



ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ



# Thematic Cartography

## Session 1: Introduction to cartography

Michail Agorastakis

Department of Planning & Regional Development



# Άδειες Χρήσης

- Το παρόν εκπαιδευτικό υλικό υπόκειται σε άδειες χρήσης Creative Commons.
- Για εκπαιδευτικό υλικό, όπως εικόνες, που υπόκειται σε άλλου τύπου άδειας χρήσης, η άδεια χρήσης αναφέρεται ρητώς.



# Χρηματοδότηση

- Το παρόν εκπαιδευτικό υλικό έχει αναπτυχθεί στα πλαίσια του εκπαιδευτικού έργου του διδάσκοντα.
- Το έργο «**Ανοικτά Ακαδημαϊκά Μαθήματα στο Πανεπιστήμιο Θεσσαλίας**» έχει χρηματοδοτήσει μόνο τη αναδιαμόρφωση του εκπαιδευτικού υλικού.
- Το έργο υλοποιείται στο πλαίσιο του Επιχειρησιακού Προγράμματος «Εκπαίδευση και Δια Βίου Μάθηση» και συγχρηματοδοτείται από την Ευρωπαϊκή Ένωση (Ευρωπαϊκό Κοινωνικό Ταμείο) και από εθνικούς πόρους.



# Outline

- What is cartography?
- Principal task of cartography.
- What is a map?
- Basic Characteristics of Maps.
- Categories of maps.
- When a map is effective?
- Ethics in Cartography.

# What is cartography? (1)

“The International Cartographic Association defines cartography as the discipline dealing with the conception, production, dissemination and study of maps.

Cartography is also about representation – the map. This means that cartography is the whole process of mapping. Cartography is a complex, an ever-changing field, but at the center of it is the map-making process”

(Canadian Cartographic Association, <http://cca-acc.org/>, last accessed 31/08/2015)

# What is cartography? (2)

“Cartography is a term that is rarely understood. People say that they like maps or that they use maps, but very few know what cartography is. ... Another description of cartography is that it is the '**Art, Science and Technology**' of map making.

This is an important definition in that it leads us to appreciate that cartography covers many disciplines and is so wide-ranging that it invites interest from a **huge diversity of people**”.

(The British Cartographic Society <http://www.cartography.org.uk/>, last accessed 31/08/2015), emphasis added)

# What is cartography? (3)

“Cartography (from Greek χάρτης, "map" and γράφειν "write") is the study and practice of making maps.

Combining **science**, **aesthetics**, and **technique**, cartography builds on the premise that reality can be modeled in ways that communicate spatial information effectively.”

(<http://en.wikipedia.org/> last accessed 31/08/2015), emphasis added)

# What is cartography? (4)

“Despite the comparatively meager theoretical investigations carried out about cartography as a subject, since its official acknowledgement by UNESCO as a science of its own in 1949, it is currently the common understanding within the cartographic community that cartography has a prominent scientific status because it uses technologies, which are based on solid principles from applied or basic sciences.”

(Buchroithner & Fernández; 2011)



# Principal task of cartography (1)

The principal task of cartography is to **communicate** information **graphically** within a spatial/geographical context.

People develop and communicate ideas and information through the use of:

written language - Literacy

spoken language – Articulacy (oracy)

mathematic symbols – Numeracy

graphics - *Graphicacy* (David J. Maguire cited in Nag, 1992)

But **communication** from **communication** differs!!!!

# What is a map? (1)

From a Lexicographer's perspective, Andrews (1996) compiled 321 definitions of "map"!!!! (for a complete list see [here](#))

Czerny (1993) discusses various definitions and concepts:

"Multilingual Dictionary of Technical Terms in Cartography (1973): "Map - A representation, normally to scale and on a flat medium, of a selection of material or abstract features on, or in relation to, the surface of the Earth or of a celestial body"."

"...W. Stams (1971) analyzed properties of maps regarded as "geographical stores of information" and concluded by giving the following brief definition of map: "scale graphic model of geographical reality (geographical space)" ...."

# What is a map? (1)

“Bertin (1967) does not give the definition of map...His concept of “graphic construction” is superordinate to map (“topography”) ...The feature which makes map distinct from any other graphic representation consists in the fact that locational relationships on a plane represent locational relationships on the Earth’s surface.”

“Ch. Steurer’s (1989)... proposed the following definition of the concept of the map: “Map is a model of the structure of the spatial information about realities” ... the following properties of maps as model: (1) in terms of set theory, they map relations and properties of the original; (2) maps reduce the quantity of relations and properties of the original preserving only the ones which are essential ... ; (3) maps are pragmatic objects as they are performing the function of substituting an original (reality) thanks to somebody, for somebody in a definite time and with a definite purpose.”

# What is a map? (1)

“symbolized image of geographic reality, representing selected features or characteristics, resulting from the creative efforts of cartographers and designed for use when spatial relationships are of special relevance” (ICA, 1995).

“storage medium for information, and provides a picture of the world to help understand i.e. spatial patterns, spatial relationships and environmental complexity” (Robinson et. al. 1995).

“A map is a graphic representation of the milieu.” (Dent, 1999). Where milieu refers to all aspects of physical and social environment

# Basic Characteristics of Maps

## Representations of reality via

- locations and various attributes

## Geometrical transformations

- map projections and coordinate systems

## Reductions of reality

- scale

## Abstractions of reality

- Generalization and corresponding components

## Representations of reality's elements by symbols

- Symbolization

# Categories of maps (1)

There are two broad categories of maps:

**-reference maps**, i.e. representing a variety of features (natural and man-made); emphasis on location and on geometric (e.g. distance) and reference (e.g. boundaries) features.

A variety of scales from Large (small area) to Small (large area)

A typical example of reference maps are topographic maps



# Categories of maps (2)

There are two broad categories of maps:

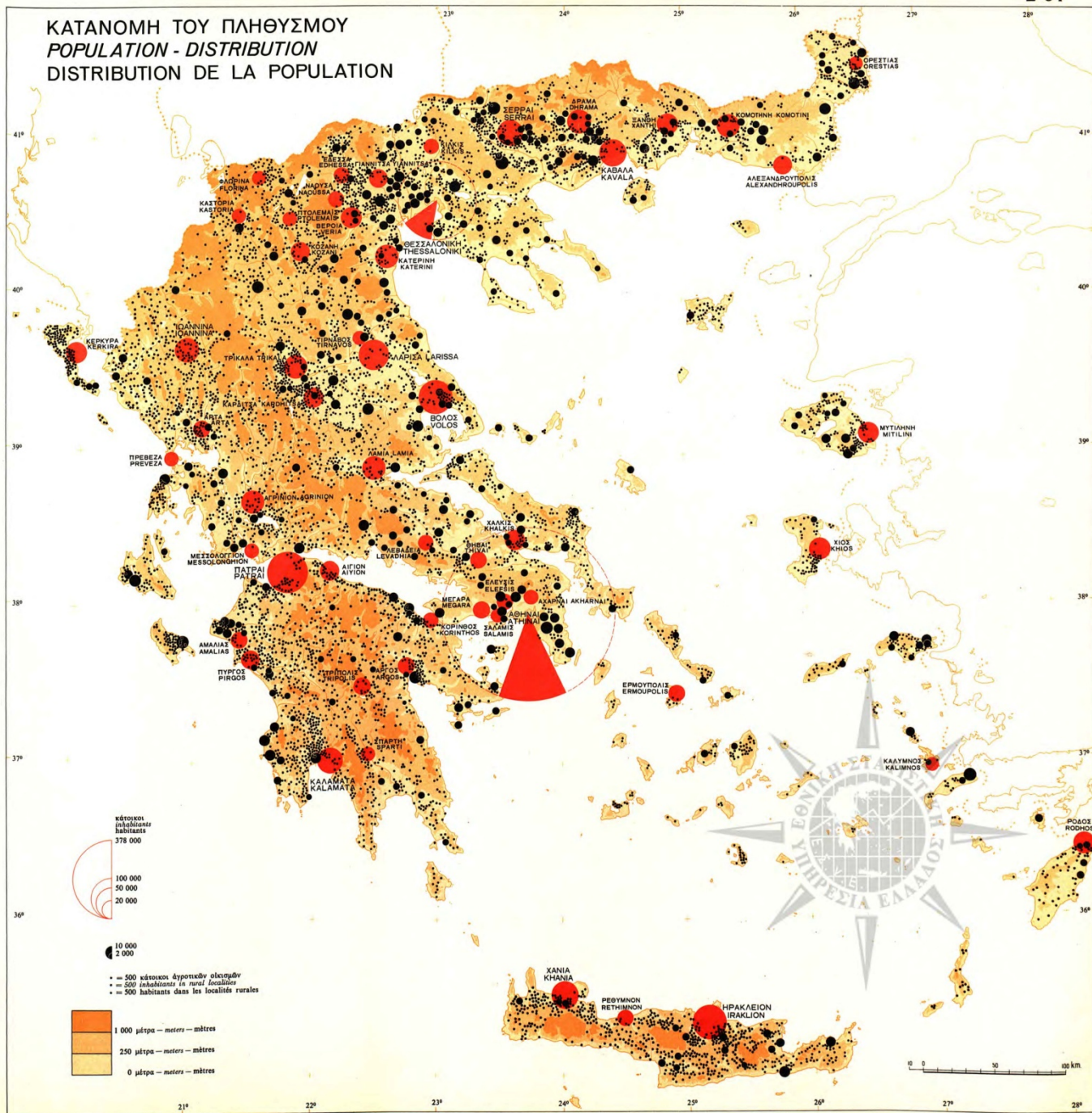
- reference maps

- **thematic maps**; maps with specific theme and focus.

Representing the spatial/geographical distribution of single/multiple attributes or corresponding spatial associations.



ΚΑΤΑΝΟΜΗ ΤΟΥ ΠΛΗΘΥΣΜΟΥ  
POPULATION - DISTRIBUTION  
DISTRIBUTION DE LA POPULATION



# What makes a good map?

1. Identify the goal of the map;
2. Identify the audience of the map and where it will be used;
3. Identify the information to be communicated;
4. Identify the geographical reference (point, line or area?);
5. Choose the base map (map projection and scale);
6. Choose the visual variable (symbolic graphic language);
7. Choose layout and identify all the elements to be added. (Zanin et. al. 2013)

# Ethics in Cartography

In his seminal book “How to Lie With Maps”, Mark Monmonier (1991) puts forth this message on the introductory chapter:

“The purpose of this book is to promote a healthy skepticism about maps, not to foster either cynicism or deliberate dishonesty. In showing how to lie with maps, I want to make readers aware that maps, like speeches and paintings, are authored collections of information and are also subject to distortions arising from ignorance, greed, ideological blindness, or malice.”



ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ



# End of Session

