The Art and Science of Depiction

Representation Systems

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Rouen revisited

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Assignments for Monday 23.

- Solso *Cognition and the Visual Arts*
  - Chapter 7
- Essay
  - Peer review
  - Final essay
- Final project
  - subject

Plan

- A paradigm: Cartography

- Representation systems
  - Drawing and projection
  - Denotation
  - Tone & color

Digression: infamous "Paradigm"

- A personal pet-subject
- Paradigm:
  - An outstandingly clear or typical example or archetype
- After Thomas Kuhn, *The Structure of Scientific Revolutions*
  - A philosophical and theoretical framework of a scientific school or discipline within which theories, laws, and generalizations and the experiments performed in support of them are formulated
- Vocabulary inflation (see also "framework")

A paradigm: Cartography

- A map is a depiction of a reality
- Can be more efficient than photo
- There is no perfect universal solution

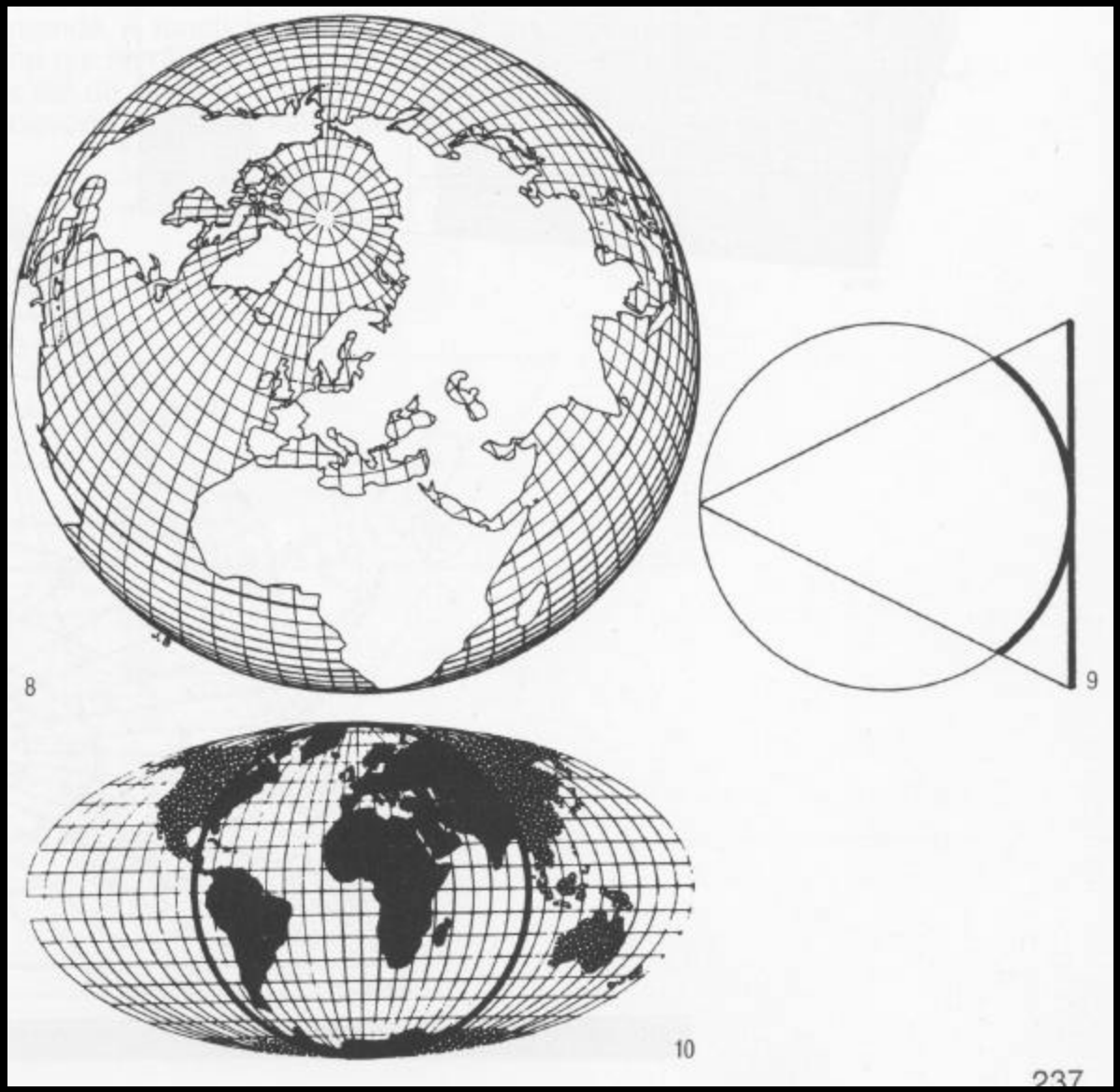
- However, quantitative is more important than for most pictures
- The systems are usually explicit
- And same issues as studied before (Gestalt, etc.)
- Amount of detail

Map making

- Which information will be represented

- Projection
- Which kind of symbols will be used
- Color codes

Projection



Projection

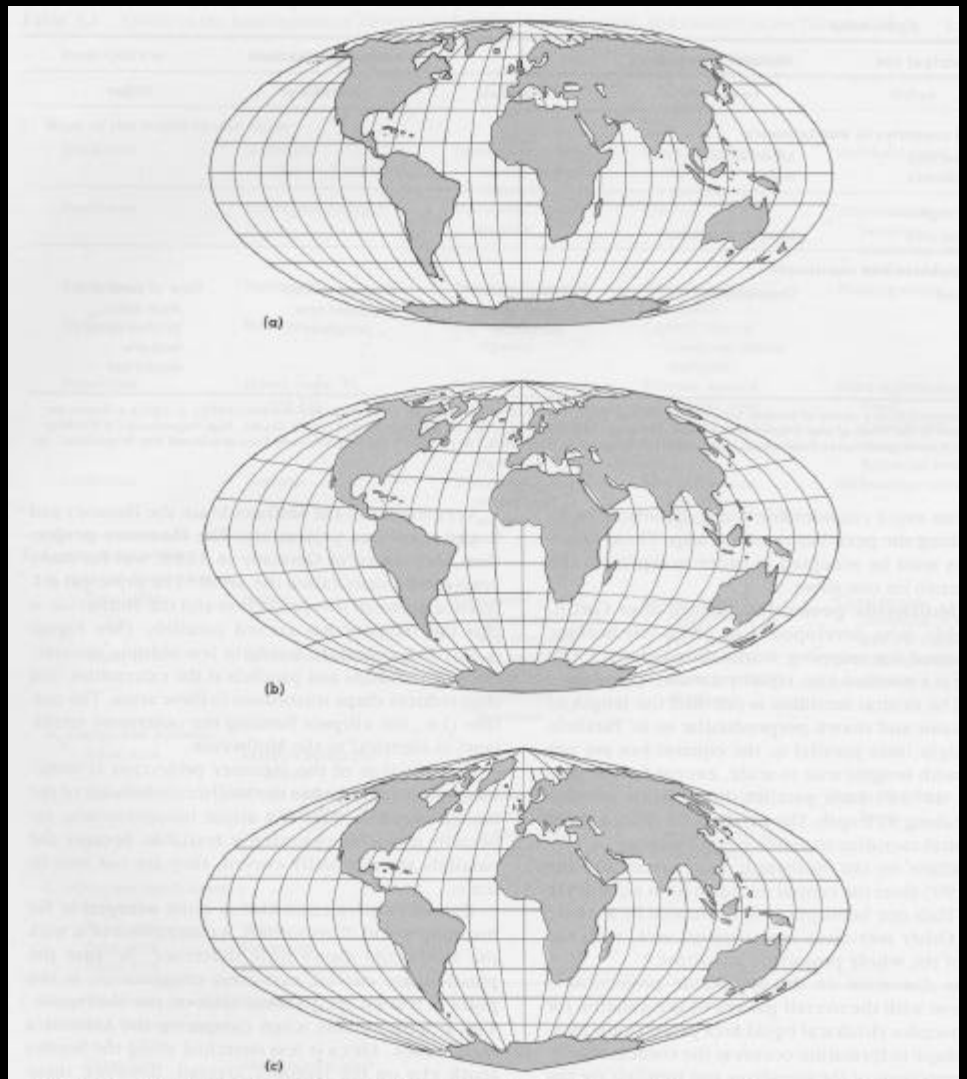
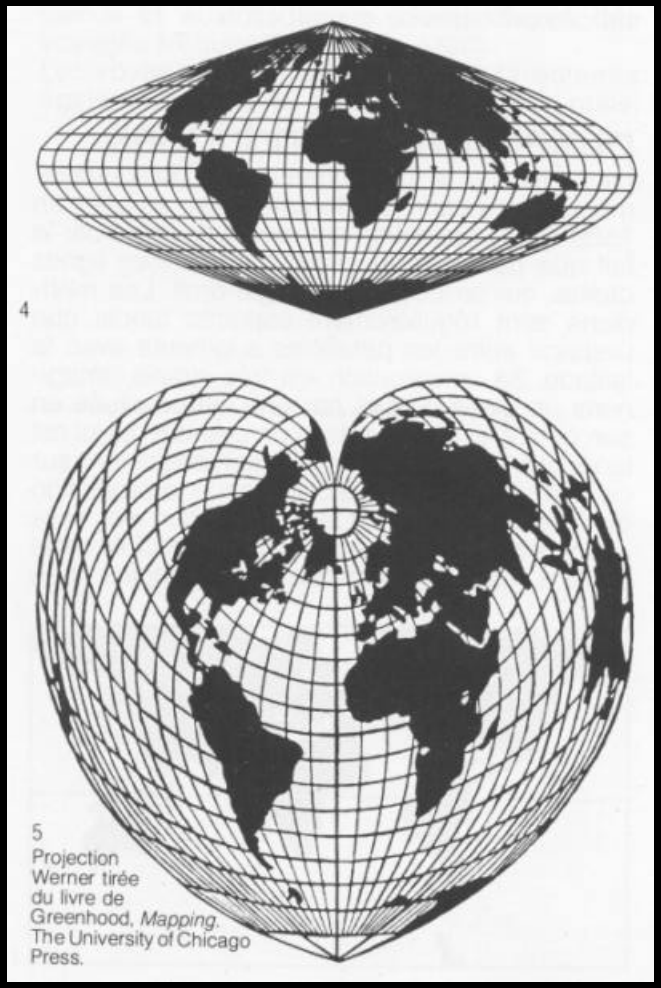
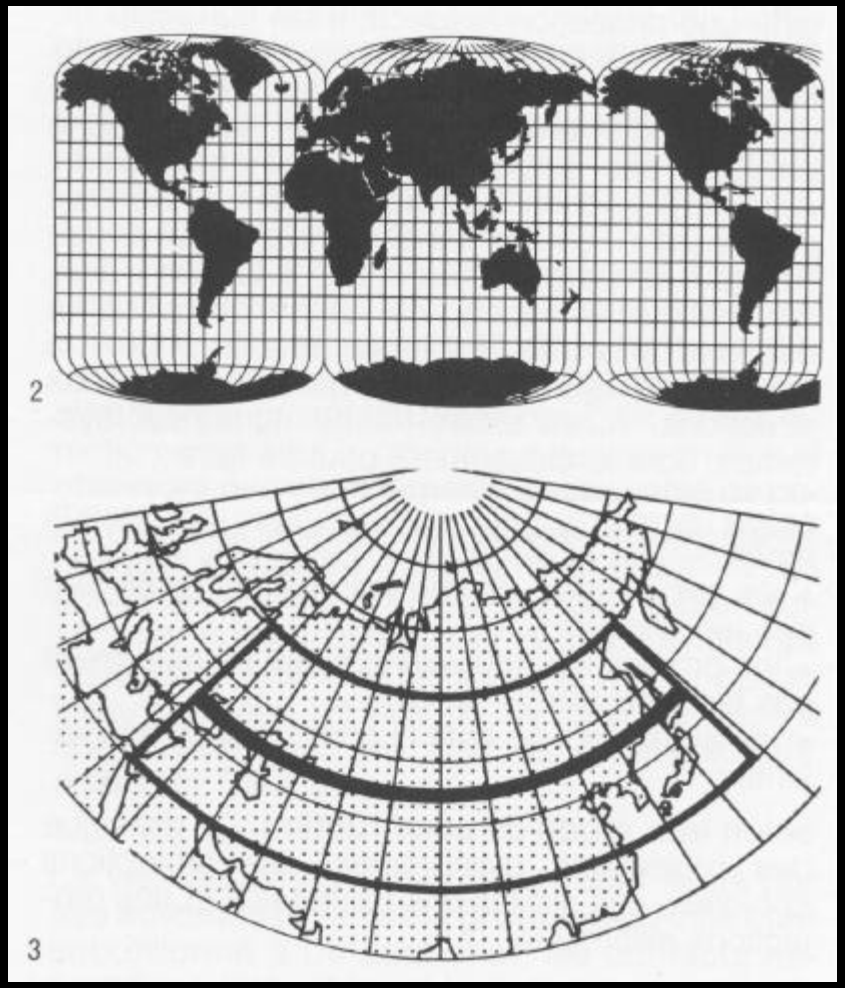


Figure 3.2. Three popular world projections on one sheet. The ones illustrated here are (a) Mollweide, (b) Hammer, and (c) Boggs eumorphic.

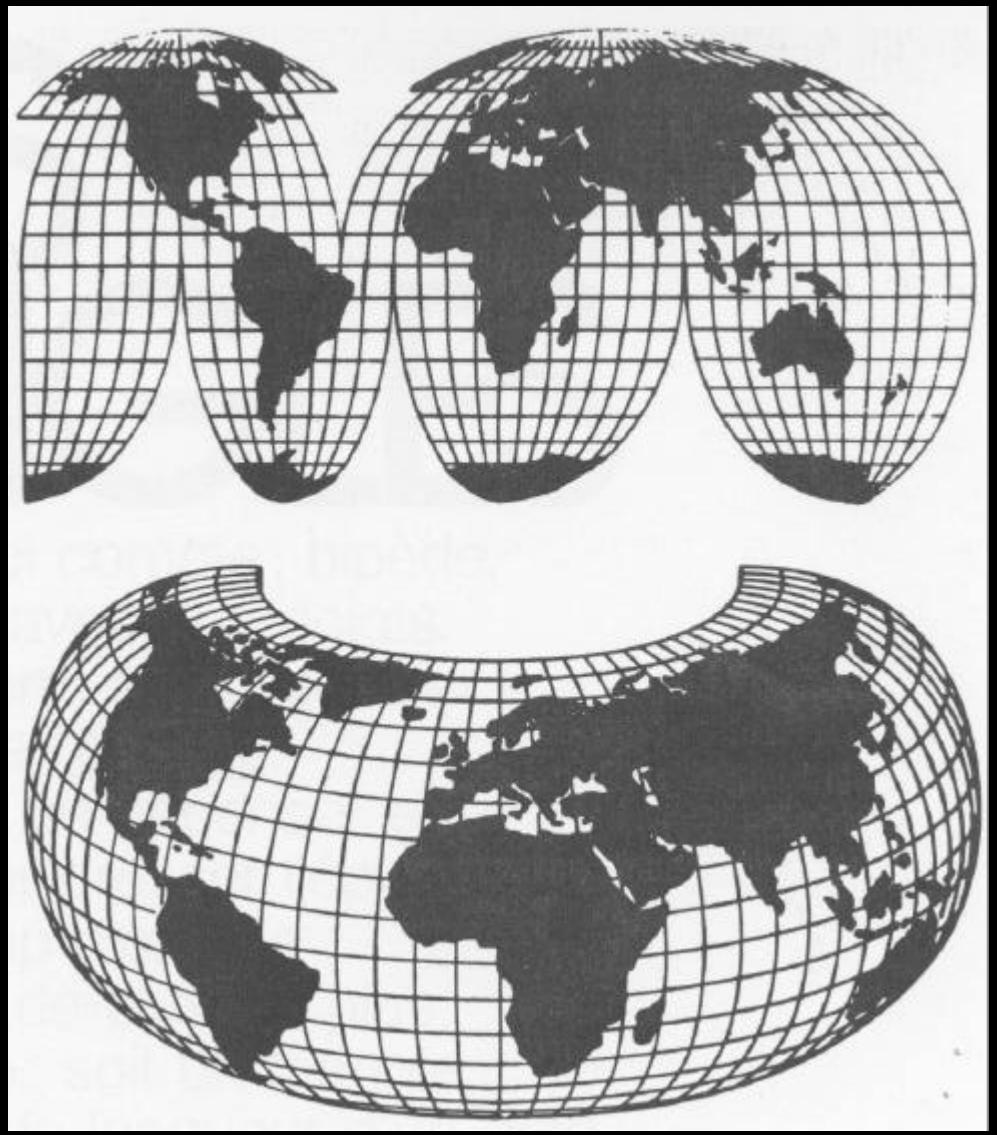
Projection





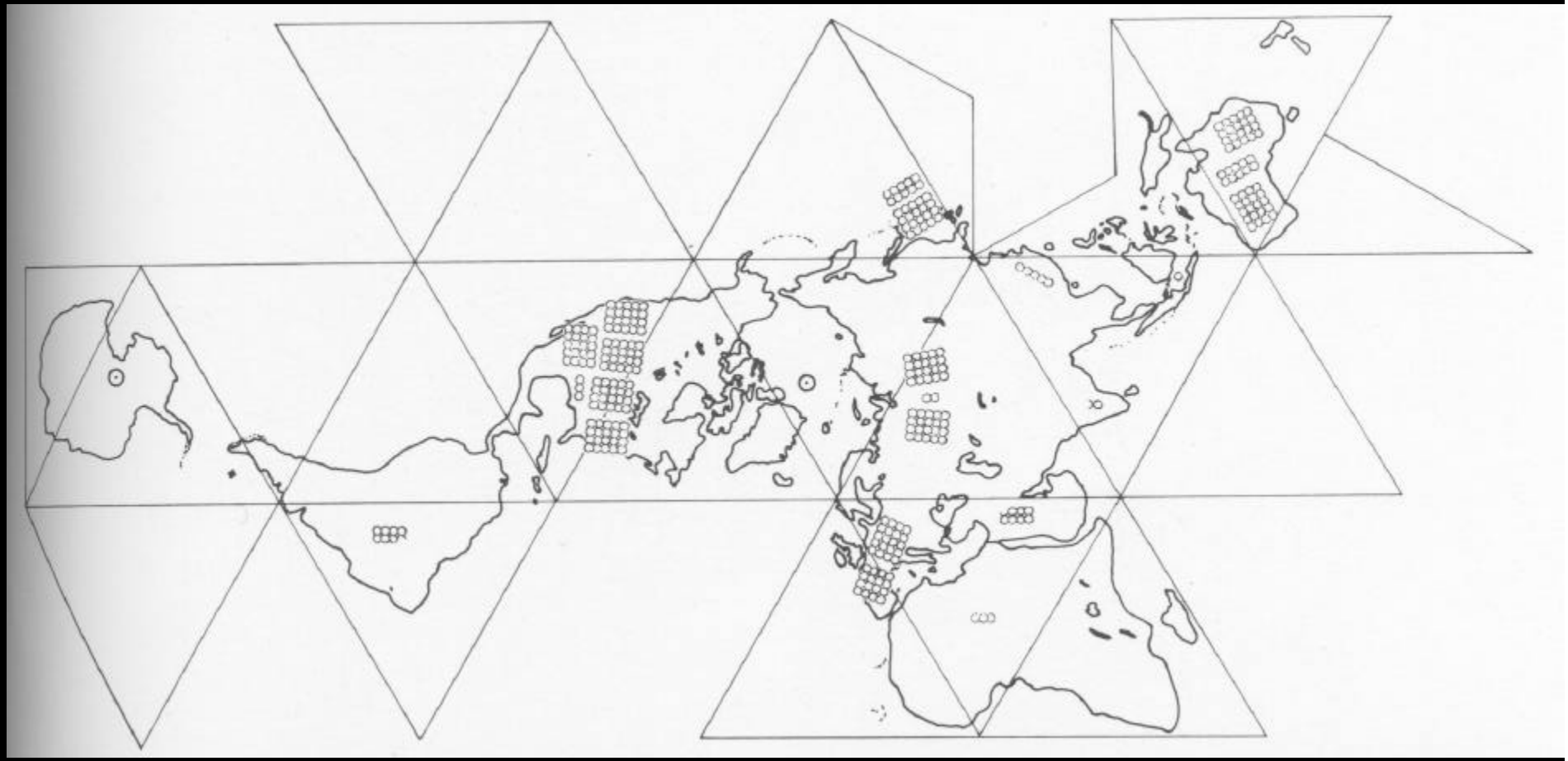
Limitations: contrast & palette

Projection

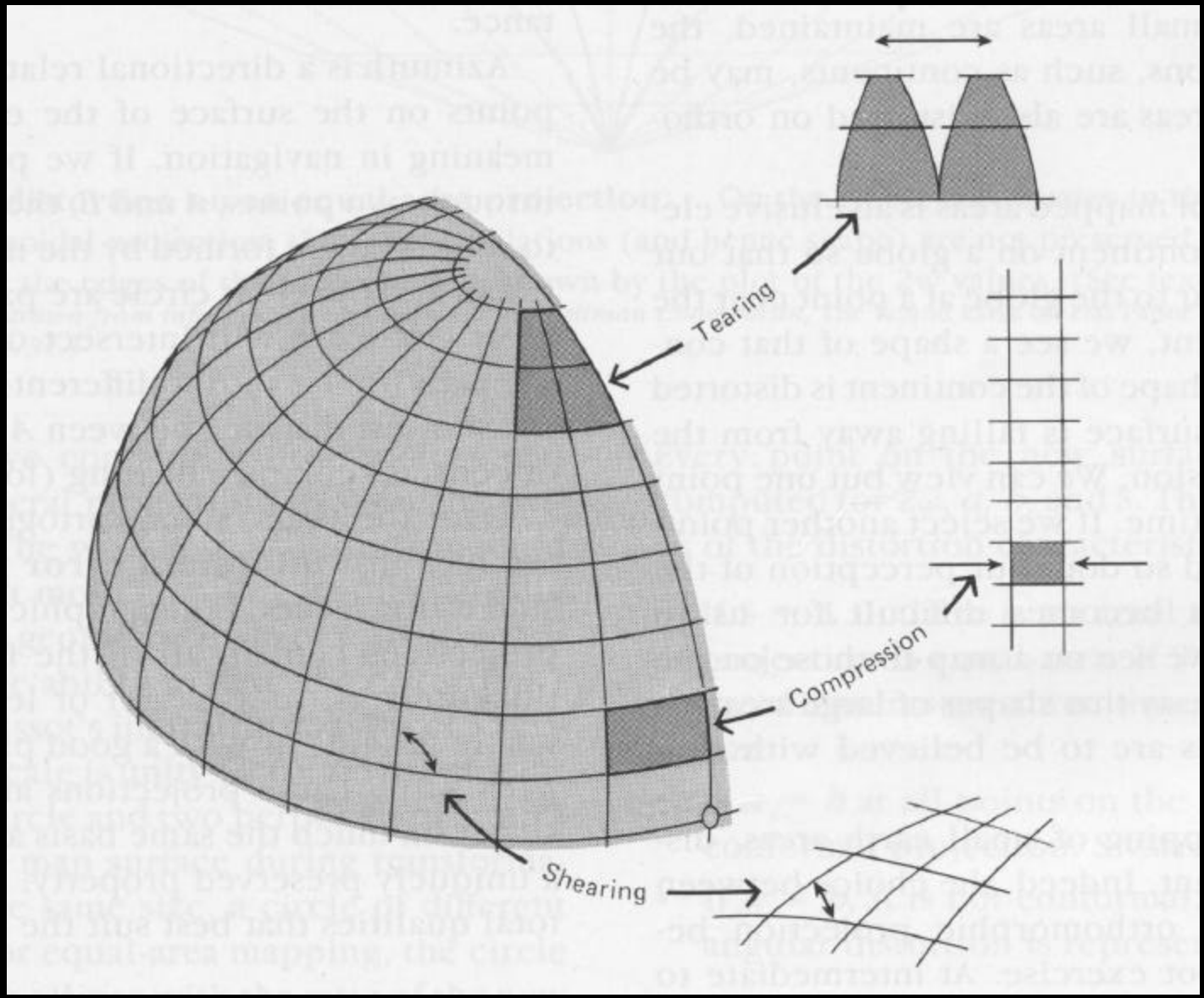


Projection

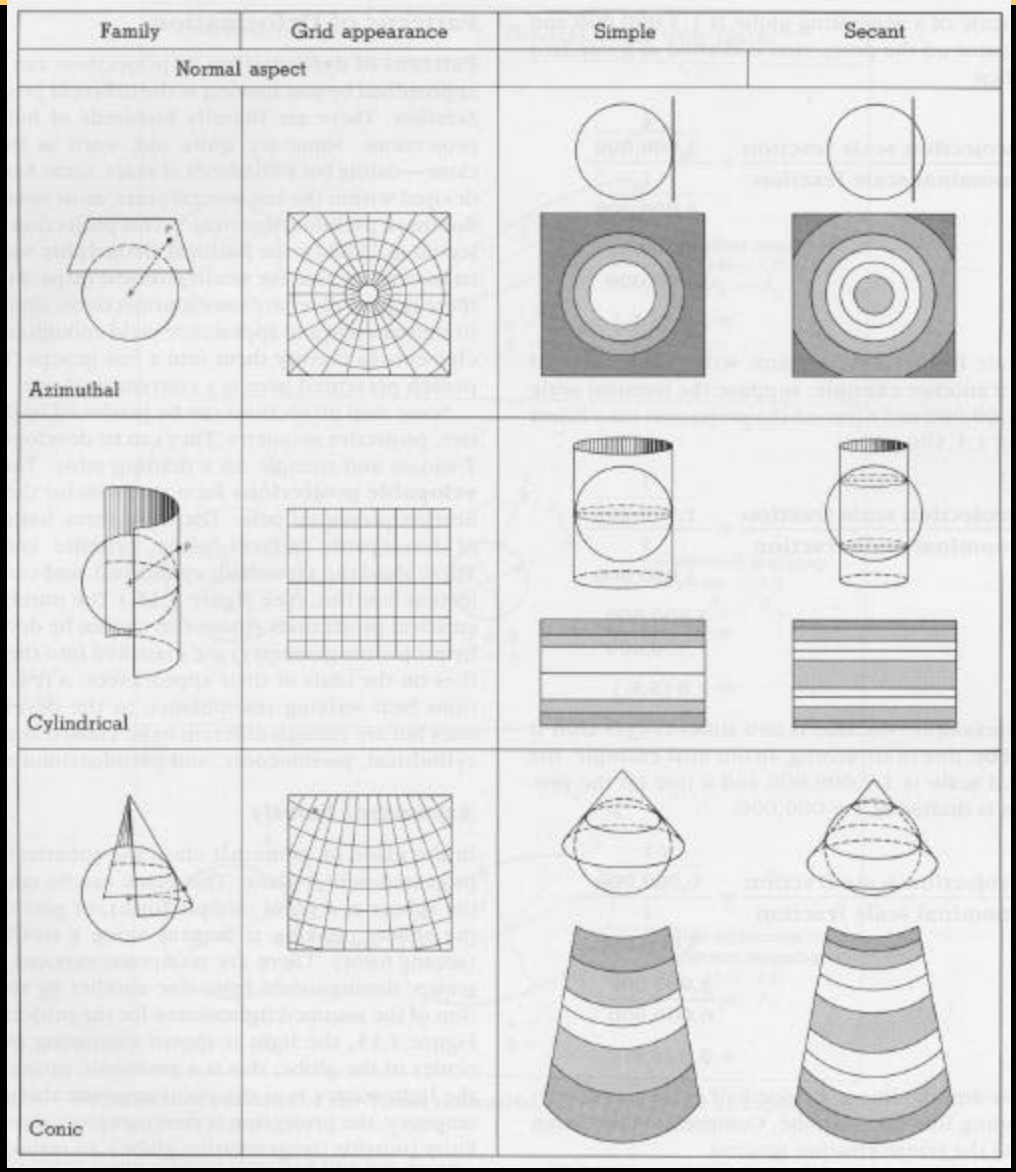
- Buckminster Fuller



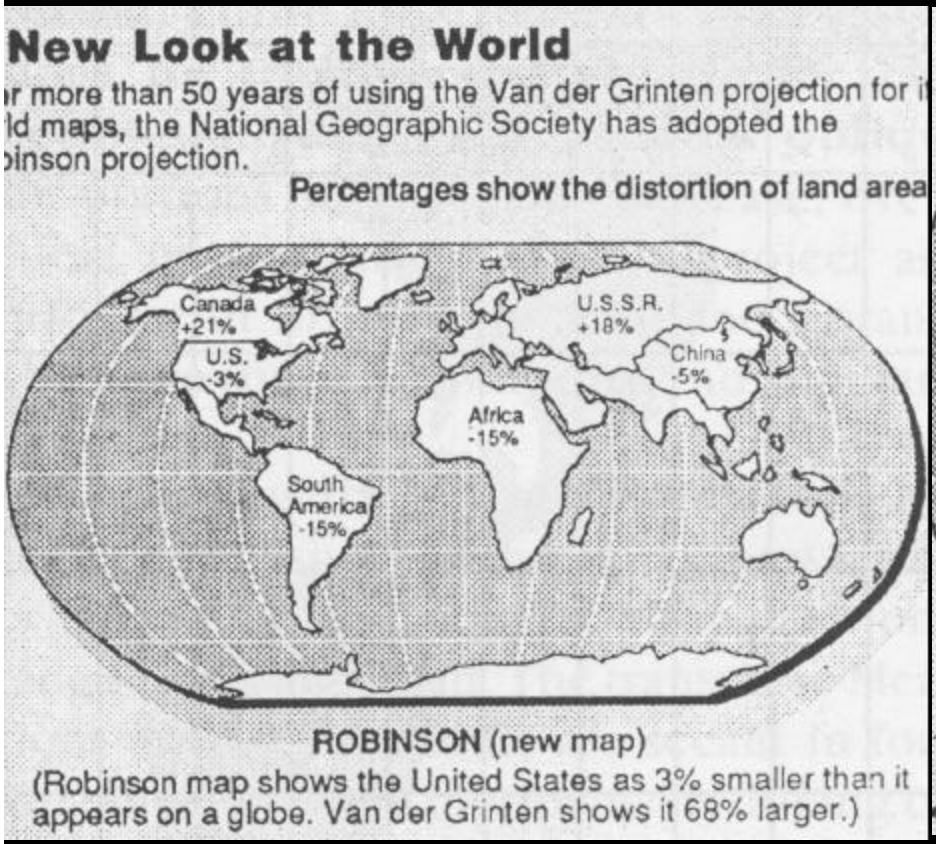
Projection & distortion

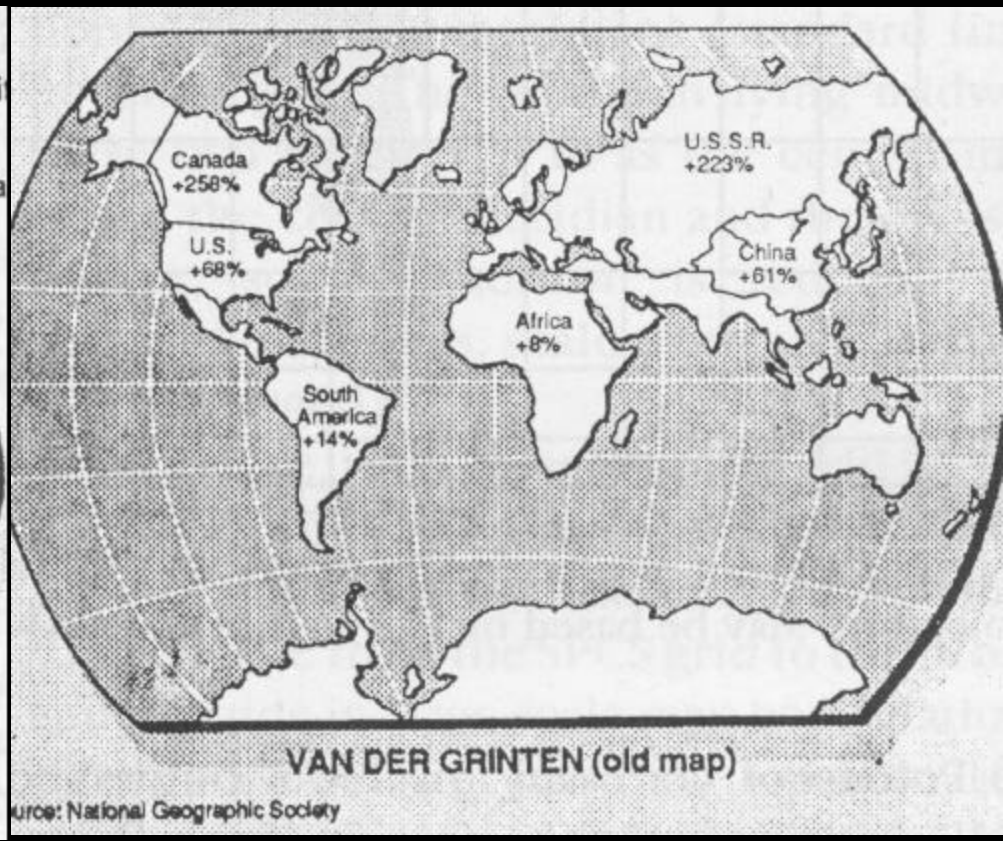


Projection & distortion



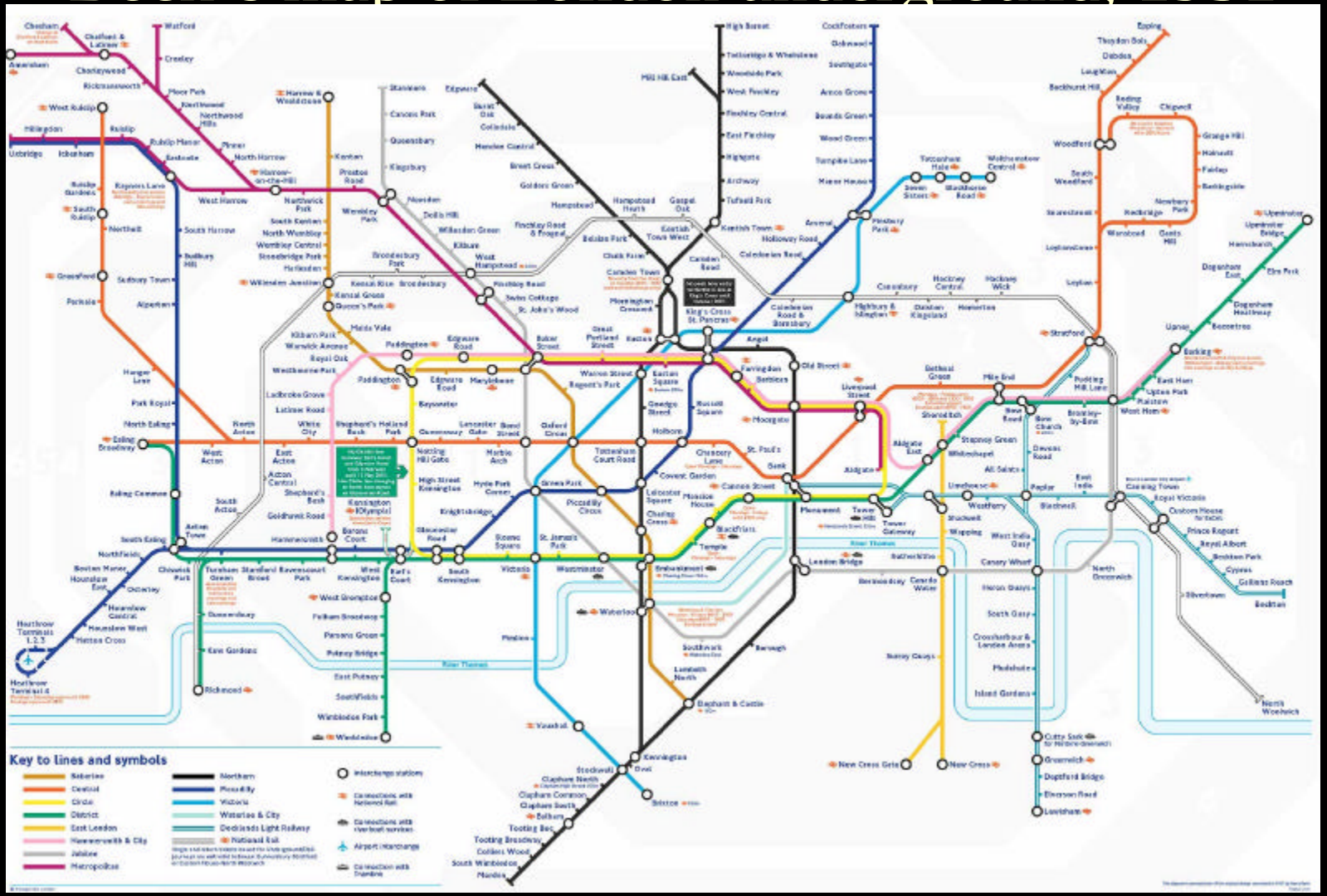
Distortion and politics





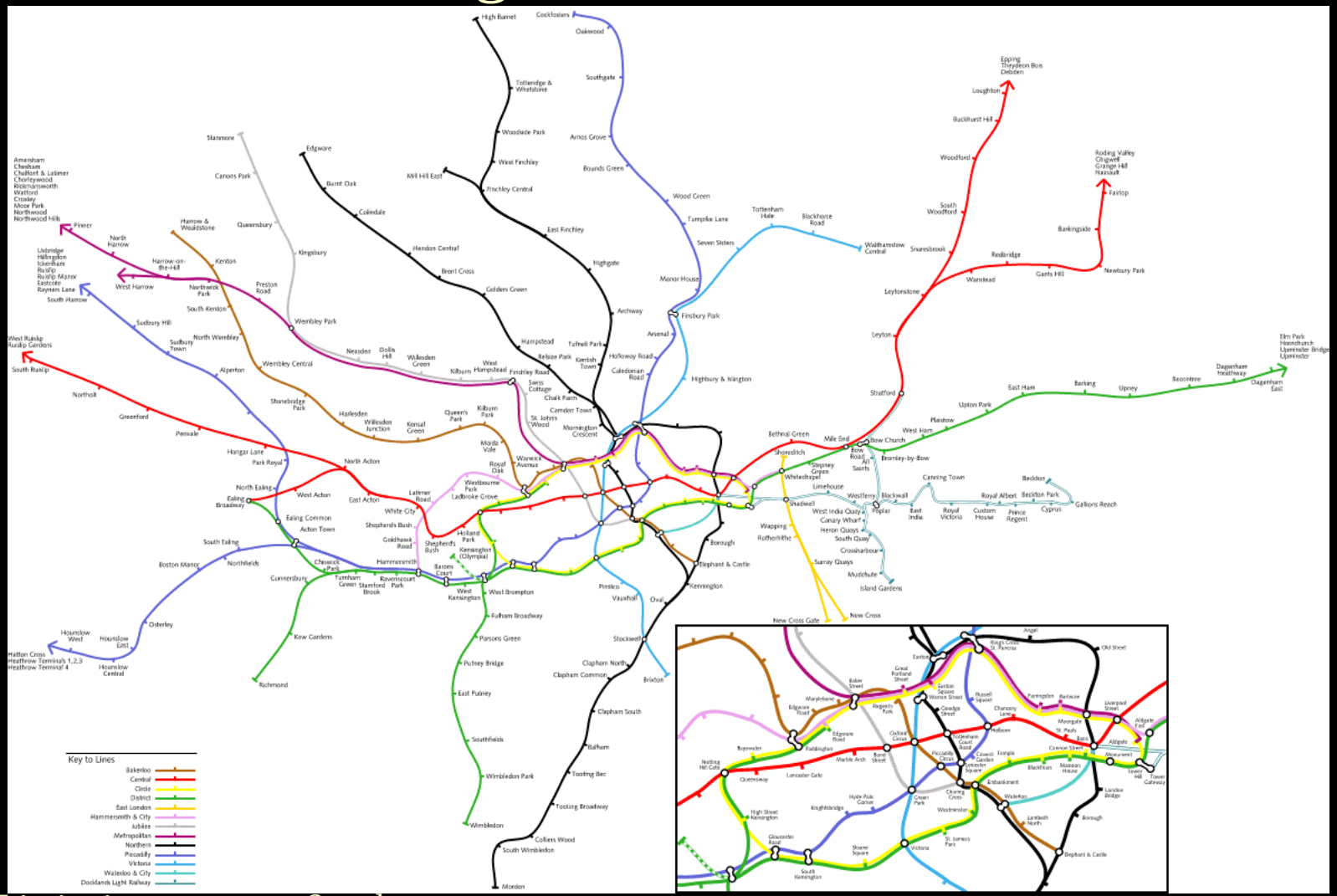
Topological map

- Beck's map of London underground, 1931



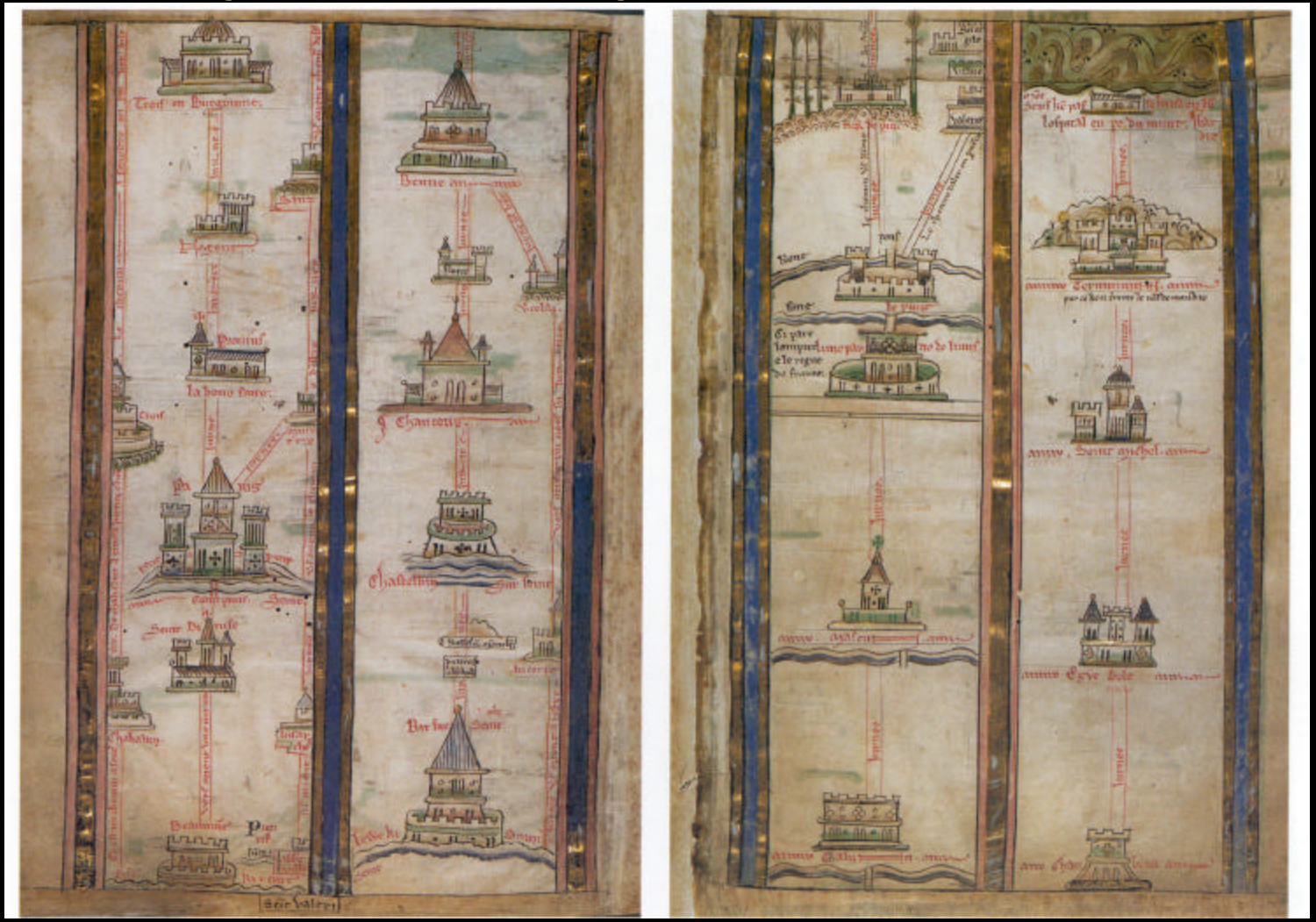
Geographical map

- London underground



Topological map

- Itinerary, 13th century



Metaphoric Projection

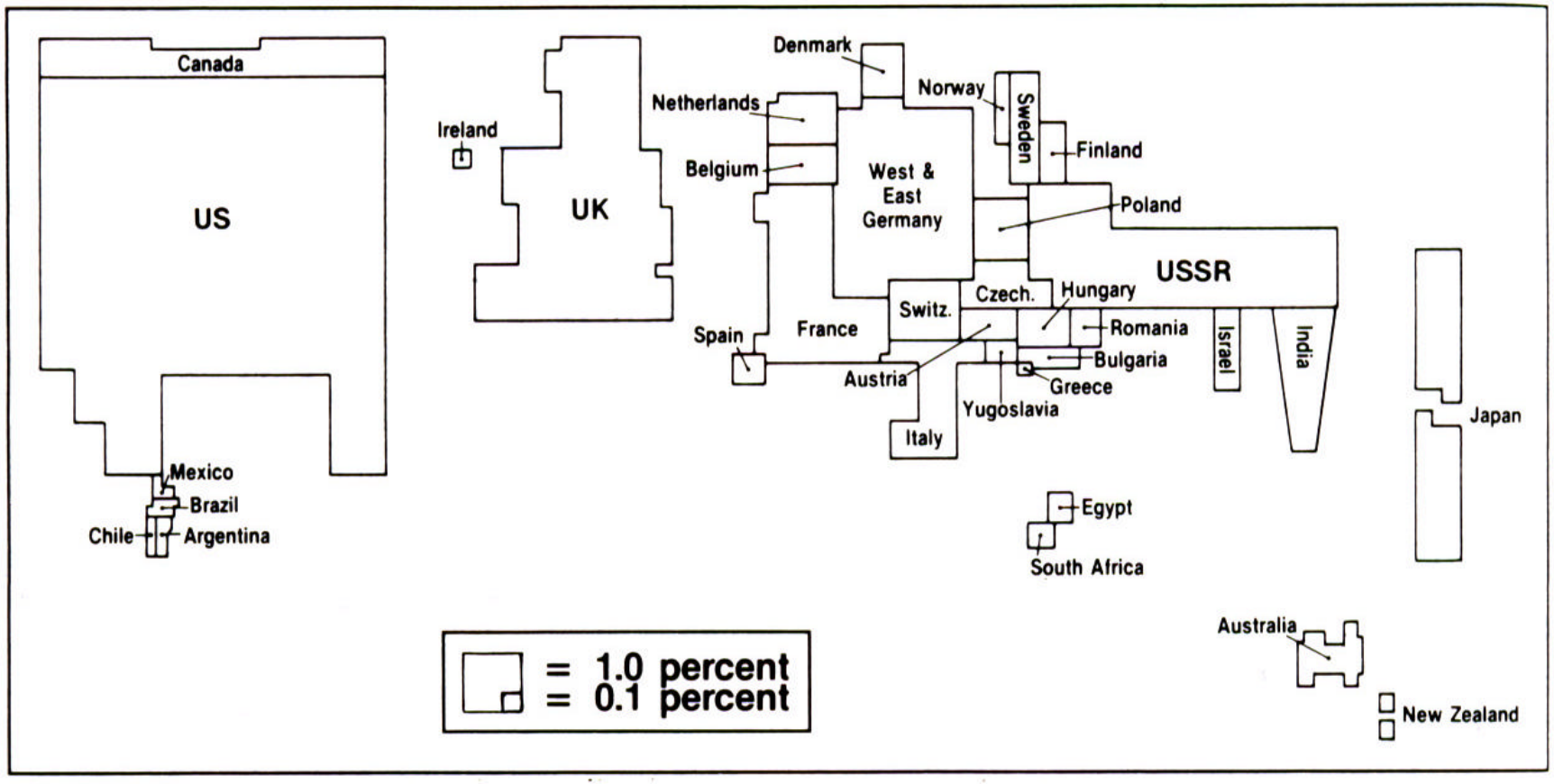


Figure 10.2. Contribution of countries to world scientific authorship. *(Source: Anthony R. deSouza, "Scientific Authorship and Technological Potential" (editorial),* Journal of Geography *(July/August 1985):138. Reprinted by permission of the National Council for Geographic Education.)*

Error:Columbus's map

Error/choice/distortion

- Descelier, 1546

Error/choice/distortion

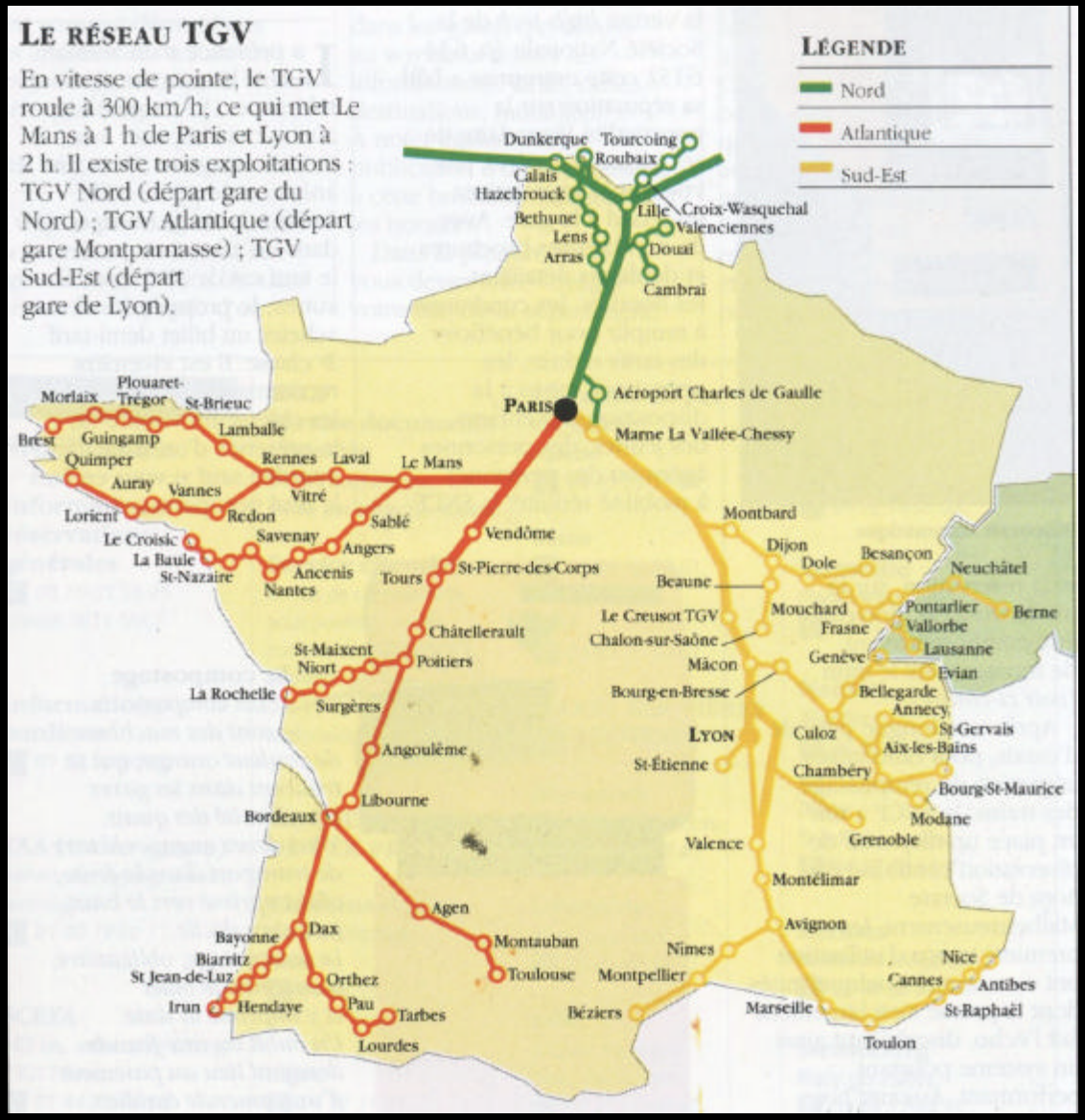
- Descelier, 1546
- E.g. huge elephant

Map making

- Which information will be represented

- Projection
- Which kind of symbols will be used
- Color codes

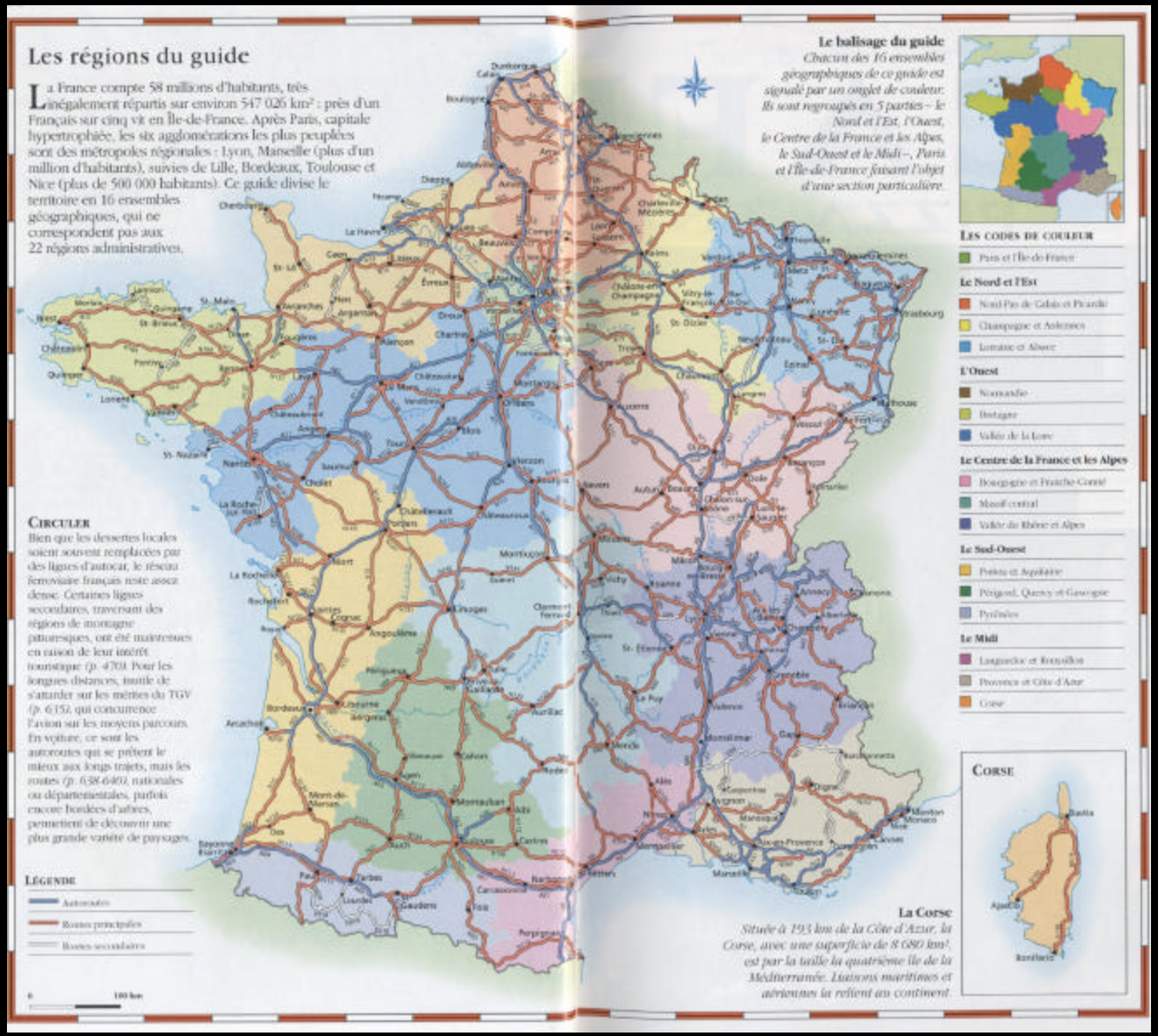
Denotation


LE RÉSEAU TGV
En vitesse de pointe, le TGV roule à 300 km/h, ce qui met Le Mans à 1 h de Paris et Lyon à 2 h. Il existe trois exploitations : TGV Nord (départ gare du Nord) ; TGV Atlantique (départ gare Montparnasse) ; TGV Sud-Est (départ gare de Lyon).
LÉGENDE
Nord
Atlantique
Sud-Est
Dunkerque
Tourcoing
Roubaix
Calais
Hazebrouck
Bethune
Lens
Arras
Lille
Croix-Wasquehal
Valenciennes
Douai
Cambrai
Aéroport Charles de Gaulle
PARIS
Marne La Vallée-Chessy
Ploaret-Trégor
Morlaix
St-Brieuc
Brest
Guingamp
Lamballe
Quimper
Rennes
Laval
Le Mans
Auray
Vannes
Vitré
Lorient
Redon
Sablé
Le Croisic
Savenay
Angers
Vendôme
La Baule
St-Nazaire
Ancenis
Tours
St-Pierre-des-Corps
Nantes
Châtellerault
St-Maixent
Niort
Poitiers
La Rochelle
Surgères
Angoulême
Libourne
Bordeaux
Agen
Bayonne
Dax
Biarritz
Montauban
St Jean-de-Luz
Orthez
Toulouse
Irun
Hendaye
Pau
Tarbes
Lourdes
Montbard
Dijon
Dole
Besançon
Neuchâtel
Beaune
Le Creusot TGV
Mouchard
Pontarlier
Berne
Frasne
Vallorbe
Chalon-sur-Saône
Genève
Lausanne
Mâcon
Evian
Bourg-en-Bresse
Bellegarde
Annecy
LYON
Culoz
St-Gervais
Aix-les-Bains
St-Étienne
Chambéry
Bourg-St-Maurice
Modane
Grenoble
Valence
Montélimar
Avignon
Nimes
Nice
Montpellier
Cannes
Antibes
Béziers
Marseille
St-Raphaël
Toulon

Denotation

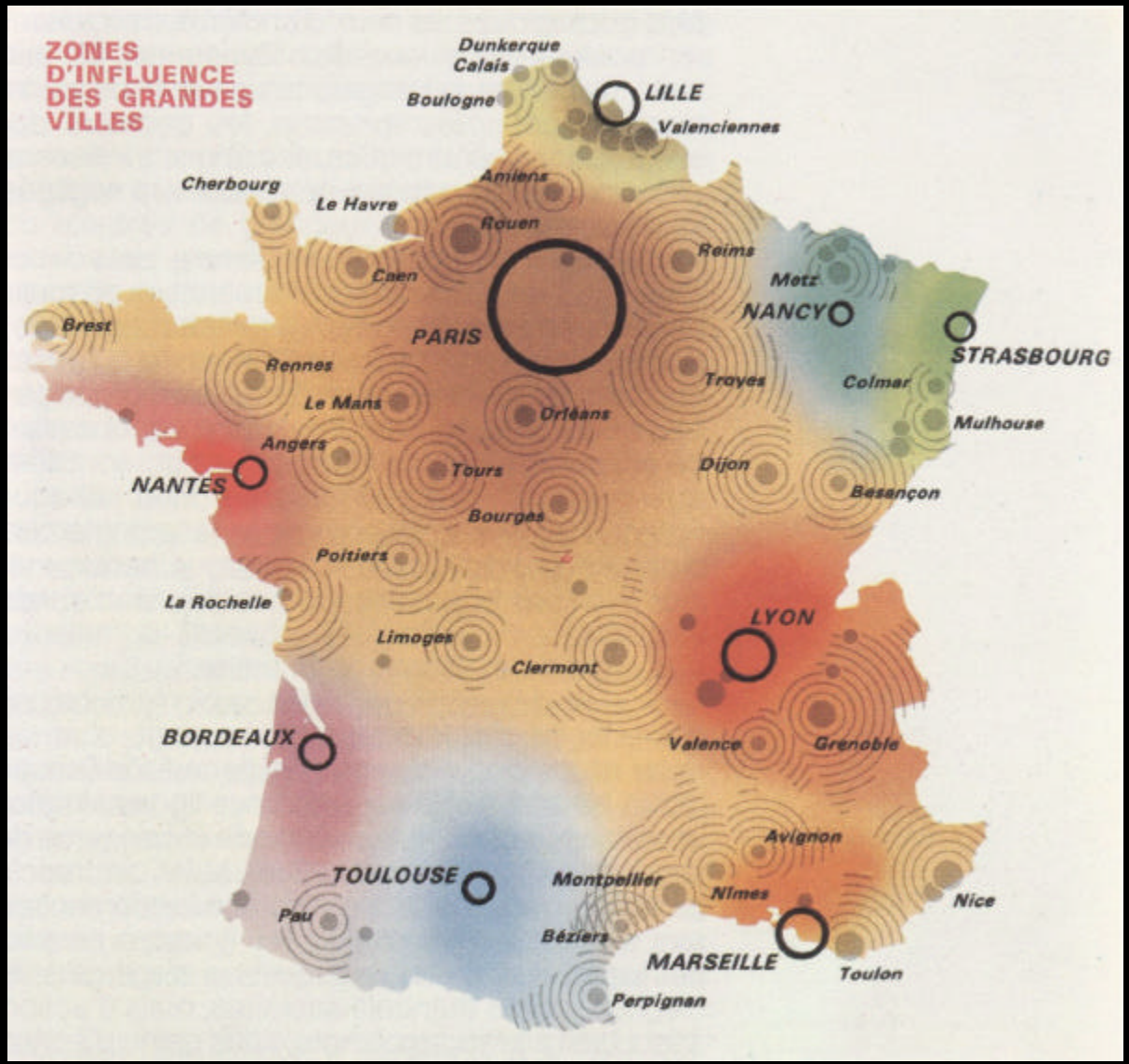
Limitations: contrast & palette

Denotation

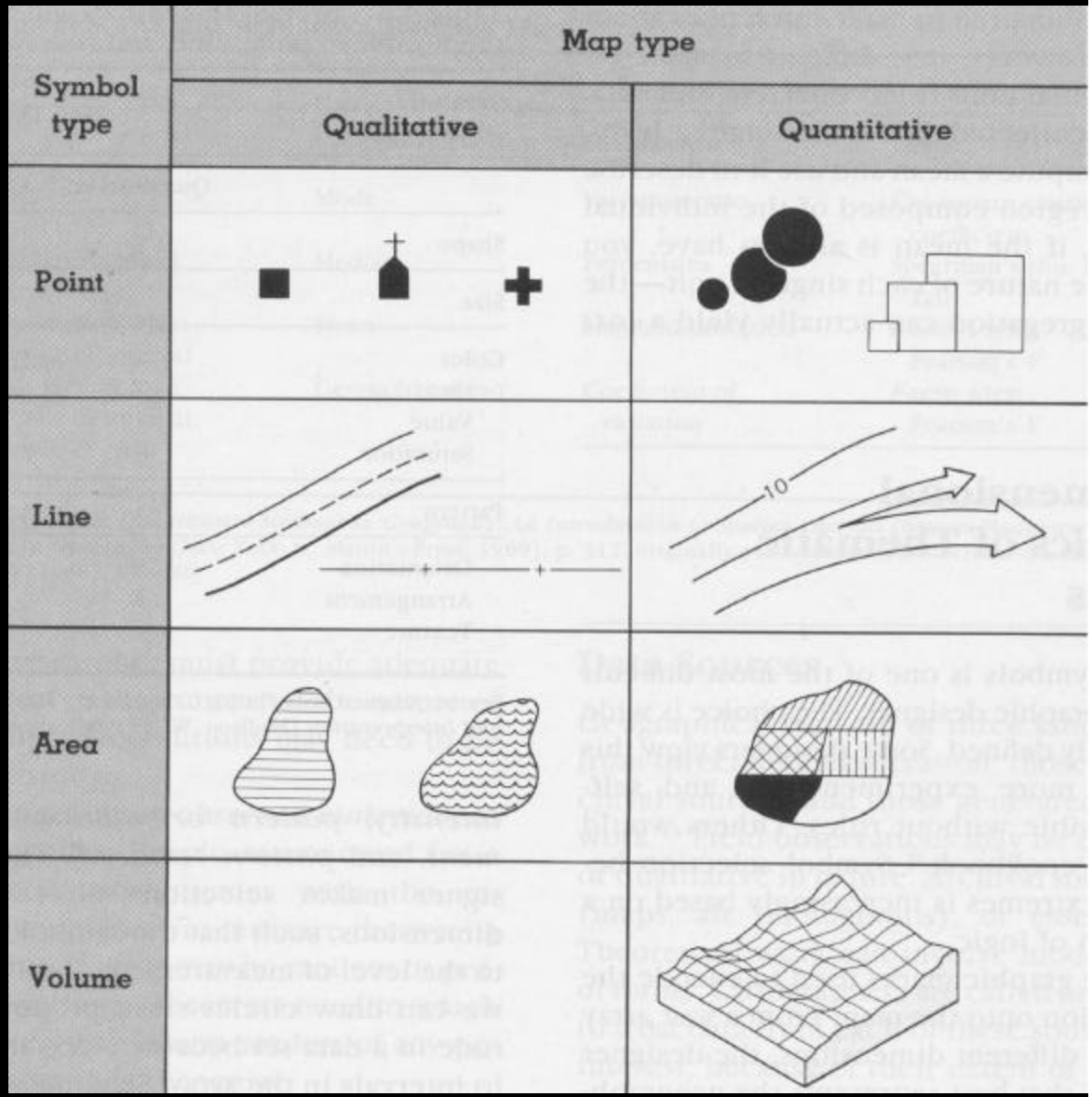


Limitations: contrast & palette

Denotation

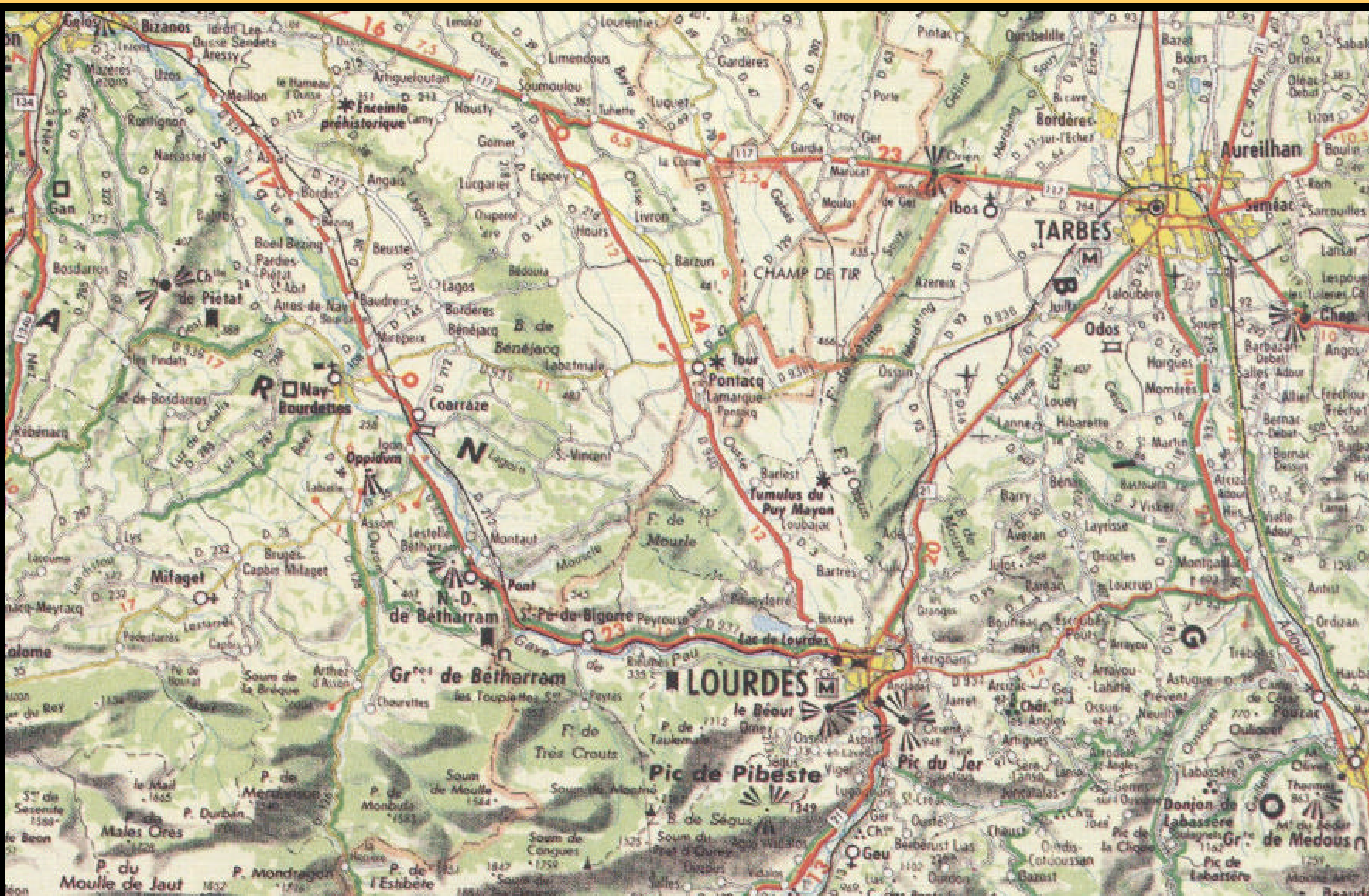

ZONES
D'INFLUENCE
DES GRANDES
VILLES
Dunkerque
Calais
Boulogne
LILLE
Valenciennes
Cherbourg
Le Havre
Amiens
Rouen
Caen
Reims
Metz
NANCY
STRASBOURG
Brest
PARIS
Rennes
Troyes
Colmar
Le Mans
Orléans
Mulhouse
Angers
NANTES
Tours
Dijon
Besançon
Bourges
Poitiers
La Rochelle
LYON
Limoges
Clermont
BORDEAUX
Valence
Grenoble
Avignon
TOULOUSE
Montpellier
Nimes
Nice
Pau
Béziers
MARSEILLE
Toulon
Perpignan

Symbols: dimension



Denotation: a complete example

Denotation



Bizanos
Limendous
Soumoulou
Aureilhan
TARBES
Ibos
Gan
de Piétat
Nay
Bourdettes
Coarraze
Oppidum
Pontacq
CHAMP DE TIR
Tumulus du Puy Mayon
Odos
Séméac
Mifaget
N.-D. de Bétharram
St-Pé-de-Bigorre
Lac de Lourdes
LOURDES
le Béout
Grtes de Bétharram
Pic de Pibeste
Pic du Jer
Très Crouts
P. du Moulle de Jaut
P. Mondragon
Geu
Donjon de Labassère
Gr^tes de Médous
Pouzac
Montgaillard
Lagos
Bénéjacq

Map making

- Which information will be represented

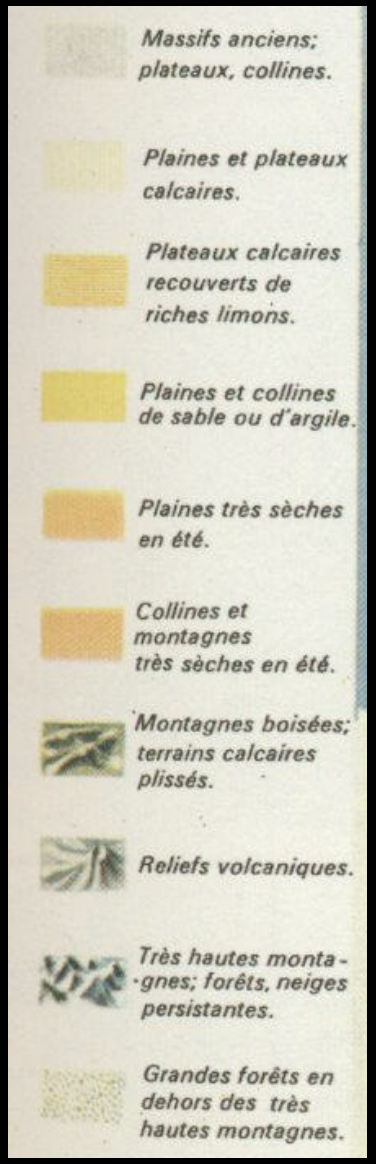
- Projection
- Which kind of symbols will be used
- Color codes

Symbols: dimension & tone, color

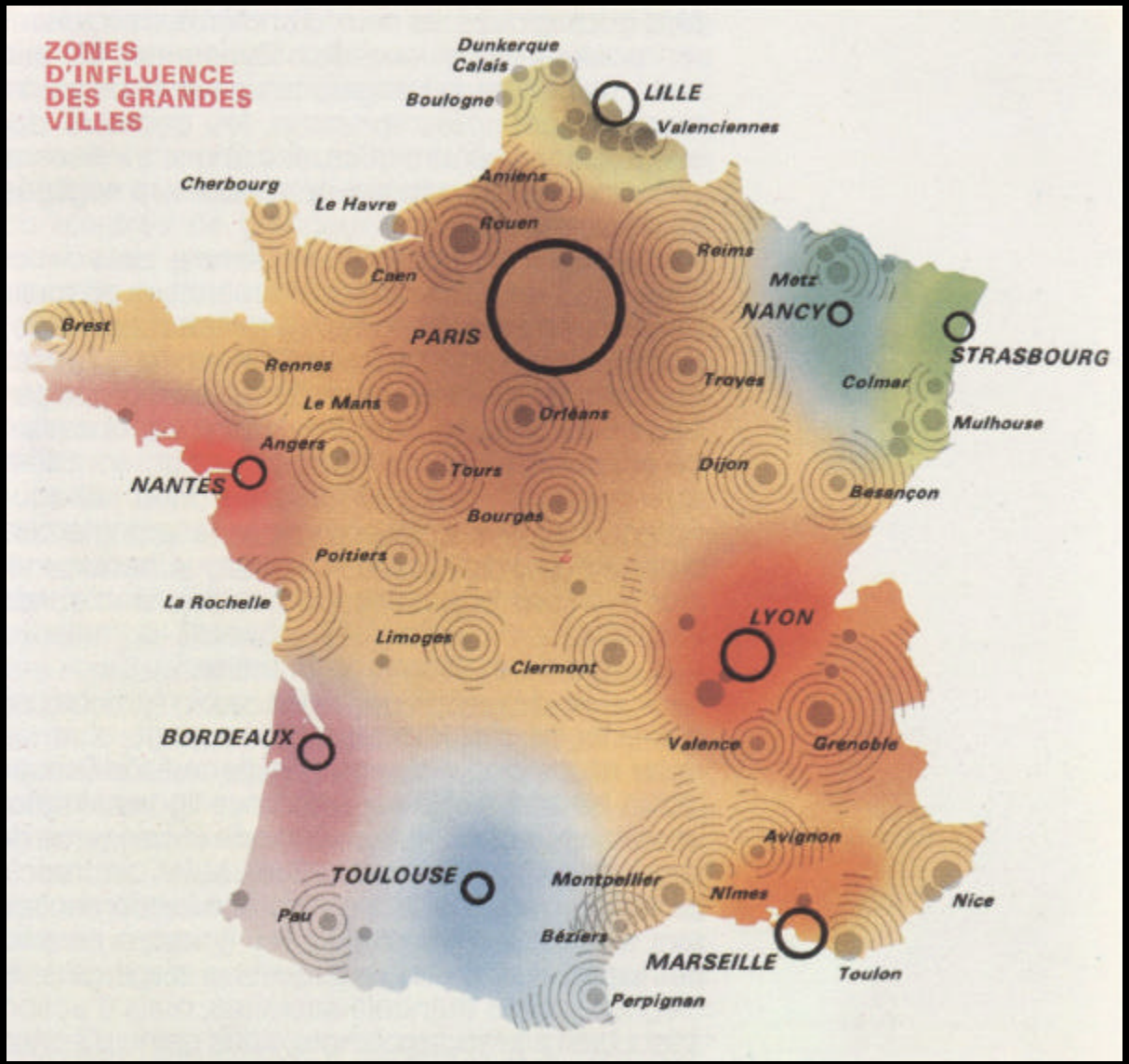
Type of symbol	Visual dimensions			
	Size	Pattern texture	Color value	Color saturation
Points	Temperature in degree days	Low Medium High	Low Medium High	Less red Medium red More red
Lines	Average stream flow	Low Medium High	Low Medium High	Less brown Medium brown More brown
Areas	Elevation above MSL >2000′ 1000-2000′ <1000′	>2000′ 1000-2000′ <1000′	>2000′ 1000-2000′ <1000′	More blue Medium blue Less blue

Color: elevation

Color: geology



Color: influence of cities



Ambiguity: color or denotation?

A complex example

- Population of the Bay Area

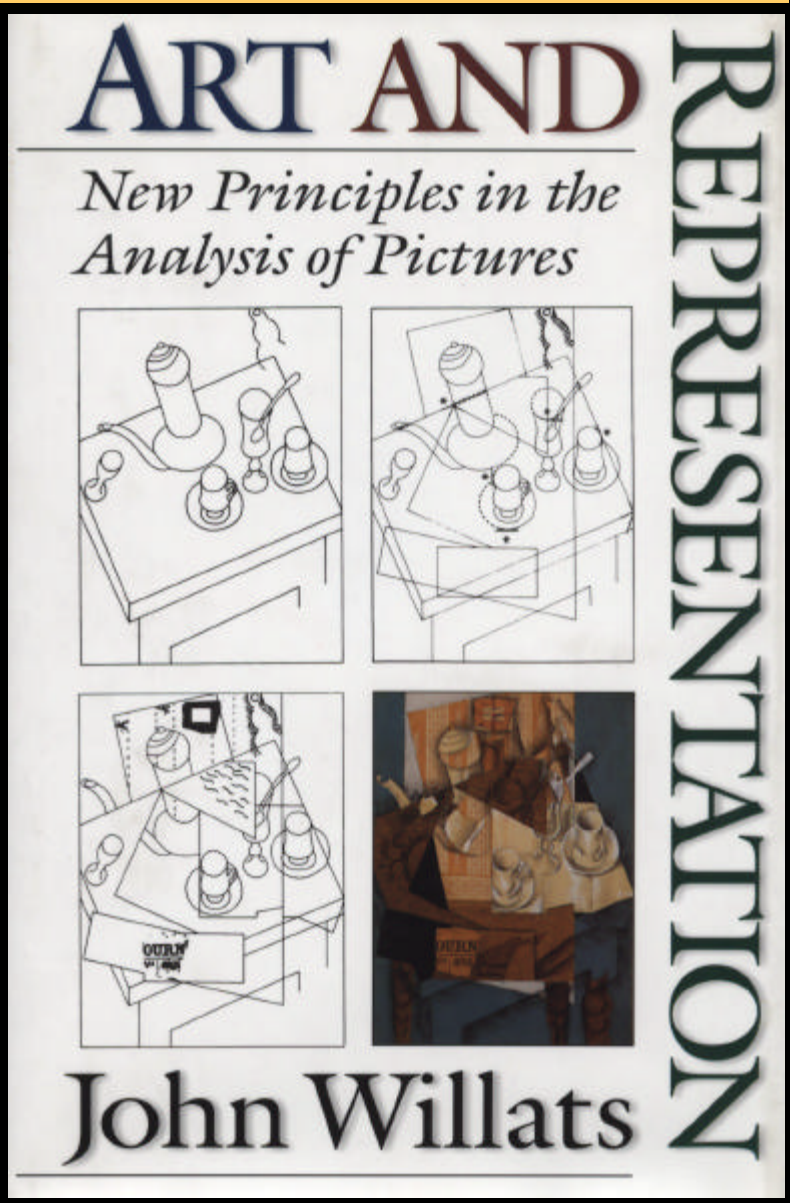
Plan

- A paradigm: Cartography

- Representation systems
  - Drawing and projection
  - Denotation
  - Tone & color

Representations systems

- John Willats
  Art and Representation: New Principle in the analysis of pictures
  1997



Goals and context

- Coarse-grain description of style
- Independent systems, independent decisions
- Description and comparison
- Synthesis (NPR)

- This is an exploratory system!
  - In progress
  - Incomplete
  - Different categories may overlap
- More a vocabulary

Representation systems

- Drawing and projection
- Denotation
- Tone & color

- The two first systems are classical
- Because painting was the only recognized art form

Drawing system

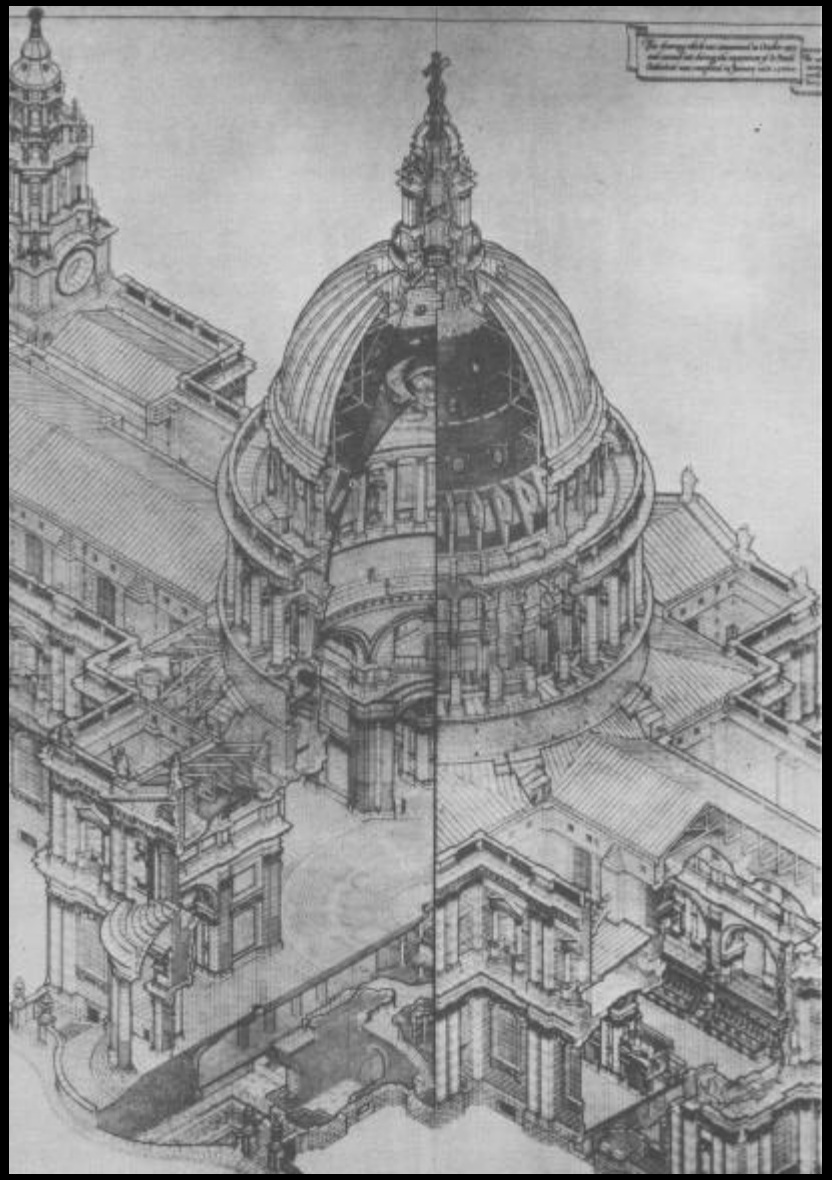
- Linear perspective
- Orthographic
- Topological
- Other

Drawing system

- Linear perspective
  - *Interior of St Bavo's church at Haarlem*, Pieter Jansz Saenredam, 1648
- Orthographic
- Topological
- Other

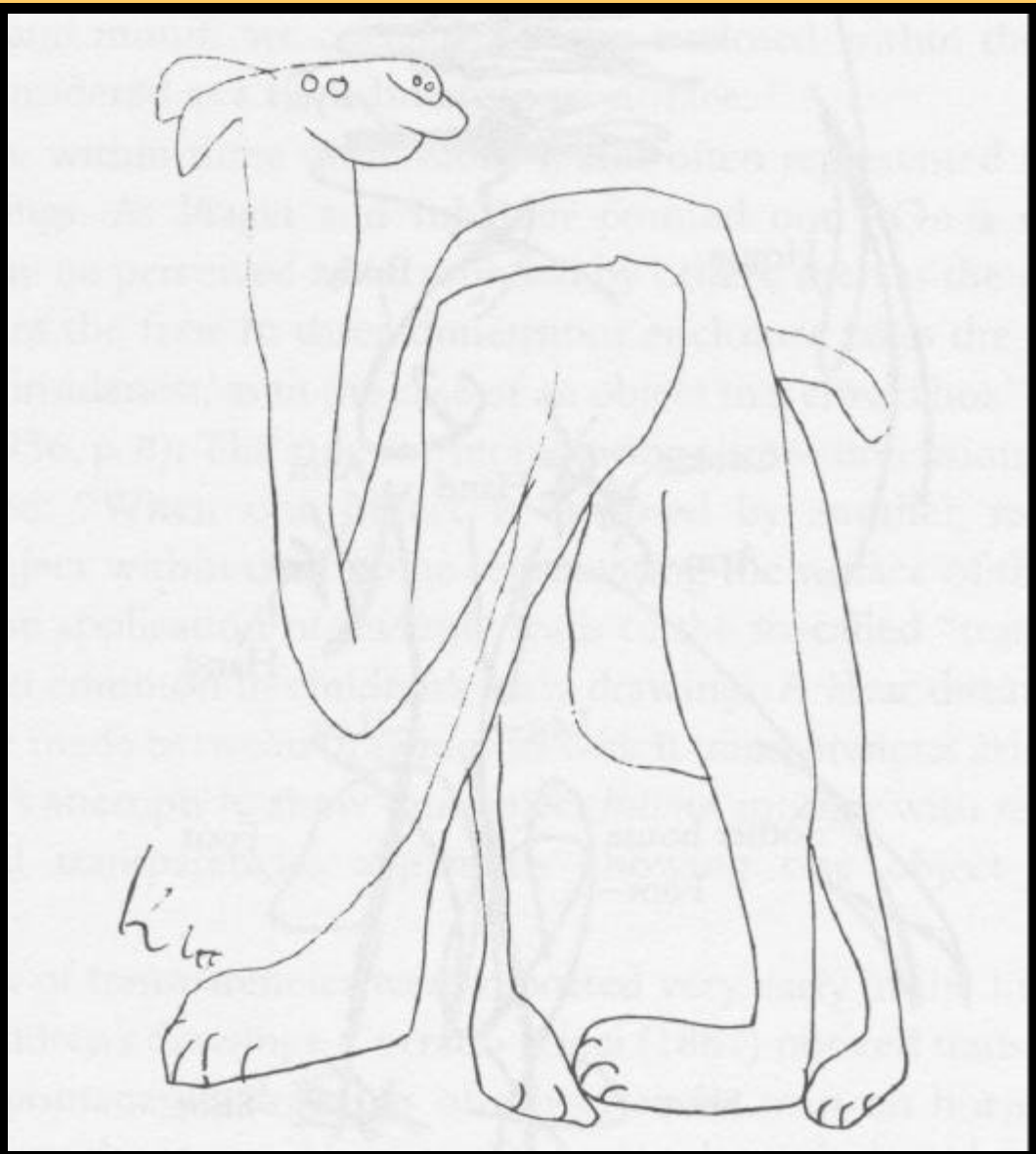
Drawing system

- Linear perspective
- Orthographic
  - Brooks-Greaves
    St Paul's Cathedral
    1928
- Topological
- Other



Drawing system

- Linear perspective
- Orthographic
- Topological
  - Paul Klee
    Another Camel
    1939
- Other



Drawing system: symbolic

- Linear perspective
- Orthographic
- Topological
- Other
  - Piero de la Francesca *Mercy*

Representation systems

- Drawing and projection
- Denotation
- Tone & color

Denotation system

- Silhouette:
  - 2D (regions)
- Line Drawing
  - 1D (lines)
- Optical
  - 0D (points)

Denotation system

- Silhouette:
  - 2D (regions)
  - Picasso, *Rite of Spring*
- Line Drawing
  - 1D (lines)
- Optical
  - 0D (points)

Denotation system

- Silhouette:
  - 2D (regions)
- Line Drawing
  - 1D (lines)
  - Picasso,
    Portrait of Stravinsky
- Optical
  - 0D (points)

Denotation system

- Silhouette:
  - 2D (regions)
- Line Drawing
  - 1D (lines)
- Optical
  - 0D (points)
  - Picasso, *Paul as Arlequin*

A fourth denotation system

- Sculpture
  - 3D (volume)
    Picasso, *Head of a Woman (Fernande)*, 1909
- Silhouette:
  - 2D (regions)
- Line Drawing
  - 1D (lines)
- Optical
  - 0D (points)

Representation systems

- Drawing and projection
- Denotation
- Tone & color

Tone & color system

- (Often a mix)

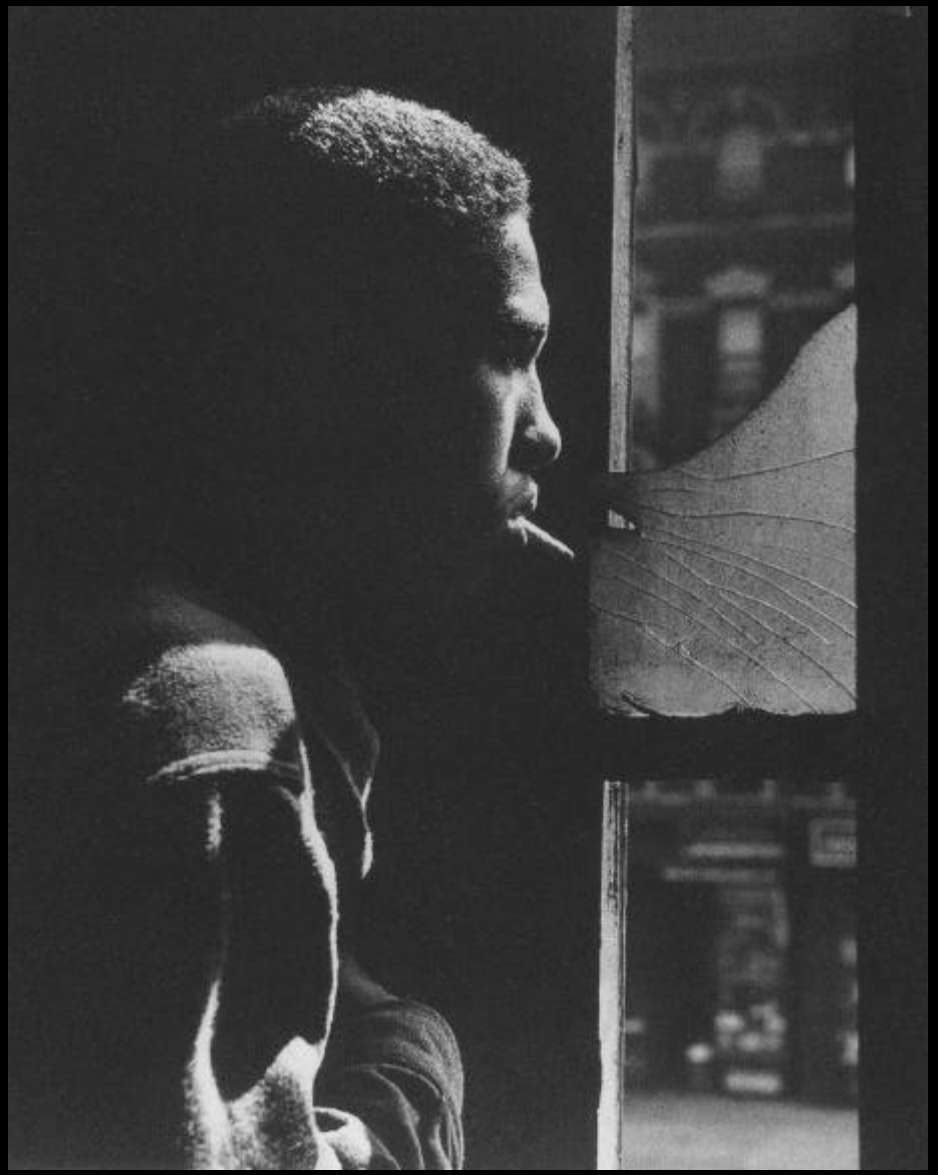
- Extrinsic
- Intrinsic
- Symbolic

Extrinsic color

- Renzo Piano Tjibaou cultural center 1991-98

Extrinsic black and white

- Gordon Park, *Red Jackson Gang Leader*

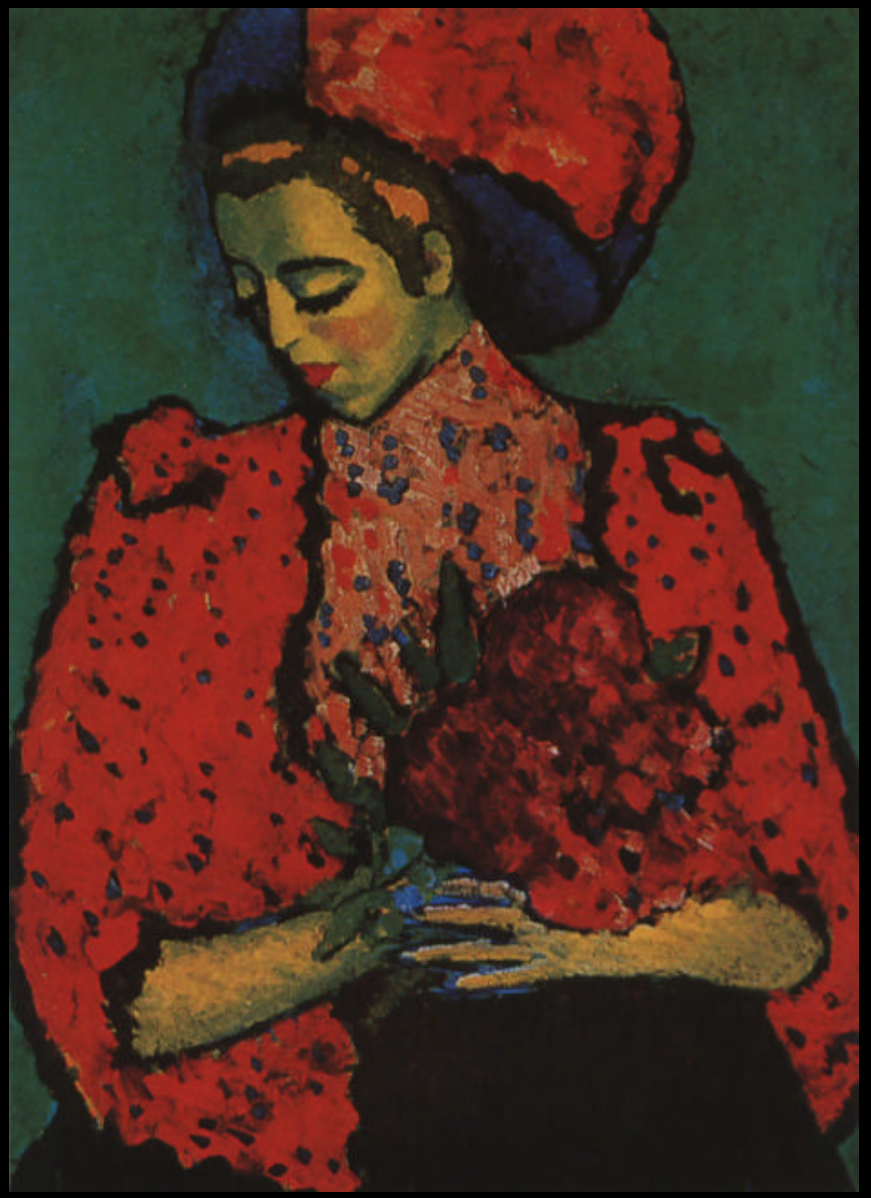


Optical intrinsic

- Boticelli *Primavera* 1482

Pure intrinsic colors

- Jawlensky
  Girl with Peonies
- *+symbolic+harmony*



Next sessions

- Linear perspective
- Canonical view
- Drawing systems
- Distortion and constraints