Semiology of Graphics

- JACQUES BERTIN

Taylor M Grant, Liam Tyler

Overview & Definitions

Semiology of Graphics

- Semiology - study of signs and symbols, their use, and interpretation
- Graphics
  - A basic sign system for storing, understanding, and communicating information
  - A visual medium
  - Has 3 sensory variable: the x axis, the y axis, and the variation of marks

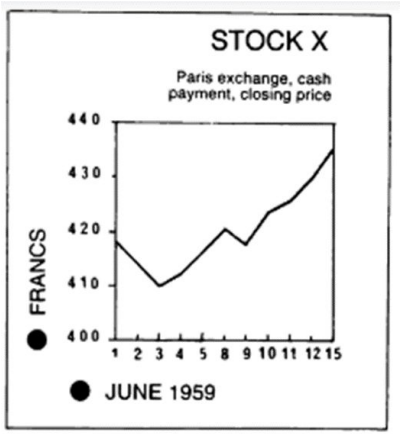
Sign Systems

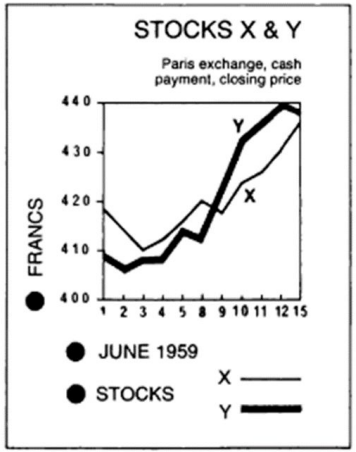
- Monosemic - Meaning of signs are known prior to observation
  - Legend or chart axis
- Polysemic - Meaning of individual signs are deduced from the collection of signs
  - Trend line
- Pansemic - signs are abstract/don’t signify anything precise

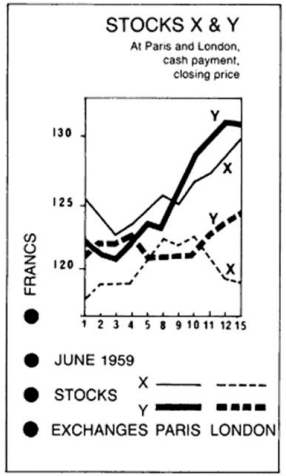
The invariant and the components

Define Invariant

- Invariant - central notion common across components
  - Main theme of the graphic
- Components - variational concepts
  - Variables represented by the graphic
- Visual Variables - represent components in a graphic







Order of Components

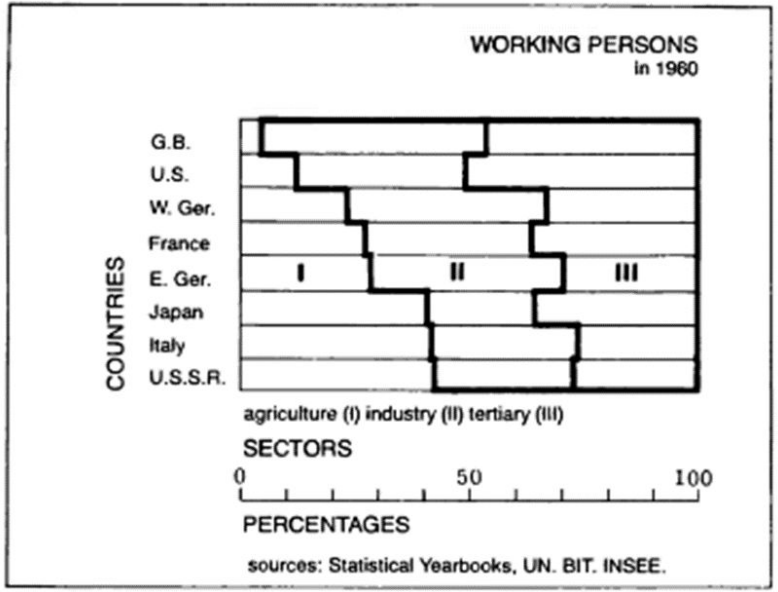
- When dealing with percentages
- Unaffected components, percentage/quantity itself, components affected by the percentage

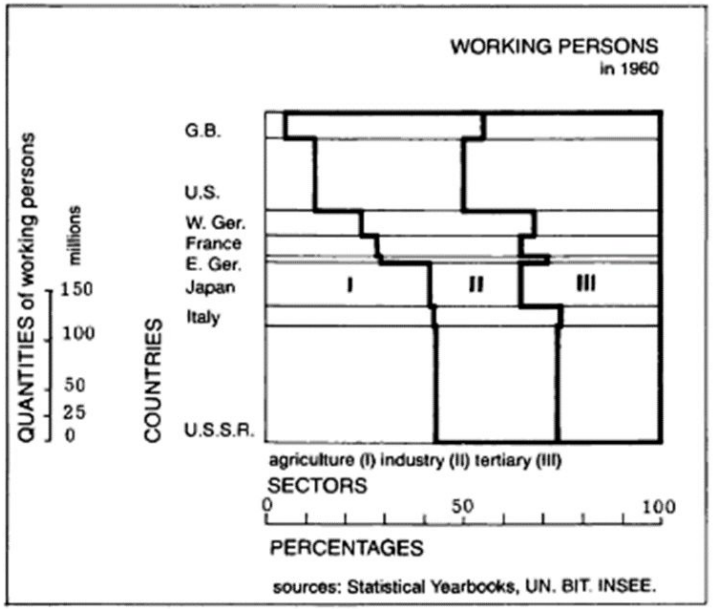
Figure 2:

INVARIANT COMPONENTS
–working persons (1960)
–different countries
–number (Q) per 100 working persons per country according to
–three main employment sectors

Figure 3:

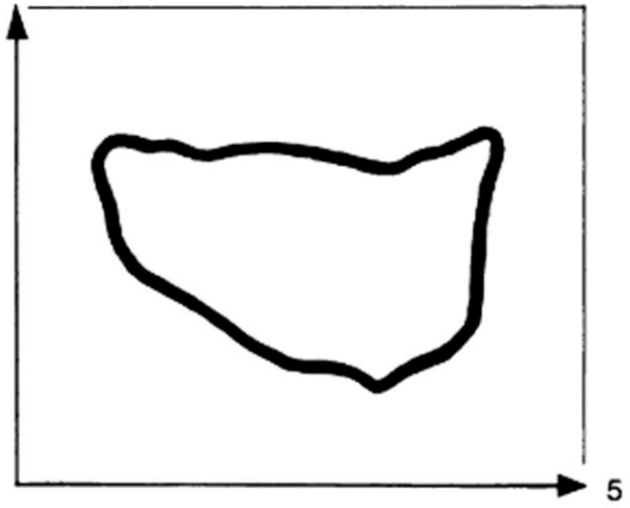
INVARIANT COMPONENTS
–working persons (1960)
–absolute Q according to
–different countries
–Q per 100 working persons per country according to
–different employment sectors

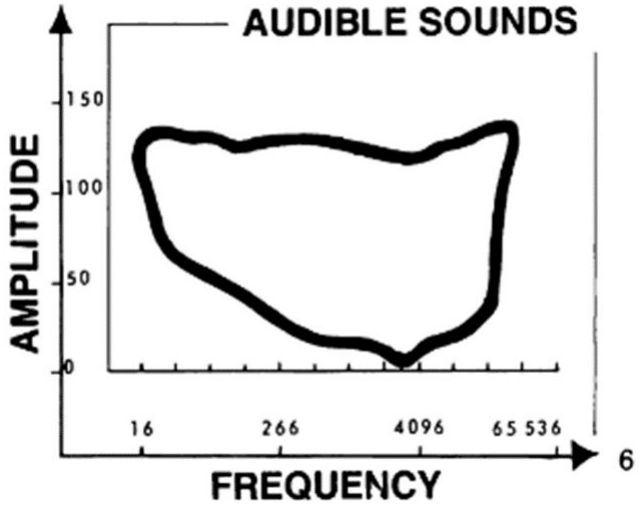

WORKING PERSONS
in 1960
G.B.
U.S.
W. Ger.
France
E. Ger.
Japan
Italy
U.S.S.R.
COUNTRIES
I
II
III
agriculture (I) industry (II) tertiary (III)
SECTORS
0
50
100
PERCENTAGES
sources: Statistical Yearbooks, UN. BIT. INSEE.

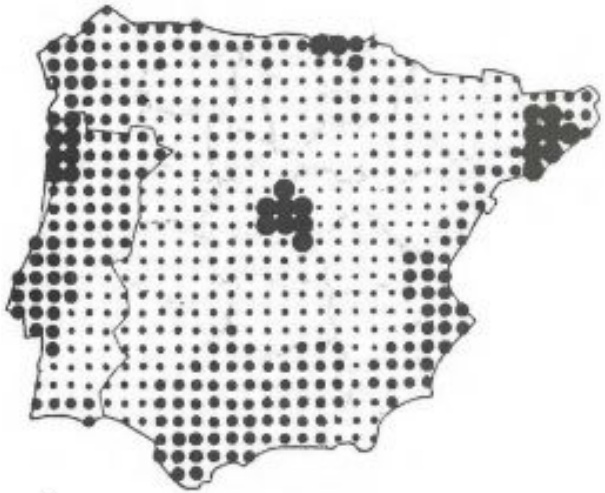

WORKING PERSONS
in 1960
QUANTITIES of working persons
millions
150
100
50
25
0
COUNTRIES
G.B.
U.S.
W. Ger.
France
E. Ger.
Japan
Italy
U.S.S.R.
I
II
III
agriculture (I) industry (II) tertiary (III)
SECTORS
0
50
100
PERCENTAGES
sources: Statistical Yearbooks, UN. BIT. INSEE.

External Identification

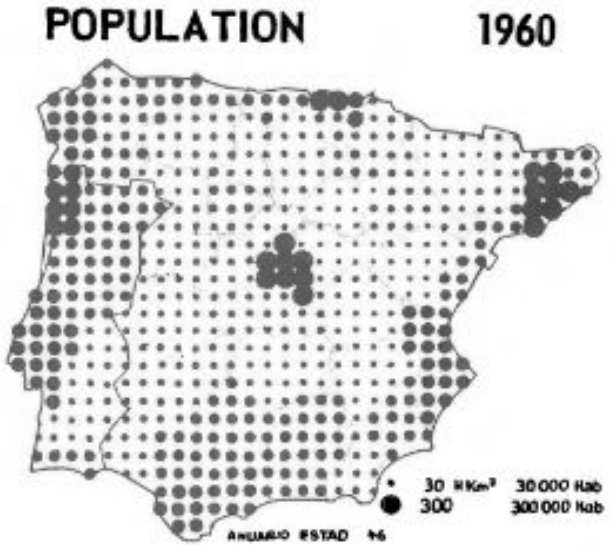
- Identify the invariant and components
- Independent of the actual visualization







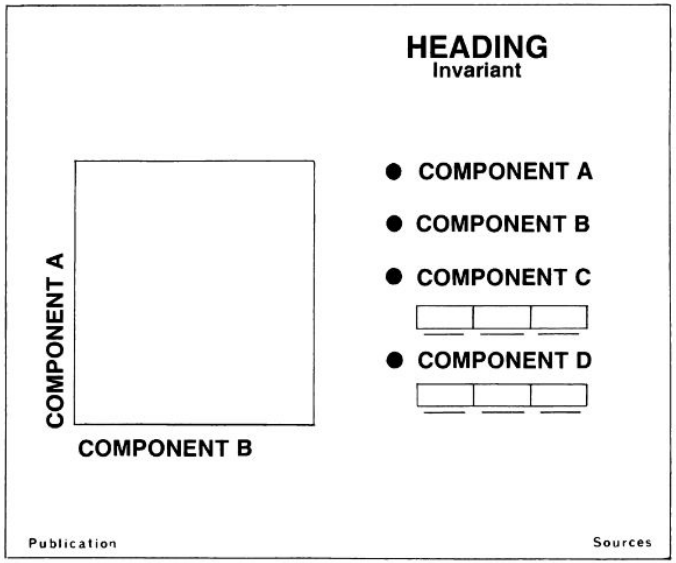
1

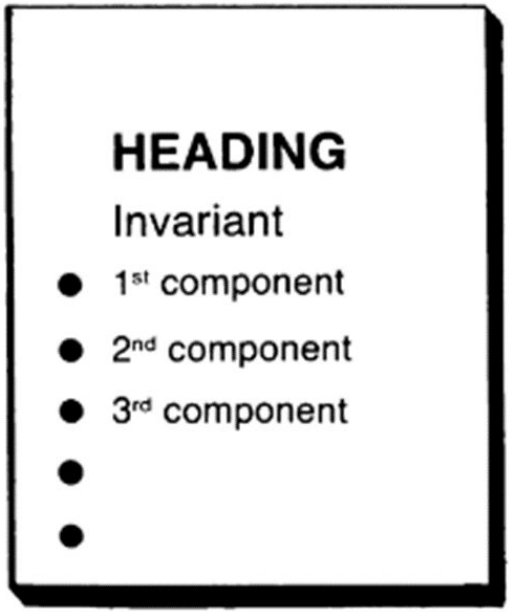

POPULATION
1960
30 Hab/Km²
300
30 000 Hab
300 000 Hab
ANUARIO ESTAD 46

2

Title Composition

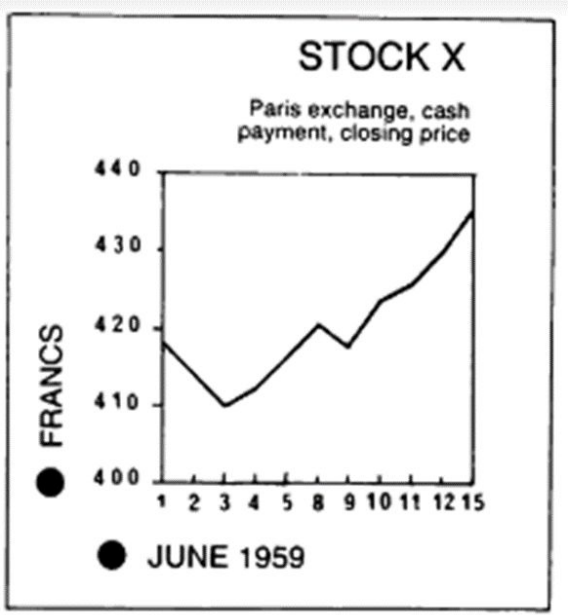
- Can be written as a function of the components
- Heading refers to the larger context of the image

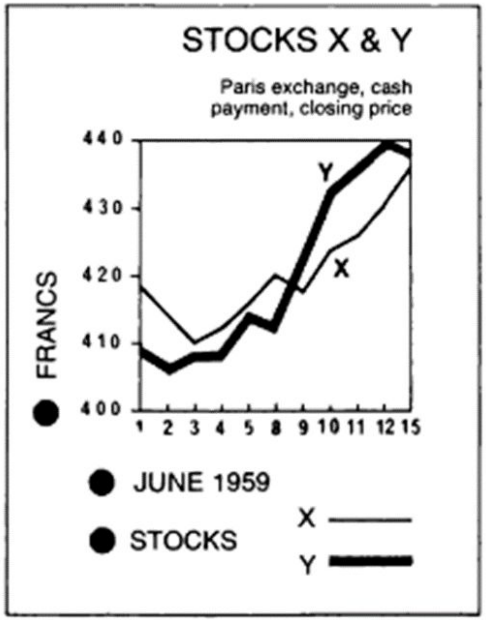




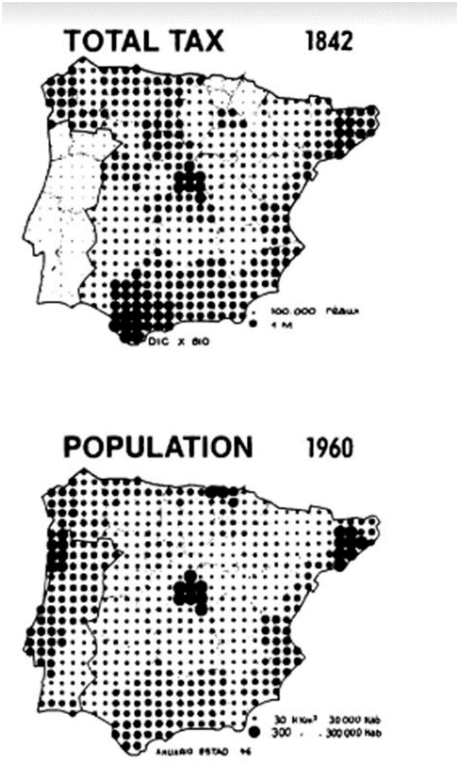
Internal Identification

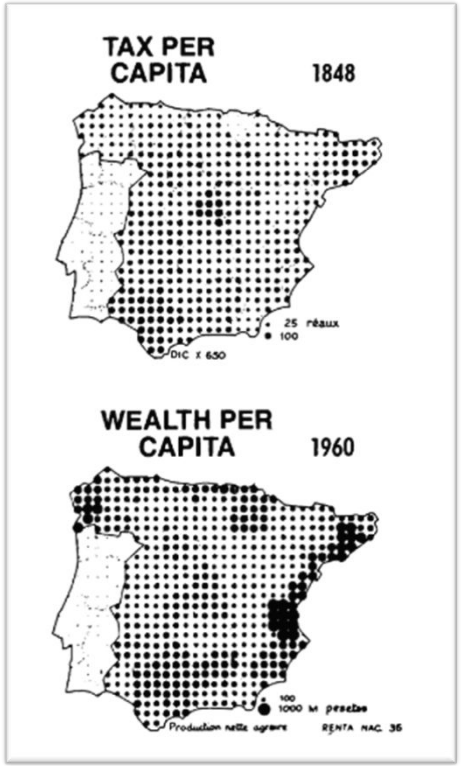
- Identify which visual variable represents each component



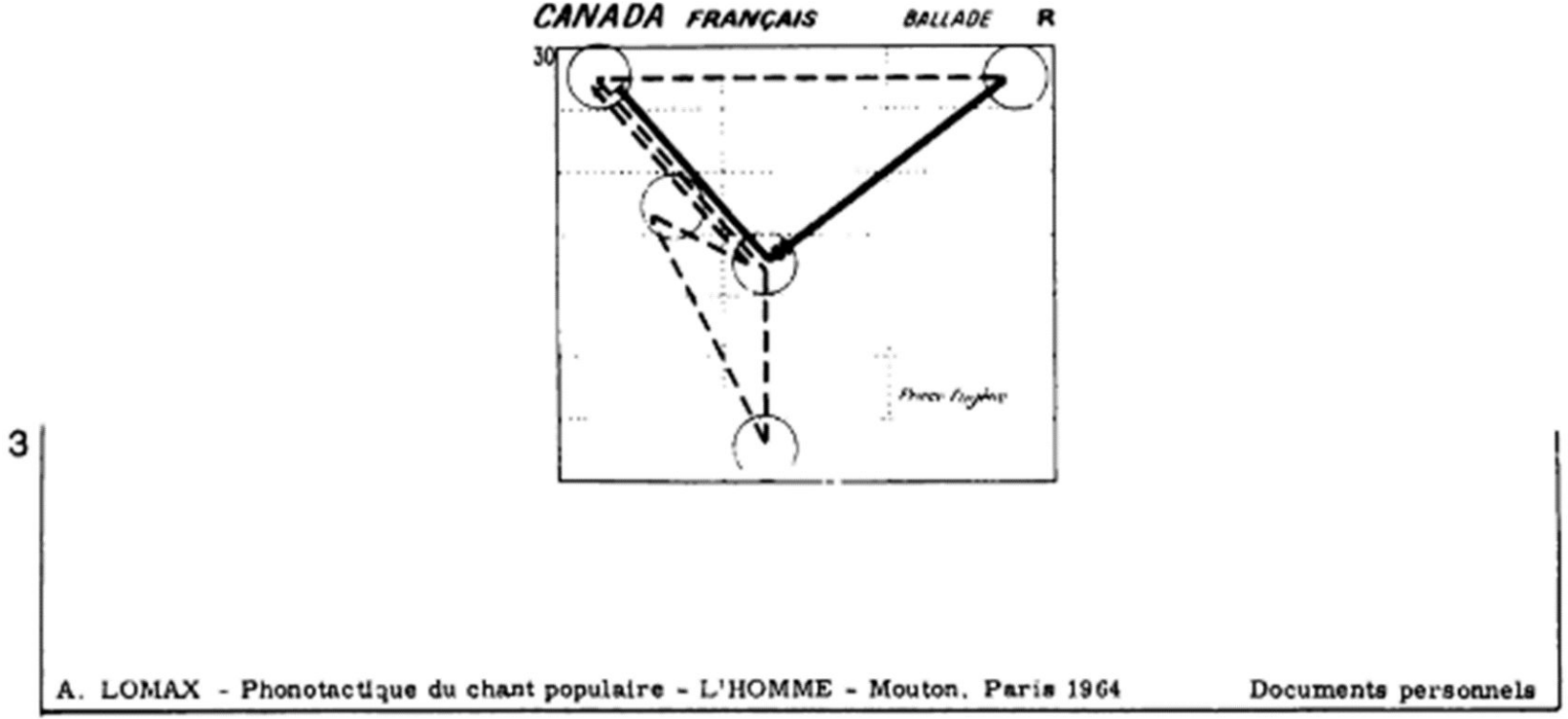


Homogeneous Series



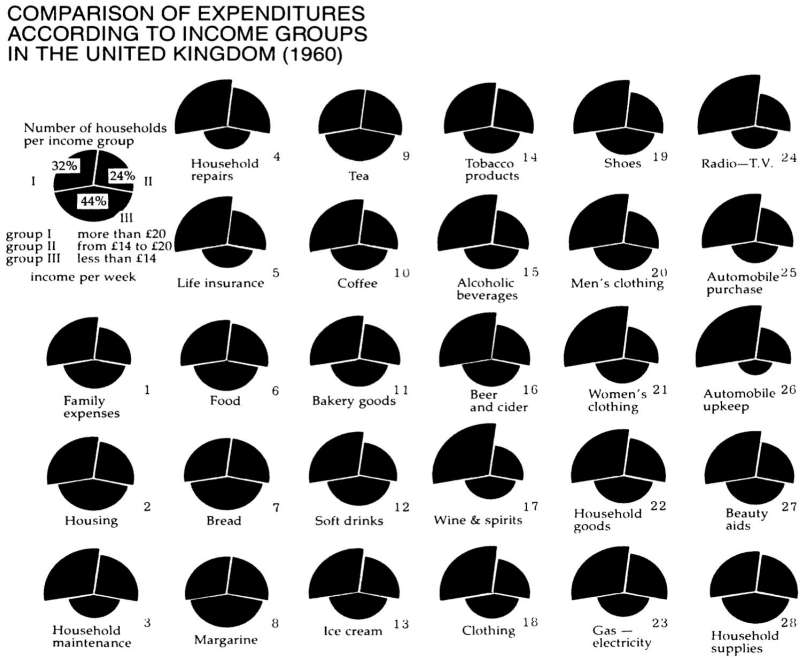


Identification of Sources



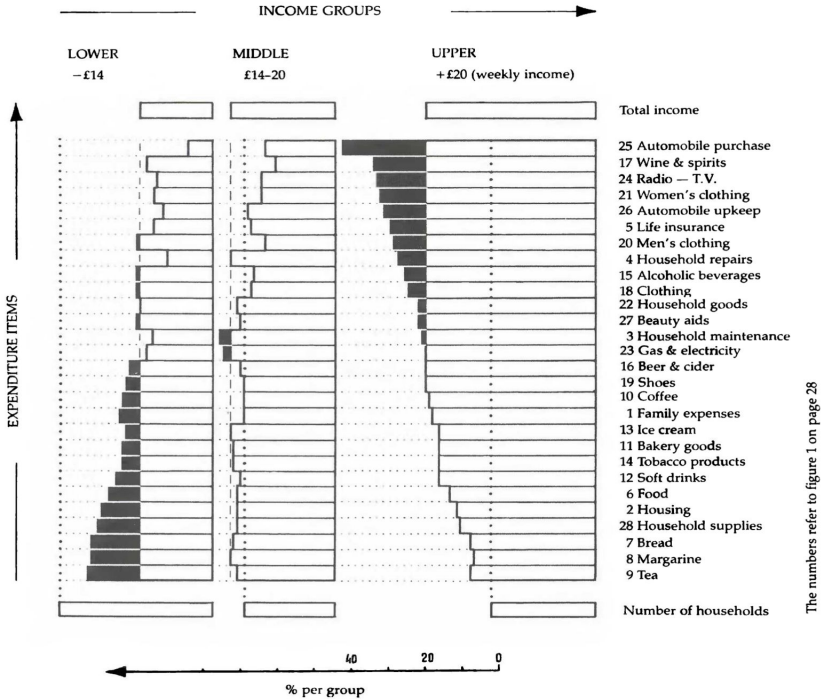
The number of components

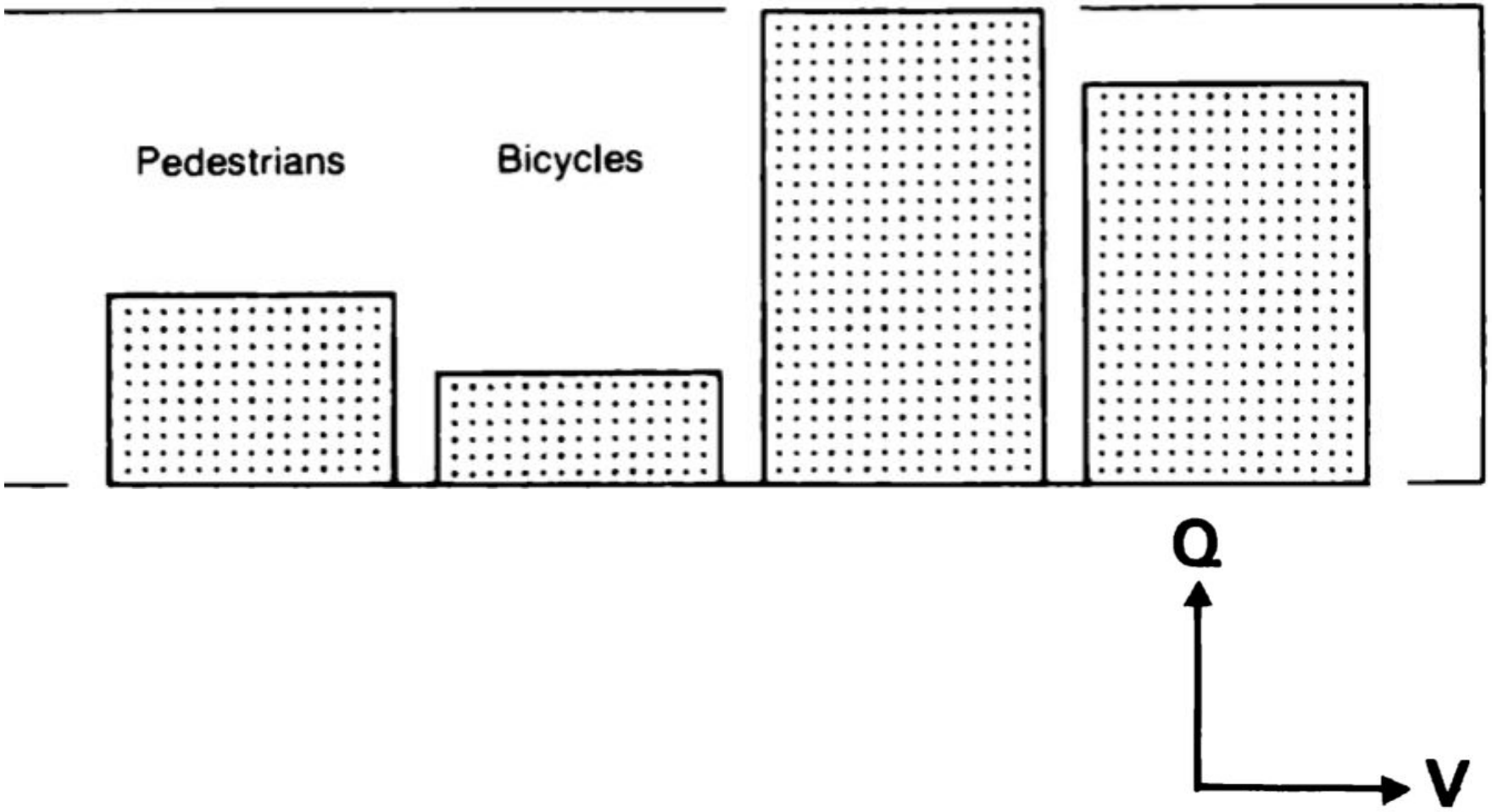
Figure. 1

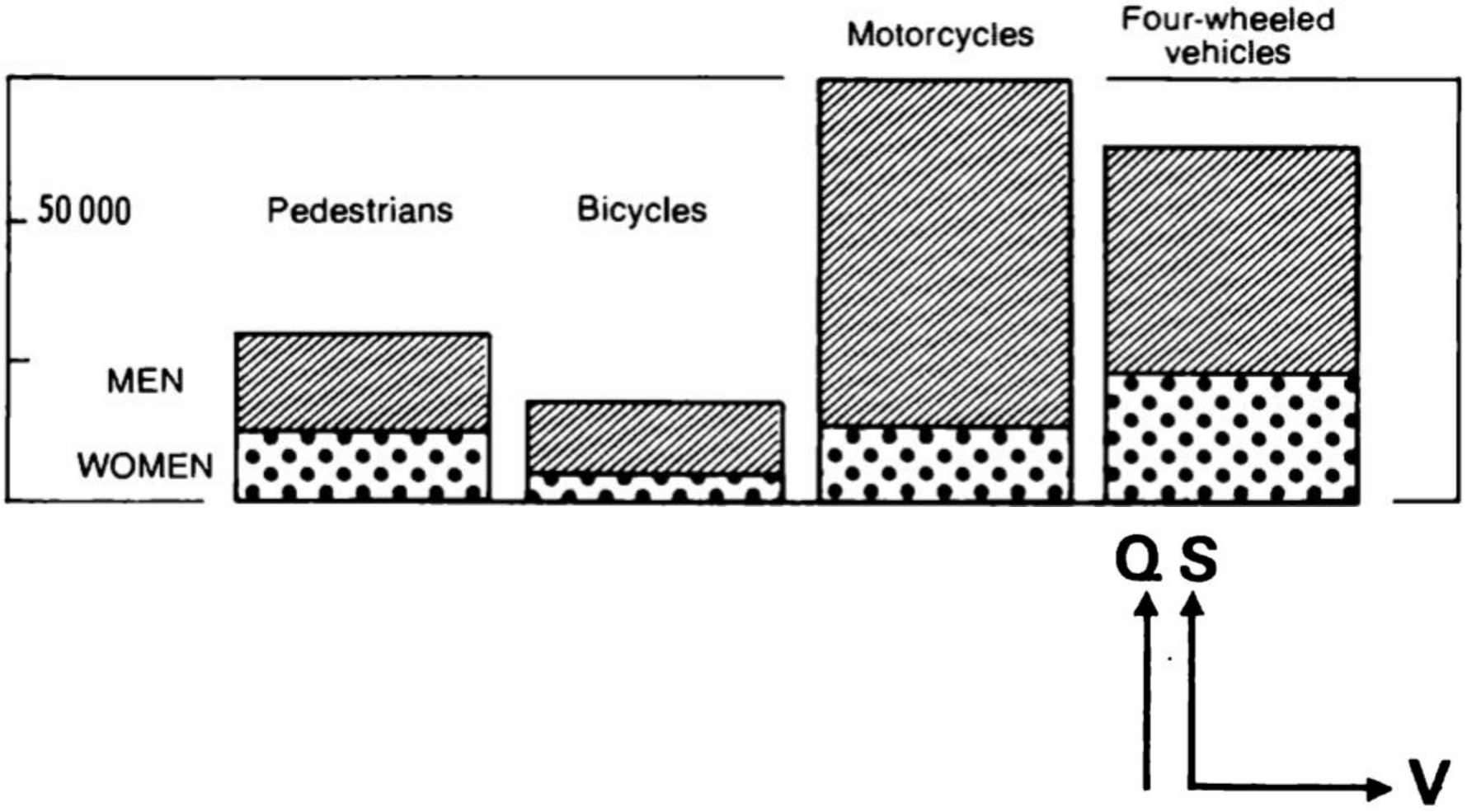


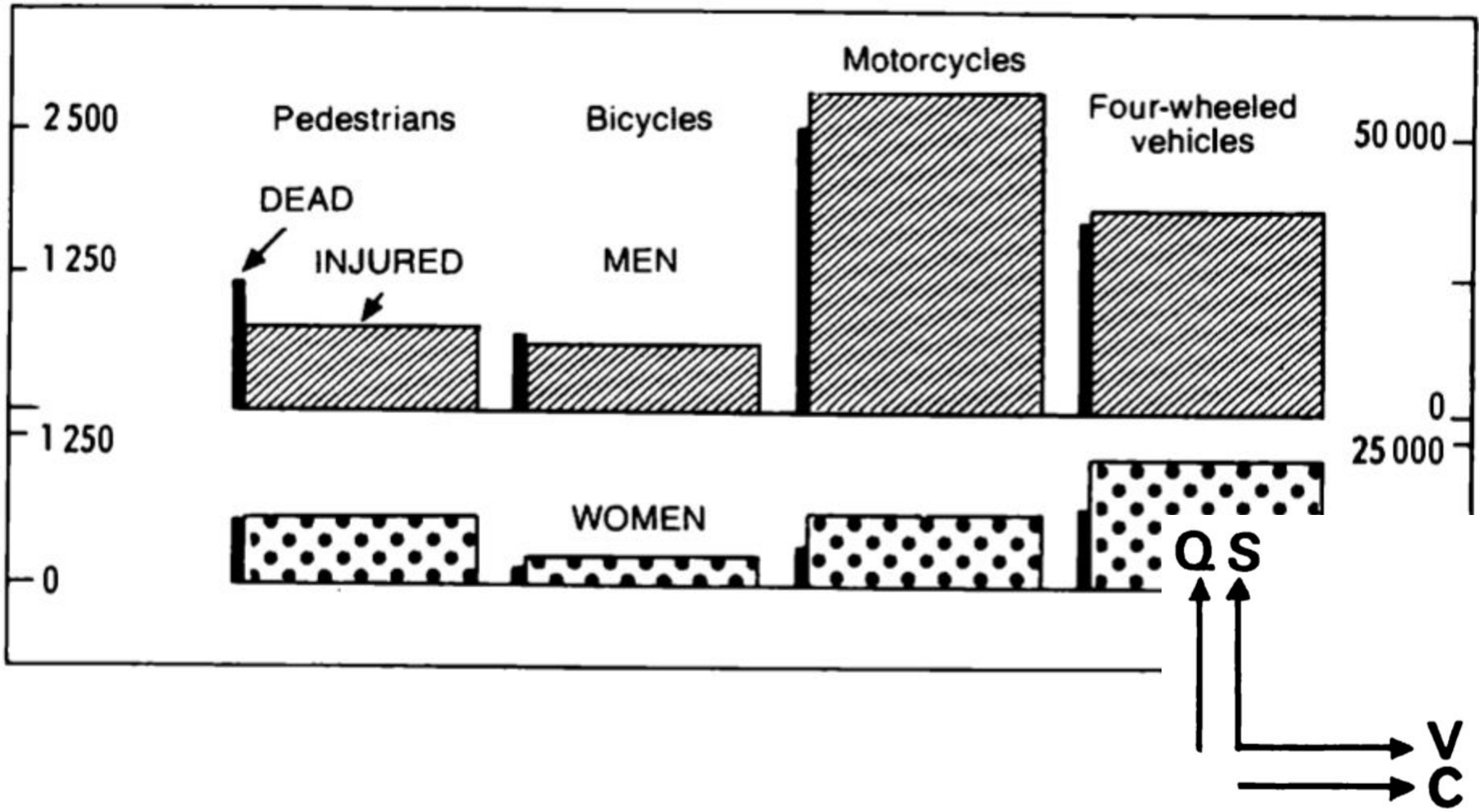
from Harry HENRY. Thomson Organisation Ltd.
Sources: Central Statistical Office. London 1961

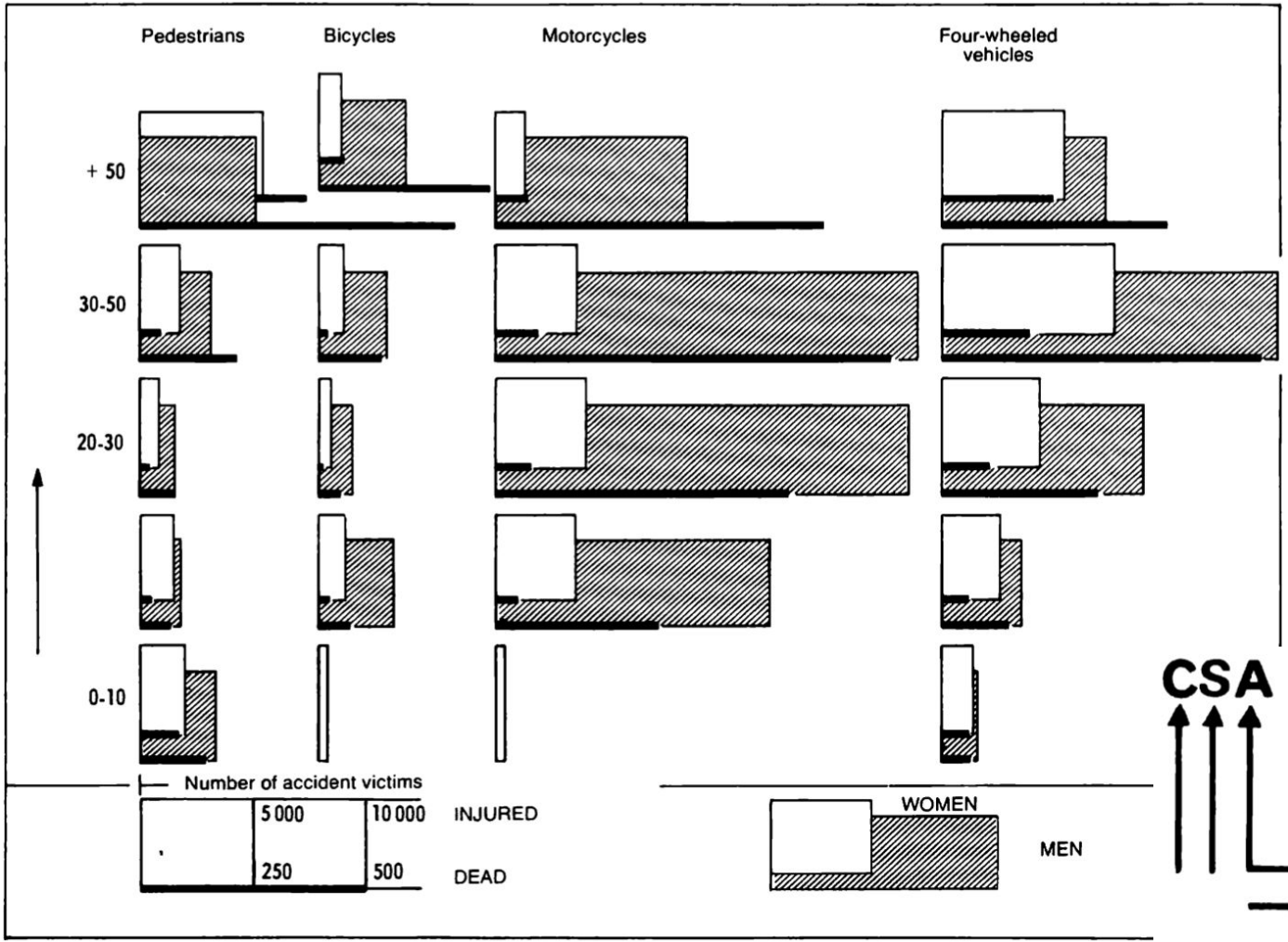
Figure. 2




Pedestrians
Bicycles
Q
V


Motorcycles
Four-wheeled vehicles
50 000
Pedestrians
Bicycles
MEN
WOMEN
Q S
V


Motorcycles
2 500
Pedestrians
Bicycles
Four-wheeled vehicles
50 000
DEAD
1 250
INJURED
MEN
0
1 250
25 000
WOMEN
0
Q S
V
C


Pedestrians
Bicycles
Motorcycles
Four-wheeled vehicles
+ 50
30-50
20-30
0-10
Number of accident victims
5 000
10 000
INJURED
250
500
DEAD
WOMEN
MEN
CSA
V
Q

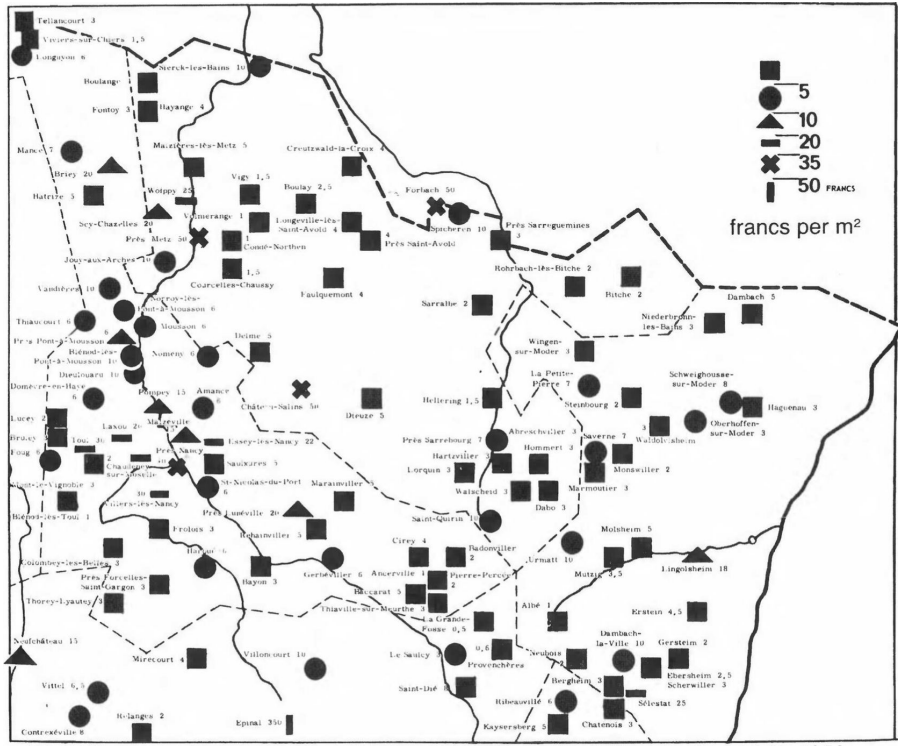
The length of the components

Small vs Large Components

- Small Components are components that have a length less than 4
  - Age
    - Youth, Adult, Elderly
  - Sex
    - Male, Female
  - Leads to special constructions
- Long Components are those with roughly 15 or more divisions
  - Leads to standard constructions
- Continuous Components lose the concept of length, yet can still be displayed as a plane is inherently continuous

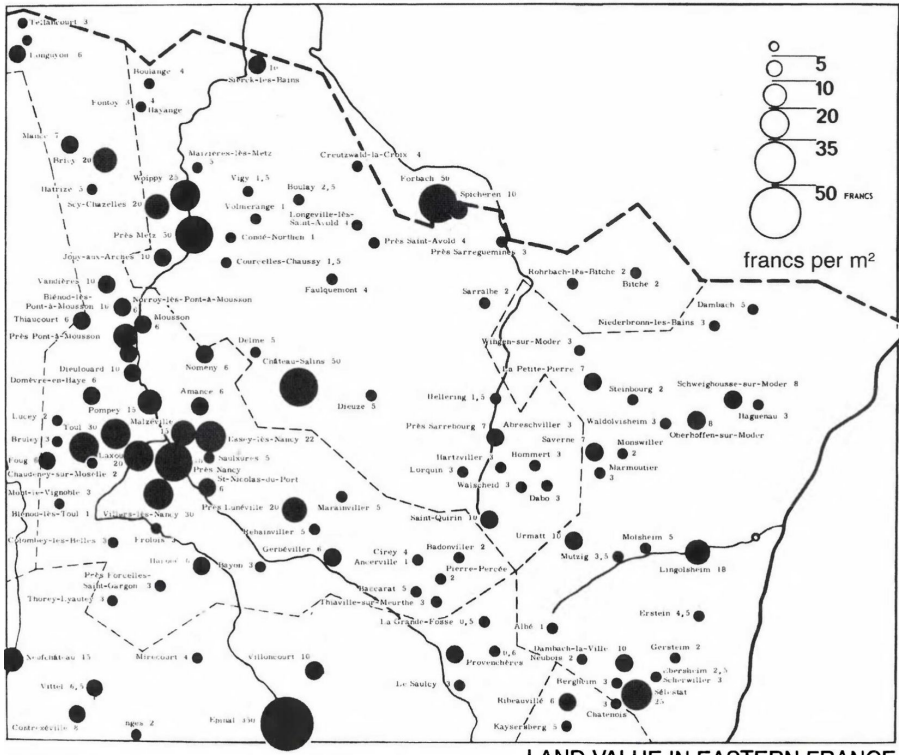
The level of organization of the components

Figure. 1

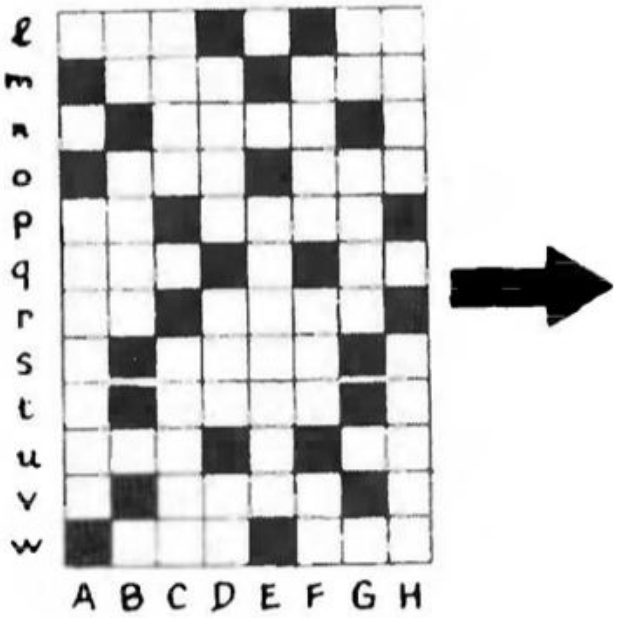


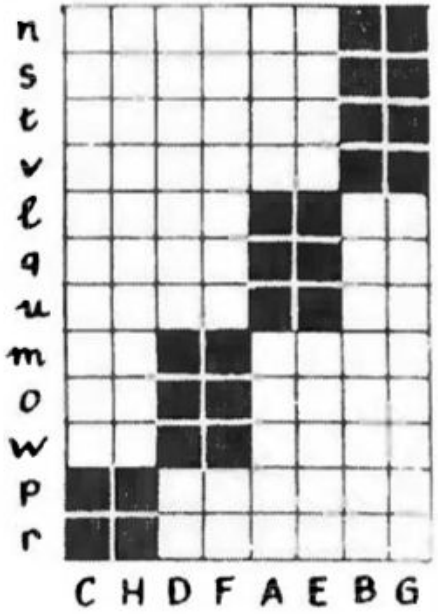
LAND VALUE IN EASTERN FRANCE, from the weekly magazine, "Elle." Paris, 1959.

Figure. 2



LAND VALUE IN EASTERN FRANCE


A B C D E F G H


C H D F A E B G

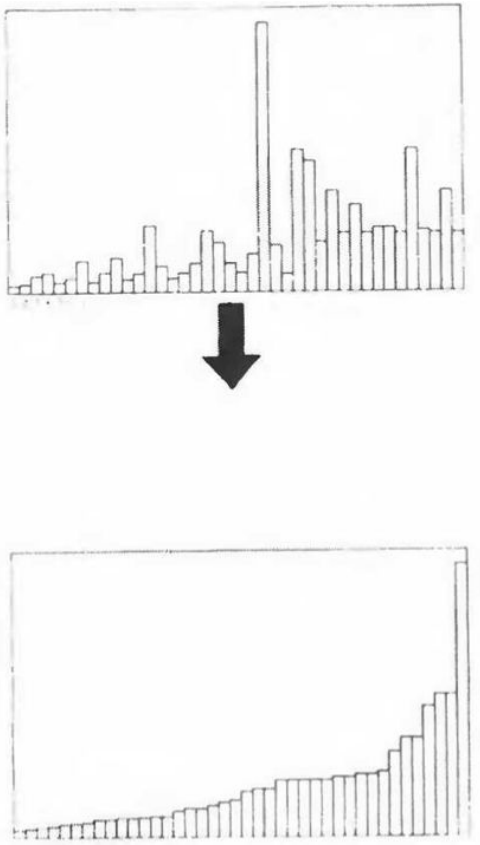


Figure. 1

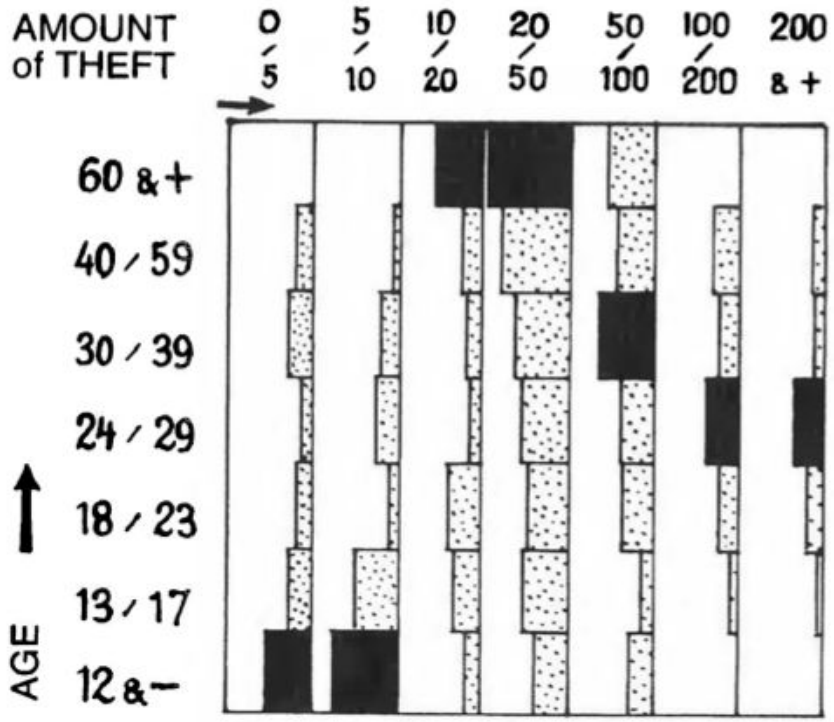
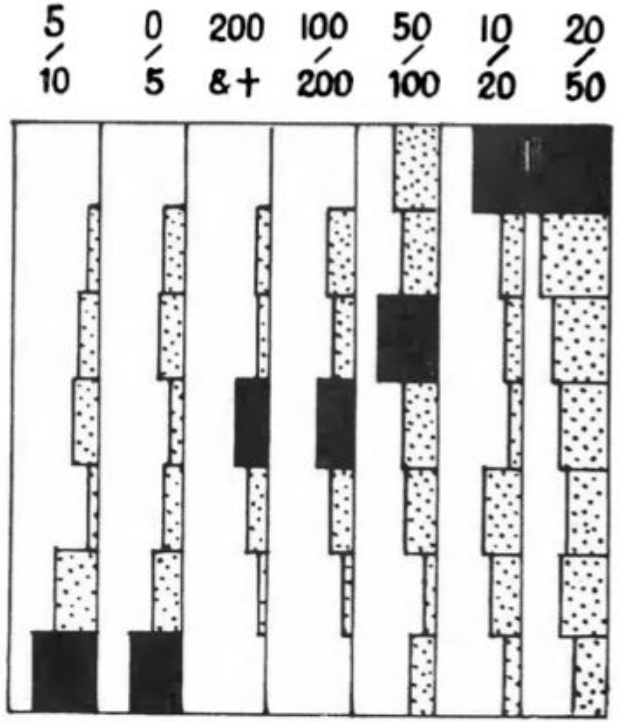


Figure. 2



- Questions? -