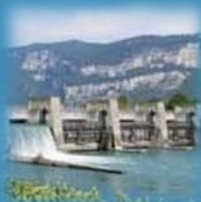


European Association of Geographers  
**European Journal of Geography**



# European Journal of Geography

---

The publication of the EJJ (European Journal of Geography) is based on the European Association of Geographers' goal to make European higher education a worldwide reference and standard. Thus, the scope of the EJJ is to publish original and innovative papers that will substantially improve, in a theoretical, conceptual or empirical way the quality of research, learning, teaching and applying geography, as well as in promoting the significance of geography as a discipline. Submissions should have a European dimension.

Contributions to EJJ are welcomed. They should conform to the Notes for authors and should be submitted to the Editor, as should books for review. The content of this journal does not necessarily represent the views or policies of EUROGEO except where explicitly identified as such.

<b>Editor</b>	<b>Kostis C. Koutsopoulos</b> Professor, National Technical University of Athens, Greece <a href="mailto:koutsop@survey.ntua.gr">koutsop@survey.ntua.gr</a>
<b>Associate Editor</b>	<b>Yorgos N. Photis</b> Associate Professor, University of Thessaly, Volos Greece <a href="mailto:yphotis@prd.uth.gr">yphotis@prd.uth.gr</a>
<b>Book Review Editor</b>	<b>Gerry O'Reilly</b> Lecturer, St. Patrick's College, Dublin, Ireland <a href="mailto:Gerry.OReilly@spd.dcu.ie">Gerry.OReilly@spd.dcu.ie</a>
<b>Editorial Advisory Board</b>	<b>Bailly Antoine</b> , Prof., University of Geneva, Geneva Switzerland <b>Bellezza Giuliano</b> , Prof., University of Tuscia, Viterbo, Italy <b>Buttimer Anne</b> , Prof., University College Dublin, Ireland <b>Chalkley Brian</b> , Prof., University of Plymouth, Plymouth UK <b>Martin Fran</b> , S. Lecturer, Graduate School of Education Exeter S. Vice President of the Geographical Association <b>Gosar Anton</b> , Prof., University of Primorska, Koper, Slovenia <b>Haubrich Hartwig</b> , Prof., University of Education Freiburg, Germany <b>Nazmiye Ozguc</b> , Prof., Istanbul University, Istanbul Turkey <b>Strobl Josef</b> , Prof., University of Salzburg, Salzburg Austria <b>Van der Schee Joop</b> , Prof., VU University, Amsterdam The Netherlands

© EUROGEO, 2012  
ISSN 1792-1341

The European Journal of Geography is published by EUROGEO - the European Association of Geographers ([www.eurogeography.eu](http://www.eurogeography.eu)).

## CONTENTS

- 1 *Letter from the Editor*
- 6 **SYSTEM COMPETENCE IN GEOGRAPHY EDUCATION  
DEVELOPMENT OF COMPETENCE MODELS, DIAGNOSING PUPILS'  
ACHIEVEMENT**  
Armin REMPFLE, Rainer UPHUES
- 23 **THE WAR OF THE MAPS: THE POLITICAL USE OF MAPS AND ATLASES TO  
SHAPE NATIONAL CONSCIOUSNESS – ISRAEL VERSUS THE PALESTINIAN  
AUTHORITY**  
Arnon MEDZINI
- 41 **COGNITIVE MAPS OF EUROPE:  
GEOGRAPHICAL KNOWLEDGE OF TURKISH GEOGRAPHY STUDENTS  
AUTHORS**  
Ilkay SUDAS, Cemil GOKTEN
- 57 **A POSTMODERN PERSPECTIVE OF GEOGRAPHY AS AN INVESTIGATING  
SUPPORT OF EUROPE'S KNOWLEDGE-BASED ECONOMY**  
Mairie G. DOUDEXOPOULOU, Gabor BARTHA
- 68 **THE MANAGEMENT OF CULTURAL RESOURCES IN THE CREATION OF  
SPANISH TOURIST DESTINATIONS**  
Carmen MINGUEZ



---

## Editorial

---

*Dear Fellow Geographers,*

I was raised and matured as a Geographer during the period of the quantitative revolution in our discipline and as a result I strongly believe in using ICT in our everyday professional lives. Our Journal and specially the current issue is an excellent testimony of this practice. The journal can be accessed on the internet, its server is based in Greece, the editor is temporally staying in the United States, the authors are from different countries of Europe and all of you are located in every part of the world. In other words our Journal is not only an outlet of quality research in Geography, but also a testimony to Geography's position on the forefront of ICT. That is, we are all participating, using ICT, in the exiting journey to understand better the world we live at.

Finally, I would like to inform you that the papers included in this issue are the last ones selected from those presented at the Athens **EUROGEO** conference. The next issue will include only papers submitted directly to the journal. However the practice of publishing selected papers from the **EUROGEO** conferences will continue and as a result you are strongly advised to participate and present high quality papers to the annual Association of European Geographers - **EUROGEO** meetings.

**Kostis Koutsopoulos**

National Technical University of Athens



## SYSTEM COMPETENCE IN GEOGRAPHY EDUCATION DEVELOPMENT OF COMPETENCE MODELS, DIAGNOSING PUPILS' ACHIEVEMENT

Armin REMPFLE

University of Teacher Education of Central Switzerland Lucerne, Museggstrasse 37, 6004 Lucerne, Switzerland,  
[armin.rempfler@phz.ch](mailto:armin.rempfler@phz.ch), <http://www.luzern.phz.ch/armin-rempfler>

Rainer UPHUES

Friedrich-Alexander-University Erlangen-Nuremberg, Regensburger Strasse 160, 90478 Nuremberg, Germany,  
[rainer.uphues@ewf.uni-erlangen.de](mailto:rainer.uphues@ewf.uni-erlangen.de), <http://www.didgeo.ewf.uni-erlangen.de/mitarbeiter/uphues/>

---

### Abstract

In the German educational standards in geography, the system concept is stated as being the fundamental concept for the subject. The first part of the essay explains what system competence means, based on the current theoretical and empirical state of knowledge. A solid system theory foundation which addresses the core concern of geography is offered by a socio-ecological system understanding. It is based on system characteristics that can be applied to physical geographical and human geographical aspects as well as human-environment issues. These characteristics are fundamental to the normative development of a structural and stage model for geographical system competence. This development is illustrated right up to the finished model. The second part of the essay explores the diagnostic tools to be used for the empirical verification of the postulated dimensions and stages of the competence model. A tool based on educational theory for the valid, reliable measurement of system competence is the ultimate objective.

*Keywords:* Educational standards in geography, system competence, social ecology, competence modelling.

---

### 1. NATIONWIDE INITIATIVE FOR COMPETENCE RESEARCH

‘Are German pupils stupid?’ – With this provoking question the popular political magazine DER SPIEGEL headlined in the year 2001. Reason for that were the weak results of German pupils within the first run of the international PISA benchmark study. This so-called PISA-shock evoked an intense, ongoing discussion in Germany about the educational system. After the German results have been compared with other nations which had been successful in the PISA benchmark study the general debate saw reason, that a one-sided input-regulation through curricula is not sufficient. Consequently, an essential paradigm shift towards a more intense output-orientation in Germany has been taking place for several years. Therefore, educational standards for individual subjects are gradually designed. In 2006 the ‘Educational Standards in Geography for the Intermediate School Certificate’ were completed by the

Standards in Geography for the Intermediate School Certificate' were completed by the German Association for Geography (DGfG, <sup>6</sup>2010; English translation: DGfG, 2007). These educational standards define which competences pupils are supposed to have at the end of grade 9. The competences aimed at are to be described precisely within competence models in order to be able to come up with concrete assignments of exercises. So students' competences can be measured within a test (see Klieme et al., 2003). Thus, competence models are the foundation for testing the corresponding educational standards, as well as for the diagnosis and for the improvement of pupils' competences (see Mandl & Kopp, 2005).

At present the design of such competence models is *the* central challenge of German geography education and education in other subjects. At the end of 2008 a nationwide network of geography educators was founded in order to develop competence models for central geographic competences and their empirically validation (see Table 1). This network is supported by the cooperation with psychometric scientists and educational psychologists.



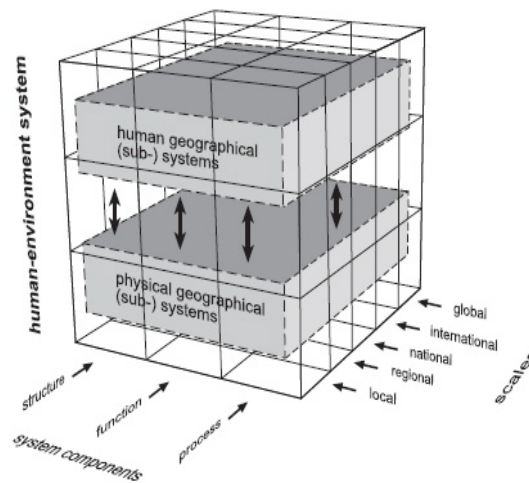
**Table 1.** Overview of all projects of the network ‘competence research in geography education’

Competence	Competence model	Lecturers in Geography Education	Cooperation partners from Educational Psychology
<b>Subject-specific Knowledge</b>	Geographical system competence I	Prof. Dr. R. Uphues (Uni Erlangen-Nuremberg) Prof. Dr. A.. Rempfler (PHZ Lucerne/Switzerland)	Prof. Dr. J. Hartig (DIPF Frankfurt)
	Geographical system competence II	Dr. S. Hlawatsch (IPN Kiel)	Dr. M. Lücken (IPN Kiel)
<b>Spatial Orientation</b>	Map reading competence	Prof. Dr. I. Hemmer (Uni Eichstätt Ingolstadt) Prof. Dr. M. Hemmer (Uni Münster) Prof. Dr. A. Hüttermann (PH Ludwigsburg)	M. Ullrich (Uni Koblenz –Landau)
	Reflexive map reading competence	Prof. Dr. D. Kanwischer , Dr. M. Horn, I. Gryl (Uni Koblenz-Landau) Prof. Dr. T. Rhode-Jüchtern (Uni Jena)	Prof. Dr. K. Schweitzer (Uni Erlangen-Nuremberg)
	Map sketching competence	Prof. Dr. G. Obermaier (Uni Bayreuth) Prof. Dr. F. Frank (TU Dresden)	Prof. Dr. Carstensen (Uni Bamberg)
	Mapping competence	Dr. A.-K. Lindau (Uni Halle)	N.N.
<b>Acquisition of Knowledge / Methodology</b>	Geographical experimenting competence	Prof. Dr. K.H. Otto, Dr. L. Mönter (Uni Bochum) S. Hof (Uni Gießen)	Prof. Dr. J. Wirth (Uni Bochum)
	Geographical competence on reading pictures	Prof. Dr. H. Jahnke (Uni Flensburg)	N.N.
	Competence on read aerial pictures	Prof. Dr. U. Wieczorek (Uni Augsburg)	N.N.
<b>Communication</b>	Geographical argumentation competence	Prof. Dr. A. Budke (Uni Köln) Prof. Dr. A. Uhlenwinkel (Uni Potsdam)	Prof. Dr. U. Schiefele (Uni Potsdam)
<b>Evaluation</b>	Ethical judgement competence	Prof. Dr. C. Meyer, D. Felzmann , Prof. Dr. D. Horster (Uni Hannover)	Prof. Dr. E. Billmann-Mahecha (Uni Hannover)
<b>Action</b>	Geographical action competence	Prof. Dr. M. Flath, Dr. J. Schockemöhle (Uni Vechta)	Dr. N. Menold, Dr. L. Kaczmirek (GESIS Mannheim)

In this essay the project of the authors, which is one of several projects about competences in the nationwide network, is presented. The authors currently develop a model for system competence.

## 2. SYSTEM COMPETENCE AS A BASIC CONCEPT FOR GEOGRAPHY EDUCATION

The development of the national educational standards forced lecturers in geography education to intensely rethink and discuss fundamental structures of their subject. The focus centres on the question how geographical education should be like in 21<sup>st</sup> century. In this process system competence turned out to be the basic concept for geographic education. In this concept earth is seen as a human-environment-system from a spatial perspective. Interaction between human geographical and physical geographical (sub-)systems becomes central (see Figure 1; DGfG, 2007, 11). For a deep understanding of the complexity of geospatial issues neither a structural nor a process-related view is sufficient. This is due to the fact that within one and also within several regional issues numerous interactions take place, which are not linear one-dimensional but multilateral and regenerative. Therefore if you analyse and think through geospatial issues, taking into account higher principles of systems seems to be the only adequate approach to achieve the central aim of geographic education which is the qualification for a future-oriented spatial behaviour (Köck, 1993, 1997, 1999; Klaus, 1998; Köck & Rempfler, 2004).

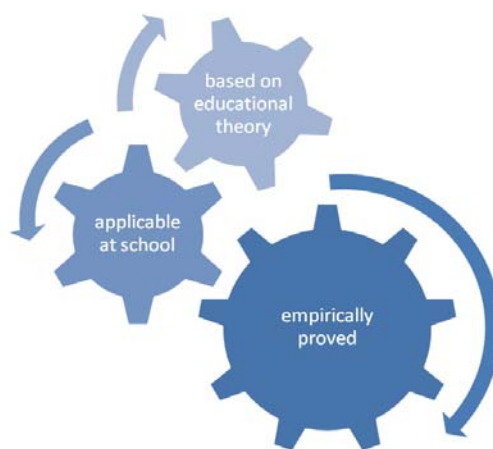


**Figure 1.** Basic concepts in the analysis of space in geography (DGfG, 2007)

In addition to that various authors make a case for system competence being essential for Education for Sustainable Development. Lecher (1997), co-founder of the psychological concept of ‘ecological thinking’, does not measure environmental awareness based on theoretical knowledge or verbally confirmed behaviour, but based on the extent of a person’s systemic reasoning powers. Bayrhuber et al. (w/o year), Riess & Mischo (2010) as well as Rost et al. (2003) assume, that learners can only actively participate in sustainable development if they recognise and understand complex and global relationships. The SysDene research group consisting of Swiss and German scientists in various fields, aims to explore ‘systems thinking for sustainable development’ and implement it at the elementary school level (Frischknecht-Tobler, Nagel & Seybold, 2008).

### 3. DEVELOPMENT OF A COMPETENCE MODEL ON GEOGRAPHICAL SYSTEM COMPETENCE

Based on didactic concepts competence models are supposed to name different aspects of each competence, to identify single stages of quality and to testify under which influences individual competences are developed. In order to design a competence model three criteria must be taken into account (see Figure 2): Firstly it must be based on normative educational theory. Secondly it must prove to be practically applicable at school and thirdly it must be empirically provable. Therefore it makes no sense to divide up the model into small stages, as teachers would be unable with making diagnoses. Likewise it would not be sufficient to derive stages from a theoretical perspective only, as students' results may show different in empirical testing.



**Figure 2.** Three essential criteria of competence models

#### 3.1. Foundation in educational theory

At the beginning of the project the foundation in educational theory had to be examined. As shown above the understanding of geographical systems is characterised by a connection between physical-material and social systems (Figure 1). Consequently we chose the system understanding of 'social ecology' (a young, interdisciplinary branch of science) as a basis (Becker & Jahn, 2006; Fischer-Kowalski & Weisz, 1999; Fischer-Kowalski & Erb, 2006). In social ecology an understanding of systems is used which proves to be well suitable because it overcomes the dichotomy between the natural and the social system. That is due to the fact that in this concept the network of relationships between society and nature is seen as a system in its overall context (Liehr, Becker & Keil, 2006). In contrast, the epistemological way of interpreting society and nature as two separate, almost autonomic (sub-)systems, which are only connected by outer relations, shows clear disadvantages. The geo-ecological system theory (Leser 1991, 2007) or the sociological system theory according to Luhmann (1984) come up against limiting factors because the natural sciences interpret social influences as external disturbances of the examined systems (and vice versa). Fundamental principles of systems according to the socio-ecological aspect are openness, autopoiesis, exemplariness, complexity, non-linearity, dynamics, emergence, delineation (by the intensity of a relational context), self-organised criticality (SOC), limited predictability and regulation (detailed explanations see in Rempfler & Uphues, 2010).

Table 2 shows the model for geographical system competence (derived from normative educational theory) which is based on the development of those social-ecological principles. The model consists of four competence dimensions which are 'system organisation', 'system behaviour', 'system-adequate intention to act' and 'system-adequate action'. The two dimensions 'system organisation' and 'system behaviour' follow the empirical understanding of Sommer (2005, 252). 'System organisation' means the ability and competence to identify a complex section of reality as an organised system and to portray and describe its essential elements within a model. 'System behaviour' can be defined as the functions and the behaviour of a system. Based on theoretical reflection, the model includes two further dimensions, which comprise the ability to system adequate action (Köck, 1985; Lecher, 1997; Ossimitz, 2000; Rost et al., 2003; Köck, 2004a; Riess & Mischo, 2008; Frischknecht-Tobler, Kunz & Nagel, 2008). While dimension one and two emphasize knowledge acquisition, the system-adequate intention to act (dimension three) and system-adequate action (dimension four) focus on the application of knowledge. The distinction between 'knowledge acquisition' and 'knowledge application' is based on Funke (2003, 157). Whereas 'knowledge acquisition' refers to the identification of a system and includes a complex understanding of relationships and dynamics, 'knowledge application' means the process of controlling the system: Existing or acquired knowledge is put into an application framework and is used to behave adequate to the system and to help rectifying or avoiding system disturbances. The application of knowledge may occur mentally or in real actions. Mental application manifests itself through system-adequate actions in virtual space while active application includes concrete action in the real world (Köck, 1989). Since the valid assessment of dimension four can only take place in a real world setting, this dimension will not be taken into consideration within the further development of the model. For the remaining three competence dimensions stages had to be defined in a next step. These stages were derived mainly based on studies which are largely empirically proved (Lecher, 1997; Wilensky & Resnick, 1999; Sweeney & Sterman, 2000; Jacobson, 2001; Hmelo-Silver & Pfeffer, 2004; Assaraf & Orion, 2005; Sommer, 2005; Talanquer, 2009) and which theoretically as well empirically support the characteristics (Ossimitz, 2000; Sterman, 2000; Rost et al., 2003; Köck, 1984, 1998, 2004b; Frischknecht-Tobler, Kunz & Nagel, 2008). The division into three stages is intended to be a preliminary hypothetical model. However, an adaption due to the pursued empirical proof remains necessary.

**Table 2.** Fundamental theoretical model of geographical system competence

	<b>Dimension 1:</b>		<b>Dimension 2:</b>			<b>Dimension 3:</b>		<b>Dimension 4:</b>
	<b>System Organisation</b> <i>(Acquisition of knowledge)</i>		<b>System Behaviour</b> <i>(Acquisition of knowledge)</i>			<b>System-Adequate Intention to Act</b> <i>(Mental application of knowledge)</i>		<b>System-Adequate Action</b> <i>(Active application of knowledge)</i>
	<b>System Structure</b>	<b>System Limit</b>	<b>System Emergence</b>	<b>System Interaction</b>	<b>System Dynamics</b>	<b>System Prognosis</b>	<b>System Regulation</b>	
<b>Stage 1</b>	<ul style="list-style-type: none"> <li>- A small number of elements and relations is largely identified in an isolated manner</li> <li>- Low level of complexity</li> <li>- Monocausal thinking dominates</li> </ul>	<ul style="list-style-type: none"> <li>- Very vague delineation of a set of relationships</li> <li>- Elements and relations are not viewed as part of a whole</li> </ul>	<ul style="list-style-type: none"> <li>- Focus on concrete, perceptible system components</li> <li>- Characteristics of the components are perceived as identical to the characteristics of the system as a whole</li> </ul>	<ul style="list-style-type: none"> <li>- Interaction is the result of contact in time and space</li> <li>- Concept of causality has a monocausal focus</li> <li>- Simple stock and flow relationships are not identified to a significant extent</li> </ul>	<ul style="list-style-type: none"> <li>- The phenomenon or system is viewed as static-stable</li> <li>- Development progressions are only considered from a monocausal perspective</li> <li>- Awareness of the temporal dimension is largely lacking</li> </ul>	<ul style="list-style-type: none"> <li>- Effects of system behaviour are perceived vaguely and incidentally</li> <li>- Prognoses are based on direct and monocausal explanations</li> <li>- No awareness of limited predictability</li> </ul>	<ul style="list-style-type: none"> <li>- Regulative measures are implemented based on the monocausal analysis of effects</li> <li>- Effects of the intended measures are vaguely anticipated</li> <li>- Weakly defined reduction of complexity</li> <li>- System dynamics are not taken into account</li> </ul>	
<b>Stage 2</b>	<ul style="list-style-type: none"> <li>- A moderate number of elements and relations is increasingly identified together</li> <li>- Moderate level of complexity</li> <li>- Linear thinking dominates</li> </ul>	<ul style="list-style-type: none"> <li>- Moderately differentiated delineation of a set of relationships</li> <li>- Integrated perspective is lacking, but elements and relations are no longer viewed exclusively in isolation</li> </ul>	Concrete, perceptible system components are combined at a higher level as part of a more general class with identical or similar characteristics	<ul style="list-style-type: none"> <li>- Cause and effect are strictly separated</li> <li>- Interrelationships, series and parallel coupling are recognised</li> <li>- Simple stock and flow relationships are identified</li> </ul>	<ul style="list-style-type: none"> <li>- Longer linear relationships are also recognised</li> <li>- Causative explanation of movement and change</li> <li>- Developments are considered reversible</li> </ul>	<ul style="list-style-type: none"> <li>- Effects of system behaviour are perceived systematically</li> <li>- Prognosis take a monofinal or multifinal direction</li> <li>- Vague awareness of limited predictability</li> </ul>	<ul style="list-style-type: none"> <li>- Regulative measures are implemented based on the linear analysis of effects</li> <li>- Effects of the intended measures are systematically anticipated</li> <li>- Moderately defined reduction of complexity</li> <li>- System dynamics are sporadically taken into account</li> </ul>	
<b>Stage 3</b>	<ul style="list-style-type: none"> <li>- A large number of elements and relations is identified comprehensively and networked</li> <li>- High level of complexity</li> <li>- System is viewed as part of nested systems</li> </ul>	<ul style="list-style-type: none"> <li>- Clear delineation of a set of relationships</li> <li>- Integrated perspective</li> <li>- Difference between neighbouring systems is recognised</li> </ul>	Understanding that the interrelationship of system components results in new structures with new characteristics at a higher level (emergence)	<ul style="list-style-type: none"> <li>- Strict separation between cause and effect is eliminated</li> <li>- Feedback and cycles are recognised</li> <li>- Differentiation between internal system and external interaction</li> <li>- Complex stock and flow relationships are identified</li> </ul>	<ul style="list-style-type: none"> <li>- Non-linear (exponential and logistical) developments are also considered</li> <li>- The fact that developments are irreversible is recognised</li> </ul>	<ul style="list-style-type: none"> <li>- Effects of system behaviour are recognised as interrelationship structures and taken into account in the prognosis</li> <li>- Differentiated awareness of limited predictability</li> </ul>	<ul style="list-style-type: none"> <li>- Regulative measures are implemented based on the complex analysis of effects</li> <li>- Effects of the intended measures are anticipated and measures are modified if applicable</li> <li>- Highly defined reduction of complexity</li> <li>- System dynamics are continuously taken into account</li> </ul>	

### **3.2. Application at school**

The theoretical foundation is only one part in the process of developing a competence model. In addition to that the model must prove to be applicable in a real school context. This means a teacher must be able to understand it and be able to diagnose students' results with its help in everyday teaching. However, the model presented above (see Table 2), turned out to be too complex for that. Therefore, the next step was to simplify the model. The differentiation into sub-dimensions was given up because of that (see Table 3). In this process the core content was abstracted to the dimension level as well. Basis of this reduction was an analysis of complexity-generating characteristics. In this respect it was especially important which characteristics (independent from its related competence dimension) make a problem easier or more difficult. In context of this question two complexity-generating characteristics could be identified within the system competence framework: a) The number of elements and relationships (low, moderate, high) and b) the type of networking (monocausal, linear, complex). Therefore, these two characteristics were constitutive for the definition of stages.

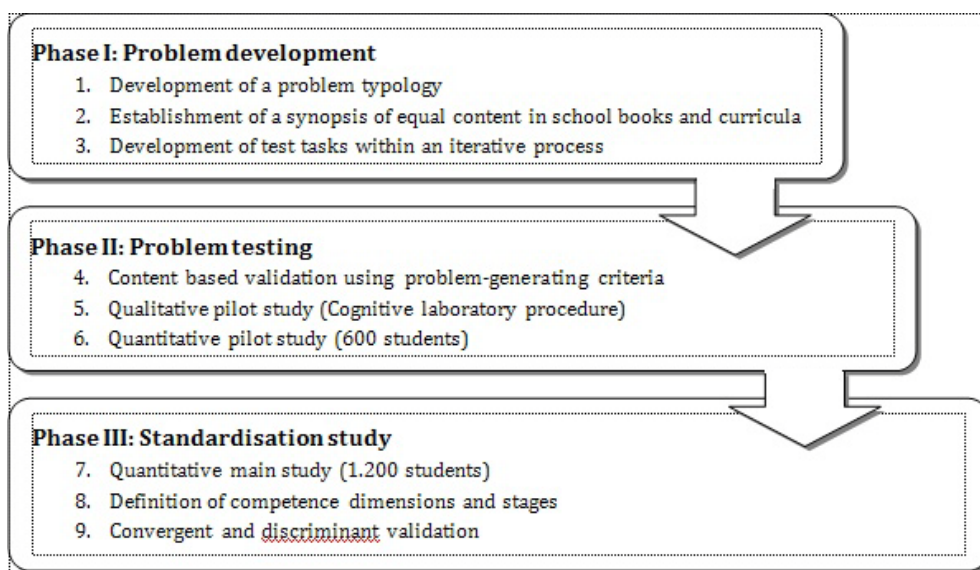
**Table 3.** Competence and stage model for geographical system competence – subject to empirical validation

	<b>Competence Dimensions</b>		
	<b>System Organisation</b>	<b>System Behaviour</b>	<b>System-Adequate Intention to Act</b>
	<b>System Structure and Limit</b>	<b>System Emergence, Interaction and Dynamics</b>	<b>System Prognosis and Regulation</b>
<b>Stage 1</b>	The student identifies a low number of elements and relations, mainly isolated or monocausal and as a vague set of relationships.	The student analysis monocausal developments based on a weakly developed functional and process understanding.	The student develops prognoses and regulative measures based on the monocausal analysis of effects, vague anticipation of effects and weakly defined reduction of complexity.
<b>Stage 2</b>	The student identifies a moderate number of elements and relations, mainly linear and as a moderately differentiated set of relationships.	The student analyses linear developments based on an understanding of interrelationships, series and parallel coupling as well as simple stock and flow relationships.	The student develops prognoses and regulative measures based on the linear analysis of effects, anticipation of effects and moderately defined reduction of complexity.
<b>Stage 3</b>	The student identifies a high number of elements and relations, mainly complex and as a highly differentiated set of relationships, and as part of nested systems.	The student analyses linear and non-linear developments based on an understanding of feedback and cycles as well as demanding stock and flow relationships, irreversibility and emergence.	The student develops prognoses and regulative measures based on the complex analysis of effects, the anticipation of effects and highly defined reduction of complexity as well as awareness of limited predictability.



### 3.3. Empirical validation

The foundation in educational theory of the model has already been completed. Right now its practical applicability at school is being verified. This is true not only for our project about geographical system competence but also for most of all other projects within the network for geographic competence (see Meyer & Felzmann, 2010; Otto et al., 2010; Flath & Schockemöhle, 2010; Hemmer et al., 2010; Gryl et al., 2010; Budke et al., 2010; Frank et al., 2010). So the empirical verification of those normatively defined models has yet to take place in all of those projects. As such a validation needs a lot of resources the network has applied for funding through the German Research Association (DFG). The design of the research project on validating the model for geographic system competence includes three phases (see Figure 3).



**Figure 3.** Planned research design for the empirical validation of the competence model on geographical system competence

#### Phase I – Problem development

In order to develop problems literature has been researched for all empirical studies on system competence especially for collecting different types of test questions. Then these problems were systemized and organised in a typology. In this context our preliminary studies delivered valuable findings as well (Rempfler 2010, 2011). The resulting typology includes adequate test exercises for each competence dimension (see Table 4).



**Table 4.** Problem typology based on the competence dimensions

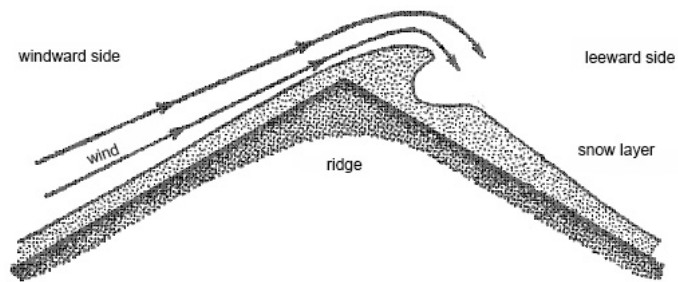
Competence Dimensions		
System Organisation (SO)	System Behaviour (SB)	System-Adequate Intention to Act (SA)
<p><b>SO 1:</b> An incomplete graphical representation (linear cause-effect chain [monocausal / series coupling], tree and network diagram) is provided based on a set of problems with background information.</p> <p>The student adds the missing elements and / or relations.</p> <p>Sommer, 2005</p>	<p><b>SB 1:</b> Based on a specified system representation, individual system components are isolated, removed or added.</p> <p>The student analyses the resulting changes in regards to system emergence.</p> <p>Sommer, 2005</p>	<p><b>SA 1:</b> One or more flow diagrams plus selective additional information are provided.</p> <p>The student develops the flow diagram further (prognostic and regulative).</p> <p>Sweeney &amp; Sterman, 2000</p>
<p><b>SO 2:</b> A system description in text form (without the course of developments) is provided with all relevant elements and relations.</p> <p>The student transfers this to a graphical representation (e.g. concept map).</p> <p>Klieme &amp; Maichle, 1994; Ossimitz, 2000; Schecker et al., 1997; Bollmann-Zuberbühler, 2008</p>	<p><b>SB 2:</b> One or more flow diagrams including a set of problems with background information are provided.</p> <p>The student answers related questions on the course of developments from a retrospective perspective.</p> <p>Sweeney &amp; Sterman, 2000</p>	<p><b>SA 2:</b> A set of problems with all system development information is provided.</p> <p>The student formulates questions to an expert regarding problems which are developing.</p> <p>Assaraf &amp; Orion, 2005</p>
<p><b>SO 3:</b> A graphical system representation (e.g. concept map) is provided.</p> <p>The student discusses the system and / or answers questions about the system structure &amp; limit.</p> <p>Schecker et al., 1997</p>	<p><b>SB 3:</b> A set of problems with all system development information is provided.</p> <p>The student answers questions about changes over the course of time from a retrospective perspective.</p> <p>Sommer, 2005</p>	<p><b>SA 3:</b> A set of problems with all system development information is provided.</p> <p>The student answers questions about changes from a prospective perspective (prognostic and regulative).</p> <p>Klieme &amp; Maichle, 1994; Sommer, 2005</p>
<p><b>SO 4:</b> Individual information components for a system are provided (e.g. isolated if-then relationships).</p> <p>The student conceives system relationships in the form of a graphical representation.</p> <p>PISA-Konsortium, 2003</p>	<p><b>SB 4:</b> A set of problems with all system development information is provided.</p> <p>The student answers retrospective 'what if' questions with regard to system irreversibility.</p> <p>Ossimitz, 2000</p>	<p><b>SA 4:</b> A set of problems with all system development information is provided.</p> <p>The student answers prospective 'what if' questions.</p> <p>Ossimitz, 2000</p>
		<p><b>SA 5:</b> Alternative scenarios and regulative measures are provided based on a set of problems with all system development information.</p> <p>The student evaluates the alternatives (also based on limited predictability).</p> <p>Sommer, 2005</p>

One of the central problems we face while testing system competence is the high correlation with geographical subject knowledge. Geographical system competence can only be shown on the basis of knowledge specific to the subject. This means that if a student has little geographical knowledge on a certain topic he will not be able to show geographic system competence. Therefore, it must be guaranteed that all students are familiar with the geographical knowledge needed for the problems. Creating a synopsis of equal content and geographical terms, which will appear in all school books and curricula, can guarantee that.

The third step of phase I is the development of specific questions. Based on the compiled synopsis and considering the problem typology, problems which correspond with each field of the competence model matrix have to be developed. If the student is able to solve the problem, he belongs to this stage at least which is corresponding with the related competence level. Figure 4 shows an exemplary problem on the topic of ‘avalanches’, which helps to examine dimension one (system organisation).

### Windward and leeward slopes

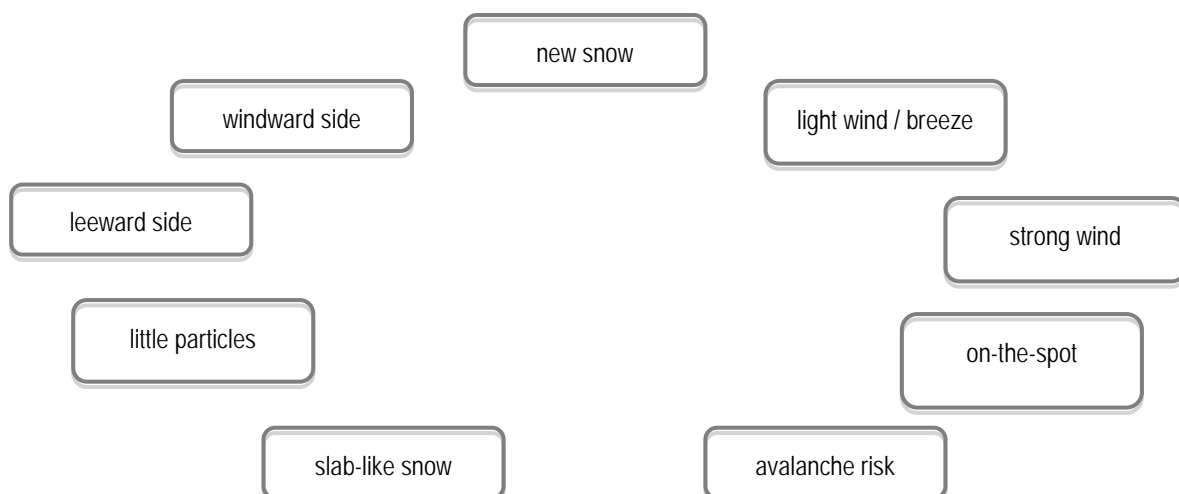
In winter there is sometimes a lot of new snow falling in the mountains. the snow falls while there is no wind, it stays in one place. If, however, the wind is blowing hard, large amounts of snow are moved (see picture). Mountain slopes which are heavily exposed to the wind (windward) can become snow free due to snow drifts. On the other hand slopes which are averted from wind (leeward) get a strong accumulation of snow. In the process of snow drift snow crystals are damaged and spilt into smaller particles. This has the effect that the snow gets compressed. As a result a new, slab-like layer of snow is formed. As long as this new layer does not bond with older layers, the likelihood of an avalanche is high.



If  
free  
the

### Task

Illustrate all relationships as shown above in a concept map. Start with the given nouns, think of how they are connected and show this connection by drawing arrows. Don't forget to label these arrows with a suitable verb. Make sure you have checked the direction of the arrows.



## Result

Concept maps help to determine different indices (see Bollmann-Zuberbühler, 2008; Rempfler, 2010, 2011).

**Figure 4.** Sample problem to diagnose geographical system competence (Rempfler & Künzle 2010, unpublished study)

The development of the problems is realised by an iterative problem-development-process (see Schnotz et al., 2008): A group of problem developers first creates initial problem prototypes which are validated by experts. Some of these experts are members of the international scientific research group SysDene (Frischknecht-Tobler, Nagel & Seybold, 2008). The experts give their feedback about the problems. After that the developers revise and enhance the exercises and send them back to the experts again. This process is repeated up to four times per problem. On the whole many problems have to be created in order to be able to remove some of them after the pilot study in case they are not suitable.

### Phase II - Problem testing

In the process of calibrating the content the developed problems are validated by experts who have not been involved in problem development before. These experts are supposed to assign each problem to one field in the matrix of the competence model (Table 3). For the purpose of content-related validation they have to go through the procedure the reverse way which is to derive the competence dimensions and stages from the problems.

Afterwards the qualitative preliminary testing of problems will be conducted. This testing follows the cognitive laboratory procedure (Alavi, 2005; Cohen, 2000; Long & Bourg, 1996) which had been used in PISA in order to detect potential problems in question designs. Therefore, students from the target population are asked to solve the problems within a test setting. While working on the problems the students have to think aloud. This setting is being filmed because it is supposed to give information about the text apprehension concerning the problems as well as about solution strategies and students' difficulties (especially against the setting of PISA-results in the category 'reading comprehension'; see Prüfer & Rexroth, 2000).

After that the quantitative pilot study takes place. The problems are now being solved by a sufficiently large and heterogeneous sample of about 600 9<sup>th</sup> graders. The goal of the pilot study is to determine the amount of time required to solve the problems and to analyse the items intensely (e.g. specification of selectivity, distractor analysis), as well as to obtain an initial assessment of degree of difficulty and Rasch homogeneity of the problem. In order to determine the identified quality criteria, a one-dimensional Rasch scale is completed for the problems for each dimension of problem. With those results it can now be decided which problems can be taken for the testing for each dimension and how the presentation of the problems can be optimized. On the basis of the item analysis a final revision of the problem-pool has to follow.

### Phase III – Standardisation study: Verification of the competence model

Phase II results in a final pool of problems which can be used in the main study. In the main study 1.200 students are working on the problems in a 60 minutes test. The target group for the study has to consist of students from schools in urban and rural areas as well as of students with different family backgrounds. The problems are presented in a multi-matrix design. Thus, not all of the students have to work through all of the items. The usage of a Youden-Square-design for the test booklet guarantees a linking of all problems as well as a control of the positions of the items (Frey, Hartig & Rupp, 2009).

By means of a confirmatory factor analysis and more dimensional item-response theory models (Hartig & Höhler, 2009; Reckase, 2009) it is being checked afterwards if the

theoretically created and within practical school testing reduced competence dimensions can be empirically verified or if the model has to be changed fundamentally.

For a further validation of the construct 'geographical system competence', the individual results from the students are connected with the outer criterion 'school grade in geography'. Within a convergent validation geographical system competence should (at least to a moderate extent) correlate with the proband's school grades in geography, biology and maths. Within discriminant validation, however, little correlations should be observed with grades from other subjects (such as German, foreign languages etc.).

#### 4. CONCLUSION AND OUTLOOK

The development of a competence model on geographic system competence, as shown above, is still a long way off. At the end of our research process, however, we should not only have a model for it but also a pool of suitable test assignments. Both will help geography teachers to diagnose the geographic system competence of their students. Nonetheless, it must be stated that a mere diagnosis does not yet mean a promotion of the student's performance. That is why we also ascertain potential factors of influence which might be related to the stages of geographic system competence. This includes individual preconditions like age, gender, place of residence, mother tongue, social background as well as intelligence and interest. The preconditions are expected to provide first clues for possibilities of promoting individual students. After that these possibilities have to be validated in an experimentally empirical pre-post-comparison.

#### REFERENCES

- Alavi, S.M. 2005. On the adequacy of verbal protocols in examining an underlying construct of a test. *Studies in Educational Evaluation*: 31: 1-26.
- Assaraf, O. & N. Orion 2005. Development of system thinking skills in the context of earth system education. *Journal of research in science teaching*: 42 (5): 518-560.
- Bayrhuber, H., Bünder, W., Euler, M., Hansen K.-H., Hassenpflug, W., Hildebrandt, K., Hlawatsch, S., Hoffmann, L., Lucius, E.R., Raffelsiefer, M. & F. Siemer w/o year. *Didaktische Analyse des Themas System Erde*. Kiel: <http://systemerde.ipn.uni-kiel.de/poster/Analyse.pdf>: 29/11/10.
- Becker, E. & T. Jahn 2006. *Soziale Ökologie*. Frankfurt/Main: Campus.
- Bollmann-Zuberbühler, B. 2008. Lernwirksamkeitsstudie zum systemischen Denken an der Sekundarstufe I. In *Systemdenken*, ed. U. Frischknecht-Tobler, U., Nagel and H. Seybold, 99-118. Zürich: Pestalozzianum.
- Budke, A., Schiefele, U. & A. Uhlenwinkel 2010. Entwicklung eines Argumentationskompetenzmodells für den Geographieunterricht. *Geographie und ihre Didaktik*: 38 (3): 180-190.
- Cohen, A. D. 2000. Exploring strategies in test-taking. Fine-tuning verbal reports from respondents. In *Learner-directed assessment in ESL*, ed. G. Ekbatani and H. Pierson, 127-150. Mahwah: Lawrence Erlbaum Associates.
- DGfG – Deutsche Gesellschaft für Geographie (Ed.) 2007. Educational Standards in Geography for the Intermediate School Certificate. Berlin: Self publishing by German Association for Geography.

- DGfG – Deutsche Gesellschaft für Geographie (Hrsg.) 2010. *Bildungsstandards im Fach Geographie für den Mittleren Schulabschluss – mit Aufgabenbeispielen*. Berlin: Selbstverlag Deutsche Gesellschaft für Geographie.
- Fischer-Kowalski, M. & H. Weisz 1999. Society as Hybrid between Material and Symbolic Realms. Toward a theoretical framework of society-nature interaction. *Advances in Human Ecology*: 8: 215-251.
- Fischer-Kowalski, M. & K.H. Erb 2006. Epistemologische und konzeptuelle Grundlagen der Sozialen Ökologie. In *Mitteilungen der Österreichischen Geographischen Gesellschaft* 148, 33-56. Wien: Selbstverlag.
- Flath, M. & J. Schockemöhle 2010. Die Fähigkeit zum Handeln im Geographieunterricht erwerben – Entwicklung, Erprobung und Evaluierung eines Modells des Kompetenzbereichs Handlung. *Geographie und ihre Didaktik*: 38 (3): 146-157.
- Frank, F., Obermaier, G. & N. Raschke 2010. Kompetenz des Kartenzeichnens – Theoretische Grundlagen und Entwurf eines Kompetenzstrukturmodells. *Geographie und ihre Didaktik*: 38 (3): 191-200.
- Frey, A., Hartig, J. & A. Rupp 2009. Booklet design in large-scale assessments of student achievement: theory and practice. *Educational Measurement: Issues and Practice*: 28 (3): 39-53.
- Frischknecht-Tobler, U., Nagel, U. & H. Seybold 2008. *Systemdenken. Wie Kinder und Jugendliche komplexe Systeme verstehen lernen*. Zürich: Pestalozzianum.
- Frischknecht-Tobler, U., Kunz, P. & U. Nagel 2008. Systemdenken – Begriffe, Konzepte und Definitionen. In *Systemdenken*, ed. U. Frischknecht-Tobler, U., Nagel and H. Seybold, 11-31. Zürich: Pestalozzianum.
- Funke, J. 2003. *Problemlösendes Denken*. Stuttgart: Kohlhammer.
- Gryl, I., Horn, M., Schweizer, K., Kanwischer, D. & T. Rhode-Juchtern 2010. Reflexion und Metaperspektive als notwendige Komponenten der Kartenkompetenz. *Geographie und ihre Didaktik*: 38 (3): 172-179.
- Hartig, J. & J. Hohler 2009. Multidimensional IRT models for the assessment of competences. *Studies in Educational Evaluation*: 35: 57-63.
- Hemmer, I., Hemmer, M., Hüttermann, A. & M. Ulrich 2010. Kartenauswertekompetenz – Theoretische Grundlagen und Entwurf eines Kompetenzstrukturmodells. *Geographie und ihre Didaktik*: 38 (3): 158-171.
- Hmelo-Silver, C.E. & M.G. Pfeffer 2004. Comparing expert and novice understanding of a complex system from the perspective of structures, behaviours, and functions. *Cognitive Science*: 28: 127-138.
- Jacobson, M.J. 2001. Problem solving, cognition, and complex systems: Differences between experts and novices. *Complexity*: 6 (3): 41-49.
- Klaus, D. 1998. Systemtheoretische Grundlagen räumlicher Komplexität. *Geographie und Schule*: 20 (116): 2-17.
- Klieme, E. & U. Maichle 1994. *Modellbildung und Simulation im Unterricht der Sekundarstufe I*. Bonn: Institut für Test- und Begabungsforschung.

- Klieme, E., Avenarius, H., Blum, W., Dobrich, P., Gruber, H., Prenzel, M., Reiss, K., Riquarts, K., Rost, J., Tenorth, H.-E. & H.J. Vollmer 2003. *Zur Entwicklung nationaler Bildungsstandards – Eine Expertise*. Bonn: BMBF: [www.szs-dachau.de/expertise\\_bildungsstandards.pdf](http://www.szs-dachau.de/expertise_bildungsstandards.pdf): 01/12/10.
- Kock, H. 1984. Der Komplexitätsgrad als curriculares Stufungsprinzip. *Geographie und ihre Didaktik*: 12 (3): 114-133.
- Kock, H. 1985. Systemdenken – geographiedidaktische Qualifikation und unterrichtliches Prinzip. *Geographie und Schule*: 7 (33): 15-19.
- Kock, H. 1989. Aufgabe und Aufbau des Geographieunterrichts. *Geographie und Schule*: 11 (57): 11-25.
- Kock, H. 1993. Raumbezogene Schlüsselqualifikationen – der fachimmanente Beitrag des Geographieunterrichts zum Lebensalltag des Einzelnen und Funktionieren der Gesellschaft. *Geographie und Schule*: 15 (84): 14-22.
- Kock, H. 1997. Der systemtheoretische Ansatz im Geographieunterricht. In *Geographie und Erziehung* 10, ed. A. Convey and H. Nolzen, 137-146. München: Münchener Universitätsschriften.
- Kock, H. 1998. Zur Relativität räumlicher Komplexität und der Frage deren curricularen Konsequenzen. *Geographie und Schule*: 20 (116): 18-24.
- Kock, H. 1999. Systemische Welt – Systemische Geographie. Notwendigkeit und Möglichkeit eines angemessenen Weltzugriffs. In *Geographieunterricht und Gesellschaft*, ed. H. Kock, 163-181. Nürnberg: HGD.
- Kock, H. 2004a: Der Raum – die Mitte der Geographie. In *Erkenntnisleitende Ansätze*, ed. H. Köck & A. Rempfler, 12-18. Köln: Aulis.
- Kock, H. 2004b: Typen und Kategorien der Raummanifestation. In *Erkenntnisleitende Ansätze*, ed. H. Kock & A. Rempfler, 19-91. Köln: Aulis.
- Kock, H. & A. Rempfler 2004. *Erkenntnisleitende Ansätze – Schlüssel zur Profilierung des Geographieunterrichts*. Köln: Aulis.
- Lecher, T. 1997. *Die Umweltkrise im Alltagsdenken*. Weinheim: Psychologie Verlags Union.
- Leser, H. <sup>3</sup>1991: *Landschaftsökologie*. Stuttgart: UTB 521.
- Leser, H. 2007: Raum, Geographie und Landschaftsökologie: Zur aktuellen Diskussion um Transdisziplinarität. In *Raum und Erkenntnis*, ed. M. Geiger and A. Huttermann, 7-26. Köln: Aulis.
- Liehr S., Becker, E. & F. Keil 2006. Systemdynamiken. In *Soziale Ökologie*, ed. E. Becker and T. Jahn, 267-283. Frankfurt/Main: Campus.
- Long, D.L. & T. Bourg 1996. Thinking-aloud: Telling a story about a story. *Discourse Processes*: 21: 329-339.
- Luhmann, N. 1984. *Soziale Systeme*. Frankfurt: Suhrkamp.
- Mandl, H. & B. Kopp 2005. *Impulse für die Bildungsforschung. Stand und Perspektiven. Dokumentation eines Expertengesprächs. Standpunkte*. Berlin: Akademie Verlag.
- Meyer, C. & D. Felzmann 2010. Ehtische Urteilskompetenz im Geographieunterricht – theoretische Grundlagen für die Entwicklung eines Kompetenzmodells. *Geographie und ihre Didaktik*: 38 (3): 125-132.



- Ossimitz, G. 2000. Entwicklung systemischen Denkens. In *Klagenfurter Beiträge zur Didaktik der Mathematik 1*, München-Wien: Profil.
- Otto, K.-H., Mönter, L.O., Hof, S. & J. Wirth 2010: Das geographische Experiment im Kontext empirischer Lehr-/Lernforschung. *Geographie und ihre Didaktik*: 38 (3): 133-145.
- PISA-Konsortium 2003. PISA 2003. Untersuchungen zur Kompetenzentwicklung im Verlauf eines Schuljahres. [http://pisa.ipn.uni-kiel.de/PISA\\_2003\\_Kompetenzentwicklung\\_Zusfsg.pdf](http://pisa.ipn.uni-kiel.de/PISA_2003_Kompetenzentwicklung_Zusfsg.pdf): 30/11/10: 1-20.
- Prufer, P. & M. Rexroth 2000. Zwei-Phasen-Pretesting. *ZUMA-Arbeitsbericht*: 8: 1-21.
- Reckase, M.D. 2009. *Multidimensional Item Response Theory*. New York, Berlin: Springer.
- Rempfler, A. 2010. Systemdenken – Schlüsselkompetenz für zukunftsorientiertes Raumverhalten. *Geographie und Schule*: 32 (184): 11-18.
- Rempfler, A. 2011. Systems concepts of youth: Design and results of an explorative pilot study on the topic of avalanches. *Die Erde* (in press).
- Rempfler, A. & R. Uphues 2010: Sozialökologisches Systemverständnis: Grundlage für die Modellierung von geographischer Systemkompetenz. *Geographie und ihre Didaktik*: 38 (4): 205-217.
- Riess, W. & C. Mischo 2008. Entwicklung und erste Validierung eines Fragebogens zur Erfassung des systemischen Denkens in nachhaltigkeitsrelevanten Kontexten. In *Kompetenzen der Bildung für nachhaltige Entwicklung*, ed. I. Ormann and G. de Haan, 215-232. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Riess, W. & C. Mischo 2010. Promoting Systems Thinking through Biology Lessons. *International Journal of Science Education*: 32 (6): 705-725.
- Rost, J., Lauströer, A. & N. Raack 2003. Kompetenzmodelle einer Bildung für Nachhaltigkeit. *Praxis der Naturwissenschaften – Chemie*: 8 (52): 10-15.
- Schecker, H., Klieme, E., Niedderer, H., Gerdes, J. & J. Ebach 1997. *Physiklernen mit Modellbildungssystemen*. Bremen/Bonn: Zwischenbericht zum DFG-Projekt.
- Schnotz, W., Baumert, J., Horz, H. & N. McElvany 2008. Das Projekt ‚Bild-Text-Integration‘. [www.bite.uni-landau.de](http://www.bite.uni-landau.de): 30/11/10.
- Sommer, C. 2005. *Untersuchung der Systemkompetenz von Grundschulern im Bereich Biologie*. Kiel: [www.ipn.uni-kiel.de/aktuell/e-diss.html](http://www.ipn.uni-kiel.de/aktuell/e-diss.html) (29/11/10).
- Sterman, J.D. 2000. *Business dynamics. Systems thinking and modeling for a complex world*. Boston, a.o. MIT: McGraw-Hill.
- Sweeney, L.B. & J.D. Sterman 2000. Bathtub dynamics: Initial results of a systems thinking inventory. *System Dynamics Review*: 16 (4): 249-286.
- Talanquer, V. 2009. On cognitive: Constraints and learning progressions: The case of ‘structure of matter’. *International Journal of Science Education*: 31 (15): 2123-2136.
- Wilensky, U. & M. Resnick 1999. Thinking in levels: A dynamic systems approach to making sense of the world. *Journal of Science Education and Technology*: 8 (1): 3-19.

## THE WAR OF THE MAPS: THE POLITICAL USE OF MAPS AND ATLASES TO SHAPE NATIONAL CONSCIOUSNESS – ISRAEL VERSUS THE PALESTINIAN AUTHORITY

Arnon MEDZINI

*Oranim School of Education, Department of Geography, Tivon, Israel*  
[arnon@oranim.ac.il](mailto:arnon@oranim.ac.il)

---

### Abstract

The purpose of this article is to examine the political uses of geographical maps made to form the national identity of pupils in the educational systems of both Israel and the Palestinian Authority. People trust maps and see them as true representations of reality because cartography has an aura of scientific accuracy stemming from the notion that map and territory are identical. In fact, map drawing is interpretation rather than an exact copying of reality to paper. The map's ability to present a pre-ordered reality allows for its use as an extremely meaningful political tool. Nations and other political bodies make much use of maps for propaganda or political messages. These bodies make use of cartographic tools aimed at creating their own "truth", focusing only on those facts or "alleged facts" that might form behaviors conforming to their interests. There are also cognitive maps residing in our minds or hearts. Although intangible, they carry much weight regarding spatial decisions made by individuals. Cognitive maps are an example and concrete expression of the Israeli-Palestinian conflict. The study of the maps shows how both sides relate their own narrative of the conflict while ignoring the other side. The universal principle regarding maps used in the sphere of education states that "my map is educational - your map is propaganda."

**Keywords:** *Cartographic manipulation, Cognitive Maps, Israeli-Palestinian conflict, Maps education, Propaganda maps, Political maps Territorial image.*

---

### 1. INTRODUCTION

A map is a tool used to represent spatial reality on a small scale. It serves as an auxiliary tool for conceptualizing space, with space usually represented abstractly and subjectively. Maps constitute the basic cartographic tool for spatial representation, yet in addition to their practical function in everyday life they also serve as a component in artistic works, as a means for expressing national and local pride and for promoting other purposes as well. Indeed, throughout history maps have also been utilized as a means of propaganda and as an instrument of persuasion and political indoctrination.



The general public regards maps as sacrosanct products of scientifically accurate work. The prevailing view is that maps provide a reliable territorial representation and that cartography, which is based upon satellite photos and mathematical and engineering calculations, is an exact science. Yet in practice the drawing of maps is not a precise copying of reality onto paper, but rather an interpretation of reality that is influenced by the political and cultural views of their creators.

Maps are subjective, and the way they are read and deciphered is both subjective and interpretive. Hence, the need to make "cartographic adjustments" cannot be avoided. Even if a map basically relies upon "the real world," cartographers cannot avoid introducing into their maps their own subjective point of view, cultural background or target audience. Every map filters reality, distorts it and imbues it with common symbols without which the map would be worthless (Portugali, 1996). Even with no malicious intent or deliberate manipulation on the part of a map's creator, it still conveys ideological themes by virtue of its being a culturally dependent graphic representation.

The public has faith in maps and considers them a reliable representation of reality. Most people who look at maps usually lack the requisite knowledge and tools for critical observation. They are thus incapable of discerning all the craftily designed manipulations carried out by the cartographers in preparing the maps. These manipulations find expression in the information chosen to appear on the map, in the means of representing it and in the decision as to what information to feature and underscore and what to merely hint at or understate.

The ability to use maps to represent a chosen realism that goes beyond physical reality turns maps into an extremely significant political tool (Collins, 2004). Throughout the history of mapmaking, heads of state have exploited this tool for propaganda purposes or to convey political themes (see Figure 1 and Figure 2). Not only did maps describe facts, but they also depicted worldviews, and in addition to their practical uses have also served as tools for education and for shaping consciousness.



**Figure 1.** Satirical map published in London in 1877.<sup>1</sup>

---

<sup>1</sup> **Figure 1** is a satirical map published in London in 1877 showing the Russian Empire's intentions to conquer Turkey in order to restore its hegemony over the Black Sea and to give the Russian navy access to the Mediterranean Sea. Russia is depicted on the map as an octopus whose arms are choking Poland and threatening Armenia, Persia, Turkey and central Asia. Greece is shown supporting the octopus's arm. Germany is trying to stop the octopus, Spain is turning its back on what is happening, and England and Scotland are looking seaward with passive anxiety (Source: *Magnificent Maps*, p. 164).



**Figure 2.** Nazi propaganda poster.<sup>2</sup>

Mapmakers with vested interests deliberately manipulate cartographic means to produce maps intended to convey ideas they wish to express and thus to create their own version of the "truth." Maps such as these focus only on those facts or ostensible facts likely to elicit the behavior and thoughts desired by those who commissioned the map. To this end a variety of cartographic techniques are used: omission or addition of details; use of various projections; alterations of scale; choice of statistical data; stressing a particular topic; choice of place names; attention paid to page and text design; selection of a title for the map; and choice of dramatic and provocative symbols and colors.<sup>3</sup>

## 2. COGNITIVE MAPS

The term "map" has also been used in psychological and intellectual contexts. Mental or cognitive maps reside in our emotions or in our minds and are therefore not visible. These maps have a major impact on determining how individuals make decisions of wide-ranging importance, such as how we choose a place to live and a place to work, how we decide where and how to spend our leisure time, how we navigate through the city and how we plan our morning route to work (Portugali, 1996). These maps are subjective and personal. Every individual has his or her own inner image of the surroundings, one that includes emotions, opinions, beliefs, values and other emotional attributes.

According to Fleishman and Salomon (2005), the creation of a cognitive map in our minds is a function of a number of factors, including direct and indirect experiences. An individual's direct experiences of space occur when traveling, walking, hiking and the like.

---

<sup>2</sup> **Figure 2** is a Nazi propaganda poster printed in France in 1944 showing Churchill as a diabolical octopus smoking a cigar and attempting to grasp Africa and the Middle East with its arms, but the Axis countries are preventing this by amputating the octopus's arms (Source: *Magnificent Maps*, p. 165).

<sup>3</sup> The most extensive research on this topic was written by Mark Monmonier in his book titled *How to Lie with Maps*. The book was first published in 1991, and a revised and expanded second edition came out in 1996. The book demonstrates in detail how cartography can be used to manipulate map drawing and for what purposes.

Another factor comprises the messages an individual absorbs from formal and informal educational systems, from information disseminated by the media, books and maps and from information passed from one individual to another by means of interpersonal communication.

While cognitive maps are personal and generated in the mind of each individual, there are groups of people whose cognitive maps are similar – collective maps, of sorts: national groups, ethnic groups, social groups and the like. These collective maps resemble a common language in that members of two different groups are likely to build different maps describing the same phenomenon or the same territory. Collective maps are usually maps of the stereotypes that are an integral part of the culture in which we live. These stereotypes are indeed influenced by distinctions between groups, but their primary influence derives from the ways the groups relate to one another. When the interests of two groups are at odds, this will be expressed by negative stereotypes.<sup>4</sup> In the following maps the graphic designers have created maps in accordance with the viewpoints of their intended audiences (Figure 3, Figure 4).



**Figure 3.** Mapping stereotypes: How China sees the world.<sup>5</sup>

---

<sup>4</sup> For a variety of stereotypical maps produced by graphic designer Yanko Tsvetkov, refer to these links:  
<http://www.andrewcusack.com/2010/09/21/stereotype-map/>  
<http://alphadesigner.com/project-mapping-stereotypes.html>

<sup>5</sup> This map that appeared on the cover of *The Economist* shows only the capital city, Beijing, with a limited number of sites: the Imperial Palace, the Forbidden City, Chang'an Street and Tian'anmen Square. Immediately behind the city is the Pacific Ocean, including a number of islands that are important to China: its traditional enemy Japan, Taiwan depicted with the Chinese flag and Hong Kong, which was returned to China in 1997. Behind the islands is the most important continent to the Chinese – America. The sign "Please give generously" on the Statue of Liberty symbolizes the disintegration of the United States. Next to the sign are abandoned sheds with the words "Closure Sale" written on them. Wall Street divides the United States into two. Europe, small and insignificant compared to the United States, is marked by the names Prada and Hermes, two fashion chains popular among China's upper class, thus showing that the Chinese see Europe mainly as a



**Figure 4.** Mapping stereotypes: How America sees the world<sup>6</sup> (source: Jason (Wade) Heflin, 2007).

Collective cognitive maps impact directly on the Israeli-Palestinian conflict. The source of the conflict is the battle over the same territory between these two groups. Their words and deeds make it clear that each group understands or "sees" the past, the present and the future of this territory from its own perspective. Each perspective differs radically from the perspective of the other, thus forming the basis for two different spatial perceptions of nationality.

These two groups live in the same geographical area, and each has created its own cognitive map. Each is aware of the existence of the other entity, but pays no attention to the other because each embraces and abides by its own nationalistic social order.

### 3. ISRAEL'S USE OF MAPS AND ATLASES TO GENERATE AFFINITY FOR THE LAND OF ISRAEL

One of the primary objectives of the Zionist movement was to secure the land of Israel for the Jewish people, both from the perspective of political and military control and from that of a sense of emotional belonging. Recognition of the supreme importance of territorial identity referred to the actual existence of a living space for the Jewish people – "a national homeland" – and of its borders. This recognition is among the ideological foundations of the State of Israel, and therefore the Zionist Movement, and subsequently the State of Israel, made use of diverse means to secure the land for the Jewish people (Feige, 2002).

Geographic maps play an essential and responsible role in shaping the territorial image and in constructing the conceptual map and borders of a political space. Hence, the way in which political maps are designed and presented is of major importance. According to Bar-Gal (1993), in the field of education maps constitute an excellent tool for communicating political messages. "The Zionist movement and the State of Israel, like other nations and movements, have always exploited map features for their own needs" (Bar-Gal, 1993).

---

shopping center. Next to Europe is Africa, depicted by industrial factories to demonstrate China's financial investments on the continent and its accessibility to raw materials.

<sup>6</sup> The map depicts how the average American perceived the world. East Asia is seen as a producer of shoes and electronics, the Middle East as a region of wars and oil, Europe as a producer of perfumes, wine and spaghetti, South America as a producer of coffee and cocaine and Africa as an unpopulated area.

The creation of a national language goes hand in hand with purging the language of foreign words and concepts in order to emphasize its distinctiveness as the national language. When the Jewish people "returned to Zion," most geographic sites had Arabic names. Thus, at the same time the land was being settled and a Jewish-Zionist community was coming into being, this national rebirth also found expression in the Hebraization of the landscapes of the new-old homeland, with the nationalistic idealistic goal of representing the space of the land of Israel as a Jewish-Hebrew space. One of the ways of achieving this goal was to choose names for the localities on the map.

The names given to sites on a map express ownership and belonging and therefore serve as an ideological and political tool to help establish Jewish sovereignty in the land of Israel. For this reason, the naming of places should not be seen merely as a cultural practice but also as a political statement, for names reflect the balance of power in a space. The choice of place names on a map, thus, is of major importance and has an impact on creating the mental map signifying ownership of a territory. Choosing a name for a place symbolizes its historical ownership, and for this reason two different nations can each refer to the same place by a different name.

In practice, the official Hebraization of the land of Israel began in 1949. Ben Gurion appointed a committee whose declared function was to give Hebrew names to all residential areas, mountains, valleys, springs and byways.

In 1951 the government established the Government Names Committee, which was charged with Hebraizing the map and with deciding upon Hebrew names for all the geographic features comprising the national landscape. During the years of its existence, this committee has determined close to 9,000 new names for localities, regions and sites appearing on maps of Israel (Shraga, 2010).

Examination of a variety of maps reveals an indefinite picture of the territory of Israel. One of the reasons for this lack of clarity is that some of Israel's borders are undefined and have not yet been finally determined. Undoubtedly political motives play a major part in this. The political confusion and the ideological debate between right and left in Israel are reflected in the maps themselves, as can be seen in a map's title, in whether or not the Green Line is marked and in the choice of names for regions, such as Judea and Samaria versus the West Bank or the conquered territories. Whether borders are marked or missing is not coincidental. Their presence or absence is deliberate, reflecting different ideologies and testifying to a complex political situation. In effect, then, maps are representative of the ideological landscape more than of the actual landscape (Collins, 2004).

The title given to a map has a similar impact. Like borders, the title also offers an indication of the map's essence and of its political message and thus has ideological significance. Further, what is absent from the title is also open to political interpretation. Clearly, the title reflects the worldview of the mapmakers.

The cultural and political tension emerging from the differences between the concepts of the "borders of the State of Israel" and the "borders of the Land of Israel" serve to exemplify this point (Falah & Newman, 1999).

This tension escalated after 1967 and reflects the ideological debate surrounding the future of the territories annexed to Israel in the wake of the Six Day War. As a result, Israeli society has been presented with different maps showing different borders. In most cases, maps titled "Israel" or "The Land of Israel" depict Israel with its expanded borders and without any division into regions with differing territorial status.



The issue of the Green Line is particularly apparent when it comes to borders. Fleishman and Salomon (2005) found that the name and the demarcation of the Green Line was the most definitive and significant representation of all border demarcations. Whether or not it is drawn reflects clear-cut political interests, and its presence or absence on a map provides an instantaneous political interpretation. The Green Line is in essence the official armistice line agreed upon following the negotiations between Israel and Jordan in Rhodes in November 1949. In practice the Green Line served as a border for twenty years. In 1967, this border was allegedly obliterated. Settlements were built on it, roads crossed it and it disappeared from maps, textbooks and official maps as well. Yet it continues to exist in people's minds as a cognitive border. Fleishman and Salomon show in their study that the political decision to erase the Green Line (Eldar, 2006) from the maps made a major contribution to creating a situation in which generations of Israelis educated in the government school system know nothing about the sovereign territory of their country. The confusion between these two concepts forms the platform for local political discourse on the future of Israeli control over the territory comprising Judea and Samaria and its Palestinian population (Fleishman & Salomon, 2005).

The territorial identity of the citizens of a country is shaped not only by government decisions, but also by the decisions and actions of other political groups on the right and on the left. A case in point is the map of the Golan Heights published by the Golan Heights Settlement Committee. This map uses cartographic manipulation in the form of a three-dimensional projection emphasizing the great height of the Golan Heights as compared to a two-dimensional projection showing the other regions in the north of Israel. In addition, the map uses bright colors and threatening arrows to illustrate the strategic importance of the Golan Heights and thus to sway public opinion and to underline the dangers of giving up the Golan Heights (Figure 5). The map of Judea and Samaria distributed by the Just Peace For Israel' movement via the Internet is designed to show how very dangerous the "two states for two peoples" political solution is. By means of cartographic manipulation using color and three-dimensional projection, the map underlines the importance of Judea and Samaria to Israel's security, and using red arrows it calls attention to the short distances between these territories and the population centers of the State of Israel (Figure 6).<sup>7</sup>

---

<sup>7</sup> [http://www.justpeaceforisrael.com/maps\\_of\\_middle\\_east\\_conflict](http://www.justpeaceforisrael.com/maps_of_middle_east_conflict)



**Figure 5.** Cartographic manipulation using colors, arrows and projections to underline the strategic importance of the Golan Heights.



**Figure 6.** Cartographic manipulation using colors, arrows and projections to emphasize the strategic importance of Judea and Samaria.

Though motivated by opposing ideologies, movements both on the political left and right make use of cartographic techniques to draw attention to Jewish settlement in Judea and Samaria. The left wants to show the size of the territory appropriated from the Palestinians, while the right seeks to emphasize the achievements of Jewish settlement.<sup>8</sup>

#### 4. PALESTINIAN USE OF MAPS AND ATLASES TO SUPPORT THE PALESTINIAN NARRATIVE

Similar to Israel's policy, the Palestinian Authority also uses maps to support its national narrative.<sup>9</sup> These maps are ever-present on the Palestinian streets and serve as a significant representation of the national aspirations of the Palestinian people. The maps are sold in the open markets and can be seen hanging on the walls of institutions across the Palestinian

<sup>8</sup> See, for example, the settlement map published by B'Tselem (The Israeli Information Center for Human Rights in the Occupied Territories) ([http://www.btselem.org/Download/Settlements\\_Map\\_Heb.JPG](http://www.btselem.org/Download/Settlements_Map_Heb.JPG)) and that published by Amana (the settlement movement of Gush Emunim) (<http://www.amana.co.il/map/binyamin.asp>)

<sup>9</sup> In addition to maps showing the borders of Palestine during the British Mandate, the Palestinian iconography has several other features: the rifle and the clenched fist symbolizing the struggle, the "V for Victory" sign, the Palestinian flag, the key symbolizing the right of return and the traditional Palestinian kaffiyah made of typical black-and-white fabric.

Authority and in the offices of individuals and organizations. The maps also appear in textbooks and are prevalently seen on advertisements, postcards, badges, souvenirs, and of course on television programs, Internet sites and at demonstrations organized by various Palestinian institutions and organizations (IICC, 2004).

Using maps to introduce messages that denounce Israel's right to exist has been common practice in the Palestinian educational system and in Palestinian society in general.<sup>10</sup> According to the Palestinian narrative, Palestine is the historical homeland of the Palestinian people. The Palestinian leadership, which has been working diligently for years to formulate Palestinian national identity, is currently at a critical juncture in this process and is attempting to invent an ancient and glorious past for the Palestinians by characterizing the ancient peoples of the region as Palestinians (Eshed, 2000). This characterization supports the Palestinian narrative in its denial of any authentic historical ties of the Jewish people to the land of Israel, since the "patriarchal right" to the land belongs to Palestinians (Bar-Siman Tov, 2010).

Over the years, the Palestinian educational system has tended to disregard the existence of the State of Israel. On maps, in atlases and in textbooks Israel does not exist, except through allusions in negative contexts. In contrast, Palestine is depicted as a nation-state despite not yet having that status (Figure 7, Figure 8).<sup>11</sup>



**Figure 7.** Map of the Middle East with Palestine depicted instead of the State of Israel.



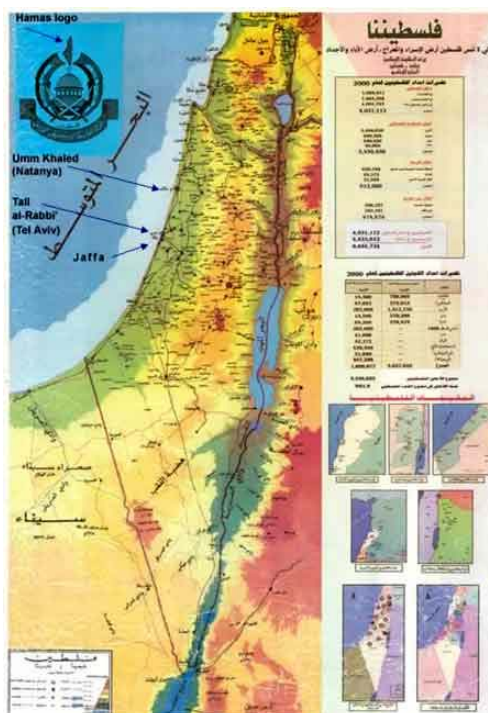
**Figure 8.** Map of Palestine with Palestinian Authority flag emphasized.

<sup>10</sup> From early childhood, Palestinian children absorb the anti-Israel atmosphere surrounding them. Conversations at home, television programs, incidents on the street, the opinions of friends at school – all these have an impact on them, even more than curricula taught by teachers who themselves are influenced by these factors (IICC, 2004).

<sup>11</sup> Sources: [http://www.palestinefacts.org/images/map\\_invalid\\_02.jpg](http://www.palestinefacts.org/images/map_invalid_02.jpg)  
[http://image03.webshots.com/3/0/44/63/21504463KmwHgCgXSy\\_ph.jpg](http://image03.webshots.com/3/0/44/63/21504463KmwHgCgXSy_ph.jpg)  
<http://home-and-garden.webshots.com/photo/1021504463025465733KmwHgCgXSy>



The reality depicted by most of the maps issued by the Palestinian Authority<sup>12</sup> and by all the maps issued by the Hamas movement is of the nation of Palestine stretching from the Jordan River to the Mediterranean Sea, with no indication of the Green Line and no mention of the name of Israel. The major message understood from these maps is that only the Palestinians have a right to the Palestinian homeland. The Hamas, which has been in control in the Gaza Strip since 2007, completely denies the existence of the State of Israel and makes extensive use of militant Islamic slogans. Hamas maps depict Palestine as covering the entire sovereign territory of the State of Israel. Furthermore, the names of Israeli localities established by the Zionist movement have been systematically obliterated from the maps, leaving only the names of Arab localities or cities that were under Arab control prior to 1948 (Figure 9). On this map, published by the Hamas movement in Gaza, the tables and small maps on the right side provide data about the dispersion of the Palestinian refugees and the refugee camps in order to underscore the right of Palestinian refugees to return to the entire historical territory of Palestine. The title in the upper right hand corner states: "Our Palestine – Let us not forget Palestine, the land of our fathers and forefathers." Only Arabic names of localities are noted on this map (IICC, 2004).



**Figure 9.** Map of Palestine distributed in the Gaza Strip by the Hamas movement.

Maps of Palestine also serve as a national symbol to illustrate the narrative of the Islamic resistance movements (Figure 10, Figure 11). Figure 10 shows a drawing on a wall in Gaza depicting a Palestinian fighter holding his weapon, a rock. The Palestinian logo and the Palestinian flag are visible in the background, as is a map of Palestine without the Green Line

<sup>12</sup> Despite the 1993 Oslo Accords in which the Israelis and the Palestinians agreed to mutual recognition.

and without Israel. Only the names of Arab localities are marked on the map. The title of the map is a verse from Surah 8 of the Koran, "The Spoils of War": "And make ready against them all you can of power, including steeds of war to threaten the enemy of Allah and your enemy, and others besides whom, you may not know but whom Allah does know. And whatever you shall spend in the Cause of Allah shall be repaid unto you, and you shall not be treated unjustly."<sup>13</sup>

Figure 11 is taken from the main Internet site of the Hamas. The home page displays a poster marking Nakba Day with a picture of an armed terrorist on top of the map of Palestine. The text on the right underlines the need to continue using terror until the refugees return and all of Palestine is "liberated."<sup>14</sup>



**Figure 10.** Drawing on the wall of a house in Gaza, illustrating the Palestinian narrative.



**Figure 11.** Poster of the Hamas movement marking Nakba Day.

According to the Palestinian media, special lessons were held in the schools in the "territories" prior to Nakba Day to instill messages denying the State of Israel's right to exist. Figure 12 shows a Palestinian teacher in a school in Hebron teaching a lesson about the Nakba, showing the pupils two maps with the title "Palestine" written in Arabic and with no trace or mention of the State of Israel.<sup>15</sup> Figure 13 shows pupils in the Gaza Strip next to a map that marks 60 years since the Palestinian Nakba and negates the existence of Israel.<sup>16</sup>

<sup>13</sup> Source: <http://web2gaza.org/events/brief-history-of-palestine/>

<sup>14</sup> Source: [http://www.terrorism-info.org.il/malam\\_multimedia/Hebrew/heb\\_n/html/alnacba.htm](http://www.terrorism-info.org.il/malam_multimedia/Hebrew/heb_n/html/alnacba.htm)

<sup>15</sup> Source: [http://www.terrorism-info.org.il/malam\\_multimedia/Hebrew/heb\\_n/html/alnacba.htm](http://www.terrorism-info.org.il/malam_multimedia/Hebrew/heb_n/html/alnacba.htm)

<sup>16</sup> Source: <http://www.life.com/image/81081441>



**Figure 12.** Palestinian children in Hebron learning about the Nakba.



**Figure 13.** Pupils in the Gaza Strip standing next to a map marking 60 years since the Nakba.

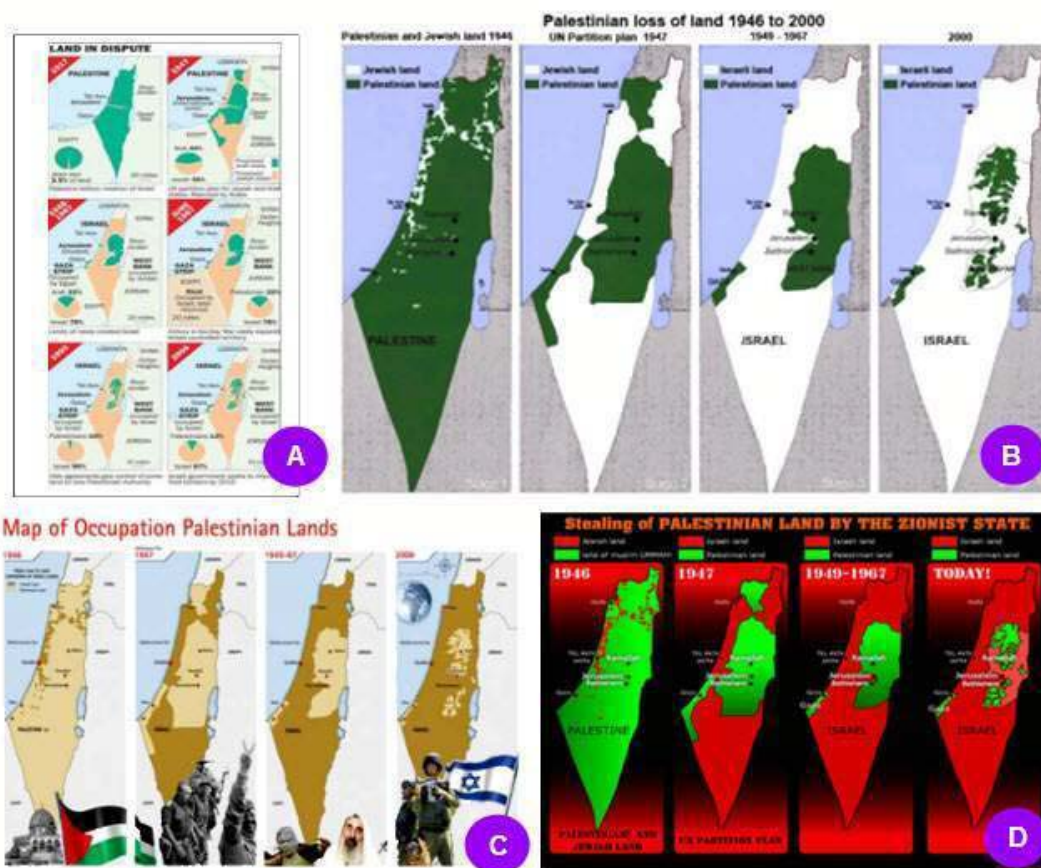
The gradual diminishment of Palestinian territory is stressed in all the maps and atlases. The maps underscore the Palestinian narrative, according to which they have been the victims of aggression in a territory that belongs to them and are therefore permitted to fight for the right to rectify this injustice (Figure 14).

The first cartographic depiction of the shrinking of Palestinian territory between 1917 and 2006 appeared in the *London Times* in June 2006 (Figure 14A) in a series of maps published under the heading "Truth in Maps."<sup>17</sup> The maps in the series are depicted over time, and from map to map clearer and more structured cartography is used. In effect, these maps tell the story of the consequences of the Israeli-Palestinian conflict by depicting the territory intended for the Palestinian state, which has gotten smaller and smaller over the years. This series of maps met the propaganda needs of the Palestinians because it clearly illustrated their national narrative regarding the conflict.

From the perspective of the Palestinians, Palestine has been stolen from them as a result of historical events, among them the immigration of the Jews to the area beginning at the end of the 19<sup>th</sup> century, the 1947 United Nations Partition Plan dividing the land into two states, the establishment of the State of Israel in 1948 when Israel took control of territories intended to be part of the Palestinian state and the 1967 war, when Israel conquered the remaining territory which, according to the United Nations Partition Plan, was earmarked for the Palestinian state. The official Palestinian demand is the rectification of the historical injustice done to the Palestinian people when Israel was established (IILC 2004).

---

<sup>17</sup> Source: <http://pakaalert.wordpress.com/2009/01/15/maps-greater-israel-and-shrinking-map-of-palestine>



**Figure 14.** Various maps depicting the gradual shrinking of Palestinian territory.

The maps in Figure 14 show how the Palestinians, over time, have "improved" the message they seek to convey by using maps, by changing the maps' titles and by means of the range of colors used as well as by adding illustrative elements to highlight their point of view. The set of maps shown in Figure 14B are featured on many Palestinian propaganda sites, under the ostensibly neutral heading "Palestinian Loss of Land."<sup>18</sup> A similar set of maps was displayed in 2007 on an Internet site marking 62 years since the Nakba.<sup>19</sup> The heading on this site was much blunter and was printed in bold red letters: "Map of Occupation Palestinian Lands" (Figure 14C). Illustrative elements were added to the maps, among them flags, religious symbols and symbols of struggle and conquest. The purpose of these illustrative additions to the map was to serve to underscore the occupation and express the territorial message more clearly. The series of maps from 2009, depicted in Figure 14D, shows that the message has become even more radical.<sup>20</sup> The terminology used in the title, "Stealing of Zionist Land by the Zionist State," is even more extreme, and the map uses brighter and more

<sup>18</sup> Source: <http://humanbeingsfirst.wordpress.com/palestine>

<sup>19</sup> Source: <http://humanbeingsfirst.wordpress.com/palestine%20>

<sup>20</sup> Source: <http://techbloggerlife.blogspot.com/2009/01/save-palestinian.html>  
<http://mondoweiss.net/2009/02/spiegel-database-of-west-bank-settlements-and-outposts-view-larger-map.html>



contrasting colors – red, green and black (the colors of the Palestinian flag) – in order to more clearly demonstrate the danger to the Palestinian people posed by the territorial expansion of the "Zionist entity."

The map of Palestine also serves as a major element in various demonstrations held by Palestinians against the State of Israel.<sup>21</sup> Figure 15 shows photographs from various demonstrations in the Gaza Strip, where the events are dictated by Hamas. In these demonstrations, the maps of Palestine are usually green, the color of Islam. This color ties the land of Palestine to the sanctity of Islam and therefore puts across the message that no negotiations about future borders can be held with Israel.



**Figure 15.** Maps of Palestine at different demonstrations in the Gaza Strip.

Maps concerned with the Palestinian right of return (

Figure 16) also make no mention of the existence of Israel. On all such maps, Palestine is the only geographic entity stretching from the Jordan River to the Mediterranean Sea. These maps are colored in a single color without any demarcation of the Green Line and are accompanied by a picture of a key symbolizing the Palestinian right of return.<sup>22</sup>

---

<sup>21</sup> For example, on the following Internet sites:

<http://jpundit.typepad.com/jci/2007/07/index.html>

<http://www.daylife.com/photo/07rO6id1xocRz>

<http://www.life.com/image/50840738>

<sup>22</sup> For example, on the following Internet sites:

<http://palestinethinktank.com/wp-content/uploads/2010/01/say-repeat-teach1.jpg>

<http://palestinethinktank.com/2010/04/09/franklin-lamb-can-lebanon-come-in-from-the-cold>



**Figure 16.** An assortment of maps depicting the map of Palestine, with a key symbolizing the right of return.<sup>23</sup>

## 5. CONCLUSION

In today's reality, in which Israel and the Palestinian Authority are struggling with the issue of the establishment of a Palestinian state within agreed-upon borders, sophisticated maps serve as an extremely important tool in presenting the territorial claims of each side. In this territorial struggle, maps are weapons of perception and propaganda. In effect they constitute an infographic form of perceived reality.

Maps help create national narratives. They have an impact on the formulation of national identity and values, on how information is perceived and interpreted and on how distrust in the other is nurtured with respect to territorial rights over land. The discrepancies between these narratives are quite broad and are expressed in the maps representing each of the sides. In effect, the maps of both sides constitute the "negative of narrative."

Both groups use maps for political manipulative purposes by means of the titles given to the maps and the names assigned to various parts of the land and to the localities on the maps, as well as by stressing or concealing facts and figures, by using colors to accentuate or to obscure, by the use of different map projections and by the addition of illustrative descriptions.

An examination of the maps of Israel and of the Palestinians shows how each side tells its narrative of the conflict from its point of view, while disregarding that of the other side. The

<sup>23</sup> Sources: <http://www.al-awdany.org/pastevents.html>  
[http://www.palwatch.org/pages/allmaps.aspx?fld\\_id=730&doc\\_id=749](http://www.palwatch.org/pages/allmaps.aspx?fld_id=730&doc_id=749)  
[http://www.palwatch.org/pages/allmaps.aspx?sort=s&fld\\_id=730&doc\\_id=750](http://www.palwatch.org/pages/allmaps.aspx?sort=s&fld_id=730&doc_id=750)  
<http://palestinethinktank.com/2010/04/09/franklin-lamb-can-lebanon-come-in-from-the-cold>  
<http://farewell-darwish.blogspot.com/>

principle underlying these narratives is this: "My map tells the truth, while your maps are for propaganda purposes only." In effect maps display the maximum territorial demands of each side, while camouflaging the complex reality of the situation. Many maps attempt to conceal the existence of the other side. In effect they represent the ideological landscape more than they do the actual landscape.

Israeli maps erase the existence of recognized international borders and draw a picture of an "intact" state. Through maps Israel aspires to demonstrate the authenticity of its current borders. Hence, maps play a decisive role, for people tend to see maps as representing reality. Thus, maps contribute to developing the perception of many in Israel, who see the West Bank as a region belonging exclusively to the Jewish people. Accordingly, the West Bank is a liberated territory and not a conquered territory.

The Palestinians adopt an identical approach. The maps presented by the Palestinians reflect a lack of recognition of the existence of Israel and of its right to exist, even alongside a Palestinian state. These messages lead the public and the young people to aspire to the existence of a Palestinian state stretching from the Jordan River to the Mediterranean Sea, in place of the State of Israel. The maps depict a country that in effect does not yet exist, and reinforce the narrative that Palestinian resistance will ultimately lead to a situation in which the Palestinians will soon be in control over all of Palestine.

Today, a "cartographer" does not require a professional license consciousness (Monmonier, 1996). Moreover, today's technology makes it possible for any person or any interested party to produce and design maps and to distribute them easily across the globe via the Internet. In this reality, it is very easy for any organization to use maps to shape political.

## REFERENCES

- Ager, J. 1978. "Maps & Propaganda," *Bulletin*, Society of University Cartographers: 11, 1-15.
- Barber, P., Harper, T. 2010. *Magnificent Maps: Power, Propaganda and Art*, The British Library, London.
- Bar-Gal, Y. 1993. *Moledet and Geography in Hundred Years of Zionist Education*, Am Oved, Tel Aviv (Hebrew).
- Bar-Gal, Y. 1996. Ideological Propaganda in Maps and Geographical Education. *In Innovation in Geographical Education*, J. van der Schee & H. Trimp, Netherlands Geographical Studies, IGU, Commission on Geographical Education, Hague.
- Bar-Gal, Y. 1999. *An Agent of Zionist's Propaganda: The Jewish National Fund 1924-1947*, Zemora-Bitan, Tel Aviv (Hebrew).
- Bar-Siman-Tov, Y. (ed.) 2010. *Barriers to the resolution of the Israeli-Palestinian conflict*. Jerusalem: Institute of Jerusalem (Hebrew).
- Black, J. 1997. *Maps and history: Constructing images of the past*, New Haven: Yale University Press.
- Cohen, A. 2001. The Power of Words, *To'ar – Journal of Hebrew University Alumni*: 11, April 2001, Jerusalem (Hebrew).
- Collins- Kreiner, N. 2004. The Borders of Israel – Mapping and Meaning. *In Eretz Israel Studies*, eds Bar-Gal, Y., Kliot, N. ,Peled, A. Aviel Ron Book, Department of Geography and Environmental Studies, Haifa University (Hebrew).

- Collins- Kreiner, N. 2004a. Mapping regions in conflict demonstrated on the mapping of Israel's borders. *Etmoded*: 22, March 2004, Association of Licensed Surveyors in Israel, 36-42 (Hebrew).
- Collins-Kreiner, N., Mansfeld, Y., Kliot, N. 2006. The Reflection of Geographical Conflict in Mapping: The Case of Israel's Borders," *Middle Eastern Studies*: 42, (3): 381-408.
- Edelson, D. 2009. "Exchange of Signs: Katz Behaves like a Roman Emperor," *Ynet*, July 14, 2009 (Hebrew).
- Eldar, A. 2006. Rightist rabbis ban use of schoolbooks showing pre-1967 borders after call by education minister to update maps. *Haaretz*, December 5, 2006 (Hebrew).
- Eldar, A. 2006A. Children: This is the Green Line. *Haaretz*, December 4, 2006 (Hebrew).
- Falah, G, Newman, D. 1995. The spatial manifestation of threat: Israelis and palestinians seek a 'good' border. *Political Geography*: 14 (8): 689-706.
- Feige, M. 2002. *One Space, Two Places: Gush Emunim, Peace Now and the Construction of Israeli Space*. Jerusalem: Magnus and the Hebrew University (Hebrew).
- Fleishman, L., Salomon, I. 2005. The Answer to the Question 'Where is the Green Line?' is 'What is the Green Line?'. *Alpayim – Journal for Contemporary Thought and Literature*: 29: 26-52 (Hebrew).
- Goetz N. 2001. *Narrating Palestinian Nationalism. A Study of the New Palestinian Textbooks*. MEMRI - The Middle East Media Research Institute, Washington, DC.
- Hoffman, A., Shanel, Y. 2002. *Objectives and Values in Curricula in Israel* Even-Yehuda: Reches and Beit Berl College (Hebrew).
- IILC 2004. The Intelligence and Terrorism Information Center, Israel Intelligence Heritage & Commemoration Center, "Geography and Politics: Maps of 'Palestine' as a Means of Instilling Negative Basic Messages about the Palestinian-Israeli Conflict" [http://www.terrorism-info.org.il/malam\\_multimedia/Hebrew/heb\\_n/pdf/map\\_hp.pdf](http://www.terrorism-info.org.il/malam_multimedia/Hebrew/heb_n/pdf/map_hp.pdf) (Hebrew).
- IILC 2004b. The Intelligence and Terrorism Information Center, Israel Intelligence Heritage & Commemoration Center, "Educational Institutions of the Palestinian Authority as Foci of Incitement to Terrorism," [http://www.terrorism-info.org.il/malam\\_multimedia/html/final/sp/sib3\\_04/k\\_apc.htm](http://www.terrorism-info.org.il/malam_multimedia/html/final/sp/sib3_04/k_apc.htm) (Hebrew).
- IILC 2006. The Intelligence and Terrorism Information Center, Israel Intelligence Heritage & Commemoration Center, "Nakba Day," May 15, 2006, [http://www.terrorism-info.org.il/malam\\_multimedia/Hebrew/heb\\_n/html/alnacba.htm](http://www.terrorism-info.org.il/malam_multimedia/Hebrew/heb_n/html/alnacba.htm) (Hebrew).
- Jason (Wade) H., 2007. *The World through American Eyes*, February 9, 2007. <http://blog.outdoorzy.com/2007/02/09/the-world-through-american-eyes/>
- Kedrosky, P. 2009. How China Sees the World, *The Economist*, Sunday, March 22, 2009.
- Lahav, A. 2008. "A New Land – A New Language," *Ynet Encyclopedia*, October 6, 2008 (Hebrew).



- Levy, M. 2006. "The Minister Engages in Educational Propaganda," *News1*, December 5, 2006 (Hebrew).
- Monmonier, M., 1996. *How to Lie with Maps*. Chicago: University of Chicago Press.
- Palestinian Media Watch:  
[http://www.palwatch.org/pages/allmaps.aspx?fld\\_id=550&doc\\_id=2475](http://www.palwatch.org/pages/allmaps.aspx?fld_id=550&doc_id=2475)
- Peace Now, 2000. *Population Map of the West Bank and the Gaza Strip*, <http://www.peacenow.org.il/site/he/peace.asp?pi=59&fld=60> (Hebrew).
- Pode, E. 2006. The quiet conflict: the reflection of Israel-Arab relations in Israeli textbooks, 1948-2000. *Zmanim*:72: 22 (Hebrew).
- Portugali, J. Maps that are hidden from the eye. *Mishkafayim*: 27: 44-47 (Hebrew).
- Shraga, N. 2010. And its name in Israel will be. *Yisrael Hashavua*: June 25, 2010, 20-21 (Hebrew).
- Wood, D. 1992. *The Power of Maps*, Guilford Press, New York.
- Zino, A. 2007. The Education Committee voted against. Tamir: The Green Line will be marked. *Ynet*, January 1, 2007 (Hebrew).
- Ziv, Y. 2005. *Rega Shel Makom: Stories behind the names of places*. Tel Aviv: Tsivonim Publishers (Hebrew).

## COGNITIVE MAPS OF EUROPE: GEOGRAPHICAL KNOWLEDGE OF TURKISH GEOGRAPHY STUDENTS AUTHORS

Ilkay SUDAS

*Ege University, Faculty of Letters, Department of Geography, 35100  
Bornova, Izmir, TURKEY*

*[ilkay.sudas@ege.edu.tr](mailto:ilkay.sudas@ege.edu.tr), <http://cografya.ege.edu.tr/>*

Cemil GOKTEN

*Macquarie University, Department of Human Geography  
Development Studies and Cultural Change Programme*

*Sydney, AUSTRALIA*

*<http://www.humgeog.mq.edu.au/>*

---

### Abstract

This paper aims at determining the level of basic geographical knowledge and perspectives of Turkish geography students about Europe, through cognitive maps. Research was conducted on a sample of 72 geography undergraduate students from the first and the fourth levels in order to reflect the effect of geographical education on mapping and their level of knowledge of Europe. Results indicate that Turkey's appearance on the cognitive maps is important as it provides us with clues about participants' thoughts about Turkey's belonging to Europe and geographical education. For some participants the idea of Europe is formed only within the physical borders and for other participants the idea is linked relatively to economic development and the political context.

**Keywords:** *Europe, higher education, geography, cognitive map, spatial representation*

---

### 1. INTRODUCTION

Many disciplines ranging from geography to sociology, from architecture to psychology, from natural sources management to regional planning have been involved in research aimed at understanding human behaviour in relation to the physical environment (Francescato and Mebane 1973: 131). The way people react to different environments greatly depends on their perceptions of those environments and the relation with the environment depends on each person's mental images and representations (Cassidy 1997). These images can be related to a vast scale like the whole world, a continent, a region, a town or even a section of a town. When this image is being formed, the reality related to the physical environment and the person's perception which is in turn influenced by the environmental and psychological factors play a role. Understanding the subjective environment which is formed by these images is as important as understanding the physical environment. Hence the different

individuals' and cultures' perception of the environment becomes a significant research field and the difference between the reality of the physical world and the persons' perception of it forms the main field of interest of behavioural geography as a sub-discipline in geography. This difference is closely related to the persons' acculturation process (Tümertekin and Özgüç 2009) and as Lynch (1973:307) points out; different groups may have widely different images of the same outer reality.

Cognitive maps are the main tools that are used to identify spatial images and the difference between physical and subjective environments (Milgram 1972). Cognitive mapping is a process by which individuals acquire, store and recall information about the places in the environments with which they come into contact (Gold 2009:287). The earliest use of term cognitive map is credited to Tolman (1948) but the start of the field can be traced to "Image of the City" by Lynch (1960). The first introductory volume which outlined the scope and approaches was "Image and Environment" by Downs and Stea (1973) and others such as Gould and White (1974) and Downs and Stea (1977).

A cognitive map usually does not have the graphical features of a geographical map and does not reflect the objective environment precisely. Milgram (1972) and Lynch (1960) describe *cognitive maps* as "the inner images that are developed by the individual about a place". Downs and Stea (1977) define cognitive maps as an abstraction covering those cognitive or mental abilities that enable us to collect, organize, store, recall and manipulate information about the spatial environment. Tuan (1975) refers to a term *mental map* and describes it as *a special type of image which is even less directly related to sensory experience and states that mental maps, like real maps, are a means to structure and store knowledge. The mental map is like the real map, a way to organize data.* On the other hand, another concept, *mind mapping*, is also used in a different sense which is more depends on organizing information through categories and hierarchies, suggested by Buzan and Buzan (1993).

Gold (2009:288) emphasizes on the different scales in cognitive map researches. Research undertaken on the perception of the environment through cognitive maps may be done at different scales such as on *cities* (i.e. Lynch 1960, Johnston 1972), *continents* (Andersen and Maude 1994) or the *world* (Saarinen 1988). For example, Saarinen (1988) worked on the centring of the world mental maps; Saarinen and Mac Cabe (1995) researched the abilities of the first year university students about drawing a world map, Andersen and Maude (1994) and Andersen again in 1997 worked on the continent of Asia; Berkowits, Saarinen and Mac Cabe (1992) researched Africa. World cognitive maps were also examined with samples from different countries as well: For example, Kong *et. al.* (1994) worked with samples from Singapore; Saarinen *et. al.* (1991) from South Korea; and Saarinen and Mac Cabe (1989) worked with samples from Finland.

Although cognitive maps received world-wide importance and attention from the 1960's on, the earliest work including cognitive maps developed in Turkey was in the late 70s. As Tunçel stated (2002:89) as the first example in Turkish, Tümertekin (1978) referred to the conceptual aspect of it and the first extensive introduction attempt was made by Tolun in 1980. Even though, during the following years no empirical study based on cognitive maps appeared in Turkey. However Tümertekin and Özgüç (1998, 2002, 2004 and 2009) emphasized the theoretical frame of this subject in their textbook on human geography. The very first example of using cognitive mapping techniques was Tunçel's work in 2002 where the perception of Islamic countries by the university students was researched. In addition to this, Aliğaoğlu's and again Tunçel's works could be counted as other contributions for the Turkish literature on the subject. Aliğaoğlu (2007) researched the image of the city of Balıkesir among the university students and Tunçel (2009) researched the perception of a major street of the downtown Elazığ among different groups in the city (tradesmen, housewives, government officials, teachers, university students etc.). Other disciplines, like social

psychology (Göregenli 2010, Karakuş and Göregenli 2008), also use cognitive maps as a part of their work which adds to the Turkish literature on the subject. Göregenli (2010:52), for instance, reveals that in images of cities, people give more importance to the functions rather than the architectural characteristics of the urban environmental elements: People have better images of the urban spaces which they use more frequently.

This research uses cognitive mapping at a continental scale. The image of Europe is examined through cognitive maps of Turkish geography students. “Europe” can be defined in various ways. Paasi (2001) for example, suggests that Europe is understood as an *experience*, a *structural body* and an *institution*. Murphy *et. al.* (2009) describes Europe both as a physical entity and a human entity – a cultural region. Mentz (2010), on the other hand, states that it can be defined according to its physical borders, in other words, as a *continent*, as an *idea* or as a *political entity* which means the European Union. He emphasises also the importance of considering the role of geography and the related components of “European competences” and geography is one of the relevant factors for the establishment of a European competence. *Every student in geography should have basic knowledge about the most important geographical aspects of Europe. This means that they should possess a topographic competence about Europe, competences to interpret landscapes and aspects of physical geography which are specific for European regions. They should, moreover, have a basic understanding of European economic geography, of demography...; in short: they should be able to interpret facts concerning Europe in all geographical themes (Mentz 2010:65).*

Depending on the finding of a research undertaken in Turkey by Tunçel (2002) who concludes that university students in Turkey draw “Europe-centred world maps”, we ask “How is this Europe located in the centre?” and considering Mentz’s opinions, this research aims at determining the level of basic geographical knowledge of Turkish geography students and their image of Europe through their cognitive maps. *The Common Framework for Europe Competence* indicates that “basic knowledge of the topography in Europe” is the first stepping stone to achieve a “European competence” (Maslowski *et.al.* 2009:18) and such a competence can be provided principally by geography teachers. Therefore, it is important to understand what Europe is in the mind of geography students as future teachers. Considering most of the geography graduates are employed as geography teachers in secondary schools in Turkey, it can be asserted that, they will teach about Europe to the next generations of Turkish society thus it is of great importance to understand their “Europe”.

## 2. AIM AND METHODOLOGY

Europe in this research is accepted as the whole continent and the topographic features and the image of Europe is explored through cognitive maps drawn by the first and fourth grade geography students. This study aims at contributing to the understanding the image of Europe in geographical higher education and competencies of the students in Turkey. By this way, it can be possible to understand the current situation and develop a better curriculum on how to teach Europe to the Turkish geography students in higher education. In order to determine the possible changes about Europe during the undergraduate years, the sample are chosen among the students at first and fourth grades.

The sample group consists of 72 registered students of Ege University Geography Department. 40 of the first year and 32 of the fourth year students have participated in the research. A blank A3 sized paper sheet was given to the each student and the participants were asked to draw a map of Europe.

They were asked to draw a *star* on the point where they started drawing the map in order to mark the reference point which makes us understand their orientation. The theory of cognitive maps developed by Lynch (1960) from the environmental psychology perspective

comes from the idea that urban space can be ‘‘read.’’ That is, there is a list of recognizable symbols that determines whether a city is more or less legible. For Lynch, the main function of this legibility is *orientation*. Orientation can be determined through the reference point of a cognitive map which means the point that the participant starts to draw the map. The example in the scale of a city is adapted to a continental scale in this article and in order to understand how Europe is seen from Turkey, *reference point* of the maps is accepted as a variable.

Place names that the participants wrote on their maps (countries, cities, regions) and the geographic elements (islands, mountains, seas etc.) were counted and classified. The data were transferred into tables using SPSS.

The year that the participants were studying was taken as the *independent variable* and their correlations with other variables were researched. The purpose of this was to compare the geographical knowledge levels of year 1 and year 4 students about Europe. Geography students form a specific group compared to an ordinary sample when it comes to drawing a map because of their education. Either cartographic abilities or the number and variety of the components that could be shown on the map are expected to be high in this sample. Another expectation is the increased usage of *graphic style* when drawing cognitive maps from the fourth year students. As Eden (2004) suggest, a cognitive map has several structural properties: the property of hierarchy and the more general property of linkage. Each of these provides opportunities for analysis of structure and the *shape* of a cognitive map is one of the properties to be considered in analyzing cognitive maps. Göregenli (2010) suggests different shapes of cognitive maps according to drawing style and such as bloc, graphical, symbolic, serial and dot maps. The validity and reliability of these drawing styles were confirmed by studies (Göregenli 1985, Karakuş and Göregenli 2008) conducted in university student and adult samples in Izmir, Turkey.

Maps were examined by looking at the *reference point of the map*, *drawing style*, *type of components*, among these types the *ratio of neutral-geographical components* and the *distribution of European countries that were included on the maps* and *if Turkey was included* within the map or not. *Neutral-geographical components* mean all the place names and geographical units that can be found on a real map and exclude the ideological or symbolic elements or drawings reflecting participant’s subjectivity.

### 3. RESULTS

Throughout the sample, the reference points of the maps are concentrated mainly on three regions. These regions are; the Iberian Peninsula, the Scandinavian Peninsula and Turkey (Table 1). Approximately 20% of the participants picked the **Iberian Peninsula** as the starting point, 36% started from the **Scandinavian Peninsula** and approximately 38% started mostly from **Istanbul** and surroundings, or somewhere else in Turkey. Choosing the Iberian Peninsula as the starting point is 23.6% among the first year students while the ratio decreases to less than 15% with the fourth year students. A similar decline also applies for the Scandinavian Peninsula. Turkey’s ratio as the starting point for the map increases with the fourth year participants compared to the first graders. The ratio of Turkey used as the reference point is below the average (32.3%) with first year participants and above the average (44.4%) with the fourth year students. Other two reference points which both used were Italy and Great Britain.

**Table 1:** Reference points of the cognitive maps

Grade	Iberian	Scandinavian			Total
	Peninsula	Peninsula	Turkey	Other	
First	8	13	11	2	34
%	23.6	38.3	32.3	5.8	100.0
Fourth	4	9	12	2	27
%	14.9	33.3	44.4	7.4	100.0
Total	12	22	23	4	61
%	19.7	36.0	37.8	6.5	100.0

When the drawing style is examined, it was seen that *graphic style maps* has the highest proportion (Table 2). Nearly 60% of the students drew graphic style maps which are followed by graphic-symbolic maps with a ratio of 17%. Symbolic style and graphic-dot styled maps have closer ratios; respectively 12.5% and 11.1%. Drawing style displays a relevant differentiation ( $p=0,007$ ). Half of the first year students drew with graphic style the ratio exceeds 70% and with the fourth year students the symbolic style drawings ratio drops significantly.

**Table 2:** Drawing style of the cognitive maps

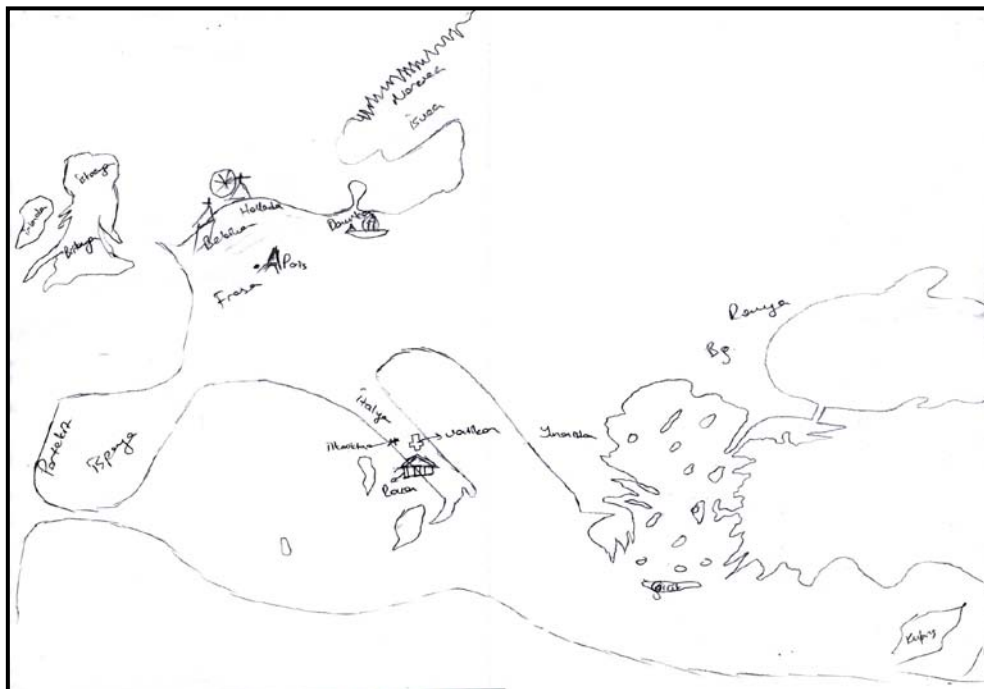
Style	1 <sup>st</sup> Grade		4 <sup>th</sup> Grade		Total	
	Fr.	%	Fr.	%	Fr.	%
Graphic	20	50.0	23	71.9	43	59.7
Symbolic	8	20.0	1	3.1	9	12.5
Graphic-Symbolic	10	25.0	2	6.3	12	16.7
Graphic-dot	2	5.0	6	18.8	8	11.1
Total	40	100	32	100	72	100.0

64% of the sample group used only neutral geographical components, 30% used both neutral geographical and ideological-symbolical components with their maps (Figure 1 and Figure 2). The ratio of maps where only ideological-symbolical components were used is only 7%. The components used in the maps display a significant differentiation depending on the years of education of the participant ( $p=0,032$ ). As the maps in which only ideological-symbolical components were used disappear with the fourth year participants, the neutral geographical component ratio increases (Figure 3).

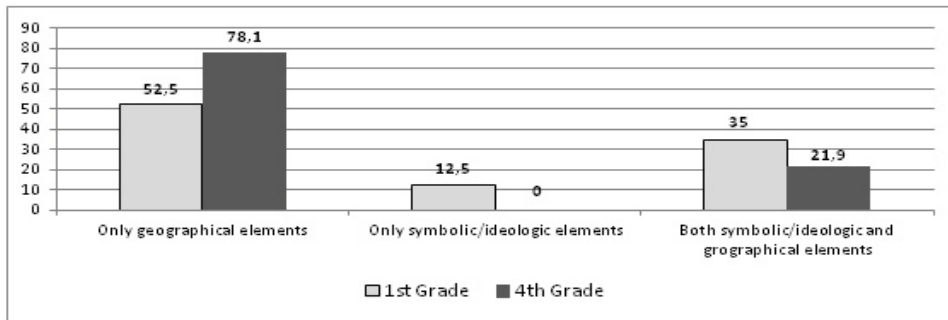




**Figure 1.** “Europe” of a 1<sup>st</sup> grade student: Excluding symbolic components, in graphic style and including Turkey completely with its name.



**Figure 2.** “Europe” of a 4<sup>th</sup> grade student: Including both geographical and symbolic components, in graphic style. Turkey is represented with the western part of the Anatolian Peninsula but name is not specified.



**Figure 3.** Types of elements on the cognitive maps

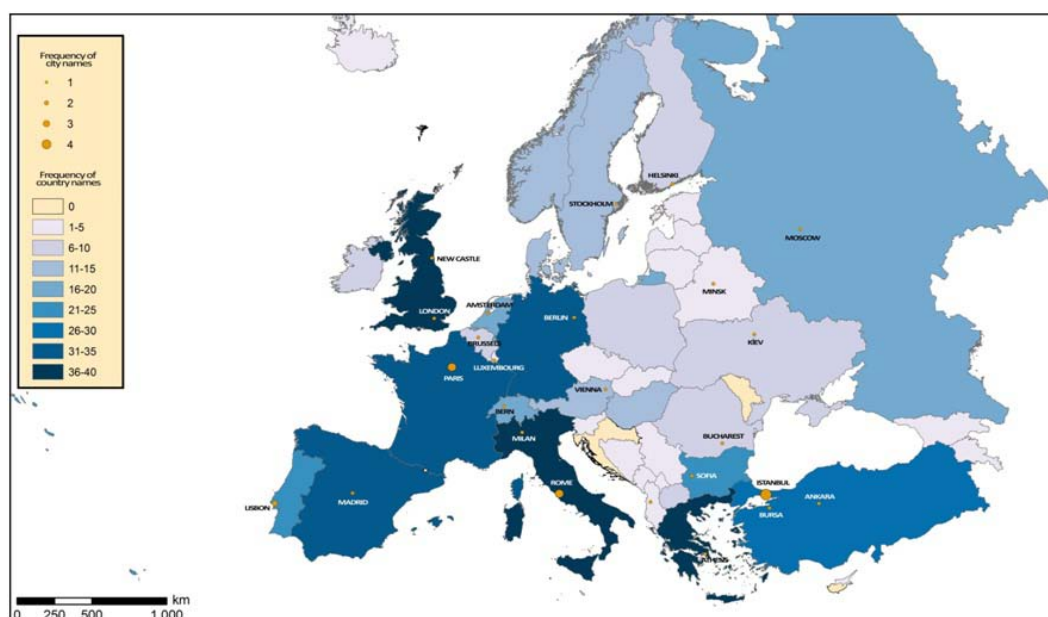
Neutral geographical components are shown in Table 3. These components which show an increase with the fourth year students include physical geographical items and their names such as mountains, islands and seas. In other words these components expose the students' conceptualization of the European continent. They can also be identified as non-symbolic components.

**Table 3.** Names of the geographical elements specified on the cognitive maps (Frequencies)

		Number of geographical elements											
		None	1–10	11–20	21+	TOTAL							
<i>Frequencies in the 1<sup>st</sup> grade</i>		12	15	8	5	40							
%		30,0%	37,5%	20,0%	12,5%	100,0%							
<i>Frequencies in the 4<sup>th</sup> grade</i>		2	16	12	2	32							
%		6,3%	50,0%	37,5%	6,3%	100,0%							
<i>Frequencies in the total sample</i>		14	31	20	7	72							
% in the total sample		19,4%	43,1%	27,8%	9,7%	100,0%							
Countries													
U.K.	40	Bulgaria	22	Hungary	13	Macedonia	6	Malta	3	Slovakia	2		
Italy	39	Portugal	22	Sweden	12	Poland	6	Vatican	3	Albania	1		
Greece	37	Holland	18	Denmark	11	Romania	6	Estonia	2	NCTR	1		
France	33	Russian Fed.	18	Belgium	10	Bosnia-Herzegovina	5	Montenegro	2	Kosovo	1		
Spain	32	Switzerland	16	Ireland	8	Belarus	4	Leetonia	2	Luxembourg	1		
Germany	31	Austria	14	Ukraine	8	Czech Republic	4	Lithuania	2	Armenia	1		
Turkey	27	Norway	14	Finland	7	Iceland	3	Serbia	2	Georgia	1		
<b>Total</b>										<b>490</b>			
Cities													
Istanbul	4	Amsterdam	1	Bern	1	Helsinki	1	Madrid	1	New Castle	1	Vienna	1
Paris	3	Ankara	1	Brussels	1	Kiev	1	Milano	1	Sofia	1		
Rome	3	Athens	1	Bursa	1	London	1	Minsk	1	Stockholm	1	<b>Total 33</b>	
Lisbon	2	Berlin	1	Bucharest	1	Luxembourg	1	Moscow	1	Tiran	1		
Physical Geographical Elements (Names specified)										Other geographical elements			
Black Sea	13	Aegean Sea	3	Plain of Po	1			European Union		13			
Mediterranean Sea	9	Marmara Sea	3	Rhodes Island	1			Scandinavia		9			
Cyprus Island	6	Alps	2	Uludağ	1			Balkans		3			
Sicily Island	5	Crete Island	2	Monte Blanc	1			Czechoslovakia		2			
Adriatic Sea	3	Greenland	2	Canary Islands	1			Eastern Europe		1			
Baltic Sea	3	Strait of Gibraltar	1	<b>Total</b>		<b>56</b>	<b>Total</b>		<b>29</b>				

When the overall sample is analyzed, the average neutral geographic component count is 8.4. This value declines to 7.8 with first year students and on the contrary increases to 9.2 with the fourth graders. This difference is also statistically relevant ( $p=0,037$ ). When 20% of the participants did not specify any neutral geographical component, the percentage of the participants which could show at most 10 components is above 40%. The percentages drop to 28% with the participants who could show between 11 and 20 neutral geographical units and less than 10% with the participants who showed 21 or more (Table 3).

As can be seen on **Figure 4**, Greece, Italy and Great Britain are in the first group as their names were mentioned the most, within the group which follows the first one comes Spain, France and Germany. The Balkan countries except Greece and Bulgaria, and eastern European country names were shown less. When Turkey's name is mentioned in nearly 38% of the sample, countries like Croatia, Moldavia and Cyprus were not shown at all. Some countries (Albania, TRNC (*Turkish Republic of Northern Cyprus - a de facto state located in the northern portion of the island of Cyprus and recognized by Turkey*), Kosovo, Luxemburg, Armenia and Georgia) are only mentioned once and some small countries of Europe like Andorra and Lichtenstein were not shown on the maps. The only exception is Vatican as it represents a religious centre and was shown on the drawings (3 times). Another remarkable point is that Czechoslovakia which maintained its political entity until 1993 was mentioned twice and another country which lost its political entity in 2003; Yugoslavia was mentioned once.



**Figure 4.** Distribution of country and city names written on the cognitive maps.

The cities on the European continent were nearly not mentioned except for one participant showing multiple capital cities. Even though with limited numbers, some cities that were shown on the map were: Istanbul (4 times), Paris (3 times), Rome (3 times) and Lisbon (twice). Apart from these New Castle in Great Britain and Bursa in Turkey were shown once.

Besides place names, the numbers that show physical geographic components (units) which form the neutral geographical units are 56 (considering that 72 maps were examined, 0.7 geographical components were used per participant). The physical geographic units whose names were mentioned the most are *seas* (34 times) and *islands* (17 times), and *The Alps* were only shown twice even though it is one of the most distinctive features of the physical structure of Europe. Although it was expected to be shown on the maps because of its

importance providing physical borders, the Ural mountain range for instance, was not shown on the maps. Neither were any rivers or lakes mentioned on the maps.

Other names that could be counted as “geographical components” were shown on the maps: The *European Union* which represents Europe as a political, economical system was shown 13 times. Regional names like *Eastern Europe*, *the Balkans* and *Scandinavia* were mentioned on the maps, again 13 times.

As stated above 38% of the students indicated Turkey’s name, however the drawings differ from each other. Even though Turkey was included within the maps, it was shown in varied ways (Table 4). More than one fourth of the participants showed Turkey as a whole, and half of the participants showed it partially. Therefore, the way Turkey was drawn and how much of it was shown are important. According to our research, half of the students showed Turkey partially; these drawings showed Turkey with only Thrace and/or with the western part of the Anatolian Peninsula. 26.4% of the participants showed Turkey as a whole and another 23.6% of the participants didn’t give Turkey a spot in their maps. When compared with the first year students, the maps that are showing Turkey as a whole displayed a nearly nine point increase with fourth year participants.

**Table 4.** Was Turkey drawn on the cognitive maps?

	<i>1<sup>st</sup> Grade</i>		<i>4<sup>th</sup> Grade</i>		<i>Total</i>	
	Fr	%	Fr	%	Fr	%
<b>Turkey was not drawn</b>	<b>10</b>	<b>25,0</b>	<b>7</b>	<b>21,9</b>	<b>17</b>	<b>23,6</b>
<b>Turkey was drawn completely</b>	<b>9</b>	<b>22,5</b>	<b>10</b>	<b>31,3</b>	<b>19</b>	<b>26,4</b>
<b>Turkey was partly drawn</b>	<b>21</b>	<b>52,5</b>	<b>15</b>	<b>46,9</b>	<b>36</b>	<b>50,0</b>
<i>Only European part of Turkey (Thrace) was drawn</i>	4	10,0	6	18,8	10	13,9
<i>Only the western part of Anatolian Peninsula was drawn</i>	17	42,5	9	28,1	26	36,1
<b>Total</b>	<b>40</b>	<b>100,0</b>	<b>32</b>	<b>100,0</b>	<b>72</b>	<b>100,0</b>

#### 4. DISCUSSION

In our research participants started drawing maps from mainly three locations: Scandinavian Peninsula, Iberian Peninsula and Turkey. Participant choice of the Scandinavian and Iberian peninsulas as their starting point is interesting because of the fact that Scandinavian and Iberian mark the north-western and south-western coasts of continental Europe. During the process of perceiving and representing a place, a similar finding appeared during the stage of categorizing the components which form the physical environment in Holding’s (1992) work. Depending on the findings of the study, taking components as reference point and their location compared to each other effects the categorization process.

Turkey, being one of the often used reference points, indicates the importance of the participants own location. Adding to this, the fact that fourth year students used Turkey more than the first year students as their starting point might show the influence of geography education. Gustafson (2001) who associates “place” distinctiveness with their meanings, states that a meaningful place would be a definable and a distinguished territorial unit. To



differentiate is a basic feature of individual and social cognition; categorization is an attribution process regarding similarities/differences and drawing the borders. During the researchers interviewing process it was seen that the participants used “here”/”there”, “at home/away” and sometimes “us/them” when differentiating places. In our research, a majority of the participants have put themselves in Turkey as the “here” point and start drawing their maps.

The fact that graphical-styled maps have the highest percentage and drawing style changes between first and fourth year students reflects the effect of geography education. This effect can be seen not only with the drawing style but also with the components that were given place on the maps. Against only neutral-geographical components dominance (64%), the rareness of only ideological-symbolic components (7%) is also reflecting this effect. Beck and Wood (1976) and Milgram (1972) also showed education’s effect on the ability to draw graphical style maps. According to Beck and Wood (1976) mental maps are scribble outcomes of the participants and also only consists of personal views of the world’s geographical structure. The participant experience in using maps and positive approach to map, contributes to how good and accurate their map is. The knowledge of map reading has a positive effect on drawing a map.

In Andreesen’s work (1997) where a different criteria was used evaluating the correctness of the maps, the participants wrote 58% of the Asian country names correctly. Even though the number of places shown on the map increases from the first year to fourth students, considering that our sample group was formed by geography students, one could conclude that the overall number is low and more would be expected from the participants. An explanation to this might be Turkey’s candidature for the European Union as the continent of Europe is something more than just a geographical place in the students’ mind. During the Turkey’s EU candidature process Europe is being discussed with different aspects in daily public life which transforms Europe more into a political being than only a geographical continent. The 8.4 percentage of the neutral-geographical units (place names, physical geographical components) illustrates participants’ lack of awareness about geographical Europe. In the geography department where the research was carried out, the only course regarding Europe is the “European Union”, a fourth year course which is optional. This makes the students’ lack of knowledge about Europe understandable as they are unable to find various courses at different levels to get to learn more about Europe. However, as Villanueva *et.al.* (2009), note that in different European countries like Austria, Ireland and Spain, geography curricula include courses on *different regions of Europe, regional development in Europe and the geography of European Union*. Villanueva *et al.* (2009:79) focus on the context of Turkey and state that “*programs must be updated in terms of content, approach, educational methods and learning processes. Geography of education must include a ‘geography of Europe’ which takes account of the increased plurality of the world as it is now and as our students will find it in the years ahead.*”

When we examine the dispersion of the countries which were mentioned within the maps, we can see two major zones. These are “Great Britain-Greece-Italy” and “Spain-France-Germany”. Great Britain, Greece and Italy are the countries whose names were mentioned the most. When this group was emerging, each of the countries’ unique attributes might have played a role: Greece being a close neighbour of Turkey (neighbourhood context), Italy’s unique geographical “boot” shape which makes it easier to draw and Great Britain both because of being an island country and a strong political player. Milgram and Jodelet (1976) during his work on psychological mapping of Paris, found out that most of the participants started drawing the map from the borders of Paris. The reason behind this is that Paris has very clean-cut borders and furthermore distinctive features of the environmental components have a positive effect on their perception and representation. Not only stylistic features of the



physical environment but also pattern and frame wise have an influence on how the place is perceived and represented, according to the authors, physical environments topographic and geometric attributes have a direct effect on mental representation (Jansenn-Osmann, & Wiedenbauer, 2004; Tversky, 2000).

The second zone is formed by Spain, France and Germany. The distinctive features of these countries might have played a role forming this pattern as well. Being Western Europe's strong political players and because of their relations with Turkey (immigration, economical relations, tourism etc.) Germany and France, and being Europe's South-West coast (with Portugal) Spain has a place in this zone. Turkey was shown in the third degree, this illustrates the importance of Turkey being a part of Europe and the place where the individual is when drawing a map. The striking difference between West and East Europe is another interesting point of this distribution pattern. While the Western European country names were remembered at a high rate, knowledge about the countries around Eastern Europe and the Balkans was rather low. Considering the fact that Eastern Europe and the Balkans were very unstable during the past two decades, the political ambiguity of the region might have impacted on the students not having clear knowledge of the region. Beck and Wood (1976) searched for the answer to the question how attributes of a geographical environment affected the process of forming an image and the places that were drawn with most mistakes are the ones that are constantly changing.

Turkey's appearance on the cognitive maps is important as it provides us clues about participant thoughts about Turkey belonging to Europe. The participants who showed Turkey partially can be divided into two groups: (1) Considering the physical borders of Europe which ends with Istanbul and Çanakkale straits and showing Turkey with only its Thrace region, (2) Drawing the western part of the Anatolian Peninsula referring to the development difference between Turkey's Western and Eastern regions. Thereby for some participants the idea of Europe is formed only within the physical borders and for others the idea is formed relatively to the economic development rate. Since "map makers are human" as Wright (1966) so aptly expressed it, every map is "a reflection of objective realities and partly subjective elements." Because of the amount of information condensed on maps, they provide a rich resource for studying the geographical knowledge and values of the mapmaker and the mapmaker's society (Henrikson 1979). A new study which identified Lynch's (1960) notion of readability within social context proved that cultural context is an important factor in means of environments social readability and construction of the meaning (Ramadier and Moser, 1998); characteristics of the environmental meanings (physical, functional and border attributes) can be understood relating to the cultural context.

These cognitive maps are important in some ways in aspect of education as well. As *The Common Framework for Europe Competence* indicates that knowledge on topography of Europe is important to build a European competence (Maslowski *et.al.* 2009:18). Although described as very important, there is no definitive description for that basic knowledge of European topography. Some countries such as the Netherlands have a list of what topographic features geography students are expected to know (De Tekstgroep 2009, CITO 2012). However it is quite important for candidate teachers to have a deep knowledge about Europe, the results of the Turkish geography students, as prospective geography teachers, show that such knowledge they have seems to be quite limited.

Another aspect for education may be related to detecting the misconceptions on the cognitive maps of the students. As the Roper Report (2006) about geography literacy, misconceptions play an important role in the geographical knowledge construction. Detecting those misconceptions about Europe can help to make the students aware about the existing of these conceptions during their training at university but also for their possible future work in educational settings. In this research, as mentioned in the results, countries such as

Czechoslovakia and Yugoslavia are still appearing on the cognitive maps which indicated the need for an actualized course programme about Europe.

Emphasizing on the goals of geography, Gershmel (2008:97) remarks the importance of knowledge of places and knowledge of how to arrange them. Thus the level of knowledge or how this is arranged and illustrated on the cognitive maps may show how much these geographical goals are reached. The findings of this study indicate the need for extra efforts to make Europe being perceived more correctly both politically and geographically in Turkey. Actually, authors studying on geographical higher education in Turkey and its problems, attract attention to the need for actualization in geography programmes (i.e. Koçman 1999, Kayan 2000). More specifically, focusing on European dimension of geographical higher education in Turkey, Öztürk (2006) concludes that there is common dissatisfaction amongst many student teachers concerning the content of the EU modules they received. As shown in our research that even with a sample group with high expectations in the field, the actual knowledge is rather low making the efforts necessary. Finally, it is important for this research to be repeated in different geography departments and the comparative study of the outcomes (Anderssen, 1997) is crucial for enhancing geography education policies.

#### **Acknowledgement**

We thank Ege University Geography Department research assistant Rifat Ilhan for his contribution in preparing Figure 4.

#### **REFERENCES**

- Aliagaoglu, A. 2007. Davranışsal Coğrafyaya Bir Örnek: Öğrenci Merkezli Balıkesir Şehir İmaji. *Fırat Üniversitesi Sosyal Bilimler Dergisi*: 17 (1): 17-44.
- Anderssen C., Maude, A. 1994. Perception of Asia: A Geographical Perspective. *Asian Studies Review*: 17 (3): 145-152.
- Anderssen C., 1997. Mental Maps of Asia: The Geographical Knowledge of Australian University Students. *Asian Studies Review*: 21 (1): 115-130.
- Bailly. A. S., Saarinen, T. F., Mac Cabe, C. L. 1995. Images of Francophone Countries and Francophone Images of the World. *Geographica Helvetica*: 50 (1): 3-11.
- Beck, I., Wood, D. 1976. Cognitive Transformation of Information from Urban Geographic Fields to Mental Maps. *Environment and Behavior*: 8 (2): 199-238
- Berkowitz, C., Saarinen T. F., MacCabe C. L., 1992. The World Image of Africa. In *Interdependence in Education*, ed. A. D. Hill, 15-16.
- Buzan, T., B. Buzan. 1993. *The Mind Map Book: How to Use Radiant Thinking to Maximize Your Brain's Untapped Potential*. New York: Plume
- Cassidy, T. 1997. Environmental Design. In *Environmental Psychology, Behaviour and Experience in Context*, Psychology Press UK, 169-203
- CITO, 2012. *Standardlijst met topografische namen* Accessible at: <http://www.cito.nl/onderzoek%20en%20wetenschap/achtergrondinformatie/wereldorientatie.aspx>
- De Tekstgroep, D. 2009. *Kennisbasis Aardrijkskunde, Economie, Geschiedenis, gezondheidszorg & Welzijn, Godsdiens & Levensbeschouwing, Maatschappijleer, Omgangskunde.* Accessible at:

[http://www.leroweb.nl/docs/lero/kennisbasis\\_voor\\_de\\_lerarenopleiding\\_vo\\_gammastudies.pdf](http://www.leroweb.nl/docs/lero/kennisbasis_voor_de_lerarenopleiding_vo_gammastudies.pdf)

- Downs, R., Stea, D. 1973. *Image and Environment*. Adline, Chicago
- Downs, R. Stea, D. 1977. *Maps in Minds: Reflections on Cognitive Mapping*. New York: Harper and Row.
- Eden, C. 2004. Analyzing cognitive maps to help structure issues or problems. *European Journal of Operational Research*: 159: 673–686.
- Francescato D., W. Mebane 1973. How Citizens View Two Great Cities: Milan and Rome. In *Image and Environment: Cognitive Mapping and Spatial Behaviour*, editors: R. M. Downs, D. Stea, Aldine. Chicago.
- Gershmel, P. 2008. *Teaching Geography* The Guilford Press. New York
- Gold, J. R. 2009. Behavioural Geography. In *International Encyclopedia of Human Geography* eds. R. Kitchin, N. Thrift, 282-293 Elsevier. Amsterdam
- Gould, P., White, R. 1974. *Mental Maps*. Penguin Books, Harmondworth, Middlesex, England.
- Goregenli, M. 2010. *Cevre Psikolojisi: Insan-Mekan Iliskileri*. Istanbul Bilgi Universitesi Yayinlari. Istanbul
- Gustafson, P. 2001. Meanings of Place: Everyday Experience and Theoretical Conceptualizations. *Journal of Environmental Psychology*: 21 (1): 5-16.
- Henrikson, A.K. 1979. All the World's a Map. 164-177, *Wilson Quarterly*. Spring.
- Holding, C. S. 1992. Clusters and reference points in cognitive representations of the Environment. *Journal of Environmental Psychology*: 12 (1): 45-55.
- Jansen-Osmann P., Wiedenbauer G. 2004. The representation of landmarks and routes in children and adults: A study in a virtual environment. *Journal of Environmental Psychology*: 24: 347–357.
- Johnston, R. J. 1972. Activity Spaces and Residential Preferences: Some Tests of the Hypothesis of Sectoral Mental Maps. *Economic Geography*: 48 (2): 199-211.
- Karakuş, P., M. Goregenli. 2008. The place attachment and the mental representations of a public space in a Turkish big city. 29. *ICP Congress* July, 20-25<sup>th</sup> 2008. Berlin
- Kayan I. 2000. Turkiye universitelerinde cografya egitimi. Amac, Yeni Hedefler, Sorunlar ve Oneriler. *Ege Cografya Dergisi*: 11: 7-22.
- Koçman, A. 1999. Cumhuriyet Doneminde Yuksek Ogretim Kurumlarında Cografya Ogretimi ve Sorunları. *Ege Cografya Dergisi*: 10: 1-14.
- Kong, L., Savage, V., Saarinen T. F., MacCabe C. L., 1994. Mental Maps of the World: The Case of Singapore Students. *Journal of Geography* : 93 (6): 258-263.
- Lynch, D. 1973. Some references to Orientation. In *Image and Environment: Cognitive Mapping and Spatial Behaviour*, eds. R. M. Downs, D. Stea, 300-315. Aldine Publishing Company Chicago.
- Lynch, K. 1960. *The Image of the City*. MIT Press, Cambridge, Mass.
- Maslowski, R. H. Naayer, G.H. Oonk, M.P.C. van der Werfe 2009. *Effecten van internationalisering in het voortgezet onderwijs. Een analyse van de implementatie en*

- effecten van een Europese en internationale orientatie*. Groningen: GION, Rijksuniversiteit Groningen.
- Mentz, O. 2010. The European Challenge – How to Integrate European Competences in Geography in Higher Education. *European Journal of Geography*: 1: 61-69.
- Murphy, A. B., T. G. Jordan-Bychkov, B. Bychkova-Jordan. 2009. *The European Culture Area: A Systematic Geography*. Rowman & Little.
- Milgram, S. 1972. A Psychological Map of New York City”. *American Scientist*: 60: 194-204.
- Milgram, S., D. Jodelet. 1976. Psychological Maps of Paris. In *Environmental Psychology: People and Their Physical Settings*. eds. H.M. Porshansky, W. H. Ittelson, L. G. Rivlin, 104-124. Holt, Rinehart and Winston. New York.
- Ozturk, M. 2006. European Dimension in Geography Teacher Education Programmes in Turkey: Student Teachers’ Experiences and Opinions. In *Teaching Geography in and about Europe*, eds. Donert and Charzinsky, Torun: Institute of Geography.
- Paasi, A. 2001. Europe as a Social Process and Discourse: Considerations of Place, Boundaries and Identity. *European Urban and Regional Studies*: 8: 7-28.
- Ramadier, T., Moser, G. 1998. Social legibility, the cognitive map and urban behaviour. *Journal of Environmental Psychology*: 18: 307-319.
- Roper Public Affairs. 2006. *Final Report: National Geographic - Roper Public Affairs Geographic Literacy Study*. New York.
- Saarinen, T. F. 1973. Student Views of the World. In *Image and Environment: Cognitive Mapping and Spatial Behaviour*, ed. R. M. Downs, D. Stea, 148-161.
- Saarinen, T. F. 1988. Centring of Mental Maps of the World. *National Geographic Research*: 4 (1): 112-127.
- Saarinen, T. F., 1999. The Eurocentric Nature of Mental Maps of the World. *Research in Geographic Education*: 1 (2): 136-178.
- Saarinen, T. F., Ballantyne, R., MacCabe, C. L. 1990. The South African Student Image of the World. In *Interdependence in Education*, ed. A. D. Hill, 5-7.
- Saarinen, T. F., MacCabe, C. L., 1989. The Finnish Image of the World and the World Image of Finland. *TERRA*: 101 (1): 81-93.
- Saarinen, T.F., Mac Cabe, C.L. 1995. World Patterns of Geographic Literacy based on Sketch Map Quality. *Professional Geographer*: 47 (2): 196-204.
- Saarinen, T. F., Kim, H. H., MacCabe, C. L. 1991. The South Korean Image of the World and the World Image of Korea. *Geography* (Korean Geographical Society) : 26: 126-135.
- Tolun, B. 1980. Davranıslara Yonelik Cografya: Aglo-Saksonların ‘Behavioral Geography’ si ve Sosyo-Ekonomik Deneyimleri. *Istanbul Universitesi Cografya Enstitusu Dergisi*: 23: : 257–278.
- Tuan, Y. F. 1975. Images and Mental Maps. *Annals of the Association of American Geographers*: 65 (2): 205-213.
- Tuncel, H. 2002. Turk Ogrencilerin Zihin Haritalarında Islam Ulkeleri. *Firat Universitesi Sosyal Bilimler Dergisi*: 12 (2): 83–103.

- Tuncel, H. 2009. Kentsel Mekanın Algılanması: Elazığ Ornegi. *In V. Ulusal Cografya Sempozyumu Bildiriler Kitabı*. 231–238. Ankara.
- Tumertekin, E. 1978. *Beseri Cografyaya Giriş*. Istanbul Universitesi Cografya Enstitusu Yayınları :100. Istanbul.
- Tumertekin, E., N. Ozguc, 1998, 2002, 2004. 2009. *Beseri Cografya: Insan, Kultur, Mekan*. Cantay Kitabevi. Istanbul.
- Tversky, B. 2003. Structures of mental spaces. *Environment and Behavior*: 35 (1): 66-80.
- Villanueva, M., T. Barata-Salguero, M. Baylina, H. Cachinho, C. Matzka, G. O'Reilly, D. Pirog, S. Şahin. 2009. Understanding Europe: University Geography Curricula. *In Thinking European(s): New Geographies of Place, Cultures and Identities*, eds. M. Keane, M. Villanueva, 56-82. Cambridge Scholar Publishing.
- Wright, J. K. 1966. Map Makers are Human. *In Human Nature in Geography*, 33-52. Harvard University Press .

## A POSTMODERN PERSPECTIVE OF GEOGRAPHY AS AN INVESTIGATING SUPPORT OF EUROPE'S KNOWLEDGE-BASED ECONOMY

Mairie G. DOUDEXOPOULOU

National Technical University of Athens, School of Rural and Surveying Engineering, Heron Polytechniou 9,  
15780 Zografou, Athens, Greece,  
[www.ntua.gr](http://www.ntua.gr), [mairiedf@central.ntua.gr](mailto:mairiedf@central.ntua.gr)

Gabor BARTHA

University of Miskolc, Institute of Geophysics and Geoinformation, Egyetemváros 1, 3515 Miskolc, Hungary,  
[www.uni-miskolc.hu](http://www.uni-miskolc.hu), [iitgabor@uni-miskolc.hu](mailto:iitgabor@uni-miskolc.hu)

---

### Abstract

The interdisciplinary character of geography involves a vast variety of knowledge under the two key meanings: “space” and “information”. The thematic maps are useful means to illustrate different sorts of qualified and ranked “information”, with respect to a simplified representation of the geographical “space” and provide an easy and fast visualization of possibly existing relationships among different sorts of ranked data in cases that these cannot be obvious. The Education and Research (E&R) sectors belong to the economical resources and are also influential factors of an IT based economy. This double role motivated the authors to extend the postmodern perspective of geography from only “space” to qualified “information”. Ranked information about R&D enterprises and E&R resources of six European countries are shown in thematic maps to reveal the possible impact of E&R resources on R&D sector that characterize the so-called Society of Knowledge (SK).

**Keywords:** *space, information, postmodern geography, thematic maps, education, research*

---

### 1. INTRODUCTION

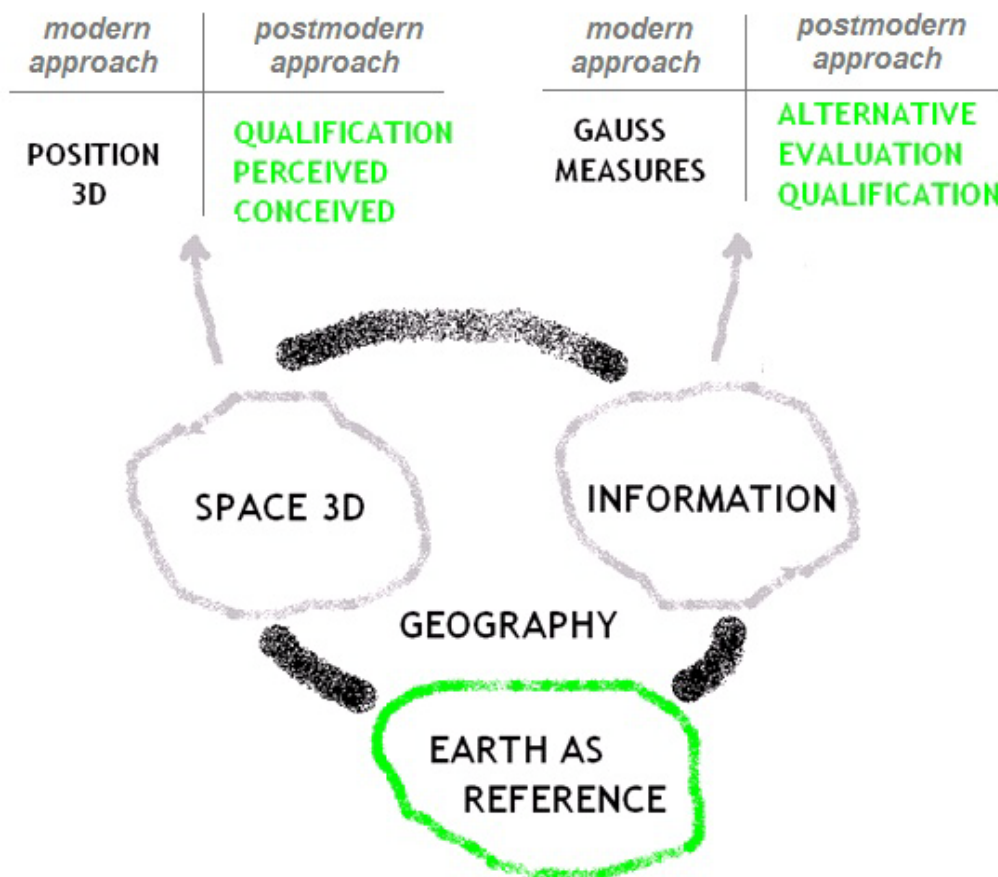
The objective to illustrate a possible impact of Education and Research (E&R) resources upon some subjectively selected features of R&D enterprises is limited for only 6 European countries. These have been selected on the basis of the high exceed of particular figures from Europe's average to “up” and “down”. The goal has been to reveal possibly existing relationships from the statistical figures on R&D enterprises and E&R sectors for the purpose to draw preliminary conclusions about a possible dependence between the Academic Research and R&D sectors.

This investigation is based on the inclusion of E&R sectors among the assets of economical resources (e.g. Greenspan, 2001) and apparently an economical perspective of these mental sectors extends the geographical ‘space’ with qualified resources in the era of the contribution of IT based “tools” (Web, Internet etc). In addition, the ranked ‘information’ about particular resources which qualify the R&D enterprises in context of their human



resources and how these are composed may be viewed in different perspectives with regard to the contribution of Education & Research.

Independently, the impact of IT in Education (e.g Web communication, e-learning) has established since few decades a deteriorating importance of a spatial dependence of Knowledge and Research resources. Thus in context of geography R&D and E&R resources can be used mainly as qualified ‘information’ within extended civil areas for the illustration of viewpoints about Europe. These may receive many perspectives for interpreting possible relationships. In this context the particularly involved science subjects portray the existence of complex and variable processes, which depend on the approach. Within this extended view a postmodern/relativistic perspective is appropriate in selecting and ranking the “information”. The thematic mapping as a practical subject represents a visual illustration compliant to the schematization of geography by the foundation meanings “information” and “space” by adding to both ‘information’ and ‘space’ extended properties and allowing an individual choice about the mapped resources. The scheme of geography in this context is shown on Fig 1.



**Figure1.** Schematization of geography in modern and postmodern perspectives

E&R resources and statistical reports about R&D enterprises consist ‘information’ that does not portray only objective quantitative criteria. These resources can be selected according to many viewpoints and the selectivity extends the postmodern perspective of geography from only ‘space’ to the ‘information’ and their mutual inter-connection. Thus the expected unclear, possible complex models between E&R and R&D enterprises may be

revealed. ‘Space’ and ‘information’ *initiate a use and interpretation of spatial measures (distances, area ) beyond their formal mapping measure.*

Education, IT and R&D are influential on individual and on macroscopic basis to the “Society of Knowledge” (SK), a term expressing the provided by technology foundations frame, within which most important driving mechanisms of the present economies may develop. A forward step to SK over the past two decades is expressed by that a part of local and regional economies are based on IT and depend on particularly qualified human resources having diverse skills. These range from skills to implement and use IT until to the ability to conceive, invent and innovate through an IT-based ‘environment’. Consequently the gradual transformation of the job “market” places and activity sectors have strongly affected in many forms traditional Education approaches. There are many viewpoints to consider this transformation, expressed in many forms (e.g. less needs of human labor, variable rates of IT literacy and respond among aged working populations). Certain viewpoints partly depend on how the E&R resources are configured and designed in the national systems. A main question is at which rate the policy about E&R contributes to the SK? The existing socio-economical ‘systems’ are expected complex and sensitive to the selected data sets. This expectation confirms relevance with a postmodern/relativistic view which includes the conceptual foundations of geography: space” & “information”.

However in the present, the term of postmodernism is used to express *a critical thinking* about meanings or models and because of the postmodernism has a relative freedom selecting, organizing and evaluating the particular types of “information” according to subjective viewpoints. The *critical thinking* represents an extended perspective to rational and framed “logic” investigations, which dominate in existing deterministic models and methods in scientific and engineering disciplines. *Postmodernism represents a perspective to view phenomena, processes and various relationships among them beyond the usual perspectives.*

Postmodernism, seems more “at home” in arts and humanities than in sciences (e.g. Good and Shymansky 2001). Its use in the perspective to select the resources of “information” and to illustrate complex relationships among them, establishes - in our belief – an appropriate approach which allows to reveal possible relationships among types of “information” which are not determined strictly neither on a formal and usual topology definition of “space” nor are based on simple statistical figures about IT-based R&D enterprises. Instead, the illustration of such ‘information’ should be viewed in less formal way, which allows configure options of complex modeling in many viewpoints and perspectives. An evaluation about the impact of mental literacy and skills in the actual working environment is expected to reveal a tendency of independence from conceived or perceived forms of geographical space, which have been perspectives given to ‘space’ beyond its logic and “modern” approach (e.g Soja 1996). A consideration of geographical “space” beyond its formal context emphasizes the unclearness, fragmentation, missing of real conformity and allows principles in social, economical, cultural and other disciplines to vary continuously by unclear, multiform and vulnerable changes in the society. This has been so far the experience with the very fast rate of IT development, of Internet facilities, the Web invention in the past 20 years.

These changes established a worldwide “new” reality and have deteriorated partly the importance of “space” in its strict objective representation and also its impact to other resources. This “reality” has been variously conceived and implemented among the states and is rooted on human resources. The sectors of education, schooling and working conditions belong to most affected ‘information’ resources, which can be influential to innovation sectors.

Europe experiences a sort of economical “diversity”, whatever are the causal sources. A part of the consequent “problems” is expressed by economical indices, including causes of unemployment, changes in many sectors, professions or occupations from the IT “revolution”.

In parallel there is a rather slow speed or hasty actions to adapt the relevant policies about education and schooling to this “new” situation. Thus, society and economy constitute the basic “culture” of SK and an IT-based “new space”, which is expressed by existing conditions in the sectors of education, schooling and research in spite that these traditional sectors seem – according to us - to “react” slower than the SK and IT in the working “market”. However, our investigation keeps partly the formality by using a “modern” means of cartography ( i.e. thematic mapping) to illustrate some viewpoints and restricts to the “postmodern” perspective only about the selection of the types of “information”. .In particular we use selectively (after reflection) statistical information about E&R resources, percentage of IT and R&D in Europe and associate these resources to standard economical indices such as employment rates and GSD (Gross State Deficit)

## 2. AN INTRODUCTORY PERSPECTIVE OF POSTMODERNISM

For completeness, a short introductory about postmodernism is included mainly about its orientation to the role and the perspective of a contrast to “logic” models of science, without to wander among philosophical perceptions (e.g. Soja 2001). However, the dominating perspective of postmodernism has been indeed a ideology stream and in fact its usefulness has been strongly questioned for scientific fields as being “unclear or obscure” (e.g. Gilbert, 1995, Good & Shymansky, 2002). For clarifying a postmodern perspective we adopt a phrase by Knox and Marston (Knox and Marston, 2004 ): “a view of the world that emphasizes a range of perspectives...” In our thematic illustration of ‘information’ we feel that certain perspectives of our investigation may be inter-related and consequently complex models should be established, may be revealed.

Postmodernism in historical and cultural context, is ‘a process of collecting and analyzing data, and relating findings’ (Lindlof and Taylor, 2002) according to a particular perspective. An important feature of the process is the rejection of idea that a research work is based on an “objective depiction of a stable other” (Lindlof and Taylor, 2002) which is the basic thinking platform in science. Thus postmodernism may allow *alternative* perspectives in selecting resources and interpreting findings. Postmodernism encourages *reflections* about synthetic impacts caused by combined and complex reasons. Thus postmodernism is viewed as a reflective platform about data pre-selection. There are several science-based disciplines and engineering models out of geography, which meet with or experience synthetic impacts (e.g. issues of environmental approaches, hazards and all multi-parametric and not linear models). A similar feature is expected for the sectors associated with knowledge based resources (e.g. Lindlof and Taylor, 2002) and their impact in limited or extended entities of human environment, which are characterized by not purely spatial proportional rates.

While Modernism has roots in the 16<sup>th</sup> century ( Knox and Marston, 2004 ) and has been clearly established in 18<sup>th</sup> century, the postmodernism in science – based disciplines is still shaping during the past 30 years without yet full acceptance ( Griffin, 1988 ) or at least extensive use. The basis of difference between ‘logic’ and *critique* of "modernist" scientific mentality of ‘objectivity’ started from the “soft” disciplines like art, sociology, literature etc. (e.g. Wiggershaus, 1994). Under this context the utility of IT for individuals and for the SK can be diverse and at various stages all over Europe.

A postmodern perspective interprets a deconstruction of the geographical or civil borderlines into a *mixed qualified reality* of a combined “socially constructed space” with illustrates possible variable ‘mentally’ based ‘information’. The illustration of such composite “information” in complex space by using thematic maps, depicts individually ranked data and provides a general background for a relevant viewpoint. This sort of mapping becomes suitable frame to reflect and interpret detected complex phenomena as – for instance - the

human *phobia of IT* and of scientific “risks” or a general “*resistance*” of population to particular subjects of science and IT. These features have been recognized as objects of interpretation according to recent EC report ( Report EUR22700, 2007).

A mathematical analogy “tool” for better understanding the use of postmodernism, which is strictly an individual viewpoint, can be associated to the existing scientific approaches in the study of unstable or chaotic “systems”. Such unstable systems exist in many disciplines and characterize modern engineering objectives. The quite large category of non-linear modes, whatever is their cause may result to chaotic instabilities (e.g. Bartha et al. 2009).

Therefore postmodernism should be viewed as a only a *creative platform* not closely associated to Soja’s theory (Soja, 2001). The contribution of geography to map and associate spatial “information” includes human and mental resources as many data types that are not characterized only by quantified criteria (e.g. Shannon, 1949) but instead their critical ranking, may establish a complex social-economical ‘environment’ which is not strictly based on a rationally illustrated “space” through maps or 3D representations. Thus a relatively “spatial free information” can be influential to state economies. Such “information” resources with a complex dependence on the civil space are innovations, business or commercial perspectives and related activities. The existing particular IT solutions depend on Internet communication and informatics, on the increased demands in infrastructure among educational approaches on creative thinking and on technological knowledge and skills. These represent an extended range of activities, which cannot be only “measured” objectively as “information”. For these activities the “space” receive a deteriorated importance of its topology impact and unravels alternatives for a subjective interpretation on the basis of regional or local geographical scale. .

The presently extending SK is building *a not yet organized, still in a shaping process* new platform for development beyond civil borders (Report EUR22700, 2007). IT economy is based on group initiatives, having unclear dependence on how E&R resources contribute and also on individual motivation and innovations. There exists an invisible fight between the existing forms of occupation and professions with coming up occasional and individual innovations in form of social phenomena (Eldon, 2008). This particular *social innovation* (the face-book) brought beyond the expected logic to its inventors revenues in million dollars. These raised from 52 in 2006 to 2000 in 2010 (Womack, 2010).

Therefore the critical question to answer is: What education do we need? *There is not a unique answer as in a postmodern perspective there can be many answers, which depend on how Education is conceived by its organizers and providers and what is the conceived goal.* A way to arrive to an answer is to illustrate viewpoints of the present situation in Europe among E&R, and R&D enterprise sectors.

### **3. A CLOSE VIEW ON E&R RESOURCES**

E&R consists of organized mental resources which aim to contribute to the SK. As a whole sector they have been affected by IT in various and diverse ways as - for instance - a drastic change in the content of many branches of studies or through active use of IT in the learning modes. The present needs to adapt E&R to the new situation may receive diverse objectives such as: a) the need to review actual aims and objectives of cognitive branches, b) to apply with caution the newer learning forms c) to drastically review existing pedagogical approaches.

The diversity of the goals for such needs relates to qualified criteria and these only partly reflect to Information Literacy (IL) of population in rather obscure way. They do not contribute to IT based R&D sectors directly, as the innovative motivations can be implemented by remote work and mainly because any innovation is based on creativity, a



feature which cannot be learned. A particular consequence of the impact of these resources can be evaluated by measures on the preparedness of the society to adapt in the new working “environment” (Doufexopoulou, Bartha, 2009). Only a side of this “environment” may be detected by data of R&D activities and the relevant innovations within them.

According to a recent report of an EC expert group (Report EUR22700, 2007), we may recall a widely-recognized problem in *Europe about an existing public “unease” with the science and in particular in relation to the science which is based technologies*. This is not a simple social or cultural phenomenon but consequents after some controversial initiatives in the sectors of E&R the past two decades. There are indications that E&Rs remain *rather apart* yet from an active economy and are partly ‘isolated’ within the society. In our belief the public unease of society with IT and science, can be caused also by issues “inside” the education process, indicating examples of hasty and rather superficial implementations of IT. Such causes come from: a) the structure of human brain, related to; b) the pedagogy approach of education and schooling, which still is based on a teaching approach; c) a low attention paid for the great difference of goals between education and schooling; d) the high majority of experts and decision makers, which belong to matured generations that did not conceive the real impacts of IT and stayed in its technology features. In particular education aims to build up creativity but schooling is targeted to provide know-how and skills for particular sectors.

E&R resources have been subjected to micro-scale and macro-scale impacts of IT and these may reflect - in turn – quite different impacts to the SK. In the micro-scale IT is focused on using IT “products”, which are built by simulation of human brain operation. The human brain is extensively used to the symbols of language but it cannot replace them so easily by implementing a new symbolic system such as those needed for IT (Dowling, 1992). The brain cannot be using symbolic mechanism beyond language without a particular learning of the symbolism, and the IT symbolic models are irrelevant to brain. Cognitive scientists and researchers in associated areas assume that human cognition can be described as a symbolic system and list basic characteristics of information-processing framework, which - they say - is agreed as an appropriate way to study the human cognition (Eysneck, Keane, 1989). From their list we may argue that without setting up a reasonable motivation for learning other symbols than language, IT skills do not contribute to creativity, which is a foundation to motivate innovations.

Some textbooks on cognitive psychology (Stillings et al, 1995) regard the symbolic view as an appropriate way of looking at the brain, with connectionism as an alternative. The appeal of symbolic systems stems mainly – according to us - from two related reasons: a) they are in general relatively *simple*, i.e. easier to conceive complex models; b) They are easy to implement on computers, which is a great advantage in IT.

However, these features are irrelevant to brain, as brain systems are *not necessarily simple* or easy to implement on computers. *The motivation to learn symbolic systems in education or for schooling can be triggered by the motivation of job finding possibilities*. Instead education which aims to emphasise foundations and “values” of particular subjects, contributes to build up rather the *creativity* which can be a learned basis for the innovations.

About the macro-scale impacts of IT – which is the main object in this paragraph - we may consider that the European policy in education has shown contradictory motivations, so far. On one side the established goal of “quality” as a main competitive “force” (e.g. EC Bologna Declaration 2000) shifted to an controversial objective: of increasing or extending the SK by demanding *mobility* from large numbers of students or academics. Despite this implicit critics, the apparent actual problems in Europe’s present economy can be interpreted only partly as a side consequence of SK and IT, which grow independently without a direct connectivity to the classic economy. Consequently rather little rate of SK and IT penetrate as an active “force” built in the present economy. In particular, a large problem is the percentage

of unemployment in many sectors and this grows up because job places are replaced by automated processes and individuals have to invent new ways of professional occupation. Also several traditional professions faded out, practical knowledge and skills are fast replaced by new practical knowledge and new skills. However, the sectors of E&R respond and adapt rather slowly to such needs.

E&R resources are target and subject oriented and frequently their initiatives strongly vary between a “schooling” perspective (= learning or implementing skills) and a perspective of “education” (= learning ways to think, solve problems or innovate) *They represent two contradictory objectives that are often mixed up.* If considered that E&R places operate as “closed human systems”, several features can be met, which make difficult a *real penetration of outcome from some valuable mental work into this societies.* Such examples are:

- 1) E&R places operate as independent entities composed by rules among large but closed ‘human systems’ which consist of massive human communities that interact inside a “system” depending on policies and sponsors and is being poorly adaptive to external social changes.
- 2) E&R places depend strongly on financing sources and they are expected to follow strategies and objectives of the ‘sponsors’. Thus an E&R resource cannot be really free (Doufexopoulou, 2007).
- 3) E&R places as human systems operate with balancing small and large scale relationships within a determined “quality” and rules in a society, which keeps a high esteem for the given place but hardly can makes an active part of it.
- 4) E&R places are subject and target dedicated and thus they do not actively respond to the fast changes in science and technology.

Taking all of this into consideration a postmodern perspective on these resources seems to be the relevant approach.

#### **4. DISCRPTION OF THE INVESTIGATION**

Our experimental illustration was initiated by three particular macroscopic observations which are not economically oriented, namely:

- 1) A widely-recognised existence of public unease with science, especially in relation to new science-based technologies. This observation is independent of a high esteem for these sectors from society (Report EUR22700, 2007).
- 2) Existing and experienced difficulties to combine fruitfully the role of E&R resources for subjects that are often composed from strongly scientific in nature cognitive sectors, although in practice they are didactically approached by mainly descriptive generalizations (e. g climate change, sustainability, environment and development etc) or through highly specialized independent subjects or are restricted to obtain learned skills (e.g. programming, data processing methods, software learning skills)
- 3) The hasty involvement of using IT in education (e.g e-learning means) without to consider - with the needed caution - the strategy of didactics for a given subject or to include concrete perspectives for the learning outcome (e.g. Doufexopoulou, Massina, 2004). In many cases the learners mix up the leaning of skills with the learning of a subject.

The investigation is restricted to draw attention that E&R resources may receive equal chances to contribute to creativity and innovations or simply practise independent mental activities apart from a variable socio-economical geographical space. However any other



similar investigation (for instance about environmental impacts and hazards) in the future should be compliant to postmodern perspective in the context of modern/realism about the existing models. The thematic maps illustrate selective records of ‘information’ through “imaging” in context of a postmodern perspective about the space/information in geography.

The illustration includes 6 European countries, which were selected after the deviation of the 3 main groups of percentage in R&D sectors profile (enterprises, state and academic institutions) from the Europe’s average to low and high rates. The countries are namely Luxemburg, Denmark, Netherlands (from western and northern part of Europe and they are higher than average in rate for enterprises and lower for E&R) and Latvia, Greece and Hungary (from eastern and southern part of Europe and they are lower than average for enterprises and higher for E&R). The relevant data are taken from EUROSTAT Report (EUROSTAT, 2010) and they are summarized in Table 1.

**Table 1.** Percentage in R&D sectors profile (enterprises, state, academic institutions E&R) in six European countries

<b>Country</b>	<b>Enterprise %</b>	<b>State %</b>	<b>Academic (E&amp;R) %</b>
<b>Europa</b>	<b>42</b>	<b>13</b>	<b>45</b>
Latvia	10	19	72
Hungary	23	23	54
Greece	21	13	66
Luxemburg	83	5	4
Netherland			
Denmark	59	7	33

For these countries particular information about their R&D enterprises and Human Research resources have been selectively acquired from the already mentioned EUROSTAT Report (EUROSTAT, 2010) and these have been illustrated by 9 thematic maps for the goal to reveal visually the existence of possible associations between the two sorts of ‘mental’ resources. The maps illustrate the following selected resources:

- 1) The % distribution of R&D enterprises in companies, government and academic institutions (E&R) in each country.
- 2) The % of human resources in science and technology sectors with respect to the national population.
- 3) The % of innovative R&D enterprises over all enterprises.
- 4) The % of providing goods and services in inner market..
- 5) The % of scientists and engineers in respect to employees in R&D enterprises
- 6) The % of R&D collaborating enterprises with scientific and Academic sectors.
- 7) The % of Science and Engineering students of tertiary education ( Ph.D)
- 8) The % interdivision of R&D employees as professionals, technical and ‘others’
- 9) The % innovations of R&D enterprises.

The first map is shown on Fig.2 while the rest can be viewed on the personal web site of the author (<http://www.doufexopoulou.com/EUROGEO-Athens-2011>)

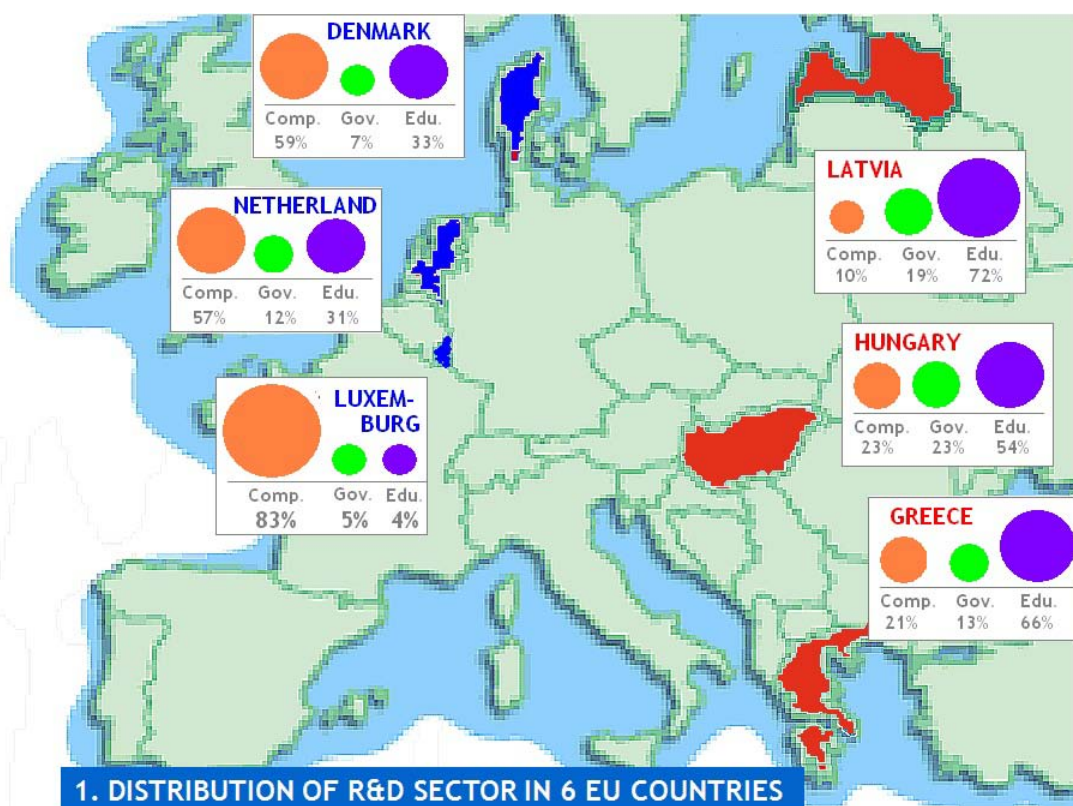


Figure 2. Distribution of R&D sectors in six European countries

## 5. CONCLUDING COMMENTS

A first impression is a confirmation of complex relationships among resources, which would deserve investigations by mixed professional groups.

The mapped 'information' illustrates that there is a relative irrelevance between the performance of R&D sector and the E&R resources, if the figures about Luxemburg are considered. In this minor state the 83 % of R&D sector are enterprises, only 18% of employees are scientists and engineers, there is low (18%) cooperation with E&R sectors, but the percentage of innovations is the highest among the other investigated states.

There is a tendency of difference between West and East in many respects. In Latvia, Hungary and Greece the higher percentage of Human Research Resources can be found inside the E&R sectors (72%, 54%, 66 %) than in the other 3 countries, although the percentage of innovative enterprises is about 20 units higher in Denmark, Netherlands and Luxemburg, which keep lower rates of occupation in E&R.

All six countries do not show large deviations about the percentage of occupying scientists and engineers in the total R&D sector.

However, we would consider rather hasty a conclusion – based on these findings – that the maps illustrate *irrelevance* between R&E and the performance of R&D sector. Instead we may claim that critics coming from various professionals would be needed to interpret the complexity of these findings and they can confirm that there are no simple models to associate the impact of E&R on R&D sector. It is a question of mental choice to argue that the

illustrated resources should be considered as postmodern/relativistic or modern / realistic models.

What is certain is that 'space' and 'information' in the frame of geographic approach can establish indeed quite complex relationships which depend on the particular discipline to which the acquired 'information' belongs .

### **Acknowledgements**

*The described work was carried out as part of the TÁMOP 4.2.1.B 10/2/KONV 2010 0001 project in the framework of the New Hungarian Development Plan. The realization of this project is supported by the European Union, co-financed by the European Social Fund.*

### **REFERENCES**

Bartha, G., Doufexopoulou, M., Massinas, B. 2009. Use of phase space representation to investigate points of geodynamical interest. *Acta Geodaetica et Geophysica Hungarica*: 44(4): 419-427.

Bologna Declaration.

[http://www.ond.vlaanderen.be/hogeronderwijs/bologna/documents/MDC/BOLOGNA\\_DECLARATION1.pdf](http://www.ond.vlaanderen.be/hogeronderwijs/bologna/documents/MDC/BOLOGNA_DECLARATION1.pdf)

Doufexopoulou, M., Massinas, B.A. 2004. Teaching - orientation analysis in Space Science Education: The case of the Earth's Gravity Field. *Proceeding of 35th COSPAR Scientific Assembly. 18 - 25 July 2004* 4396, Paris.

Doufexopoulou, M. 2007. Is there indeed Academic Freedom? *to VIMA* 22.03.2007.

Doufexopoulou, M., Bartha, G. 2009. The ending of old working style promotes a new approach in Education. *Higher Education, Partnership, Innovation* ed. Klucznik-Törő: 279-289, Budapest: Publikon.

Dowling, J.E. 1992. *Neurons and Networks: An introduction to neuroscience*. Cambridge, MA: Harvard University Press.

Eldon, E. 2008. *2008 Growth Puts Facebook In Better Position to Make Money*.

<http://venturebeat.com/2008/12/18/2008-growth-puts-facebook-in-better-position-to-make-money/>.

EUROSTAT, 2010. *Science, technology and innovation in Europe*  
[http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-32-10-225/EN/KS-32-10-225-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-32-10-225/EN/KS-32-10-225-EN.PDF)

Eysneck, M.W., Keane, M.T. 1989. *A Student's Handbook* East Sussex: Psychology Press.

Gilbert, S.F. 1995. Introduction: Postmodernism and science. *Science in Context*: 8: 559—561.

Good, R., Shymansky, J. 2001. Nature-of-Science Literacy in Benchmarks and Standards: Post-Modern/Relativist or Modern/Realist? *Science and Education*: 10: 173-185.

Greenspan, A. 2001. The importance of education in today's economy.

*Proceedings, Federal Reserve Bank of Chicago*, issue Apr, 2001, 6-11.

Griffin, D.R. 1988. *The Reenchantment of science: postmodern proposals*. New York: State University New York Press.

- Knox, S., Martson P. 2004. *Places and Regions in global context: Human Geography* New Jersey: Pearson Education Inc.
- Report EUR22700, 2007. *Taking European Knowledge Society Seriously*, European Commission Report of the expert group on Science and Governance to the Science, Economy and Society Directorate – DG RTD.
- [ec.europa.eu/...society/.../pdf.../european-knowledge-society\\_en.pdf](http://ec.europa.eu/...society/.../pdf.../european-knowledge-society_en.pdf)
- Soja, E.1996. *Third-space. Journeys to Los Angeles and other real-and-imagined spaces...* Malden: Blackwell Publishers Inc.
- Soja, E. 2001. *Postmodern Geographies. The Reassertion of Space in Critical Social Theory* London : Verso.
- Stillings, N. et al 1995. *Cognitive Science an introduction* Cambridge, MA: MIT press.
- Thomas Lindlof, T., Taylor, B. 2002. *Qualitative Communication Research Methods*. London: Sage Publications.
- Wiggershaus, R. 1994. *The Frankfurt School: its history, theories, and political significance* Cambridge, MA: MIT Press.

## THE MANAGEMENT OF CULTURAL RESOURCES IN THE CREATION OF SPANISH TOURIST DESTINATIONS

Carmen MINGUEZ

Complutense University of Madrid, Department of Human Geography, Faculty of Geography and History,  
Avda. Profesor Aranguren s/n 28040

[cminguez@ghis.ucm.es](mailto:cminguez@ghis.ucm.es)

---

### Abstract

Spain is one of the most important tourist destinations in the world due to the great stream of visitors that arrive seeking sun and sand, historical towns and the great cities such as Madrid, Barcelona, Sevilla or Bilbao. With more than 52 million foreign visitors and more than 150 million visits by nationals, tourism generates around 10% of the GNP. The relevance of cultural tourism in Spain and its multiple facets makes it interesting yet difficult to study. In this process it is considered of prime importance to identify how cultural resources in the destination are managed and to establish various types that reflect possible activities as well as those that are already in use. Better management patterns are being sought for destinations in order to achieve better quality in visits and a better position for these in an ever more competitive market.

*Keywords: Spain, tourism, cultural, destinations, typology, innovation.*

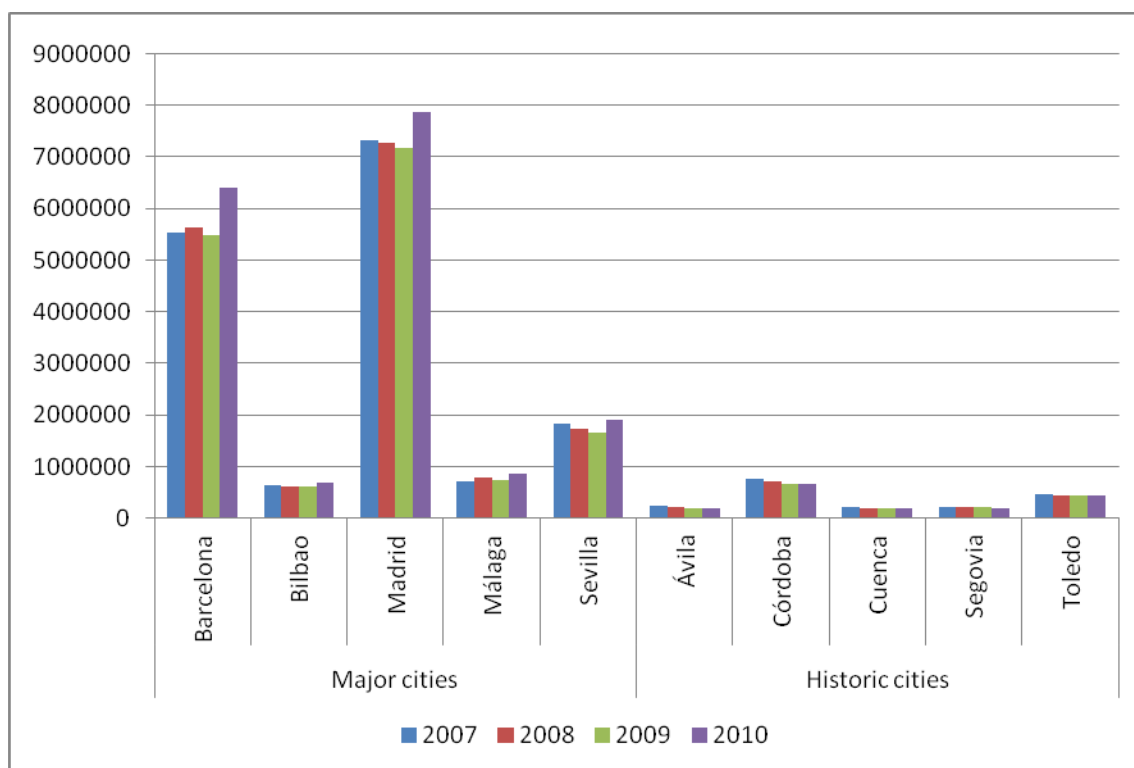
---

### 1. INTRODUCTION

Spain stands out on the international scene as one of the main tourist destinations in the world; and tourist activity is one of its primary sources of income, bringing in 10-11% of the annual GNP (Institute of Tourism Studies, various years). All of this is due especially to sun and sand tourism which made this destination famous in the 1960s (Pellejero, 1999), and is still the basis of Spanish tourism today; however, Spanish tourism is presently experiencing changes due to more and more diversification in what is offered to tourists. Cities play a great role in this variety and their cultural and heritage resources, of which at the end of 2011 stood out 43 Sites written in the UNESCO World Heritage List, more than 16,000 Properties of Cultural Interest declared by the Law of Spanish Historical Heritage and over 1,400 museums. To this can be added a wide offer of gastronomy, culture and landscape recognized on the national as well as international scale (Troitiño & Troitiño, 2010).

However, not all city destinations are the same. On analyzing the situation of Spanish cities between 2007 and 2011, one sees how the big cities, in which the cultural attractions are greatest in number and variety and which have the principal tourism infrastructures, are the ones that have best adapted to the present economic recession (Fig.1). On the other hand, the medium-sized and small cities, though with a strong presence of heritage sites, have been harder hit by the recession and have even reached the point in some cases, such as Avila,

Cuenca and Toledo, of need to introduce changes in their tourism cycles. This fact makes one think about current management of these destinations and the pattern to follow in search of success in cultural tourism based exclusively on the adjustment in the value of these heritage resources.



Resource: INE

**Figure 1.** Evolution of visitor by typology

Modern tourism is inserted into a process of marketing in which culture is another consumer product of the “leisure society” (Watson & Kopachevsky, 1994). Consequently, culture is understood as the product of individual or group activities to which a specific meaning is attached and loses its value as an anthropological process and as a code of conduct integrated into a specific social group (Van Maanen & Laurent, 1993). Moreover, today’s postmodern society is selective and therefore not all cultural or heritage resources are equally attractive. Only some of them can be considered tourist resources (Jansen-Verbeke *et al*, 2008), that is, potential attractions that to be considered need a solid management model to which can be given great importance for public visit (Richard, 2001).

Equally, destinations are undergoing constant modifications since they have to adapt to new needs of a dynamic and changing market that demands that heritage meet criteria of conservation, authenticity and sustainability (MacCannell, 1976; Waitt, 2000). This makes it necessary for managers to innovate in order to make an attractive adjustment in value. In this process of adjustment to the necessities of leisure society, the destinations incorporate the new creations (museums, events, performances...) into the cultural offer, while respecting the idea that culture is an inalienable product of the place (Zukin, 1991:28). Likewise, the new cultural products end up becoming new symbols and the new image of the territory (Urbain, 1989).



## 2. STUDY OBJECTIVES AND METHODOLOGY

We present a trilateral relationship in which intervene cultural resources, a demanding society and the managers, who serve as a union between the first two of these components. Traditionally, the first two have received much greater attention on the part of researchers, leaving aside the connection between agents in charge of cultural management and the destinations (Calle & Garcia, 2010). This relationship has been taken as a departure point by the research projects “Recent Dynamics and Strategies of Intervention in National Heritage Destinations” and “Carrying Capacity as an Instrument for Planning and Management of Cultural-Tourist Resources”. Both have been carried out by the research group “Tourism, Heritage and Development” at the Complutense University of Madrid, who have spent over a decade analyzing tourism planning in Spanish and Latin American historical cities with the purpose of identifying urban dynamics caused by tourism.

In the first of the research projects a survey was designed and distributed to managers of the principal Spanish heritage resources. They were chosen because they were directly in charge of cultural policy and over the last years had shown great concern about the introduction of tourism in the destinations where the properties they managed were located. The managers, more than anyone else, were conscious of the role played by the institutions they represented and they knew very well the needs and problems of the cities termed as tourist destinations.

The questionnaire was made up of 18 questions and included the following subjects: the general management of the heritage property; the tourist management of the same; the visitors and the heritage property within the tourist destination. For its application, a first selection was made proportional to the number of properties located in each place, and it was necessary to distinguish among different types of heritage properties. Therefore, all those properties managed by the State through the National Heritage or the Ministry of Culture – State Museums – and also those Archeological Complexes that are open to the public were included in their entirety.

Finally, after a detailed culling, the total was established at 1,339 properties scattered irregularly across the national territory. Among them were 1,056 museums, 91 cathedrals and 177 archeological complex grounds and 15 monumental ensembles, constituted by palaces, walls... Of all these, 426 were chosen to receive the survey and in the period of one year 115 responses came back. Initially they were considered insufficient, but on analysis we observed that they offered a representation of the entire country and of all types of properties while they also included the principal attractions. In addition, the plentiful information obtained was complemented by personal interviews as well as already existing bibliography and documentation.

The survey revealed valuable and diverse information of which only a part is shown in this article and which defines the following two points: The first analyzes the direct data taken from the survey and the second interprets this information to establish types of destinations. This result could have been achieved with other methodology; however, innovative and first hand information was obtained. Thus the principal objective of this study is reached, that is to recognize how a model of management of cultural-tourist resources meets directly with the destination, generating different types that show their degree of accuracy.

## 3. CULTURAL ATTRACTION AND CULTURAL DESTINATION IN SPAIN

A great part of the literature relative to cultural tourism concentrates on cultural and heritage attractions as key components in the interpretation of and contact with cultural tourism (Prentice, 1993). Both are essential in consumption practices and in the make up of the landscape (Richard, 1996) and for that reason deserve the attention of geographers. Moreover,

we are interested in the close relationship that attractions maintain with the cultural destinations. This connection emerges when the destination has a heavy concentration of cultural resources that set a stage on which the attractions acquire such value that they may create a city-museum (Russo, 2002). This can be seen in the medieval and renaissance cities which are the basis for the European tourist industry and for the Spanish tourist industry as well (Toledo, Segovia, Salamanca...). However, attraction and destination also join forces when the monumental complexes are so powerful in physical dimension and image (symbology, historic-artistic representation) that they become a destination in themselves, eclipsing the town (Mínguez, 2007). This is the case of Granada and the Alhambra or San Lorenzo de El Escorial and the Royal Monastery.

In both cases cultural heritage attractions are the tourism axis of the destination and their actual tourist image, as can be seen in promotional activity, in motivational studies carried out and/or in processes of occupation of the area observed. Then the monumental area becomes a "touristification," that is, a heavy concentration of visitors and visitor services appear and alter the traditional functions in the historical centres (Troitiño, 1998). The success of the tourist destination is difficult to justify and can only be explained in quantitative terms by measuring the number of visitors. This is impossible in open areas; what is measured is the flow at the principal attraction linking the destination therefore directly to the cultural institution.

According to the survey presented, 65% of the monuments and museums in Spain received between 10,000 and 250,000 visitors a year and that the number of those that did not reach 5,000 was constant (6%) as was the case of those that received more than a million visitors a year (5.2%). These last were always the same (Fig.2): the Real Alcázar and the Cathedral of Sevilla, Prince Felipe Science Museum (Valencia), the Alhambra (Granada) and the Prado Museum (Madrid). Another point of information obtained was that the majority of the visitors were nationals and that only in very special cases did foreigners make up more than half of the total. This did happen in the Guggenheim (Bilbao); the Alhambra and the Cave of Sacramonte, (both in Granada); the Prado Museum, the Cathedral and the Alcázar of Sevilla, the Andaluz Centre of Flamenco (Jerez), the Church of Santo Tomé (Toledo); the Antoni Tapies Foundation (Barcelona) and the Museum of Segovia and the Museum of Zuloaga, (both in Segovia). For their part, local visitors made up the majority at the Provincial Museums that showed collections closely related to the region and where the presence of school visitors was high. Local visitors were also the majority at the Thyssen Museum or the Reina Sofía because the temporary exhibitions that they put on are an important component of the Madrid cultural offer. Moreover, it must be noted that they are located in a city with a metropolitan area of over six million inhabitants.



**Figure 2.** Visitors waiting to enter in Sevilla's Real Alcazar. Mínguez

### **3.1 Tourism According to Cultural and Heritage Agents**

Numerous authors, such as Smith in "Issues in Cultural Tourism Studies," think that cultural and heritage managers present a vision of culture different to that of tourism managers. The former believe that heritage is an asset to protect and they see art as a phenomenon of inspiration that enriches those who produce it or observe it. Tourism managers see culture and heritage as resources that should be converted into elements for entertainment and fun through a process of democratization that renders them accessible to the greatest possible number of people. Not only are these differences going to cause conflicts of interest among managers, but also for the most outstanding properties, they create different management patterns and distinct types of destinations (Smith, 2009; McKercher & DuCross, 2002).

For this reason, when various types of Spanish managers were asked for their opinion on tourism, it seems that they recognized the interest and importance of tourism in their properties. The majority (83%) thought that it was positive as long as it remained sustainable and 62% believed that tourism helped to increase the value of cultural components. However, the idea that tourism increased economic development had minor support (23%), made up of the great institutions with annual budgets of more than €1,000,000. These were The Alhambra, the Cathedrals of Córdoba and Sevilla and the Guggenheim, Thyssen, Prado and Art Nouveau (Salamanca) museums.

Of those interviewed 62% believed that cultural tourism would increase at a moderate rate in the destinations where it was found; this figure coincided with the 60.87% who believed that same growth would take place in the properties they managed as well. Among them can be noted, for example, provincial and municipal museums. Only four of the managers interviewed thought that in a moderate growth span they would be able to have a higher than average growth. These were the Archeological Museum of Murcia, The Birthplace House of Jovellanos (Gijón), the El Greco House (Toledo) and the Museum of the City of Baeza. The four have undergone renovations in the last five years and have received heavy investments from local and regional governments that wished to place them as major cultural institutions in their respective towns.

On the other hand, 21% of those surveyed considered the property they managed to be the most important feature at the destination. It is noteworthy that 50% were monuments (the

Alhambra, the Cathedrals of Santiago and of Sevilla, the Royal Palaces of Madrid and of La Granja and the Royal Monastery of El Escorial...); 40% were museums (the Prado or the Museum of Abstract Spanish Art in Barcelona) and 10% were Archeological Complexes (Baelo Claudia and Italica, both in Adalucia). On the other hand, 20.17% believed that they did not represent institutions with any tourism interest at all. These were City Museums (Avila, Segovia, Malaga, Valladolid...), Diocesan or Cathedral Museums and even some State Museums – the Cerralbo and the Decorative Arts Museum – located in Madrid, where what is on offer is quite impressive and varied. All except the Museum of Malaga believed that they would improve their position as a tourist attraction over the next five years. This was precisely the only museum that saw tourism as having only a trite influence on its heritage and thought that it produced more damage than benefit. This idea was possibly due to the fact that the museum is located in one of the most important sun and sand destinations in Europe.

Along with the above idea, most of the managers (81.21%) believed that the property they managed was the principal reason for the visit, followed by the enjoyment of the same (62.28%). On the contrary, filling empty time and socializing were two reasons managers hardly took note of (22.81% and 14.91%, respectively) and without any doubt they had greater importance than managers were willing to recognize since the social element is part of the mission of museums. Moreover, the European Union promotes this type of participation through programs such as Europe for Citizens (2007-2013).

### **3.2 Problems in Creation of Destinations**

The joint attraction-destination implies numerous problems stemming from the model of management of the attractions, which directly affect the management of the destination. This reflects problems in the inter-institutional collaboration and in the perception of tourism which cultural institution officers and those in charge of the city have. Likewise, conflicts arise originating from compatibility of the tourist visit with the original functions of the property (religious, institutional...) and the relationship existing between the property and its surroundings (crowds, rendering of services...).

Beginning with importance that managers of Spanish Heritage placed on tourism, it must be noted that the majority believed that the properties under their charge were distinguished tourist resources. To make this value correspond to reality and not be limited to an idyllic and personal viewpoint, there is need for a series of procedures, policies, tools, services and budgets that truly define their merit as a tourist attraction. On analysis of these elements we saw marked deficiencies, principally because there were few properties that had the tools, except those that were dedicated to the traditional mission of museums, such as conservation (conservation, restoration and/or museological plans) and cultural dissemination (teaching program and research plan). Only a minority could rely on tourism management tools (study of the public and a program of dissemination and communication), economic program (financing, marketing and sponsorship) or integral procedure (management and strategy). Furthermore, at times there was a lack of sufficient and qualified personnel or budget to put the tools to use.

Of all the properties that have participated in this research study only four had procedure plans and programs in all areas of management. These were recognized as cultural-educational areas with public visitors: the National Museum of Roman Art (Mérida), the National Museum of the Prado and the Royal Palace (both in Madrid) and the Guggenheim Museum (Bilbao). The first three are managed with state provided funds, while the last one depends on private sponsorship.

The greatest efforts are concentrated on studying crowd flow with the intention of increasing numbers (Moore, 1994; Sanguinetti & Garré, 2001) and they forget about the planning and tourism management tools that facilitate putting into action procedures to



improve the quality of the visit and that are key to the process of updating the museum. 52.17% used analysis systems and follow up on visitors and 26.96% had a use and management plan that included management of the visit.

Another element to take into consideration in the adapting of properties for tourist use is the availability of services dedicated exclusively to the public visit. Only 10% of the sites – principally museums – had all the services mentioned. These were the National Museum of Roman Art (Mérida), the Centro Bonastrucça Porta (Gerona), the Catalan National Art Museum (Barcelona), the Alhambra (Granada), the Guggenheim (Bilbao), the MUSAC (León) or the Thyssen and the Prado (both in Madrid). The rest were limited to offering general information services, rarely innovative or personalized.

If we look at special services on offer, the Web (71.93%), temporary exhibitions (55.26%), and cultural events (52.63%) were the most common, while at the extreme opposite were cocktail receptions and trips (5.26% and 2.63%, respectively). These figures, like those above, did not show a modern image of a heritage resource as a tourist attraction and for this reason the greater part of the managers were aware that they must increase and modernize their services in order to improve and facilitate visits. However, the introduction of tourist services was closely related to budget and the number of specialized employees such as public visits technician (17.5%); press and public relations agents (25%); guides and interpreters (45%); information personnel (56.6%); cultural promoter (21.6%); or technician for communication and dissemination (25%). This showed that most of the properties had a traditional visitor pattern and that there were few qualified employees to develop the tasks and services offered. These tasks were being carried out by individuals who were not trained for them and who were required to work in all of the activities.

The lack of and unbalanced distribution of budgeted funds has led to scant hiring of specialists, as shown in the survey responses. Therefore, although 56.51% considered that the funds which they had available annually to be adequate in general terms, this evaluation is skewed if we look at visit management and the incorporation of technology and qualified personnel for its development, in which more than half the subjects surveyed considered their budget to be inadequate. All of these features had a direct effect on the creation of the image of the destination, which was seen as impoverished as a consequence of lack of initiative and of budgets. Moreover, on rare occasions did management of the attraction depend on local government. Therefore, joint plans were seldom carried out between culture and tourism boards; nor were the local people taken into account; and decisions were made by administrators and/or private organizations.

#### **4. TYPES OF TOURIST DESTINATIONS.**

##### **4.1 Criteria for identifying the destinations.**

In order to identify a type of tourist destination the following two criteria must be taken into account:

- a) The weight of the properties: is the result of evaluating the flow of tourists, its evolution over the last five years and where visitors came from (local, national or international) as well as the reason for the visit. There were three levels. Prime properties: received more than 100,000 visits yearly and had a stable evolution. National and international visitors made up more than 50% and they were motivated mainly by cultural intentions such as to see and/or enjoy the property. Complementary properties: received between 10,000 and 100,000 visitors and they had an increasing or stable evolution. They were visited by a mainly national public and the visitors were motivated by diverse reasons such as to see and/or enjoy the property or simply “to fill time.” Accidental properties: received fewer than 10,000 visitors and

had an unstable evolution. These were basically local visitors who, in addition to seeing and/or enjoying the property and filling time, engaged in social practices since the properties also act as cultural centres (for exhibitions, concerts and conferences at the local level).

- b) Capacity for Innovation: looks at the annual budget, tools available, planned activities and the organizations that participate in these activities. Conservative Properties: had a budget that permitted only the conservation and management of visits, for which they had tools designed for the protection and dissemination of culture. The activities and services offered did not require hiring of specialized personnel or opening extra hours and they collaborated with public administration and the university. Innovative Properties: had a budget that permitted activities for different types of visitors, incorporation of new technologies and development of studies. In addition they used tools and services of all types and collaborated with the public administration, but also with private firms, cultural associations and universities.

## **4.2 Types of Destinations.**

The crossing of these levels made for six types of destinations, in which each one's character is reflected in its offer and capacity for adaptation.

### *4.2.1. Competitive Cultural Destinations.*

These had a strong cultural offer – at least one prime category property and another complementary – and fulfilled the same requirements as innovative properties. These were Barcelona, Bilbao, Granada, León, Madrid, Palma de Mallorca, Ronda, Santander-Santillana, Sevilla and Valencia. They were large cities or historical cities (León or Ronda) that had a rich heritage which has supported culture, with the help of local institutions (Fig.3 and 4). They have diversified the tourism offer and made cultural tourism a complement to urban tourism, business tourism or even that of sun and sand or cruises, as in the case of Barcelona. To this group we must add some of the cities that have been nominated candidates for European Capital of Culture 2016. These were Burgos, Córdoba, Segovia and Zaragoza. They have supported innovative artistic activities and were improving their strategies in communication, dissemination and merit.





**Figure 3.** Leon's Cathedral. Mínguez



**Figure 4.** MUSAC-Contemporary Art Museum of Castilla Mínguez

#### 4.2.2. *Non-Competitive Heritage Destination.*

They had a strong offer especially in heritage, having a least one prime category property and *another complementary*. They had a limited capacity for adaptation and little vision toward the future. All were historical cities that have been important destinations for cultural tourism or day visits. Their offer was limited to monumental heritage with resulting risks as seen over the last year making innovation necessary to make them competitive among themselves and to maintain possibilities in quality. These were Ávila or Toledo (Fig. 5).



**Figure 5.** Visitors on Avila's wall. Mínguez

#### 4.2.3. *Potential Cultural Destination.*

They had more than one complementary property and, on occasion, accidental properties and were of great capacity for innovation. Until now these have been rare since, although many institutions had budgets and institutional support, they did not carry out competitive innovative activities. In this group Málaga stood out, where both public and private funds were being heavily invested in culture, not only as a complement to other forms of tourism (sun and sand, urban or business) but also with the aim of turning the city into a true culture destination in Andalucía. In this context, the Film Festival played an important role that like other events of this type made up the character of the destination (Fig.6). In Andalucía there were also three destinations with important archeological complexes (Baelo Claudia, Carmona and Itálica where the regional government was investing to make Archeology more accessible to the public, a difficult task since these sites were hard to interpret.



**Figure 6.** Rodin's sculpture exhibition. Malaga, 2009. Mínguez

#### *4.2.4. Weak Cultural Destinations.*

They had an offer based on complementary and accidental properties and moreover their adaptation to new demands was limited. This was a heterogeneous group since some were in a transitional period with isolated cases in which there have been attempts made at innovation and modernization in the destination, as happened in Gerona, Gijón or Oviedo. Others, on the contrary, were lacking in resources for change such as Astorga, Cáceres, Caravaca, Pamplona, Úbeda or Valladolid (Fig.7).



**Figure 7.** Vazquez de Molina Square in Ubeda (Andalusia). Mínguez

#### *4.2.5. Tourist Destinations with Cultural Innovation as Added Value.*

These places had only one complementary property or several of accidental category and they were investing in improving and modernizing the cultural offer as the EU designates in the Work Plan of the Culture Fair (2011-2014). Sometimes they linked the offer with contemporary artists as in Figueres with Dali, in Lanzarote with Manrique or with intangible heritage such as in Jerez with flamenco or in Briones (La Rioja) or Elciego (Álava) with Rioja wine (Fig.8).



**Figure 8.** Wine cellar of Rioja wines designed by Frank Gehry. Mínguez



#### 4.2.6. *Tourism Destinations with Heritage or Culture as a Supplement.*

These, because of their location and characteristics, could not be considered cultural destinations. They had a single complementary property and/or various of the accidental type, but their ownership (generally private) prevented them from being attractions. At the same time there was no encouragement for activities to make them so. This offer was limited to being a setting for weekend destinations within a rural or sun and sand framework, such as Chinchón, Ecija, Huelva, Sagunto or Toro (Fig.9).



**Figure 8.** Chinchón's Main Square (Madrid). Mínguez

## 5. CONCLUSION

Spain possesses a great wealth of culture and heritage that on rare occasion generates tourist destinations of the same quality as that of the museums and monuments that they host due to lack of strategies of integral management. To this significant deficiency, we must note the absence of management models that are specific to each of the cultural destinations and that take into account features of current demand as well.

The present study shows an image of what is happening in Spain now and helps to identify which destinations compete among themselves, what their weaknesses are and which are the patterns of greatest and least success in each group. In this sense it can be seen how programs inserted into the European policies on aid and promotion of heritage, such as "Culture in the EU" or "European Capitals of Culture" have favoured the modernization of

the destinations and whose range of performance are as much the resources as the destinations.

### **Acknowledgements**

*This paper is part of the research project: "Carrying capacity as a planning and management instrument for cultural tourism resources". Ministry of Science and Innovation (Spain). I+D+I (2008-2011). National Plan. Ref:CSO2010-20702GEOG. Department of Human Geography, UCM. Director: María García*

### **REFERENCES**

- Calle, M & García, M. 2010. Reflexiones sobre el turismo cultural en España: la aportación de la cultura en la conformación de flujos turísticos emisores. *Anales de Geografía de la Universidad Complutense*: 10 (2): 31-58
- Jansen-Verbeke, M.; Priestley, G.K.; Russo, A.P. 2008. *Cultural resources for tourism. Patterns, processes and policies*. New York, Nova Science Publishers Inc.
- Maanen van, J & Laurent, A. 1993. The Flow of Culture: some notes on globalization and the Multinational Corporation. In *Organization Theory and de Multinational corporation*, ed. S. Ghohal and D. Westney, 275/-312. London: St. Martin's Press.
- MacCannell, D. 1976. *The tourist: A New Theory of the Leisure Class*. London: Macmillan.
- McKercher, B. y H. Du Cros. 2002. *Cultural Tourism. The partnership between Tourism and Cultural Heritage Management*. Binghamton, N.Y: The Haworth Hospitality Press.
- Minguez, C. 2007. Planificación y gestión turística en destinos patrimoniales: el caso del Real Sitio de San Lorenzo de El Escorial. *Anales de Geografía de la Universidad Complutense*: 27 (1): 83-102
- Moore, K. 1994. *Museum management*. London; New York: Routledge.
- Pellejero, C. 1999. *Historia de la economía del turismo en España*. Madrid: Cívitas.
- Prentice, R. 1993. *Tourism and heritage attractions*. London: Routledge.
- Richards, G. 1996. Production and consumption of European cultural tourism. *Annals of Tourism Research*: 23 (2): 261-283.
- Richards, G. 2001. *Cultural attractions and European Tourism*. Wallingford: Cabi.
- Russo, A.P. 2002. The "vicious circle" of tourism development in heritage cities. *Annals of Tourism Research*: Vol. 29 (1): 165-182.
- Saguinetti, M<sup>a</sup>.R & Garre, F. 2001. Estudio de publico: herramienta fundamental para el desarrollo de un proyecto de marketing de museos. *Revista electronica de biblioteconomia, archivologia y museologia*: 10 (3).
- Smith, M. 2009. *Issues in cultural tourism studies*. London; New York: Routledge.
- Troitino, M.A. 1998. Turismo y desarrollo sostenible en las ciudades históricas con patrimonio arquitectónico monumental. *Estudios Turísticos*: 137: 211-228.
- Troitino, M.A & Troitino, L. 2010. Historic Cities and Tourism: functional Dynamics and Urban Policy, *The open Urban Studies Journal*: 3: 47-57
- Urbain, J.D. 1989. The tourist adventure and his images. *Annals of tourism Research*: 16: 106-118



- Waitt, G. 2000. Consuming heritage. Perceived historical authenticity. *Annals of Tourism Research*: 27 (4): 835 - 862.
- Watson, G.L & Kopachevsky, J.P. 1994. Interpretations of Tourism as Commodity. *Annals of Tourism Research*: 21: 643-660
- Zukin, S. 1991. *Landscapes of Power: From Detroit to Disney World*. Berkeley: University of California Press.

**Web references:**

Institute of Tourism Studies: <http://www.iet.tourspain.es/es-ES/Paginas/default.aspx>

National Institute of Statistics: <http://www.ine.es/>

UNESCO: <http://whc.unesco.org/en/list>

Europe for Citizens (2007-2013): <http://ec.europa.eu/citizenship/>



© EUROGEO, 2012  
ISSN 1792-1341

The European Journal of Geography is published by EUROGEO - the European Association of Geographers  
([www.eurogeography.eu](http://www.eurogeography.eu)).