In Need of a New Paradigm to Support European Geography

KOSTIS KOUTSOPOULOS
Professor N.T.U. of Athens

Amsterdam
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Epistemology

**APPROACH:** Environment is an Externally Given Creation

The Ecosystem Exists as an Independent Natural and Cultural Process

**PERCEPTION:** The Uniqueness of Geographic Location

Interdependence of Phenomena in Geographic Space

**ASSUMPTION:** The Phenomena Exist in Order to Be Discovered

The Phenomena Constitute Social Constructs, One Own Creations.

**NEED FOR A SOCIAL EPISTEMOLOGY OF ALL SCIENCES**

**NEED FOR EPISTEMOLOGY OF GEOGRAPHY**

**THE SCIENCE OF SPACE**
Fables in Practicing our Science

The way we practice our science is limited almost exclusively by our "fables". These fables work as lights that lit up our field of perception, allowing us to have a clear picture of certain only problems and not seeing the others, while simultaneously they give us the intellectual calm we need, since the judgments we make are revealed in our mind as reflection of the objective reality.
They should satisfy certain functional conditions in order to remain constant.

They should require systematic ways in order to satisfy basic methodological needs.

THEY ARE THE RESULT OF VALUES

CONSTITUTE THE BASE FOR ACTING
Choroinformatics

The centre of the scientific approach of geographic space, that constitutes inevitably and the source of our myths and values should be the concept of the integrated spatial approach not only in terms of the way geographic space is regarded, but also with regards to the spatial investigation methodologies.

This leads to the position that the traditional concepts are absolute and now we find ourselves in the period of CHOROINFORMATICS.
The Role of an Integrated Approach

Geographers have the scientific background to:

- Examine the surface of the earth
- Analyze spatial patterns and processes
- Present the results of these analyses for a scientifically sound and efficient planning.

An integrated approach of geographic space is required, which, however, is not possible without the help of Choroinformatics.
The term Choroinformatics is composed of two components:

**Choros + Informatics**

The component “choros” (space) is referred to the integrated dimension of geographic space, which is equally important with information technology and consequently the necessity of an integrated approach in considering geographic space is imperative.
Choroinformatics

The integrated approach to geographic space is tenable only through the examination of the nature and the evolution of Geography, which in turn determine:

- How we perceive geographic space and teach it.
- How we investigate it.
The recent changes of these two dimensions, representing a paradigm shift have led to the integrated approach of Choroinformatics.

Consideration of Space: *From Disciplinary to Interdisciplinary*

Investigating Space: *From Geoinformatics to Metageoinformatics*
Consideration of Space

**DISCIPLINARY APPROACH**
- Economic Development
  - Location is ignored

**MULTIDISCIPLINARY APPROACH**
- Sustainable Development
  - Location is important factor

**INTERDISCIPLINARY APPROACH**
- Holistic Development
  - Integrated Approach
Integrated Approach

It should be obvious that a continuous differentiation of how geographic space is regarded has taken place ranging from disregard of space to considering it as a fundamental component of development in the form of a set of relations, interdependences and interactions within the ecological and socio-economic reality, leading to the present notion that all these constitute a dialectic unit, an organic “whole”.
Europeanization in the form of sustainable education is envisioned as a strict system leading to homogenization of teaching and learning practices or curriculum structures across Europe.

But given the need for an integrated approach one can wonder about the appropriateness of the mode and the content of the Bologna effort.
The Case Against Homogenization

“At the interface between the highly abstract geographic lore of the professional and the common sense or mythological geographic lore of the “student” lay a fault line: a chasm of language and concept which was difficult to transcend”.

A. Battiner

How can one be sure that scientific thought does transcend Culture and Educational Space?
The Case Against Homogenization

- Geography Reflects the Civilization
  - J.K. Wright

- Each Culture has its own “Geographic Science”
  - Yi-Fu Tuan

- Geography is Tinged by Imperialistic Bias
  - Imperialistic Bias in European Geography
    - Blaut
  - Imperialistic Expansion in China
    - Samuels

- Geographers and “Geographies” Reflect Political Orientation
The Question

How do the language, the culture and the conceptual structures of academic sciences in Europe relate to the varieties of “geographical sense” found among the diverse cultural groups of the various nations who inhabit the European Continent?
Geographical Sense vs Bologna Process

Given that almost every nation, region and even city has its own “geographical sense” arising from different needs and expectations, how does this stand against the very core of the Bologna process and in general the need for an integrated approach to Geography?
Differences in culture, in behavior, in values and standards do not have to conflict. To the contrary, they can be a unifying force.

Within an integrated framework, Europeanization can be seen as a process towards unity without uniformity.

- That is European
- Expresses Choroinformatics
In an integrated approach, geographic space, in order to be described, analyzed and comprehended, requires a dialectic, interdisciplinary methodological approach. In other words, it requires a corresponding integrated approach.
The New Paradigm

Nowadays the field of Geography is undergoing a revolution, a change that is fundamentally driven by the increased efficiency of microprocessors.

Geographers will be in the information business (or no business at all) and today’s tedious tasks in the field, the lab or the office will become routine, even perfunctory.
Questioning the Geoinformatics Model

The need for comparable scientific-academic procedures in European countries raises the necessity for a paradigm (model) to be more reflective to culture and ideology which can be expressed by the unifying dynamism of Choroinformatics (CI).

In simple terms, understanding the role of CI requires a new model.
The Choroinformatics Transition

The key to that understanding is the appreciation of the rapid transitions of our field in Europe from old models to a new one where Choroinformatics plays the central or the determining role. That is, it is suggested that Geography’s methodology has recently undergone a paradigm swift
The Old Model: Traditional

- Data Capture
- Processing & Analysis
- Presentation (Map)
The Old Model: Traditional

The old model starts with the observations (data capture) and ends (most of the time) with a map as the final product. The data are collected in the field or by other traditional methods (i.e. photogrammetry, remote sensing), practices widely accepted in the European Educational system, and are processed (adjusted) and analyzed for the purpose of displaying the information created through the use of some cartographic means.
The Newer Model: Geoinformatics

- Data Capture
  - Data Processing CI 1
  - Spatial Data
    - Spatial Analysis CI 2
    - Planning or Data Management CI 3
      - Spatial Information
        - Users
The Newer Model: Geoinformatics

- DATA PROCESSING AND MANIPULATION
  It has changed the ways data is captured and processed. The outcome of this stage is digital layers of diverse land-related or human activities data.

- SPATIAL ANALYSIS
  The process from spatial data to spatial information is possible, almost exclusively through the use of CI.

- INFORMATION MANAGEMENT AND PLANNING
  The task of effective management of spatial information requires acceptable tools for decision making.
The New Model: Choroinformatics

The literature has been permeated by the notion that there is no universal optimum but a local one. In other words, the application determines the tool.

Such an idea certainly violates scientific deontology and leads us toward dangerous conceptual paths.
Choroinformatics: Data Processing

This approach, whose aim is processing spatial data, includes:

- The **Cartographic Approach**, which is concerned with manipulating exclusively cartographic data (the input, the processing and the output are all referred only to maps).

- The **Information Approach**, which emphasizes the importance of CI as **Information Systems** for managing spatial data bases.
Choroinformatics: Data Processing

Data Capture

Data Processing CI 1

Spatial Data

Spatial Analysis CI 2

Planning or Data Management CI 3

Users

Spatial Information
Choroinformatics: Analysis

This approach projects the importance of Spatial Analysis. According to this approach, CI represent part of the science of Geography and not simply a new technological gadget.
Choroinformatics: Analysis

Data Capture

Data Processing CI 1

Spatial Analysis CI 2

Spatial Data

Spatial Information

Planning or Data Management CI 3

Users
Choroinformatics: Planning

This approach is focused on the ability of the CI to help solve spatial problems. That is, to actively participate in spatial planning (Urban and Regional).
Choroinformatics: Planning

Data Capture

Spatial Data

Spatial Analysis CI 2

Spatial Information

Data Processing CI 1

Planning or Data Management CI 3

Users
These approaches are considered as independent and conflicting.

It has been shown that having a common background -the Spatial Dimension- they are:

- **Closely interrelated**
- **Complementary**
- **Separate components of an integrated spatial approach**
Europeanization of Geography is not “solving” the various pressures put upon our field by accepting that something has to “give”, but finding the unifying force that will permit Europeans to apply the paradigm’s manifestations in any desired mixture that fits individual “geographical senses”. And, of course, this force is none other than Choroinformatics.
Proposal for Europeanization

The principle of unity and uniformity should be the goal towards Europeanization of Geography and Choroinformatics the means to accomplish it.
Experience in Europe: Geography

Madrid (Spain) : *Geographic Engineering*

Aalborg (Denmark) : *Problem-Solving-Oriented*

UK : *Planning*

Greece : *Spatial Analysis*

*In Europeanization all flowers can bloom as long as they can find the appropriate Choroinformatics mixture to grow upon.*
Europeanization passes through the understanding of the way in which CI can become the driving force of Geography.

That is, understanding the integrated approach to Data Processing, Analysis and Planning - the basic components of Geography - is paramount to a successful Europeanization of our science.

The road to Europeanization riding Choroinformatics is not as smooth or easy as you might have been led to believe.
Paradigm Evolution

PLANNING
CLASSICAL
TECHNICAL OR BLUEPRINT
FUNCTIONAL
STRATEGIC

SPATIAL INFORMATION

SPATIAL ANALYSIS
DESCRIPTIVE PROCESSING
STATISTICAL ANALYSIS
MODELLING
ANALYSIS FOR DECISION MAKING

DATA PROCESSING
TRADITIONAL MAPS
DIGITAL MAPS
DATA MODELS
SPATIAL DECISION SUPPORT SYSTEMS
Planning

- **Classical Planning**, lasting until the beginning of the 20th century and was concerned with aesthetics and symmetry mostly in the urban areas.

- **Blueprint or Technical Planning** focusing on order and efficiency of Le Corbusier (urban) and Isard (regional).

- **Functional Planning** where the planner acts as a social engineer optimizing the functions of a region.

- **Strategic Planning** which moved the focus of planning from plans to decision making.
Spatial Analysis

- **Descriptive Analysis**, focusing on data classification and coding and having as main tool the map.
- **Statistical Analysis** which uses mathematics and statistics to test and evaluate spatial distributions.
- **Modeling** expressed by the formulation and use of spatial models to describe and explain spatial patterns.
- **Analysis for Decision Making** creating the analytical framework to support the decision making process.
Data Processing

- **Traditional Maps** which for thousands of years were the only means of presenting and processing spatial data.

- **Digital Maps and other Products** focusing on spatial data bases becoming widely available as result of dramatic cost cuts in digital data capture.

- **Data Models** in which spatial relationships of geographic data are explicitly included in the data base.

- **Spatial Support Systems** where the processing of the data is aimed at the individual decision maker and at specific decision.
In addition to the “vertical” relationships or the temporal evolution of these areas there are horizontal or causal relationships between them:

- *Changes in the planning approach create different needs for analysis which in turn require a differentiated spatial data processing approach.*

- *Changes in the ways spatial data is processed formulate new approaches for their analysis which lead to a differentiated application of urban or regional planning.*
Uneven Development

Although experience and literature have repeatedly shown the existence of these explicit temporal evolutions and causal interconnections, and thus they are universally accepted, these relationships can not be considered as uniformly or evenly developed.
The reason is that each approach has been developed independently from the others and with no effort to follow existing links or to develop new ones, which are necessary to relate the manifestation of each area at a particular evolution stage with their counterparts.
Towards Europeanization

If the model upon which our field has to be based can not integrate all its components in an harmonious way, then the situation requires our immediate attention to overcome these dysfunctions, but most importantly hinders any efforts towards Europeanization.