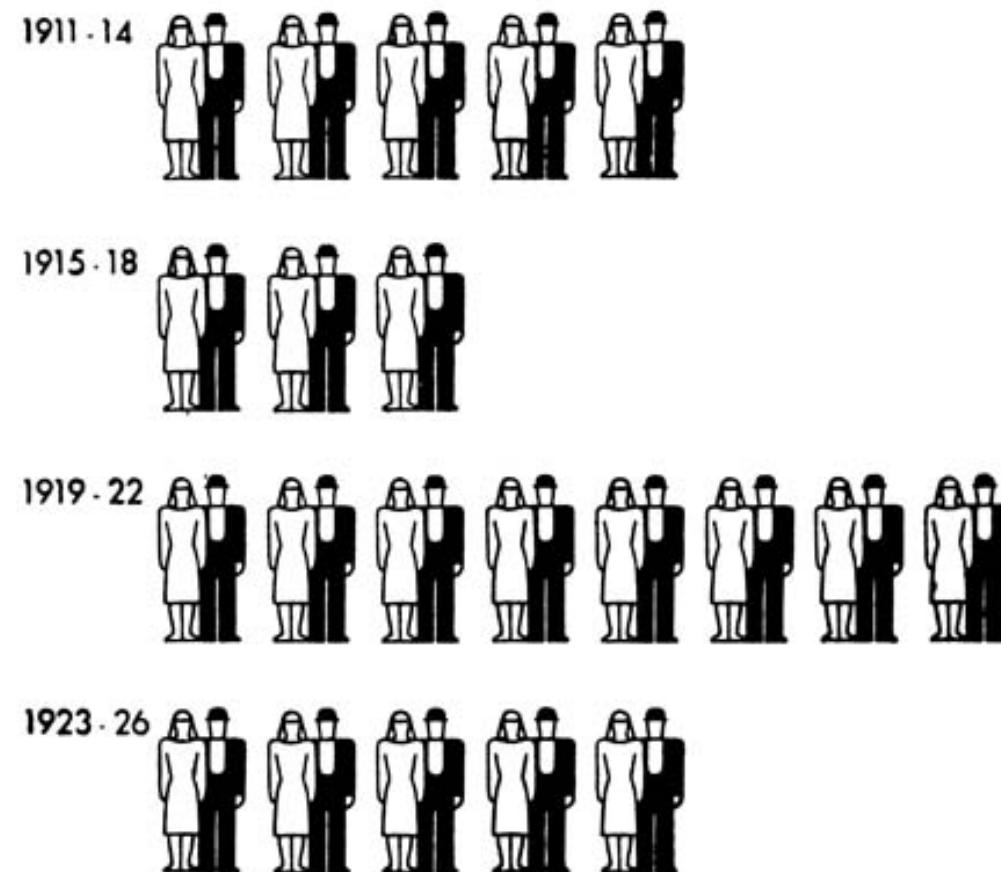




7.

Symbols can stand for a number of things only as a repeated graphic unit. Scaling is not allowed to represent a number of things

Men Getting Married in Germany in a Year



I sign for 100,000 a year

8.

**Pictorial statistics
are to be read
from top left to
bottom right like a
book**, except when
comparing national
statistics, on a
geographical map

9.

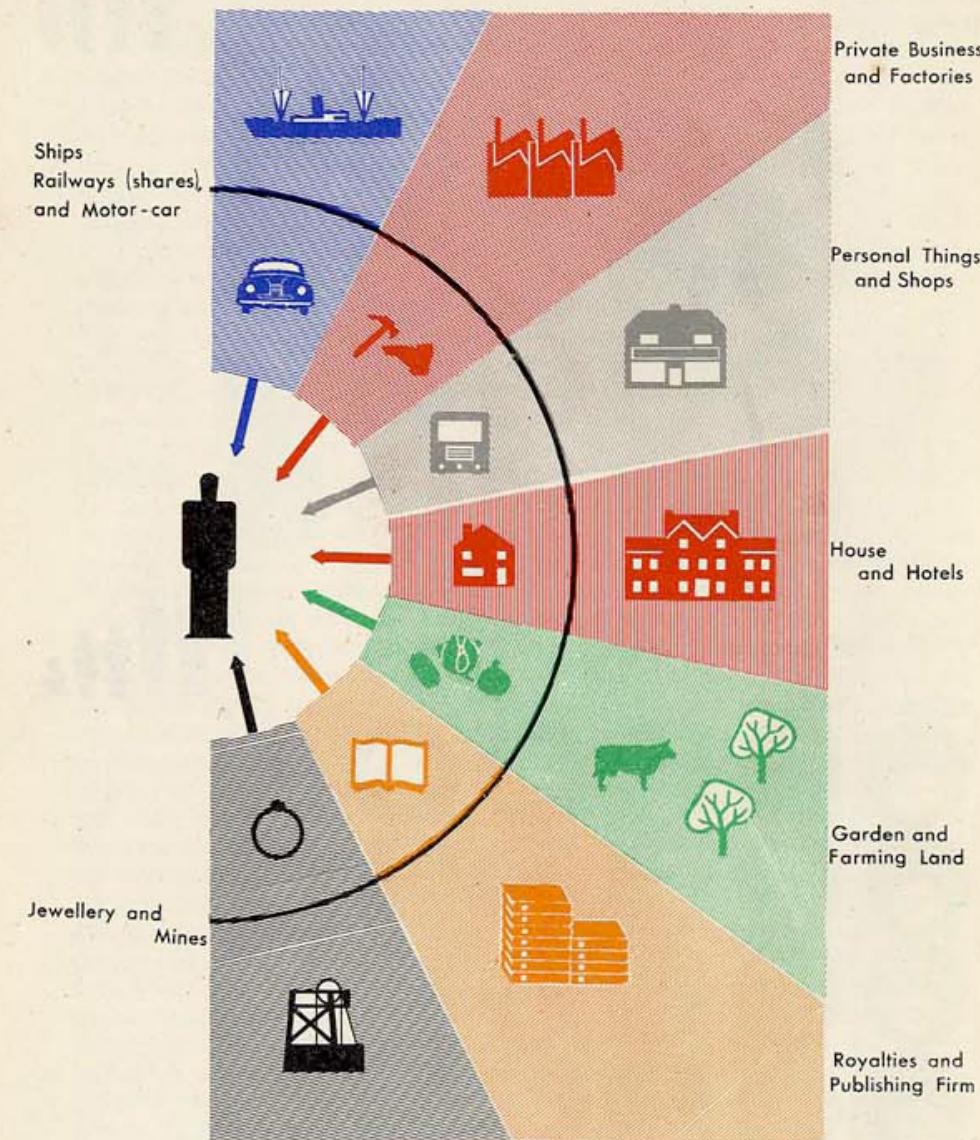
**Combinations
of symbols may
form a unit of
information like a
story**

Neurath
acknowledged
that the pictorial
language is
semantically,
syntactically and
pragmatically **limited**
and **underdeveloped**

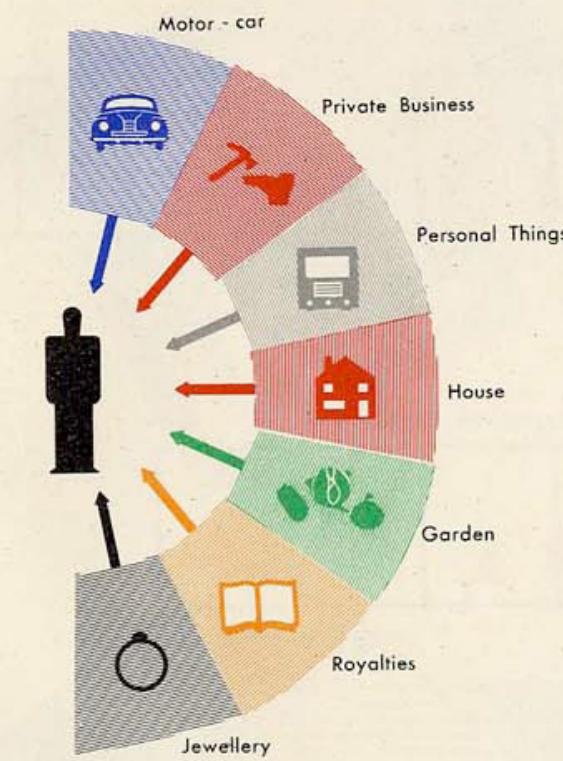
ISOTYPE

**Visualizations
in context**

What a Briton Can Own



What a Russian Can Own



THE SOVIETS AND OURSELVES

EDITOR Professor John Macmurray

HOW DO YOU DO TOVARISH?

BY RALPH PARKER

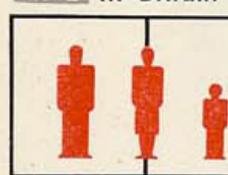
WITH 16 ISOTYPE CHARTS IN
COLOUR AND 32 PHOTOGRAPHS



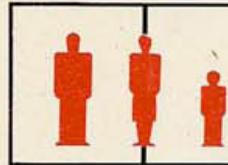
GEORGE G. HARRAP & COMPANY LTD.
LONDON TORONTO BOMBAY SYDNEY

Housing Conditions

Living space of a working-class family



Average European Russia

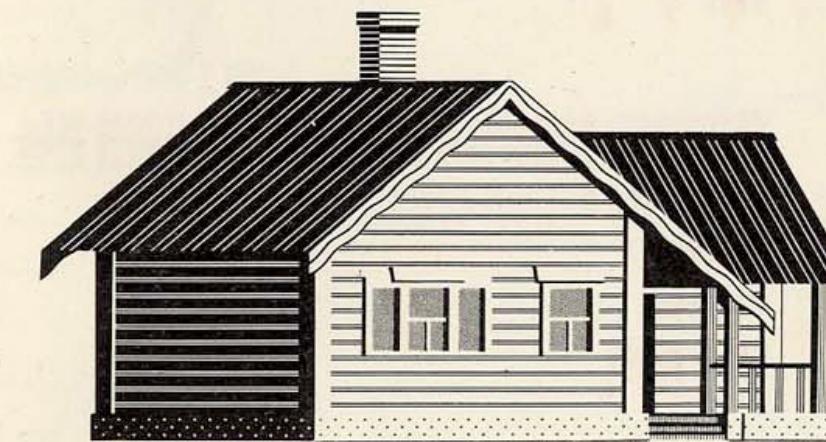
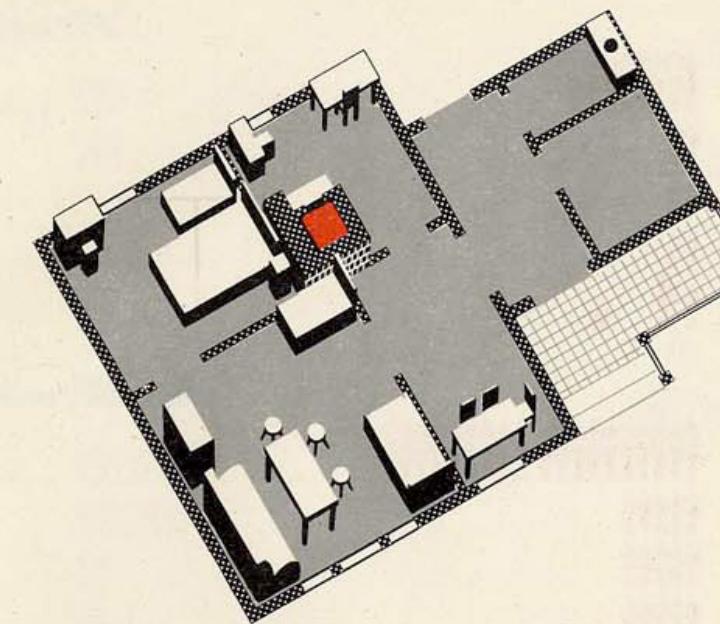


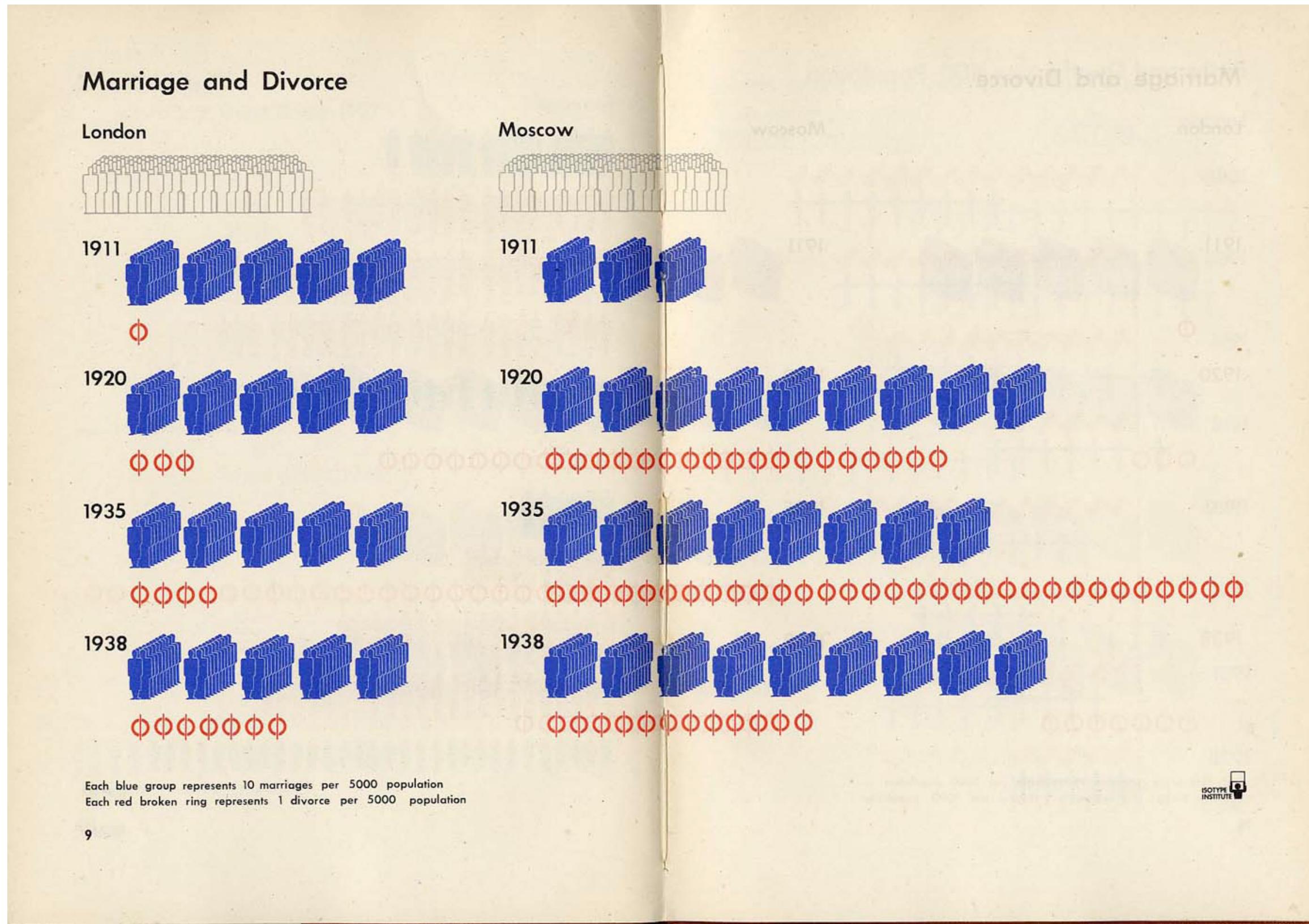
Average Moscow



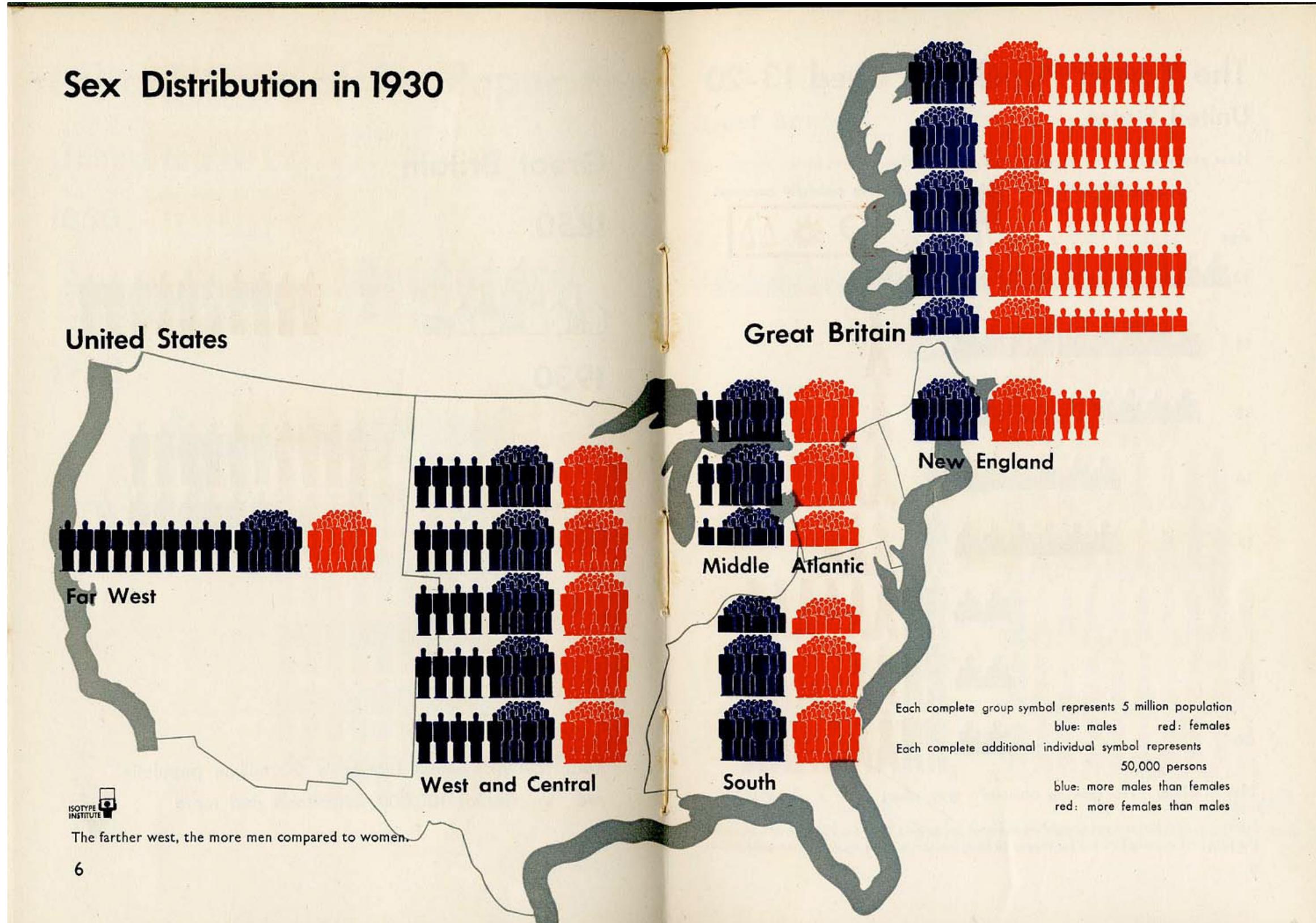
Each unit of area represents 10 square metres

Rural Cottage in Russia



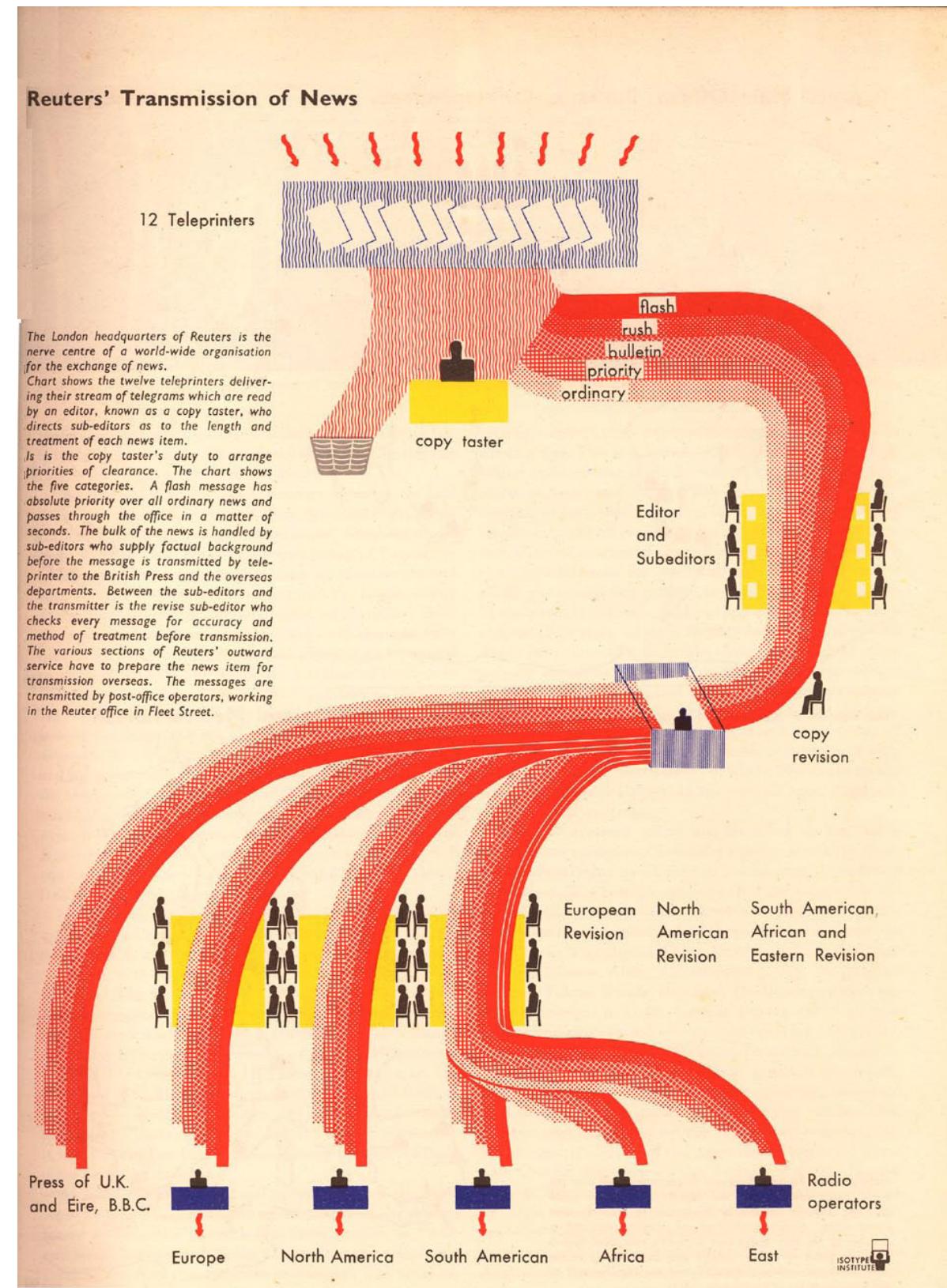


Sex Distribution in 1930



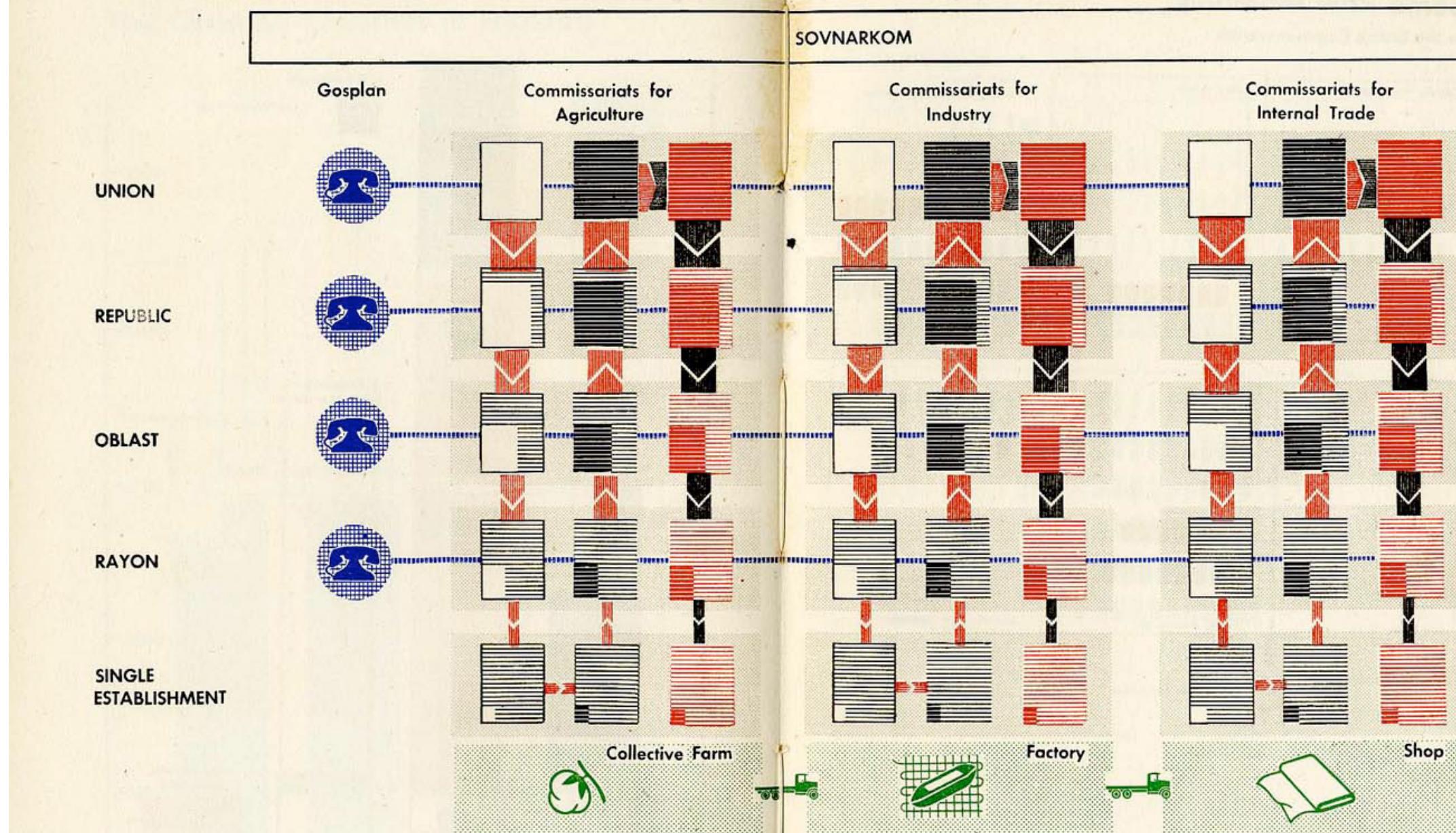
ISOTYPE

Visualizing processes



Planning for Cotton

31 / 47



11

black and white sheets: questionnaires
white parts: to be filled in
black parts: filled in
red sheets: directives

red arrows: course of questionnaires
black arrows: course of directives
blue: supervision and advice from Gosplan
green: course of commodity and distribution

ISOTYPE

Film

Collaborations with Paul Rotha

A Few Ounces A Day

<http://collections.libraries.indiana.edu/IULMIA/items/show/2>

World of plenty

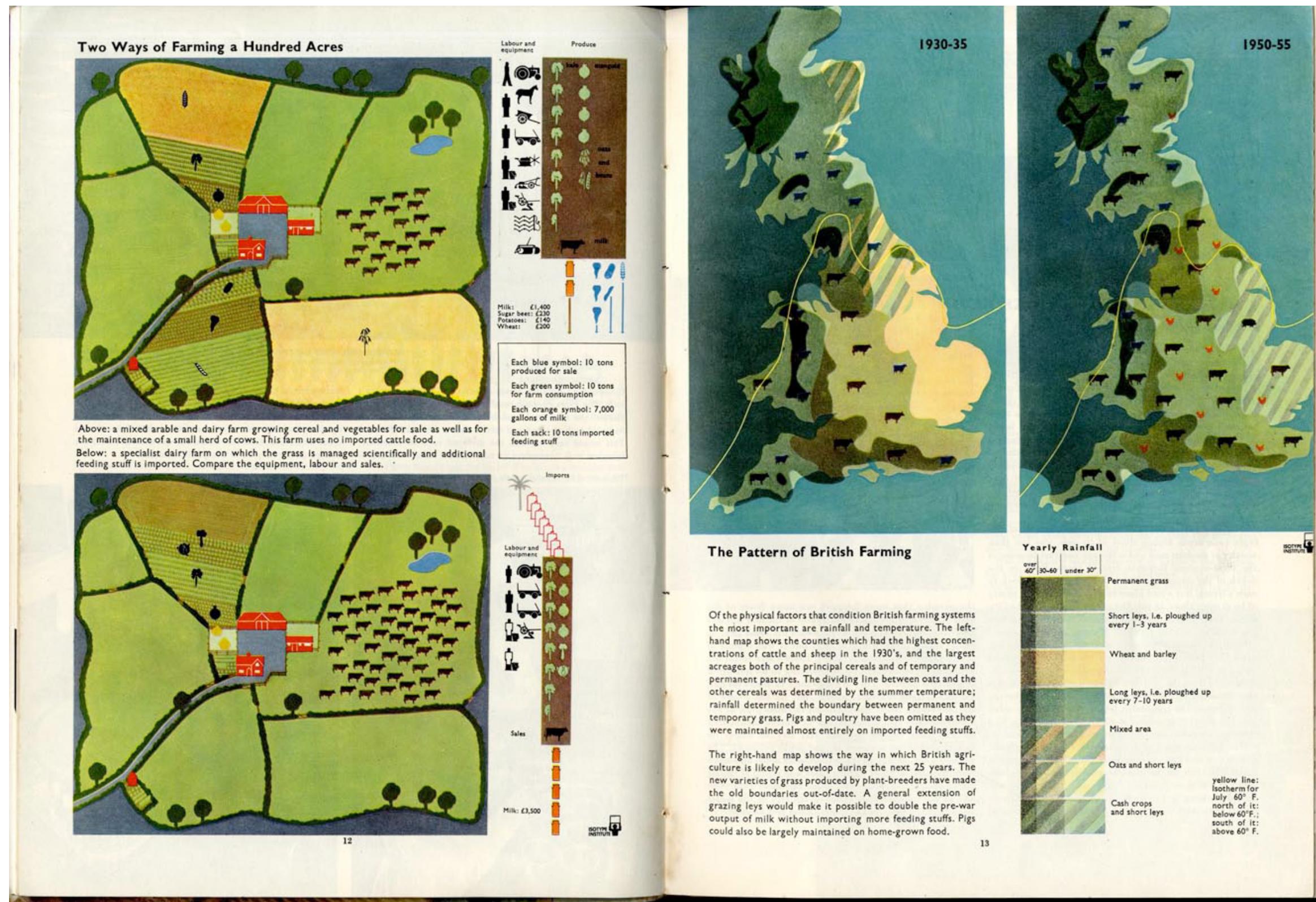
<https://www.youtube.com/watch?v=5tDOcUb4KFk>

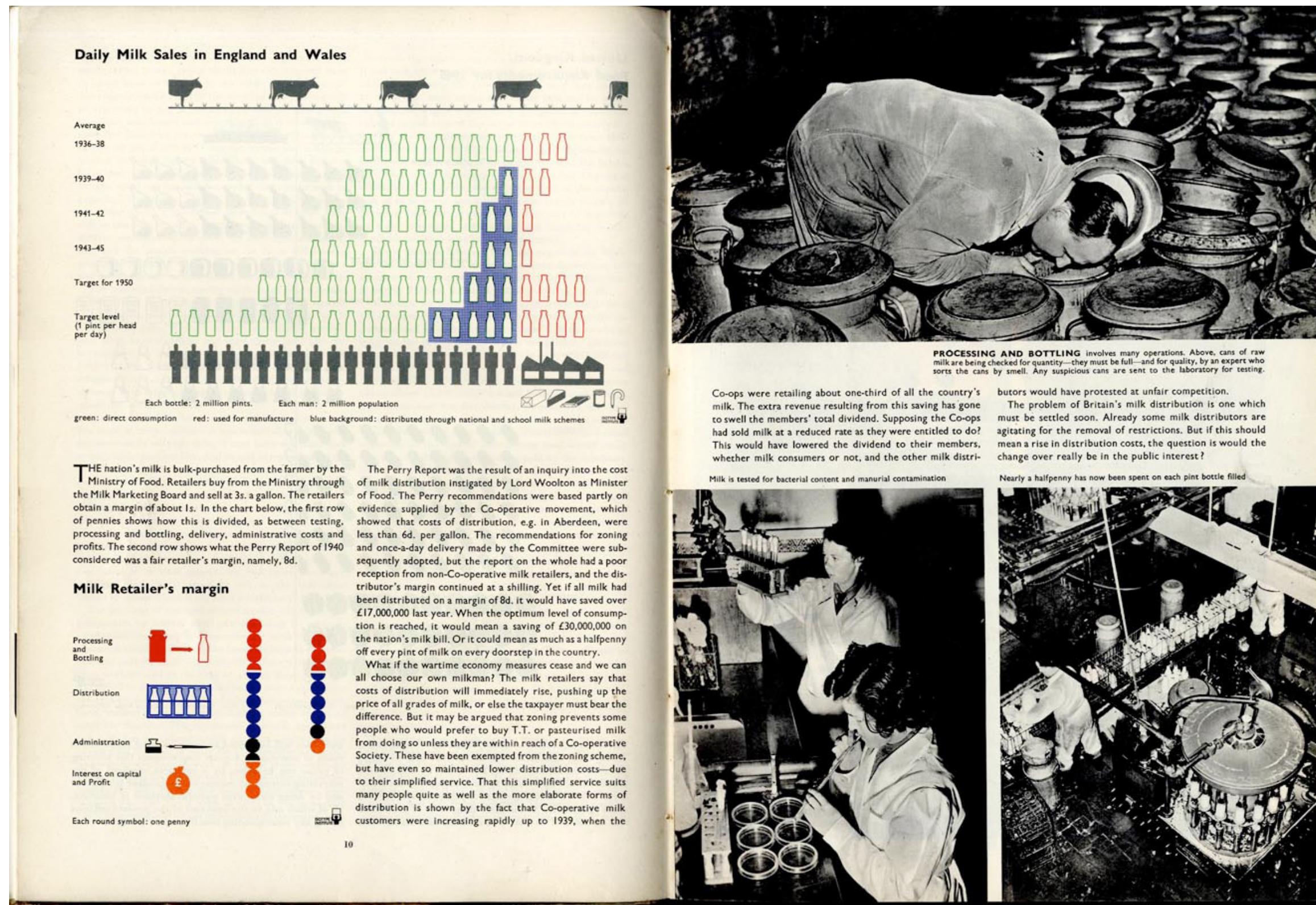
Blood transfusion

<https://www.youtube.com/watch?v=JDUHLJCgKas>

ISOTYPE

After Otto Neurath





different jobs have to be done that it is impossible to be really skilled at any one of them. The cowman will have to spend some of his time in the fields, and the tractor-driver must lend a hand in the cowshed. The tractor will be too small to pull a large plough and ploughing will, therefore, take longer and cost more than it would with a specialist ploughing tractor; at the same time, in order to plough at all, it will have surplus power which will be wasted on many lighter jobs. There will have to be a large stock of machinery such as drills and binders, and yet the small acreage will not enable them to be used to capacity. This means unduly heavy overheads and depreciation. With a specialised farm many of these difficulties can be overcome; machinery, whether tractor or milking machine, will be given the maximum amount of use, and the people working on the farm will have a greater opportunity to become expert at their job and will be able to devote their whole time and energies to it.

The inadvisability of having all the eggs in one basket is one of the most frequent arguments levelled against specialisation, and where no stability is offered this is undoubtedly true. We have already agreed that agriculture must have stability, and have shown how this can be supplied by long-term contracts, thus assuring the farmer of his market and his price for many years in advance. Given this stability, he need not grow a variety of crops as a safeguard against a sudden fall in the demand for any one of them.

It should be clear, however, that specialisation is not the same as mono-culture. A specialised dairy farm will not necessarily sell only milk; it may have side-lines such as vegetables and poultry, and to add extra income there will also be calves. A specialised arable farm will not concentrate only on wheat; it may grow barley, oats, beans, potatoes—any crop suited to local conditions.

Mixed farming is not the only means of ensuring fertility. In certain cases livestock may be the cheapest method, while in others it may be found more economical to plough in green crops, to compost surplus straw or even to fold chickens over the farm. As the fertility on our farms is of vital importance and there are many different methods, it must be left to the individual farmer to decide which is the most satisfactory.

The problem of the agricultural worker will always be paramount, no matter what advances may be made in mechanisation, scientific discoveries, or methods of land tenure. A steady drift from the land has been in progress over the past hundred years. By 1939 there were 710,000 farm workers, and at the time of writing there are under 632,000. The drift from the land has to some extent been arrested by defence regulations which prevented agricultural workers from leaving agriculture unless it was to enter the Services. This legislation removed, agriculture naturally has to compete with the other industries for labour. To do this, it must be able to offer attractive wages and conditions of work, as well as living conditions which compare favourably with those of other industries. During the war, farm wages doubled themselves—from between 34s. and 35s. a week in 1939 to 70s. a week in 1945. But industrial wages have similarly increased, with

the result that agriculture is no more attractive now than it was before the war. The answer to this problem lies not only in increasing the farm worker's wage but also in ensuring that such an increase is not followed by a rise in industrial wages. A national wages policy in which the relative importance of the major industries is clearly defined is the only permanent solution. At the same time more houses must be built to improve living conditions in the country, but it will be useless to build the houses unless water and electricity are also provided. At present electricity is available only to 67 per cent of the population of rural areas, and a piped water supply to only 30 per cent. Transport in rural areas must also be improved to make education, amusement and shopping readily available to those who live in the country.

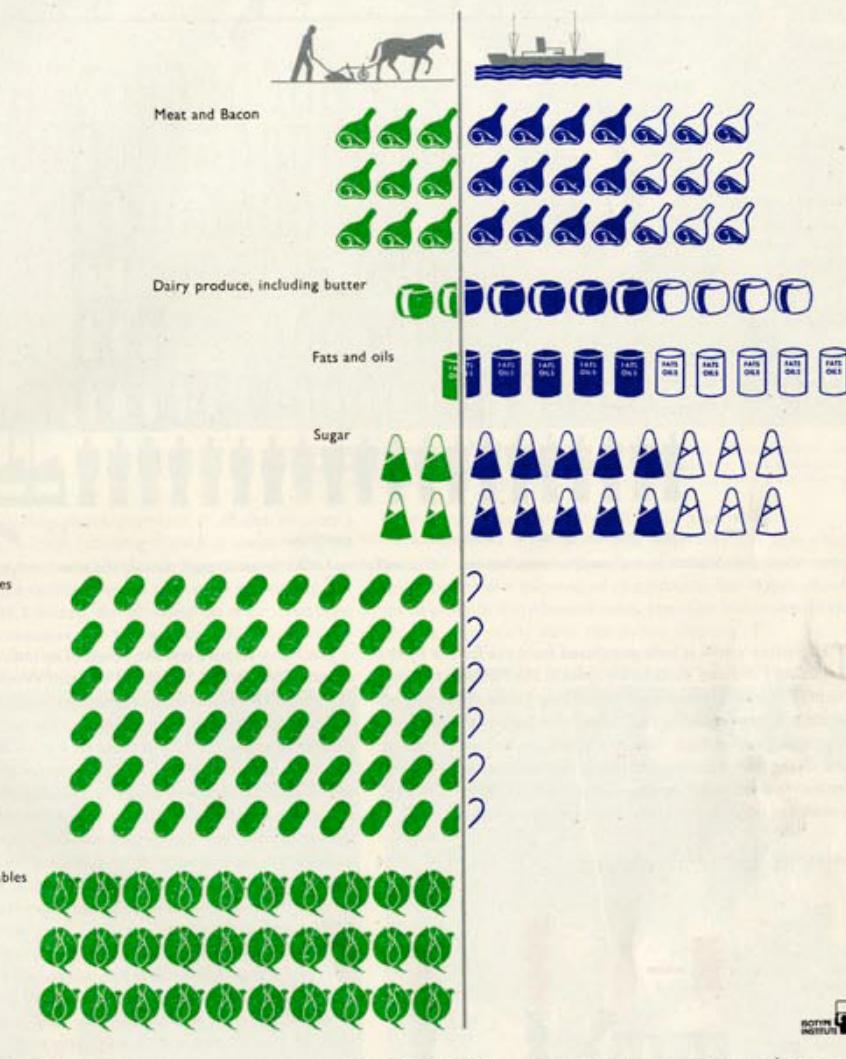
The problem of labour is the most urgent of all. Without the improvements already discussed agriculture will continue to develop more slowly and less efficiently than it might. Without labour it will not continue at all.

Although we have considered production only, from the consumer's point of view distribution is equally important, and in terms of money there is little to choose between the two. Food for which the primary producer in pre-war days received approximately £650,000,000 (£250,000,000 of which went to the British farmer and £400,000,000 to the overseas farmer) cost the consumer round about £1,500,000,000 when bought in the shops. This means that the distributors, transporters, and processors of food received for their services over 60 per cent of the total cost to the consumer. Therefore even a small reduction in the cost of distributing food would result in a considerable fall in the prices paid by the consumer. In the distribution of such vital foods as milk and vegetables there is very special room for drastic economies.

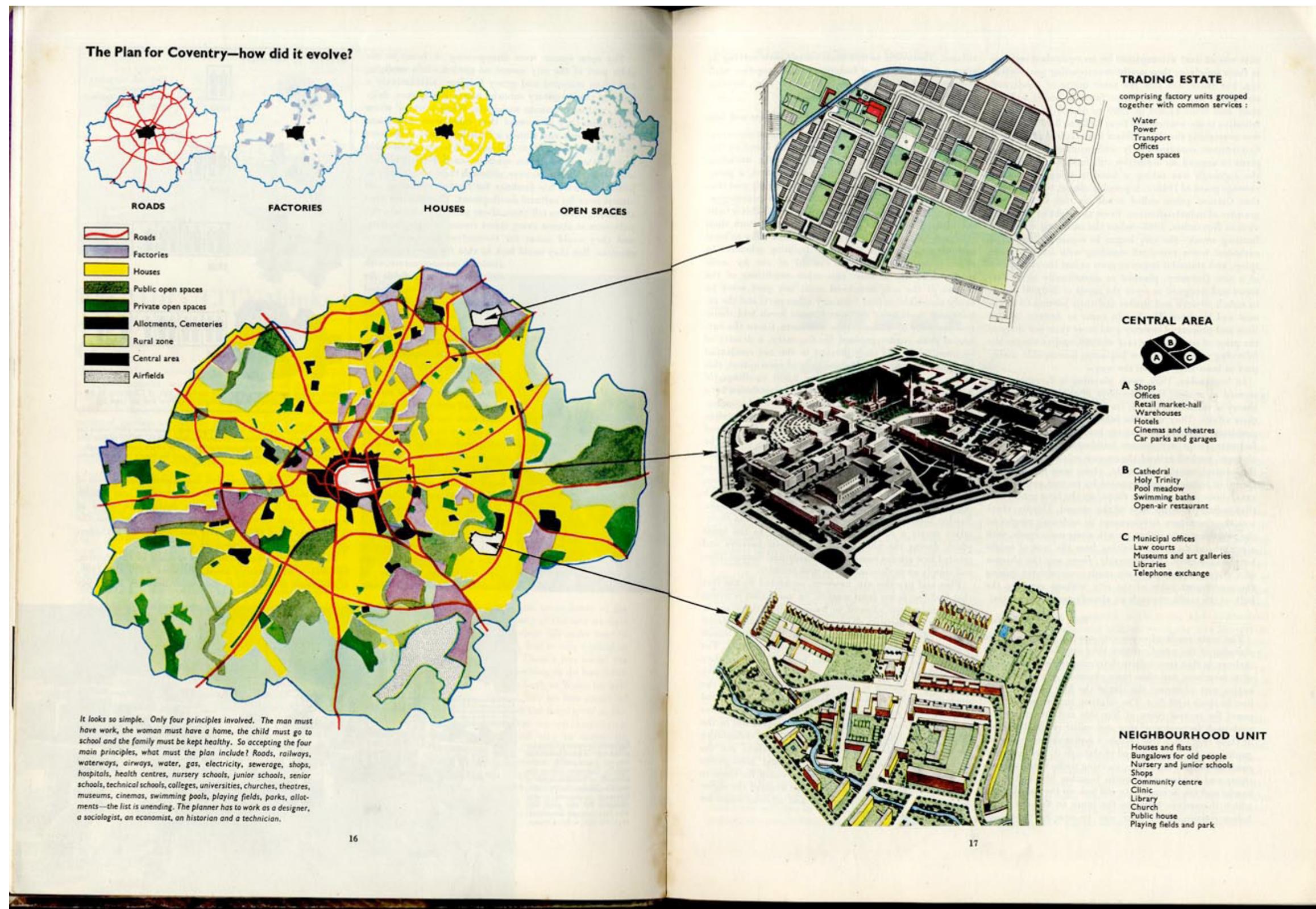
Although the foregoing notes outline the type of agriculture at which we should aim, for technical, political and economic reasons it will be impossible as well as inadvisable to achieve such an agriculture within the next five years. During this transition period our aim should be to guide agriculture toward the type of farming outlined, so making the change from wartime to peacetime farming a painless one for the farmer, as well as one which fits in with the economic policy of the country as a whole. Even when the ultimate goal has been reached, the English countryside will not be merely one vast dairy farm interspersed with orchards and market gardens and dotted with occasional chicken coops. There will still be areas, particularly in the Eastern counties, where arable farming can flourish with high-quality malting barley, and where soft wheat can be grown for biscuit manufacture and for blending with the hard foreign wheats. Such areas should and, no doubt, will continue to give a good return to the local farmer.

To sum up, even without the special conditions imposed by shortage of foreign exchange and setting aside all the social or sentimental reasons, agriculture in this country has a great future. In fact, without a large and prosperous agriculture it will be impossible for us to have a healthy and well fed population. The cardinal requirements are stability of price, access to the results of scientific

United Kingdom Food Requirements for 1945



tific research, and fresh capital. When these requirements are satisfied, agriculture will not only be able to supply the food the country needs, but it will be able to offer conditions of employment to those engaged in the industry, which will encourage some of the best of all classes to enter agriculture. At the same time, costs of production will be lowered so that a decreasing amount of State assistance will be needed to bring essential foods within reach of everybody. A great step towards this lowering of prices can be taken by a complete overhaul of our marketing system, by cutting out redundant middlemen and by doing away with wasteful methods of handling, all of which add to the final cost of the product without giving any corresponding benefit to the consumer.



MARIE NEURATH

**Educational books
for kids**

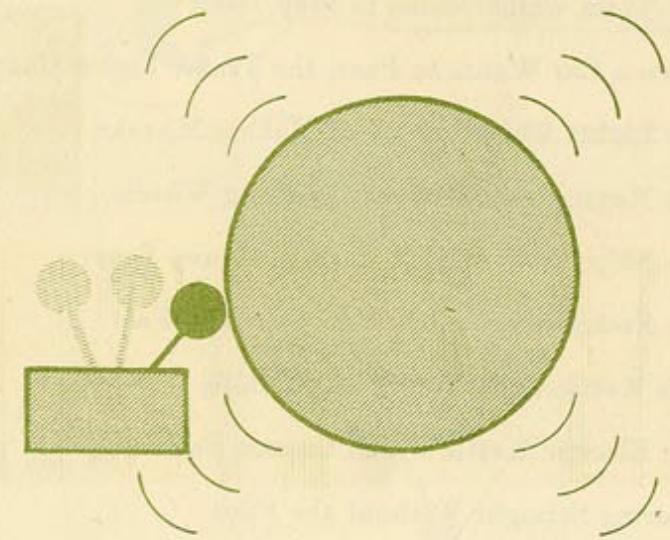


ISOTYPE

FIRST PUBLISHED 1954 · PRINTED IN GREAT BRITAIN BY GRAPHIC

MACHINES which seem to think

Marie Neurath



REPRODUCTIONS LTD. LONDON

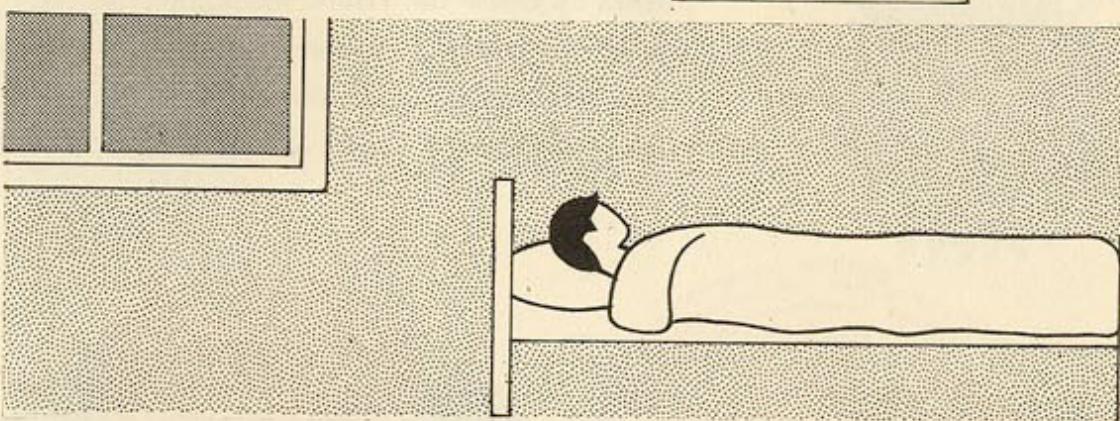
Max Parrish London

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How a Machine Can Give the Correct Change	16
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When a Car Wants to Pass, the Traffic Lights Change	20
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This Kettle Calls You When it Boils	30
The Electric Kettle which Cannot Burn	31
Steering Straight Without the Pilot	32
A Spinning Wheel Keeps the Plane Straight	34
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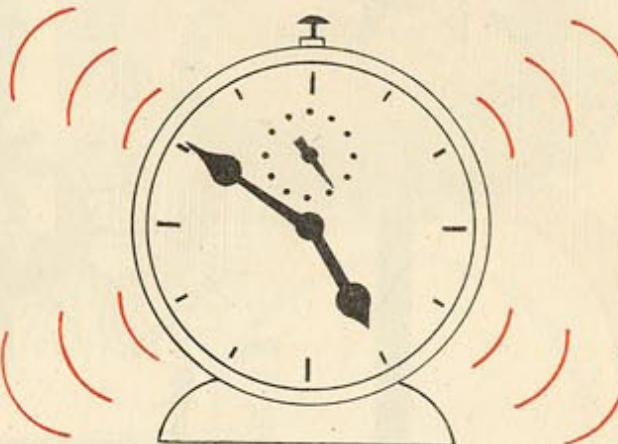
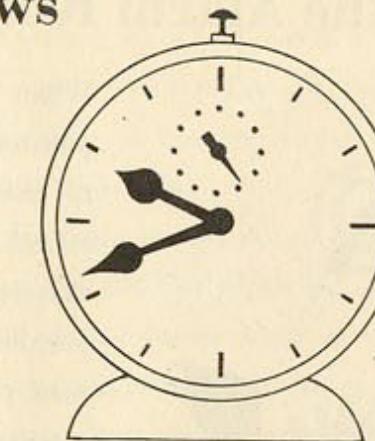
The Clock which Knows When to Wake You

All night long this clock ticks away the seconds while the boy sleeps. Its two big hands creep round the clock-face; the hand of the small alarm dial, pointing to ten minutes to five, never moves.

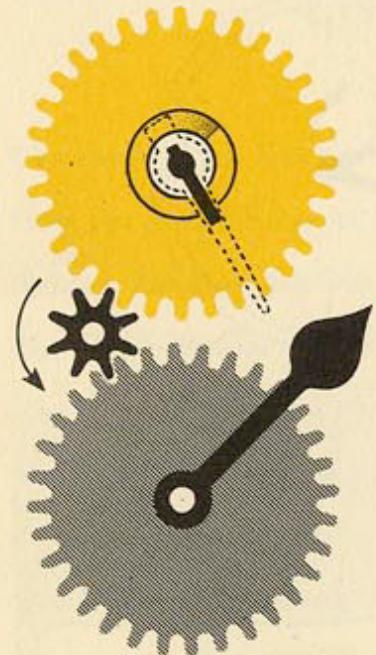


Suddenly, at ten minutes to five, the alarm bell rings and the boy wakes up.

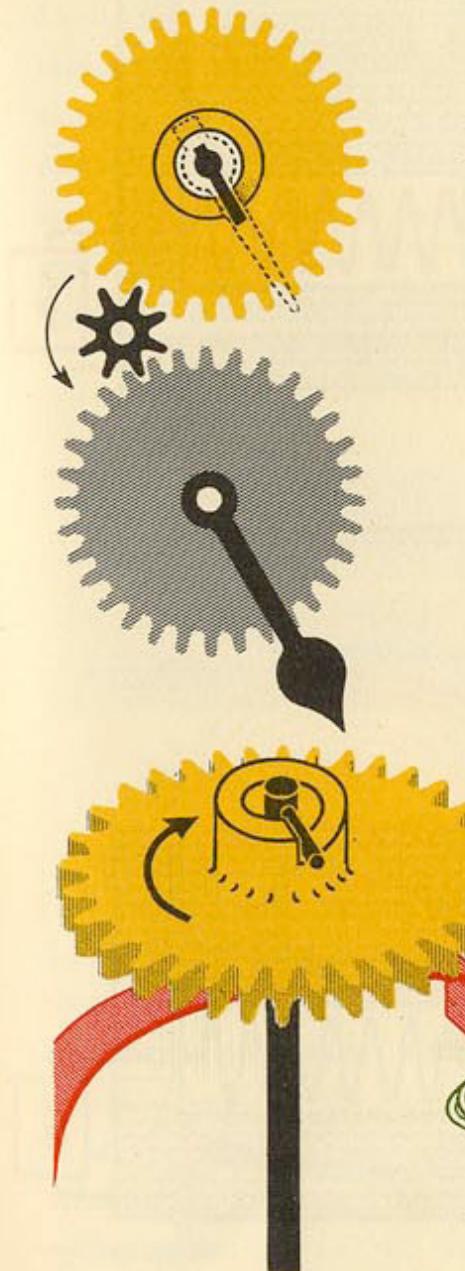
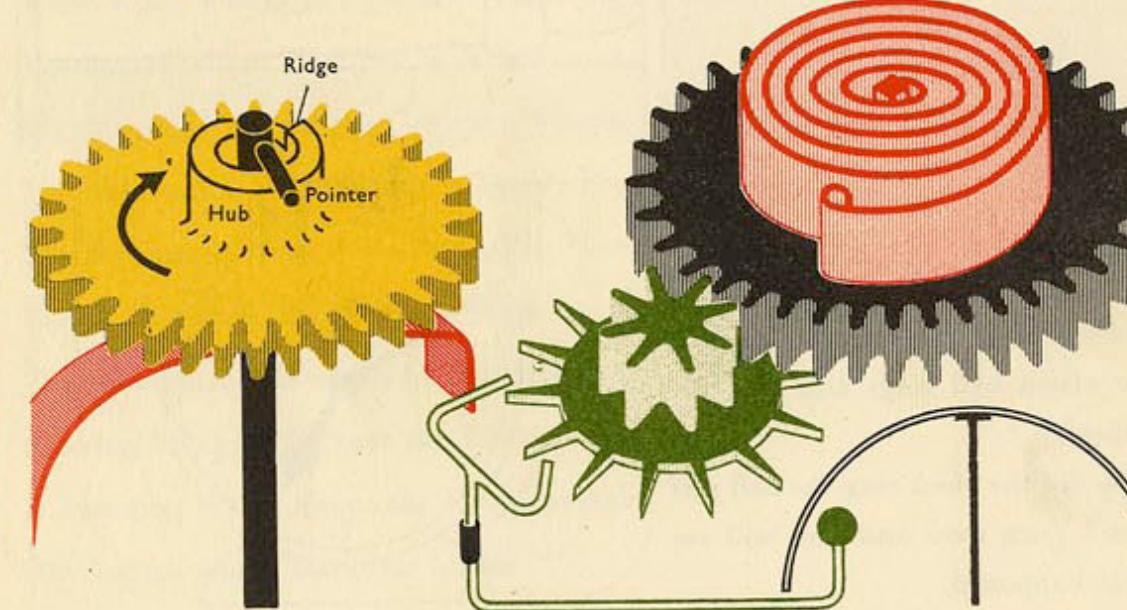
Why did the clock ring the bell just then? Turn over and you will see what happened.



How the Alarm Rings at the Right Time

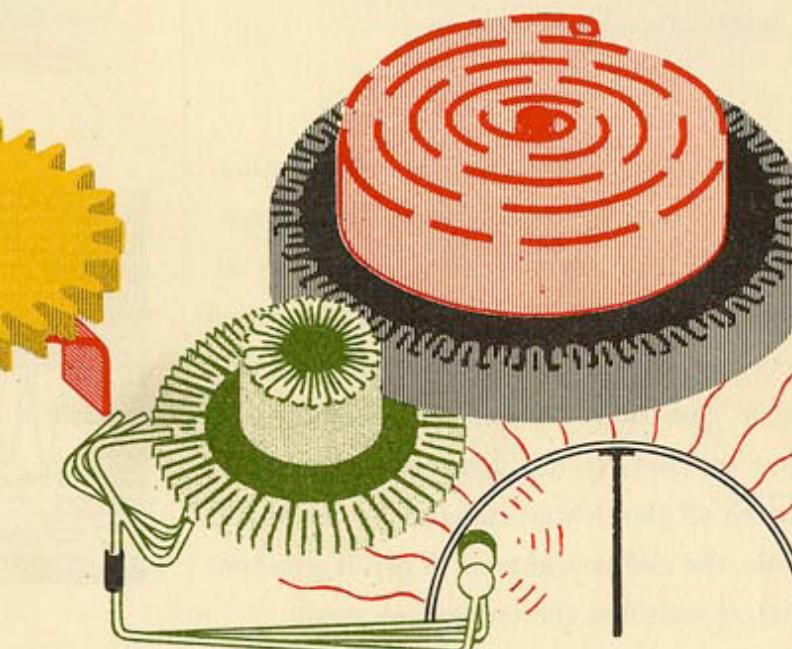


When we "set" the alarm clock, we move the pointer above the yellow cog-wheel until it points to the waking time. As the hour hand moves round, its cog-wheel turns the yellow wheel at the same speed. The ridge on the yellow wheel keeps parallel with the hour hand. Now look at the bottom picture. During the night, a bent spring presses up below the yellow wheel, but the wheel is held down by the pointer above the hub. The end of the spring holds the green lever, which stops the green and black cog-wheels turning.



Slowly the hour hand of the clock moves round, and slowly the yellow cog-wheel moves round with it. At last the hour hand points to the waking time, and the ridge on the cog-wheel points in exactly the same direction.

Suddenly, as the ridge passes under the pointer, the bent spring can lift the whole yellow wheel. The end of the spring jumps clear of the green lever. The strong coil-spring begins to unwind and the black and green cog-wheels turn. The teeth of the green wheel set the lever moving to and fro, the lever sets a little hammer moving to and fro, and the alarm bell rings.



The Door which Opens by Itself

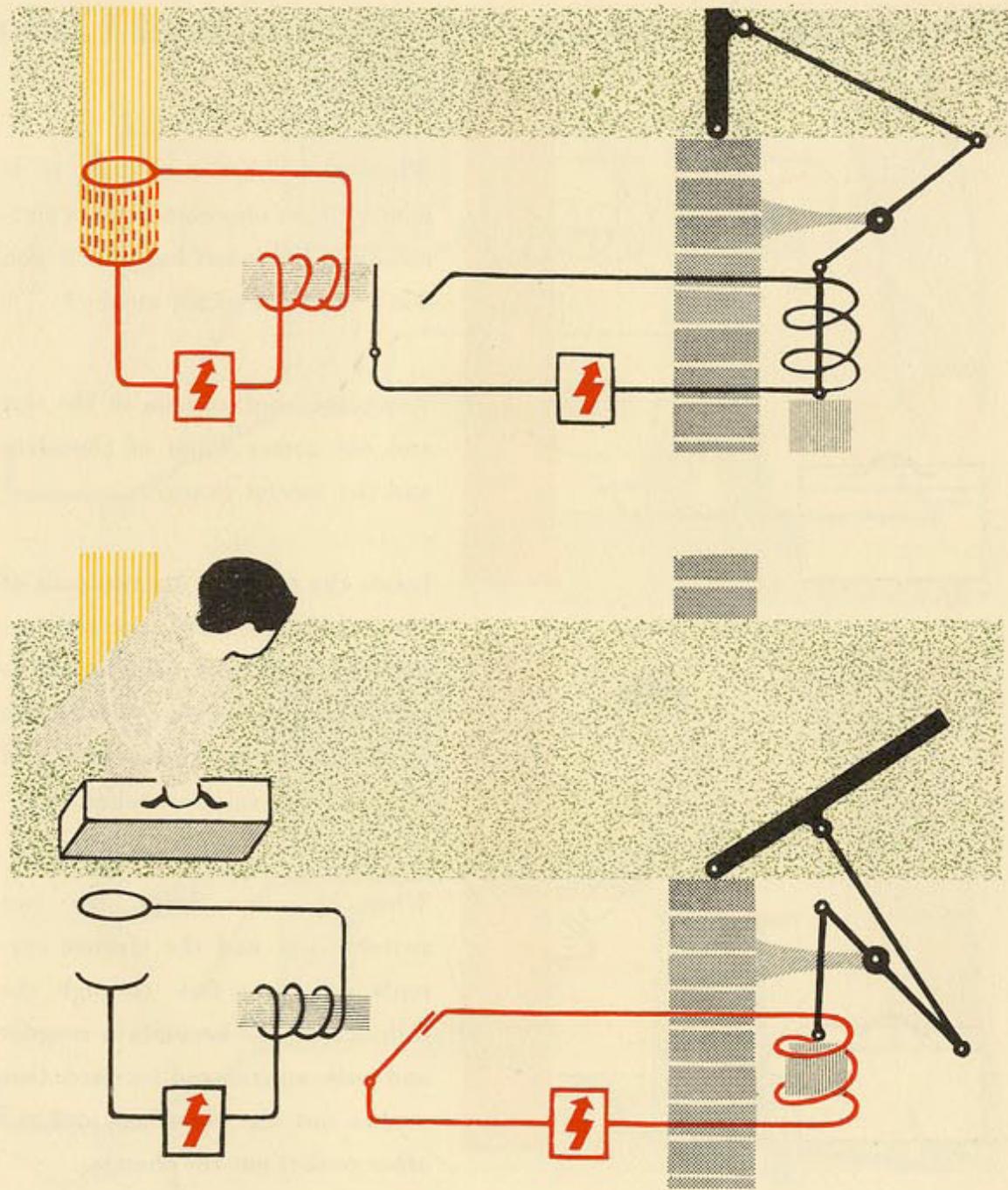


In front of this door, a light shines from one post to the other. As the boy crosses the beam of light, the door swings open; as he enters the house, it closes slowly behind him.

Inside the right-hand post there is a special cell, through which a current can flow so long as light shines upon it. As long as the current flows, it makes a magnet which holds back a switch.

When the light is cut off, the cell cannot carry a current. The magnet loses its power and the switch drops. At once another current flows and makes a more powerful magnet behind the door. This works a machine which pulls the door open.

When the boy has passed through, the powerful magnet is no longer working, and the heavy door slowly closes itself again.



1.

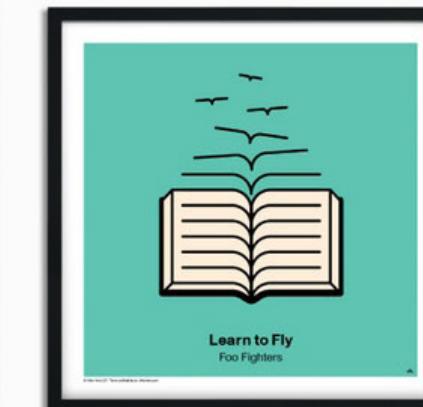
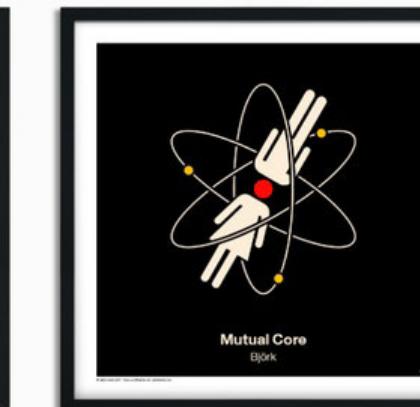
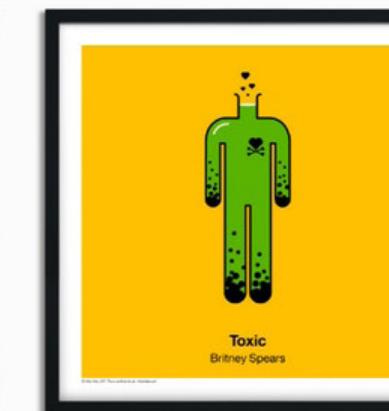
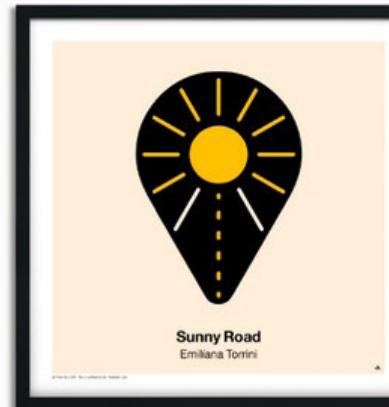
Sometimes Neurath violates the proportional Ink rule. Do you think that is justified or even preferable in these cases?

2.

What do you think is the reason ISOTYPE didn't become widespread successful? (Personal or structural)

3.

What do you think would be Otto Neurath's opinion about today's pictograms / pictographs?



4.

Neurath's visualizations were created with a very specific idea in mind. How can this example help us identify and understand other agendas or even our own?

5.

What do you think of the use of color in Neurath's work. Does it correspond to the guidelines Robert Simmon introduced? Either way: do they work?

I. Money is the only thing I came across where Neurath uses an abstraction (circle) as a representation. This corresponds probably with the idea that money is already an abstraction (of exchange value, which is ultimately the amount of "standard" work to produce a commodity). I can imagine he tried to avoid incorporating money in his graphs as often as possible.

II. What Neurath wanted to achieve was a "**delabelization**". Instead of having generic geometric figures represent something we identify by reading their labels, Neurath wanted the reader to immediately recognize what the graph was about and consult the label only to be able to identify and count the absolute numbers shown in the graph. In Charles Sanders Peirces conception the result would most often be a icon (physical resemblance to the represented) and / or an index

(showing evidence of what's being represented).

III. Neurath also praised the value of some techniques in advertising. The person to guarantee that the ISOTYPE wasn't misused to propagate personal agendas or to manipulate the workers was the so called "Transformer". Neurath was lucid, that neither the underlying data nor the language could guarantee a benevolent use of his language.

IV. This is a very nice visual deconstruction of the Mercator projection.

V. See also the initial quote as reference.

VI. This is a nice example of Neurath's emphasis of the centrality of the human being and its well-being. The citizen in this

comparison is the protagonist and contextualized. This comparison of systems shows the different kinds or qualities of property people can own in capitalism and socialism. I guess the less possible kinds of property in socialism was not a disadvantage for Neurath. Maybe one could also think of this as a relief, as property also increases one's own vulnerability (as an extension of one's own body similar to McLuhan)

VII. Neurath's graphs never came without context. Usually he published one book dealing with one topic at large, text and juxtaposition of graphs ensuring that the reader would be able to get a very broad impression on the subject.

VIII. What do you think of this departure from the rule of ink in this visualization? Is it actually helping us understand the differences in distribution or distorting them?