Data Visualization & Design

Week 6

This week in **visualization —**

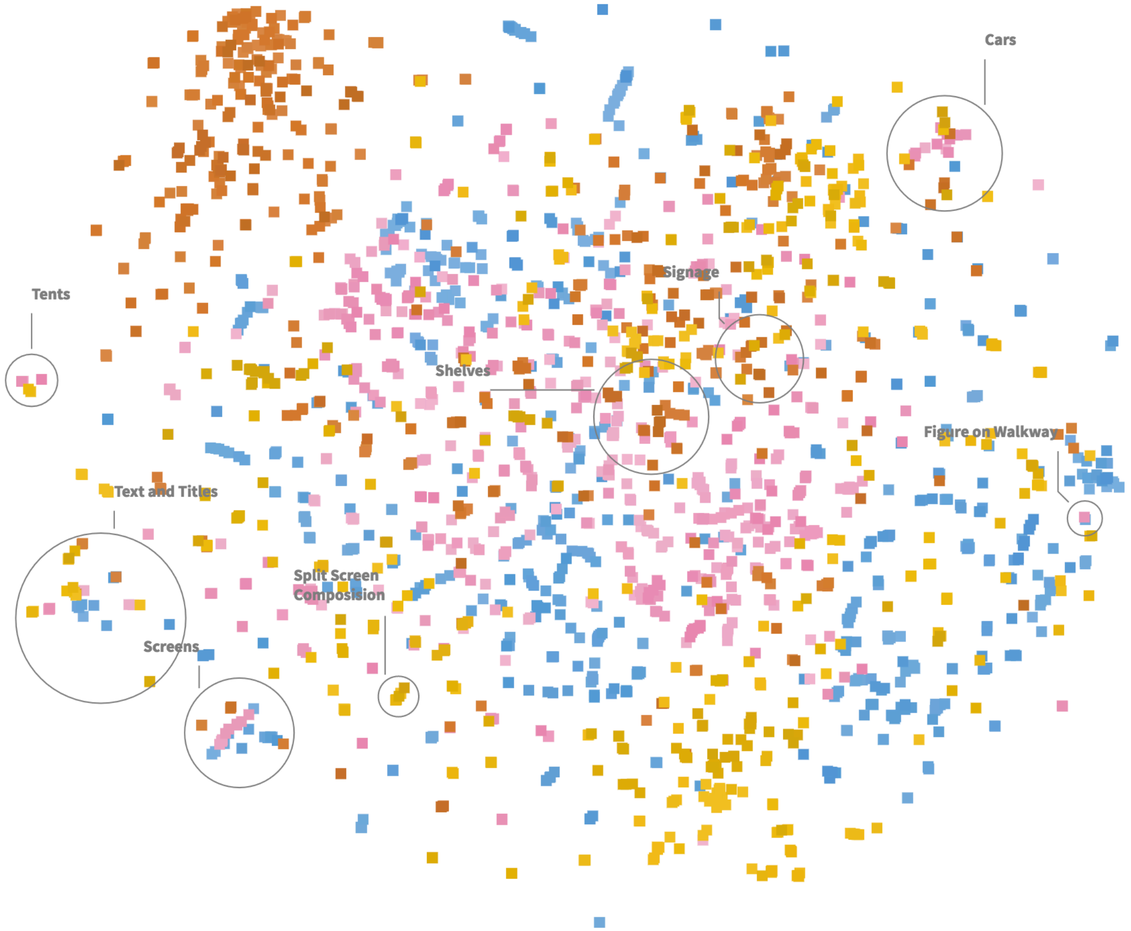
Model 2: Inception

This next model attempts to go beyond the previous one by constructing our feature matrix not directly from the field of colors, but rather by passing the images through a neural network that has been **trained to recognize objects** within images and using its output.

The neural network we use is a deep learning model called **InceptionV3** that is produced by Google. InceptionV3 is trained on a collection of images known as **ImageNet.** [8] ImageNet is a collection of labelled images in categories such as animals, appliances, birds, furniture, people and much much more. The InceptionV3 model we use has been trained to recognize objects from **1000 of these categories** with a high accuracy.

The output of the InceptionV3 model is a label like “cow” or “hat”. However we can use **one of the internal representations** of images that the network produces to construct our feature matrix. As before we use T-SNE to group similar frames in 2D space.

Mouse over *or* ***click*** *the underlined links below to highlight those groups and to see where those frames would appear in the color-based model we used previously.*



Assignment #2 — **Notes**

1. Data ink
2. Isotype

1. **Data ink**
2. Isotype

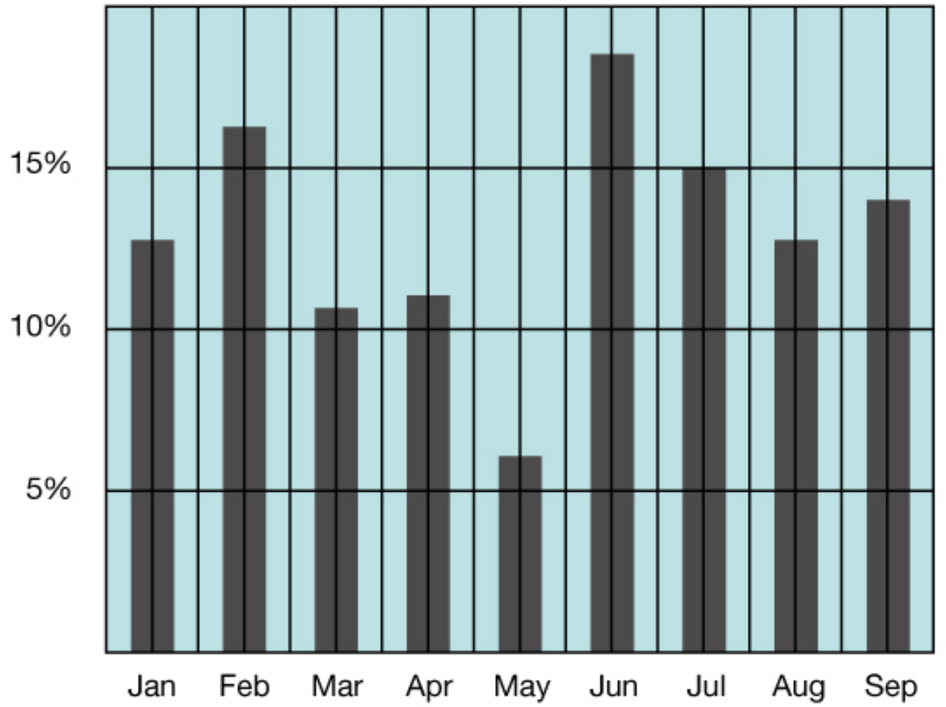
Data-ink ratio —

The non-erasable ink used for the presentation of data

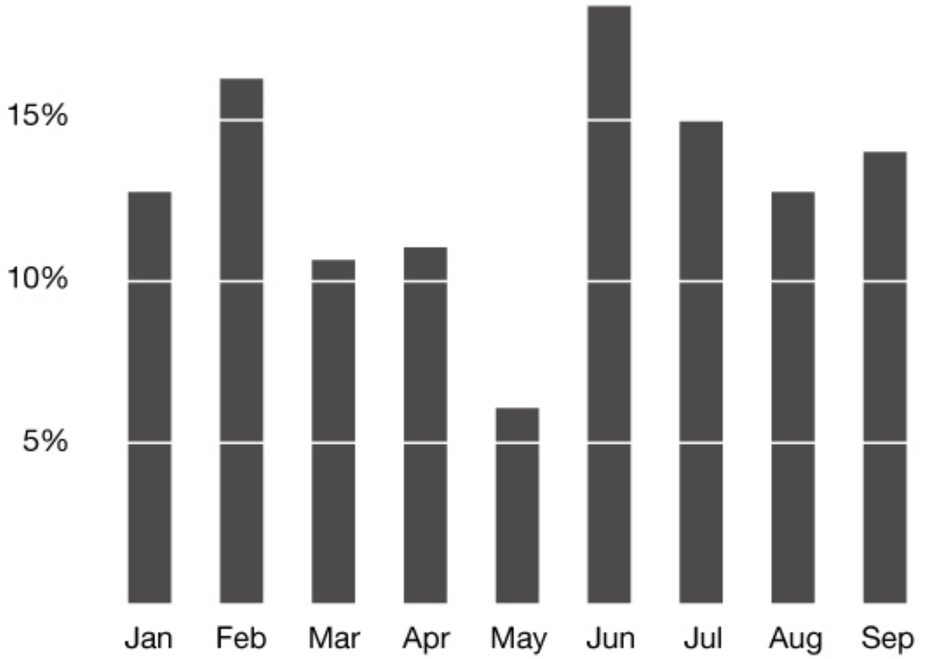
(Edward Tufte)

$$\text{Data-ink ratio} = \frac{\text{Data-ink}}{\text{Total ink used to print graphic}}$$

LOW DATA-INK RATIO



HIGH DATA-INK RATIO




MONSTROUS COSTS
Total House and Senate campaign expenditures, in millions
$300
250
200
150
100
50
1972
'74
'76
'78
'80
'82 est.
VOTE

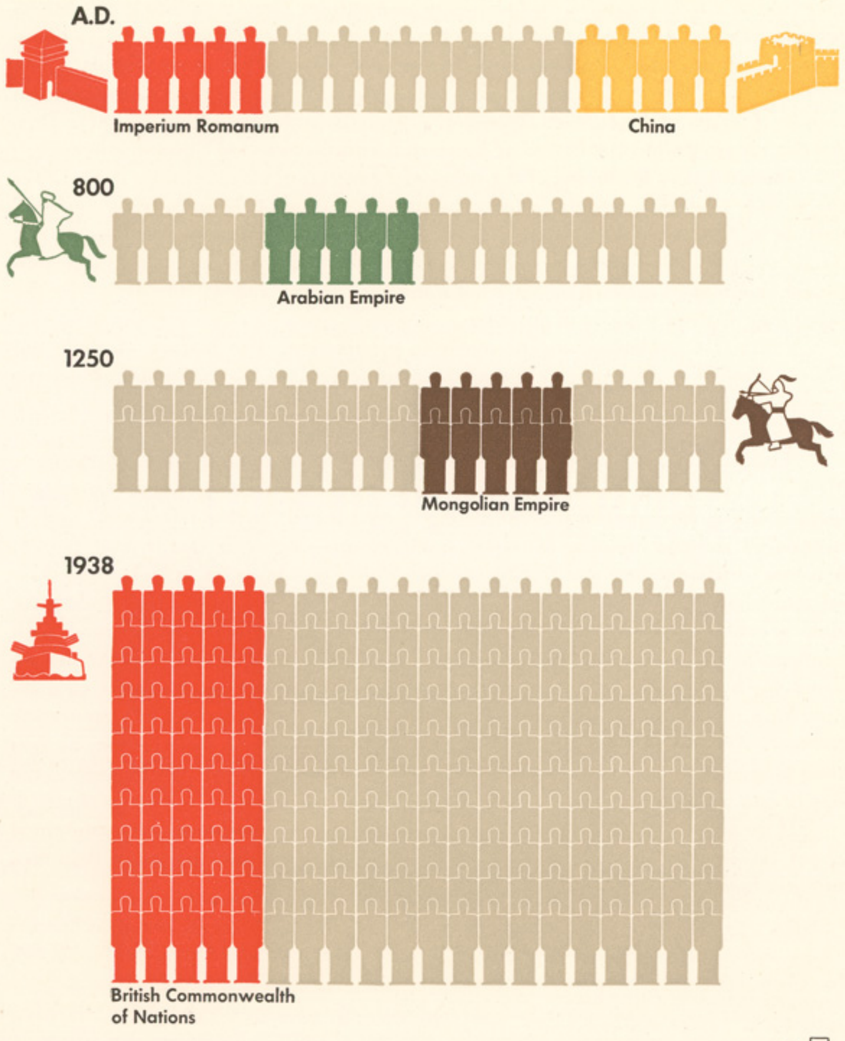
“CHARTJUNK”

1. Data ink
2. **Isotype**

A brief history of **Isotype**

or, “International System Of TYpographic Picture Education”

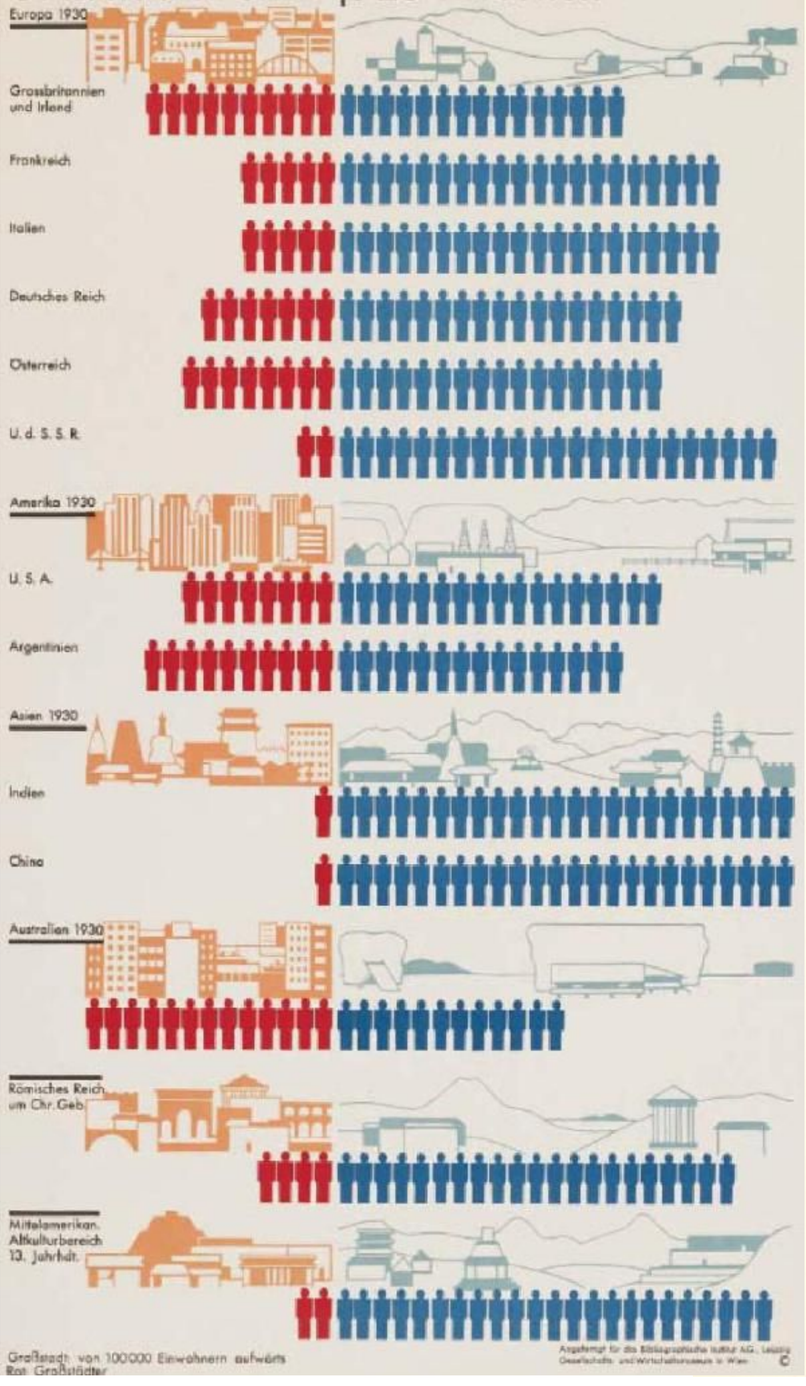
World Imperia



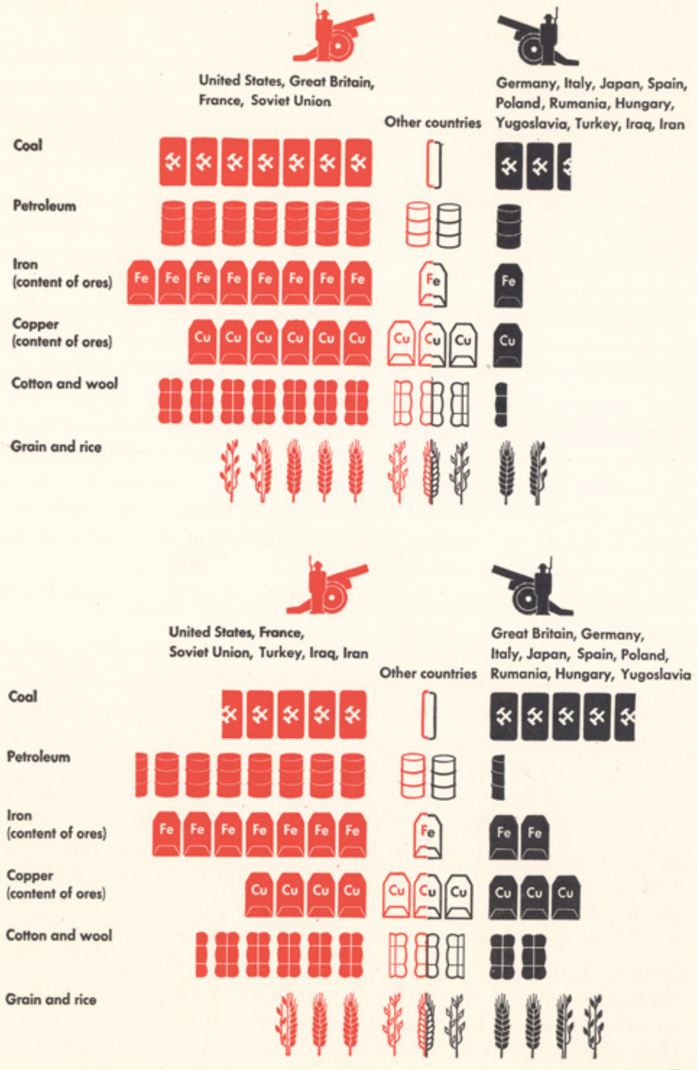
Each man symbol represents 10 million population

ISOTYPE

Großstädter unter je 25 Personen



Silhouettes of War Economy



Each symbol represents 10 % of world production

ISOTYPE


Central Power
Germany, Austria, Hungary, Bulgaria, Turkey
Great War 1914-18
Each figure 1 million soldiers
(killed, wounded, others returning home)
Allies
USA, British Empire, France, Belgium,
Italy, Serbia, Romania, Russia, Japan a.s.o.
ISOTYPE

The **isotype** was initiated by **Otto Neurath** in collaboration with **Gerd Arntz**.

Origins of Isotype

- Developed at the Gesellschafts- und Wirtschaftsmuseum in Wien (social and economic museum of Vienna) between **1925**-**1934**
- Neurath believed the museum should be a teaching museum, not a repository of artifacts
- First known as the **Vienna Method of Pictorial Statistics**
- Its aim was to “represent social facts pictorially” and to bring “dead statistics” to life, by making them more visually memorable

Principles of Isotype

- Greater quantities are not represented by an enlarged pictogram, but by **a greater number of the same-sized pictogram**
- In Neurath's view, variation in size does not allow accurate comparison
- Variation in multiples does, because multiple pictograms can be counted
- To avoid distortion, pictograms are represented as flat (rarely in perspective)
- Focused on **visual education**

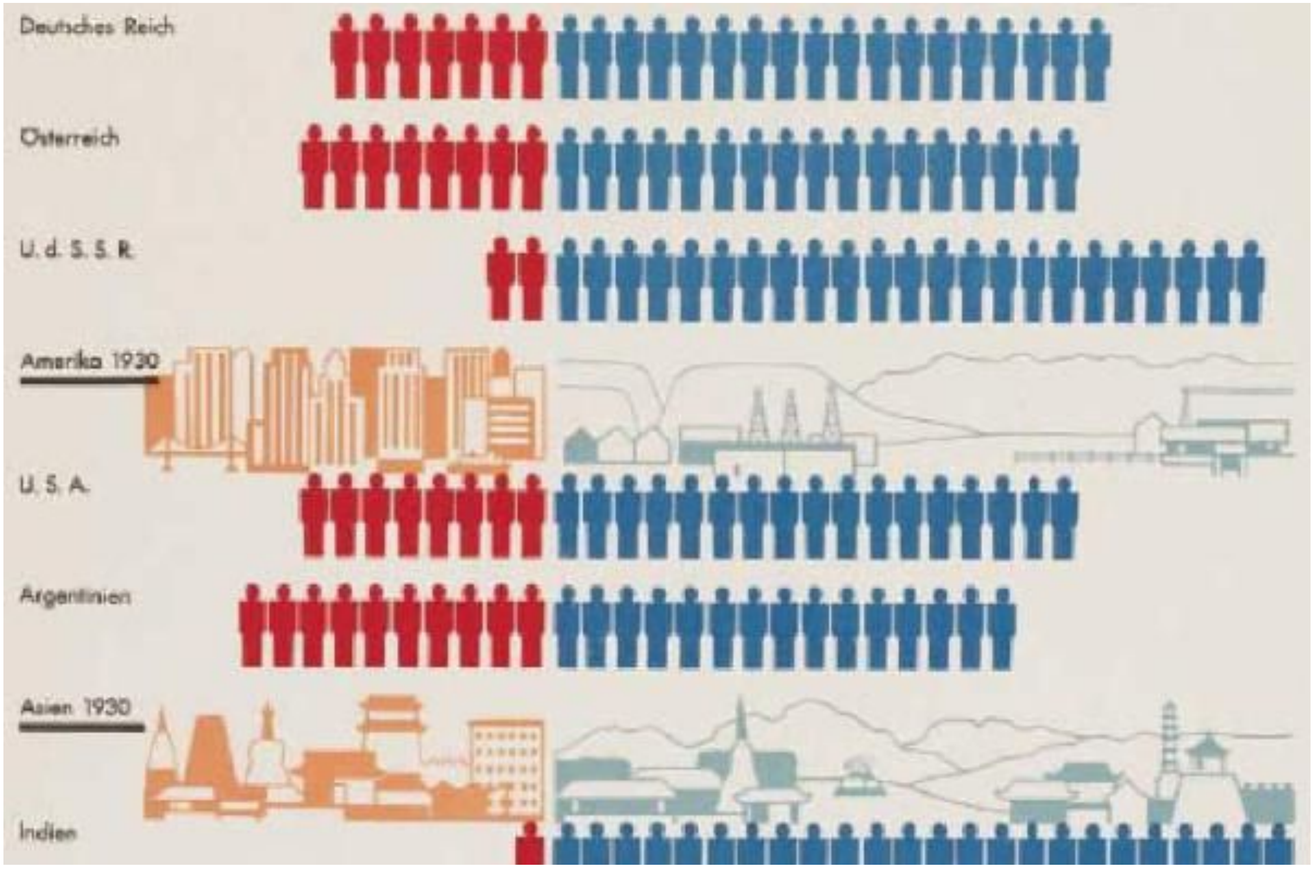
= 75,606

Google X5 = 379,592

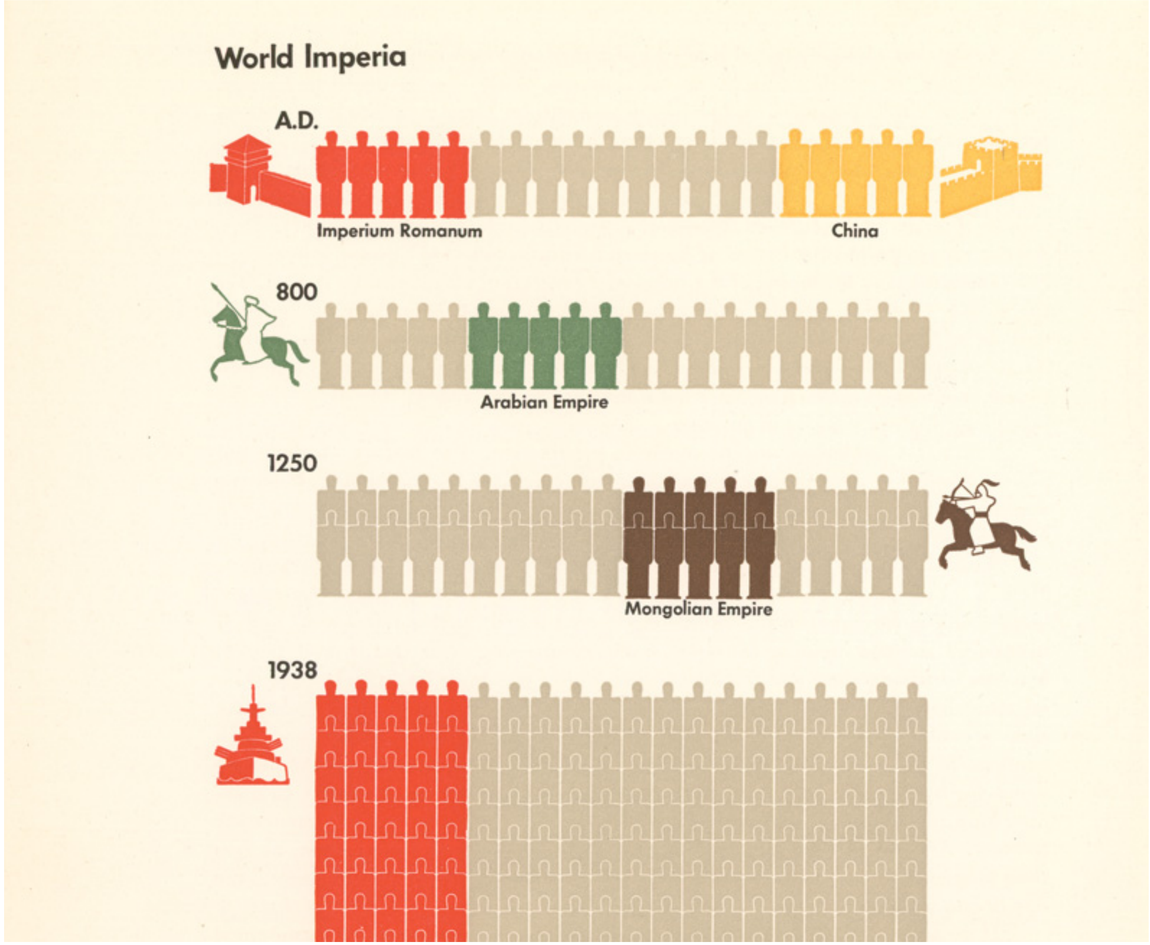
Employees

*** 5 <**

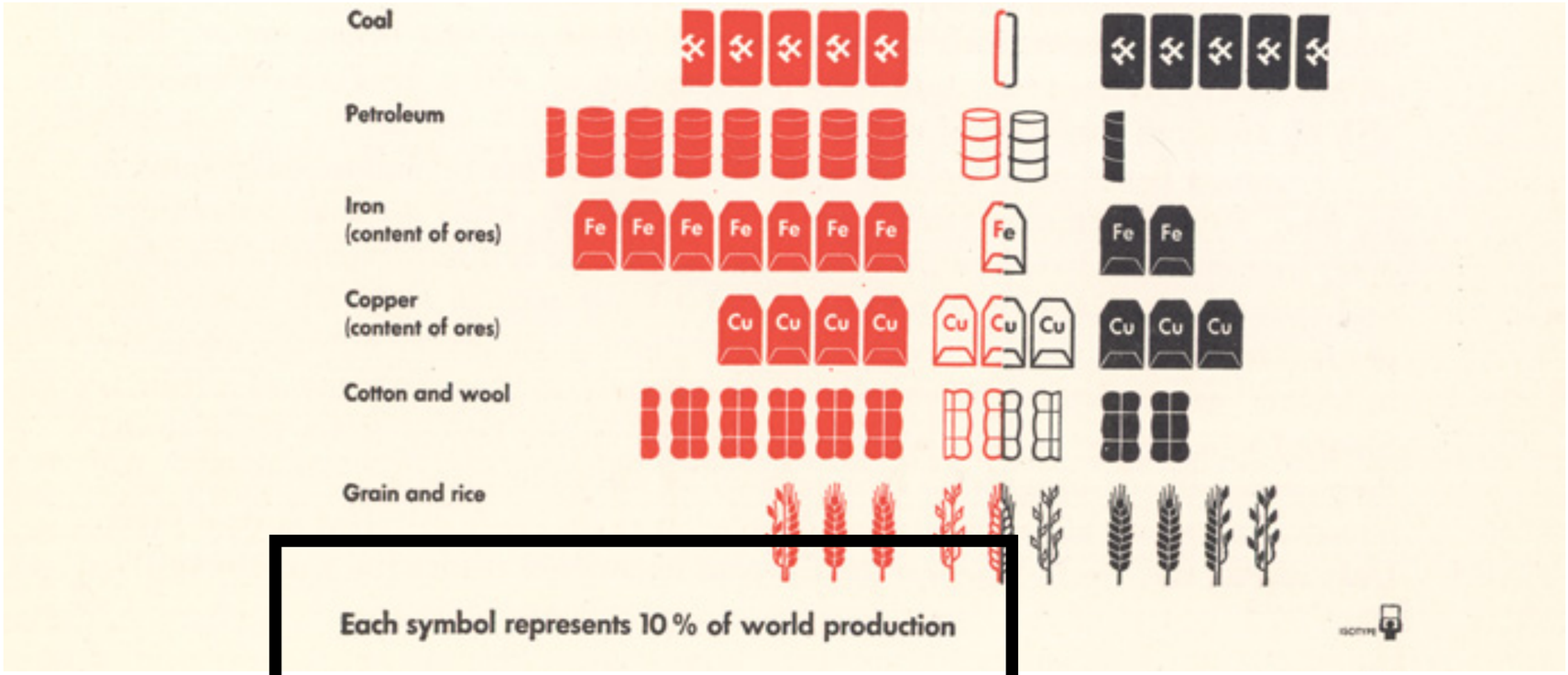
Guideline 1 — **Make the icons the same size**



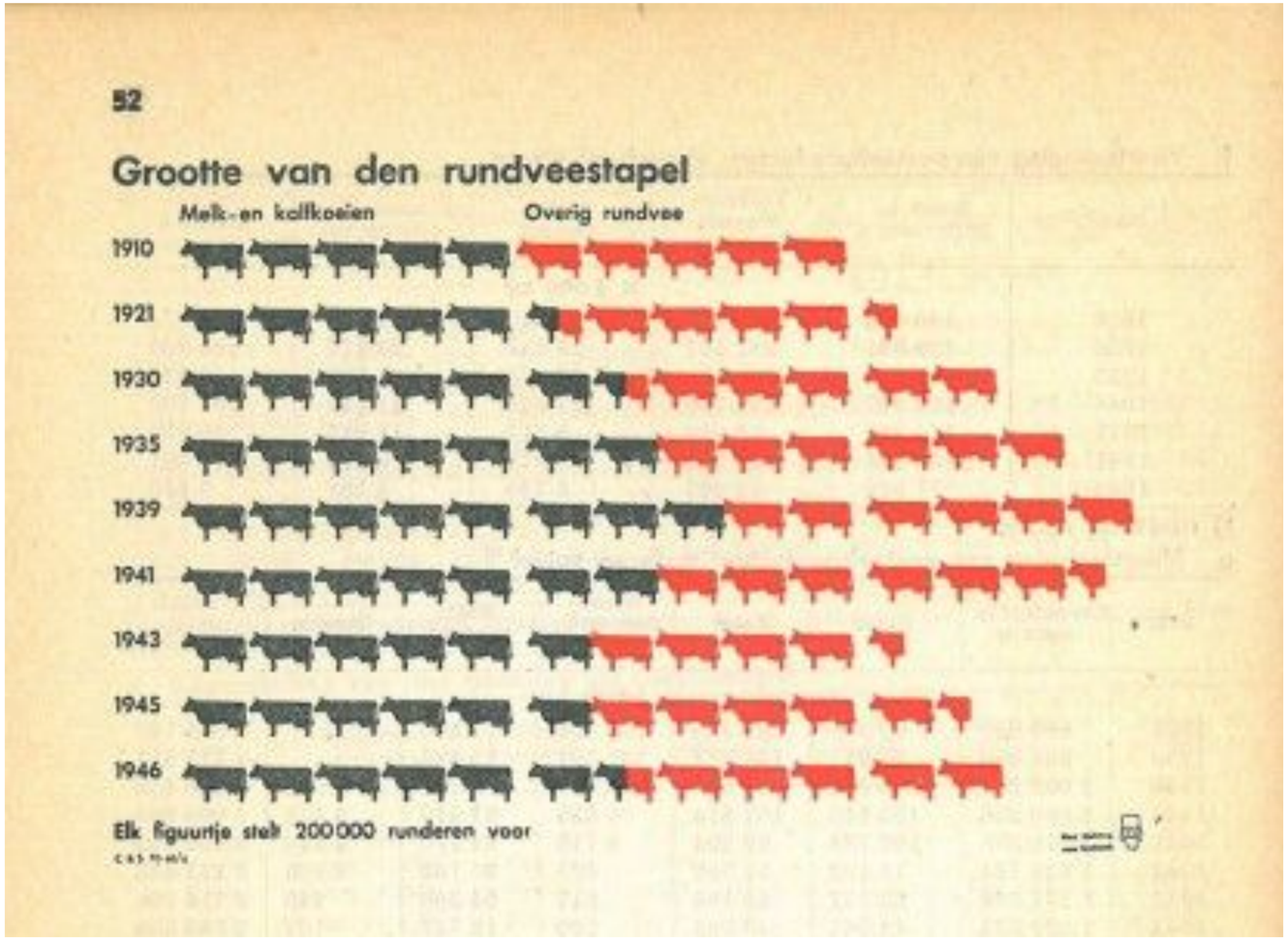
Guideline 2 — **Use color sparingly (for categories)**



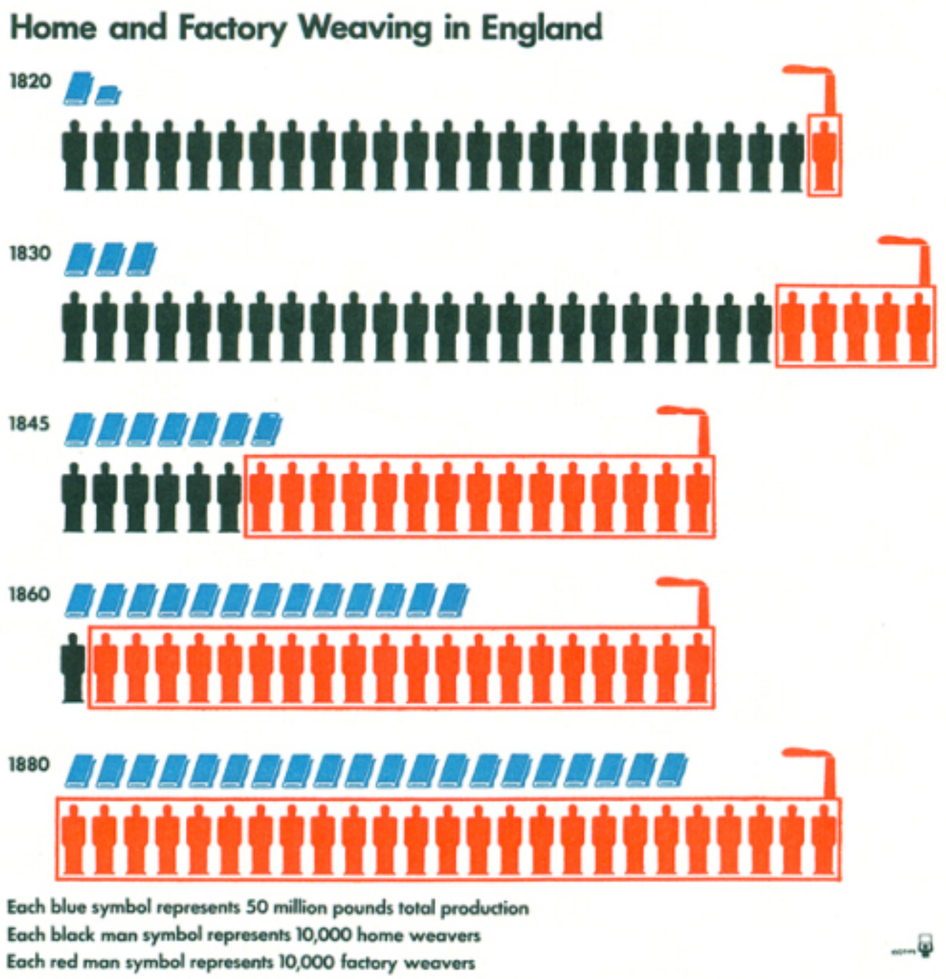
Guideline 3 — **ALWAYS include a legend**



Guideline 4 — **Include *partial* icons if needed**



Guideline 5 — **Include *enough* symbols**



Introduction to **Tableau**

https://github.com/emilyfuhrman/datavis_design/blob/master/2017_Fall/Studios/01_Introduction_to_Tableau.md