

LEARNING AND RESEARCH BY INTEGRATING THE ICT AND THE THEORY OF REPRESENTATIONS: MAPPING THE INDUSTRIAL AREAS OF CLUJ-NAPOCA

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Abstract

In this paper, we report on a project implemented in July and August 2019, in Babeş-Bolyai University, in Cluj-Napoca, Romania, entitled "Digital Cluj-Napoca: Enabling Learning and Research by Integrating the Most Recent Trends for Knowing and Using Urban Areas". This project aimed at developing university students' competences to explore and represent urban space and was developed within an internal fellowship. The main objective of the project was to create an open source digital product for didactic purposes, available online and meant to enable the

integration of the theory of representations. This product is a website integrating an interactive map for Cluj-Napoca (<https://a60194.wixsite.com/digitalcluj>), focusing on the industrial sites within the city. The digital product targeted to enable users' correct learning of the concept of representation, developing their critical thinking and competences necessary for territorial analyses. The research material of this paper is represented by the written feedback given by the members of the Digital Cluj Team. Their feedback concerned their research process. A general conclusion is that the project reached its aim as (at a first feedback) it is considered efficient from a research and didactic perspective.

Keywords: Cultural Geography, qualitative research, questionnaire survey, landscape, factory

INTRODUCTION

In this paper, we report on a project implemented in July and August 2019, in Babeş-Bolyai University, in Cluj-Napoca, Romania, entitled *Digital Cluj-Napoca: Enabling Learning and Research by Integrating the Most Recent Trends for Knowing and Using Urban Areas*. This project aimed at developing university students' competences to explore and represent urban space and was realised within an internal fellowship in the Centre for Research on Settlements and Urbanism, belonging to the Faculty of Geography. The project coordinator was the first author of this paper.

The main objective of the project was to create an open source digital product for didactic purposes, available online and meant to enable the integration of the theory of representations from the field of Cultural Geography (and Cultural Studies). This product is a website integrating an interactive map for Cluj-Napoca (<https://a60194.wixsite.com/digitalcluj>) (Echipa Digital Cluj-Napoca [Digital Cluj-Napoca Team], 2019), revealing its transformations from the end of the 19th century to present day, through photographs, remote sensing images, and Google Street View). Our focus was on the industrial sites within the city (we selected 26 of them for this research). The digital product targeted to enable users' correct learning of the concept of *representation*, developing their critical thinking and competences necessary for territorial analyses.

Within this project, in Babeş-Bolyai University, two events took place: *the workshop "Digital Cluj-Napoca: Enabling Learning and Research by Integrating the Most Recent Trends for Knowing and Using Urban Areas"* and *the presentation "Digital Cluj-Napoca: Applying the Theory of Representations"*.

The members of the Centre for Research on Settlements and Urbanism were the main target group, but any interested members of the university academic staff and students could participate at the above-mentioned organised events or as product testers/users. The Digital Cluj-Napoca Team was formed by members of the target group.

First, the project results were presented at the *International Academic Conference Global Education, Teaching and Learning (IAC-GETL)*, which took place in Budapest, in August 2019. We presented the paper *Digital Cluj-Napoca: Merging Geography and Technology for Didactic Excellence*. Secondly, the project results were presented at the *EUROGEO International Conference "Hidden Geographies"* in Ljubljana, in August 2019. We presented the paper *Bringing to Light the Hidden Cultural Geographies of Cluj-Napoca, Romania*. Finally, at the *14th International Conference on Virtual Learning (ICVL)*, in October 2019 (in Bucharest), we presented the paper *E-Learning Urban Landscape Changes in Post-Socialist Romania Using Digital Mapping*. Moreover, we have already published a scientific paper as a result of the project (Ilovan et al., 2019b).

THEORETICAL BACKGROUND

This section includes two parts. First, we realise a brief introduction to the main concepts used: *representation* and *landscape*. Secondly, we present the state of the art so far, from a didactic perspective, considering previous research that assisted us in writing and implementing the project, as well as in reflecting on project members' feedback.

On concepts

Our project was planned in the framework of the centrality of representations in making a difference in our lives, of "a renewed attention to the work that representations do; to the material-affective liveliness of images, words, and art works as things in the world which incite, move, anger, transform, delight, enchant or otherwise affect" (Anderson, 2019, p. 1).

In addition, our project answers to the present trend in the New Cultural Geography, that of "a concerted effort to understand the forces of representations as they make, remake and unmake worlds" (Anderson, 2019, p. 1). Thus, the theory of representations created the theoretical basis for our research project. However, in this paper, we shall not analyse the product (i.e. website) of the research project considering this theory, but the challenges of implementing the research project itself.

Nevertheless, a brief introduction to the notion of *representation* is necessary in order to uncover the project challenges in ensuring the accuracy and relevance of the research product. Hence, the representation is a "boundary notion" and "at the core of scientific practice", therefore its innovative potential in a variety of fields: art, culture, politics, science, and law (Söderström, 2010, p. 11). Moreover, the representation is concerned with knowledge production, considered to be summarizing this whole process (Söderström, 2010, p. 11).

A vast critique of representation appeared in the 1960s and 1970s, known under the name of the “crisis of representation”, encompassing philosophy, the arts, and human sciences as a whole: “This crisis of scientific representation is paralleled by a crisis of political representation” (Söderström, 2010, p. 13). In Geography, the early 1970s is characterized by two moments: the critique of representation and the appearance and development of the non-representational geographies (Söderström, 2010, p. 13). Another moment is the first half of the 1990s, recognised as the “visual turn”, in the human and social sciences, which gives pre-eminence to research that uses “vision, visualisations and visual methodologies” (Söderström, 2010, p. 14).

In our action-oriented perspective, representations are revisited by mainly using visual imagery and, complementarily, written text about the industry of Cluj-Napoca city. One may argue that one limitation of the study is that our research product is a representation and, in this process, as always, Geography as a scientific discourse represented some aspects and excluded others. From a didactic point of view, the creation of the website as a representation (a collective image according to the team members’ scientific knowledge and skills, and subjective perceptions) is very useful as the project team members and the users/testers have a proof of how representations are created and work. They may understand that representations in the form of image and text are visual and written mediations of spatial experiences, involved in the process of place-attachment. In addition, they may also observe the process by which image and text are produced and how interpretation creates meaning. Moreover, they may understand the geographers’ role in this process of creating representations and working with them:

“Geographers are (and, probably increasingly, will be) analysing the interplay between different forms of representations of space – in maps, photographs, cinema, etc. – and fields of practice such as patterns of behavior in the urban environment or urban planning. They study, in other words, ‘representations in the wild’ (i.e. having escaped from the prison house of the *cogito*). In this second perspective, lies the possibility of responding to the limitations of classical representationalism but also of rescuing the important idea that geographers are inescapably (and should remain) representatives of certain (generally spatial) phenomena. As such, they are always giving voice or muting certain things and actions, giving importance and visibility to certain processes and not to others, and thus contributing to the transformation of the world (which they thought for too long they were only ‘representing’).” (Söderström, 2010, pp. 14-15).

Representations have been understood and defined in many ways, depending on the leading scientific paradigm of the respective period. At present, the definition of representation, as rendered in the *Dictionary of Human Geography*, is the following:

“At its minimum, representation is conventionally defined as a symbol or image, or as the process of rendering something (an object, event, idea or perception) intelligible and identifiable” (Dubow, 2009, p. 645).

From a social constructivist approach, the representation is understood as a discursive practice:

“[...] this perspective recognizes that while concepts and signs may have some material dimension (we do, after all, emit sounds when we speak, paint marks on a canvas, transmit electronic impulses when taking a digital photograph), the meaning of such things depends not on any pragmatic quality but on their symbolic and social function. It is for this reason that Ferdinand de Saussure (1966) preferred the word ‘signify’ rather than ‘represent’ for what words and concepts do: they do not describe a pre-existent reality, but constitute what counts and is valued as reality. Influenced by Saussurian linguistics and rehearsed within various registers of post-structuralism, the constructedness of representation is now a chief interpretive principle cutting across a wide sampling of contemporary theories, including those of human geography” (Dubow, 2009, p. 646).

A representation is the result of a cognitive process, subjective, either individual and collective, which transforms reality into a mental image, whose correctness or truthfulness to reality is no longer an issue (after the crisis of representation in the 1960s and 1970s), but what matters is understanding representations in their social, cultural, economic, and political context:

“No longer more or less correct mental images, they are seen as one of the elements in a network of human and non-human distributed intelligence, which constantly transforms the world we inhabit” (Söderström, 2010, p. 14).

Considering this, another concept central to our project was that of *landscape* (i.e. industrial landscape), where landscape is seen as a product of social construction, and thus an example of spatial representation:

“Landscape is thus a unity of materiality and representation, constructed out of the contest between various social groups possessing varying amounts of social, economic and political power” (Mitchell, 2008, p. 162).

The selected images were included for their power of representations as text, considering that texts or discourses are created through images and written text (Brito-Henriques, 2014). Through this product (i.e. the website), we acknowledge and prove the constructed nature of representation, while drawing testers’/users’ attention to “the restrictions of the representational model” (Dubow, 2009, p. 646).

In studying the territory and its representations for development, both internationally and in Romania, recent research shows the need to understand the role of local territorial identities as relational processes in transforming urban and regional regeneration into a participatory approach (Banini, 2017; Ilovan, 2006; Havadi-Nagy & Ilovan, 2018; Ilovan et al.,

2020a, 2020b; Ilovan et al., 2019a). Equally important for advancing theoretical knowledge and practice about representations as social constructs was the development of research on representations in visual imagery within postcolonial studies in Geography (Brito-Henriques, 2014). At the level of Romania, integrative to this trend was a focus on sustainable development of the territory at different scales (Cocean & Ilovan, 2008; Ilovan et al., 2018a), while more attention was paid to qualitative research in Romanian geography (Ilovan & Doroftei, 2017a, 2017b).

On research supporting teaching and learning about representations

In our project, special attention was given to monographies or studies on the development of industry in Cluj, during socialist Romania (Baconsky, 1963; Buta, Bodea & Edroiu, 1989; Cucu, 2019; Ilovan, 2019; Negucioiu, Teodor & Edroiu, 1980; Paşcu, 1974; Pop, 2007).

Moreover, our research project includes recent developments and a series of studies on supporting excellence in teaching and learning geography at the university level in Romania. These studies approached topics such as: images and constructivism in Geography (Dulamă & Ilovan, 2018; Ilovan, 2018; Ilovan & Maroşi, 2018), maps and critical thinking (Dulamă & Ilovan, 2006), e-learning geography in university (Dulamă et al., 2015), web-based research and visual imagery (Ilovan, 2019b; Magdaş et al., 2018) and usefulness of web sources in Geography bibliographical research and learning (Ilovan et al., 2018b), studying the landscape and developing competences (Dulamă et al., 2020; Ilovan, Ursu, & Dulamă, 2019), and identifying urban landscape changes (Ilovan et al., 2019b).

MATERIAL AND METHOD

Data collecting, procedure and research material

The collected data in the project was realised through bibliographic research and has undergone visual analysis and content analysis. However, this data is not the focus of this paper. *The research material* of this paper is represented by the written feedback given by the members of the Digital Cluj Team. Team members' feedback was collected by administering them a short questionnaire with open-ended questions. Their feedback concerned the research process they carried out (they are also the authors of this paper). The members of the team reflected on their Internet mediated documentation and the use of the printed sources, as rendered in the references part available on the website created for Digital Cluj-Napoca.

The questionnaire included the following entries:

1. Which were the criteria for information selection?
2. Which were the criteria for information organisation (e.g. chronology)?

3. Reflect on the accuracy of the information. Was there wrong information in the mass media?
4. Did you have any difficulties in the documentation phase?
5. Did you have any difficulties while working in the team?
6. Do you have suggestions for improving work during such a project?
7. Do you have any suggestions for the website users/testers?
8. Share any comments you consider useful.

To this questionnaire answered the students and researcher in the team (the two professors were excluded), who were also the ones processing the information according to the professors' indications: two Ph.D. students, two M.Sc. students, and a researcher.

They were divided into three teams (written text, images, maps and website). Their feedback is given by answering all questionnaire topics, but one may see that it observes their experience within the group and working in one of the three teams. One of the two members who posted on the website also realised the map.

Participants

Digital Cluj-Napoca Team had the following members: Oana-Ramona Ilovan, Zoltan Maroşi, Emanuel-Cristian Adorean, Cosmina-Daniela Ursu, Béla Kobulniczky, Maria Eliza Dulamă, and Alexandra-Maria Colcer. Oana-Ramona Ilovan is Associate Professor at the Faculty of Geography, the fellowship holder and project coordinator; Zoltan Maroşi is Ph.D. candidate at the same faculty and member of the Centre for Research on Settlements and Urbanism; Emanuel-Cristian Adorean is researcher, member of the above mentioned research centre; Alexandra-Maria Colcer is a Ph.D. student at the Faculty of Geography; Cosmina-Daniela Ursu and Béla Kobulniczky are M.Sc. students at the same faculty; Maria Eliza Dulamă is Professor at the Faculty of Psychology and Sciences of Education and the team's advisor on geographical education.

RESULTS AND DISCUSSIONS

The use of web sources and its challenges, a preliminary assessment of data and information sources, analysis of the digital map on the website, analysis of the urban landscape changes, information quality and suggestions for users of the website and digital map, have been partially reflected on and discussed in a previous paper (Ilovan et al., 2019b).

In the first part, we offer a quantitative overview of the website, which is the product of the research project. In the second one, we provide an analysis of the project implementation, according to the project members' feedback.

For each factory of the 26 included (Table 1), the information on the website was structured in an abstract about the evolution of the factory, images (photographs or other representations of the factory in the online environment or in printed books), and the list of references for both text (abstract) and images.

Table 1. Quantitative data about the represented industrial sites

No.	Factory name (year of its setting up)	No. of images	No. of online sources for the abstract *
1	Întreprinderea de confecții „Flacăra” [“Flacăra” Garments Factory] (1948)	75	15
2	Combinatul de Utilaj Greu „CUG” [“CUG” Heavy Equipment Factories] (1970)	52	17
3	Întreprinderea „Sinterom” (Uzina „Triumf”) [“Sinterom”/ “Triumf” Factory] (1936)	30	20
4	Întreprinderea „Tehnofrig” [“Tehnofrig” Factory] (1949)	28	12
5	Întreprinderea de materiale de construcții ceramice „Sanex” [“Sanex” Ceramic Materials and Constructions Factory] (1970)	24	12
6	Întreprinderea de cartoane și confecții „Mucart” [“Mucart” Cardboard Factory] (1880-1882)	22	11
7	Combinatul de pielărie și încălțăminte „Clujana” [“Clujana” Leather and Footwear Factory] (1911)	21	16
8	Întreprinderea de medicamente „Terapia” [“Terapia” Drugs Factory] (1920)	20	9
9	Fabrica de bere „Ursus” [“Ursus” Brewery] (1878)	18	11
10	Întreprinderea de prelucrare a lemnului „Libertatea” [“Libertatea” Wood Processing Factory] (1870)	17	8
11	Întreprinderea de produse cosmetice „Farmec” [“Farmec” Cosmetics Factory] (1943)	15	10
12	Întreprinderea „Armătura” [“Armătura” Factory] (1884)	14	18
13	Întreprinderea „Carbochim” [“Carbochim” Factory] (1949)	14	11

No.	Factory name (year of its setting up)	No. of images	No. of online sources for the abstract*
14	Întreprinderea „Napochim” [“Napochim” Factory] (1950)	14	10
15	Întreprinderea mecanică de material rulant „16 Februarie” [“16 Februarie” Rolling Stock Mechanical Factory] (1870)	13	17
16	Întreprinderea de porțelan „Iris” [“Iris” Porcelain Factory] (1922)	11	7
17	Întreprinderea de produse zaharoase „Feleacul” [“Feleacul” Factory for Sugar Products] (1918)	10	13
18	Întreprinderea de Tricotaje „Someșul” [“Someșul” Knitting Factory] (1930)	9	6
19	Imprimeria „Ardealul” [“Ardealul” Printing] (after 1918)	9	12
20	Întreprinderea „Metalul Roșu” [“Metalul Roșu” Factory] (1948-1950)	8	5
21	Fabrica de mașini de rectificat (Napomar) [“Napomar. Rectifying Machines Factory”] (1973)	7	6
22	Fabrica de Tutun [Tobacco Factory] (1851, 1860)	6	5
23	Întreprinderea „Electrometal” [“Electrometal” Factory]	5	9
24	Întreprinderea „Unirea” [“Unirea” Factory] (1848)	5	7
25	Întreprinderea „Electrocentrale” [“Electrocentrale” Factory] (1973)	2	6
26	Întreprinderea de mătase „România muncitoare” [“România muncitoare” Silk Factory] (after 1949)	1	6

* The number of printed sources was the same for most of the factories (five monographies)

For each industrial objective, the first image was the one showing the location, using Google Maps (Figure 3). The then and now approach on the representations of industrial objectives reveals the evolution in their visual and written representations.



Fig. 3. Location of the former furniture factory “Libertatea”
(at present, the location of Liberty Technology Park)

Source: Echipa Digital Cluj-Napoca [Digital Cluj-Napoca Team], 2019

Analysis of the project according to the project members’ feedback or how to create and work with spatial representations

This part is divided into the following entries, considering project members’ feedback on their work: criteria for information selection, organisation and accuracy, challenges of the documentation phase, challenges of team/group work, suggestions for improving project work, suggestions for the website users/testers, and further useful comments.

a. Criteria for information selection, organisation and accuracy

We grouped the members’ feedback to the first three questions referring to the criteria for information selection, organisation (e.g. chronology) and the accuracy of the information (e.g. Was there wrong information in the mass media?). We also grouped their feedback considering the team they belonged to: (i) written text for the abstract, (ii) images, and (iii) maps and website.

Concerning the written text for the abstracts, the mentioned criteria were the evolution of the factory (key moments), information accuracy and relevance. Identifying the best keywords for online search was a fundamental first step.

Then, project members took care that the information selected was confirmed in several sources. The issue of subjectivity and objectivity

appeared for information identified on personal pages (e.g. Facebook) and blogs, more than in the cases when the source were mass media articles:

“When writing the abstracts, I tried to maintain an objective eye because each mass media article sided with one or the other in a conflict concerning a factory or underlined only the qualities of a factory.” (C.-D. Ursu, team member writing the abstracts)

Researcher's attention to details and information relevance was crucial. One team member underlines the focus on the sensational in certain sources and therefore distorted information.

Concerning information organisation, the criterion of chronology was the main one. Sometimes the date of the mass media article was considered based on the veracity of the dated facts (e.g. a fire emergency was reported).

No wrong information was reported, but the doubling of information was highly frequent (80-90% of information present in other mass media articles, sometimes with the same phrasing).

Concerning the images, information was selected according to the following criteria: relevance, clarity and objectivity. The main sources were from the online environment and, secondly, from monographies. Chronology was important when selecting the images, as well as source availability.

b. Challenges of the documentation phase

One respondent considers that the researched topic (mostly former industry of Cluj) has not attracted attention so far, because there is not much information online (as it may not attract many views). Most of the information about the former factories is related to their demolishment and changes in property/land ownership. Challenges in documentation appeared in the case of the less known factories (little or no information) and concerning veracity of information.

Another challenge was that, in general, the activity was rather time consuming because there were many factories considered and many articles (or other sources) for some (where information was not enough, supplementary sources were searched for continuously).

“In my opinion, it would have been easier if at that moment when I was copying the information from websites, I would have ordered it chronologically. Thus, it would have been easier for me when writing the abstracts, even though it would have taken more time. But, I had to read texts several times: first to understand their story, then to underline what I considered relevant, then to read them again and gather pieces of information like in a puzzle, and then to rephrase them and order them chronologically. I even found mass media articles where the same information was repeated (only the title was changed, a fragment represented the new piece of information, and everything else was the same as in other already published articles).

Because of the big text volume, it was rather difficult for me to work on more than four industrial objectives a day. It was difficult to keep my attention alert and make connections and I would end up with making confusions. At that moment, I would decide to postpone for the next day to work at the abstract for the respective industrial objective and to continue work with copying information from websites for other factories (this activity would take an average of 30-40 minutes, depending on the number of links, while writing an abstract would take about 90-120 minutes)." (C.-D. Ursu, team member writing the abstracts about the evolution of factories)

The map was realised using the Autodesk AutoCad 2015 software, which brought some challenges, but that choice of software was explained in the following manner by the team member who realised the map:

"Geographers usually use GIS software and architects use AutoCAD, but I personally, knowing well enough both types of software, consider that GIS is more adequate for territorial analysis at a small scale and that does not require a high level of preciseness. In urban planning, when mapping cities, at a big scale, details are very significant, and AutoCAD is realised for high precision, but with the disadvantage that some automations in realising maps are missing. Therefore, realising maps in AutoCAD is mainly a manual process, but more personalised and precise." (Z. Maroşi, team member realising the map)

We render below the description of the map creation process as it offers information on the features of the map and on our choices, as well as on possible challenges in using the map:

"In our case, the vectorial basis for the map is taken from a previous project. This basis included only the plots, as they were delimited by streets. We considered the entire distance between two plots, in this particular case, as streets zones. According to the law, street zones are including the roadway, the sidewalks, the drainage gutters, parking areas, green areas, bike lanes, etc. However, on our map, we included the entire empty surface between the buildings in the same category and, for this reason, the width of streets on the map seems exaggerated. But, for our study, this aspect was irrelevant. On this vectorial basis, we had to add the following elements: the railway, the rivers, the national and county roads – which, according to the law, keep their rank when crossing settlements, gaining also the role of streets. Only in the end, we started to locate and delimit the factories, and then to group them into industrial areas." (Z. Maroşi, team member realising the map)

In addition, it was difficult to delimit the area of the factories because of the following causes: the properties of the factories had been fragmented, parcelled again and sold separately; in some cases, new buildings appeared where the factories had been (see Ilovan et al., 2019b, for the discussion of such a situation for two of the factories); there were not enough photographs; factories do not have their area delimited on old maps; street names in nowadays Cluj are not the same as those on historical maps;

Google Maps, although the most useful as information, includes no exact data concerning the delimitation. At the same time, within the former area of the socialist factories, many private and smaller firms operate (they rented, delimited and modernised the premises) and it is difficult to recognise what it once had been there.

When realising the documentation for the map, team members noticed the following: they did not find enough information; information from the locals (born and bred in Cluj) was very useful; mass media articles represented 80% as information source for the map; the popular name of the factory was better recognised and useful than the formal, complete, and long one; knowledge of Hungarian (true for two members of the research group) increased the success chances when searching for such information; they were unable to render data in strata, chronologically, as they wanted to.

Related to the website, they did not know which of the open source ones was the most suitable for what they needed, and it may be that more testing was necessary. Uploading information on the website was rather difficult and time consuming.

c. Challenges of team/group work

Respondents considered that teamwork was good in general, although there were some small synopses. Some were unsure about the other team members' feedback on their contribution and then was when they asked for clarifications from the project coordinator.

All remained with the impression that it was difficult to coordinate a big research group as some of them were involved into coordination work during this project (e.g. drafting a plan for solving the tasks, transmitting information to their smaller teams, etc.). One member underlined that although indications were very clear, they were either not observed or realised in more time than established in the beginning (e.g. renaming and reorganising images for each factory was time consuming for those working with selecting images and for those uploading them on the website).

Some respondents preferred that communication was realised in their small teams, not in the entire group. That would reduce the number of e-mails received as not all of them concerned all teams directly. So, targeted messages were preferred to the situation in which the wider picture was available (i.e. of what was happening at a certain moment for all teams).

d. Suggestions for improving project work

Respondents made the following suggestions: to create a common chat on Facebook or on another platform where discussions could take place in real time for everybody; better observing the work plan and letting all members know which is the route for the information flux (e.g. a sketch telling that the information from x goes to y, then to z, etc.); more awareness and responsibility from all team members; separate communication for each of the three teams with different tasks (i.e. images selection and processing,

written text, and map and website creation); better delineation of tasks within the group and better standardization of the working manner as these two influence the quality of the final product in teams with many members.

e. Suggestions for the website users

Respondents suggest that users compare information from the website with information from other sources (no matter if they have been familiar with Cluj for longer or shorter time). When working with information from the website, if the users are students, they should realise a synthesis of this and not copy-paste it when realising their own research projects.

Information on the website is in the form of a quite short and objectivity-driven summary. The latter was ensured by a chronological ordering in presenting the story of the industrial objectives and by rendering concrete information such as number of employees and production data. For further details, users should access the links mentioned in the list of references at the end of the webpage for each industrial objective. If one is interested in the influence of a certain person upon the fate of a factory, one should read all the recommended mass media articles.

f. Further useful comments

Concerning the map, feedback showed the following possible improvement: more exact delimitation of the factory area/lot on a more detailed map; shorter factory names on the map (i.e. the popular ones); the link between the map and the website should be the factory names themselves, not a sign, such as "+" (this is possible only if the factory name is short enough as to be included in a link button); the map should be more exact and include the whole infrastructure connected to the respective industrial areas (e.g. all industrial railways to be represented – an ample network, almost entirely dismantled –, the transport for commuters, trolley bus lines (we rendered only the tram line), the deposits of those factories, etc.).

Concerning the website, it is free of charge, limited, but good enough to allow the demonstration.

The team member writing the abstracts highlighted how spatial representations enable the appearance of place-attachment:

"I consider the project very useful not only for students, but also for the larger public, because it is important that inhabitants know the story of the industrial objectives that were emblems for their city. And it may be that some of these inhabitants know about some of the moments in their evolution, but due to the abstracts for each factory, on the project website, they can find out the whole history without having to read separate mass media articles and articulate that information themselves. Cartographic representations are necessary considering that few still know where the old factories were located. As a student, I heard many times about certain industrial objectives

and when searching for online information about them I would find only truncated information, not a homogenous, chronological story. Considering that I am not a local, working at this project helped me find out more information about the city where I have already spent four years during my university studies and I have started to feel that I belong, as I learnt less known information about the history of Cluj." (C.-D. Ursu, team member writing the abstracts for the factories)

One respondent suggested that "investing more resources in such a project would lead to extraordinary results".

CONCLUSIONS

Besides enabling correct learning of concepts such as *representation* and *landscape*, the digital map and the website supports the development of critical thinking and of certain competences necessary when realising territorial analyses. Its creators (and first users at the same) testify for the development of the following competences: analysing written text considering accuracy and relevance of the geographical information, analysing photographs, analysing maps, identifying, analysing and interpreting territorial relations at the urban level, identifying scenarios and eventually solutions to real territorial development problems, etc.

A follow up to this project may take into consideration introducing users into the non-representational theory (or more-than-representation) (*cf.* Simpson, 2015). This would be realised by involving the target group in field research so that they get direct contact with characteristic problems of industrial areas (e.g. economic, social, and environmental), in a diachronic perspective. Adding the non-representational theory to the theory of representation would enrich the proposed didactic approach to the concepts of representation, landscape, and more-than-representations and would truly support didactic excellency enabled by research:

"In recent human geography, the disappearance of the textual dimension in so-called 'non-representational theory' offers one such address. Concerned to close the distance between subject and object – the very distance implied by representation as mediation, illustration or derivative sign-language – non-representational theory attends to how certain spaces, experiences and states act directly on the body, addressing the manifold affects, sensations and, indeed, visibilities of the world in the subject's felt engagement with it. Here the re of representation, or the substitutive value that this re indicates, makes way for a certain intensification of presentation, for an immediacy of presence of which any secondary reproduction of the world can give no account (Dewsbury, Wylie, Harrison and Rose, 2002)" (Dubow, 2009, p. 646).

A general conclusion is that the project reached its aim as (at a first feedback) it is considered efficient from a research and didactic perspective.

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