

A TALE OF A CITY, THROUGH ITS URBAN LANDSCAPE AND CULTURAL HERITAGE IN THE HEART OF EUROPE: THE CASE STUDY OF ORADEA CITY (ROMANIA)

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Abstract: The urban landscape of Oradea city is characterized by the presence of the Crișul Repede River and of the Renaissance Fortress. In the present study an interdisciplinary methodology for the diachronic study of the interrelationship between man and his landscape has been applied. The study of the paleorivers shows that the hydrographic network (the distinguishing and bonding element of the city) was subject to natural evolution and to human intervention. The knowledge of Oradea's urban landscape represents a tool for rediscovering the geomorphological heritage, between use of resources and environmental conditioning. The relationship between fortress and rivers can be a chance for urban geotourism.

Key words: Fluvial plain, urban landscape, cultural heritage, Oradea, Western Romania, urban geotourism

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INTRODUCTION

Oradea is a north western city of Romania, Bihor County, with about 200.000 inhabitants; it is located at the limit of the Apuseni Mountains (belonging to the Carpathian mountain range) on the eastern edge of the fluvial plain opening toward Hungary (the border is 12 km westward) (Figure 1). Its favourable location has made it one of the most important cities for communications between the western, central and southern Europe (Petrea et al., 2005; Stupariu, 2014); moreover, about 10 km southeast of the city are located two of the most famous spa resorts in Romania: Băile Felix and Băile 1 Mai (Ilies et al., 2015). A particularly dynamic hydrographic network has been the distinguishing and bonding element of the urban landscape of Oradea since the first construction stages of the

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fortress, the most antique centre of the town, but most antique traces of the old town were destroyed by dense urban planning during the 19th and 20th centuries.



Figure 1. Location of Oradea city (Bihor County, NW Romania)

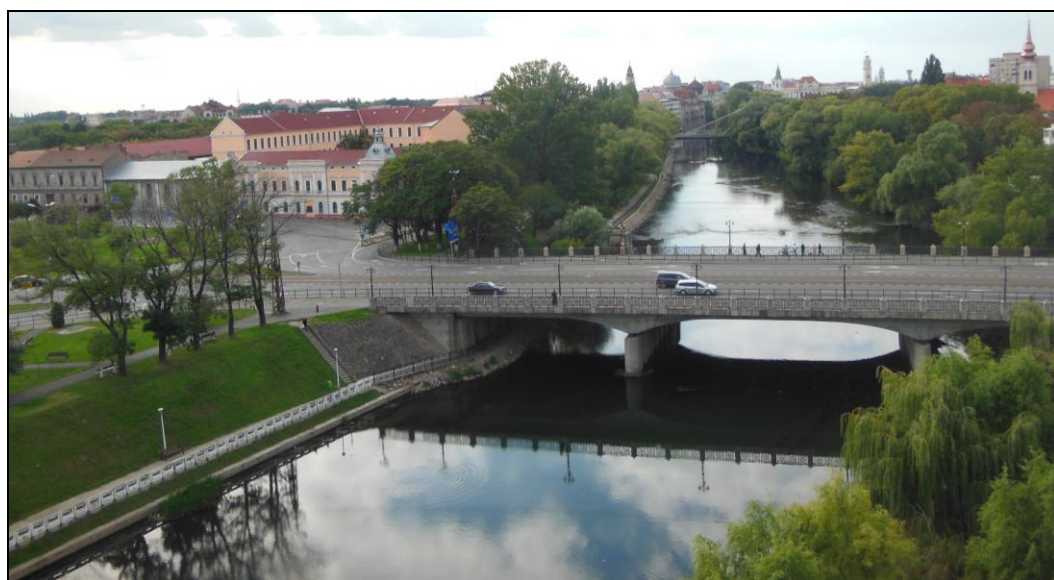


Figure 2. The Crișul Repede River crosses Oradea City. In the background, the city centre

The urban landscape of Oradea city is strongly characterized by the presence of the Crișul Repede River (Figure 2) and of the grand pentagonal Renaissance fortress, built by Italian architects (Badiali & Ilieș, 2011; Ciure, 2007; Marosi, 1975; Maggiorotti, 1939), even if the cultural links between citizens, river and fortress have been almost forgotten. Oradea can be a significant example, of both distant and recent past, in what regards the development of relationships between landforms and urbanization, how the geomorphological heritage and its use could be a tool for urban geo-tourism enhancement, and how to increase residents' awareness of their own heritage, both geomorphological and cultural.

Geological and geomorphological outline of the Oradea metropolitan area

Oradea city is located at an altitude of approx 140 m a.s.l. on the fluvial plain of the Crișul Repede River, at the contact with Apuseni Mountains, maximum altitude of 350 m a.s.l. in the metropolitan area (Ilieș et al., 2007). The Crișul Repede River it reaches the plain S-E of Oradea, where currently the river bed has been deepened by about 2-3 m (Borcea et al., 1997) and then crosses the city (Figure 2) with a trend from ESE to WNW. In more detail, Oradea is located on the lower level of a flood plain constituted by gravels and sands from the upper Holocene (Figure 3). According to Josan et al, 2003 and Ilies et al 2007, the flood plain is overlooked by 5 orders of fluvial terraces and glacial deposits located on the slopes of the Apuseni Mountains in which sands in alternation with sandy clays crop out. The glacis are constituted by gravel and sands of the Upper Pleistocene. The fluvial plain is characterised by a dense network of abandoned river beds, with E-W and SE-NW trends, which can be clearly recognized in remote sensed images (aerial photographs and satellite images) as well as in the field (Figure 4) and which can be easily mapped (Figure 5). Some of these rivers are still active in maps dated from the 18th and 19th centuries (Emódi, 2007).

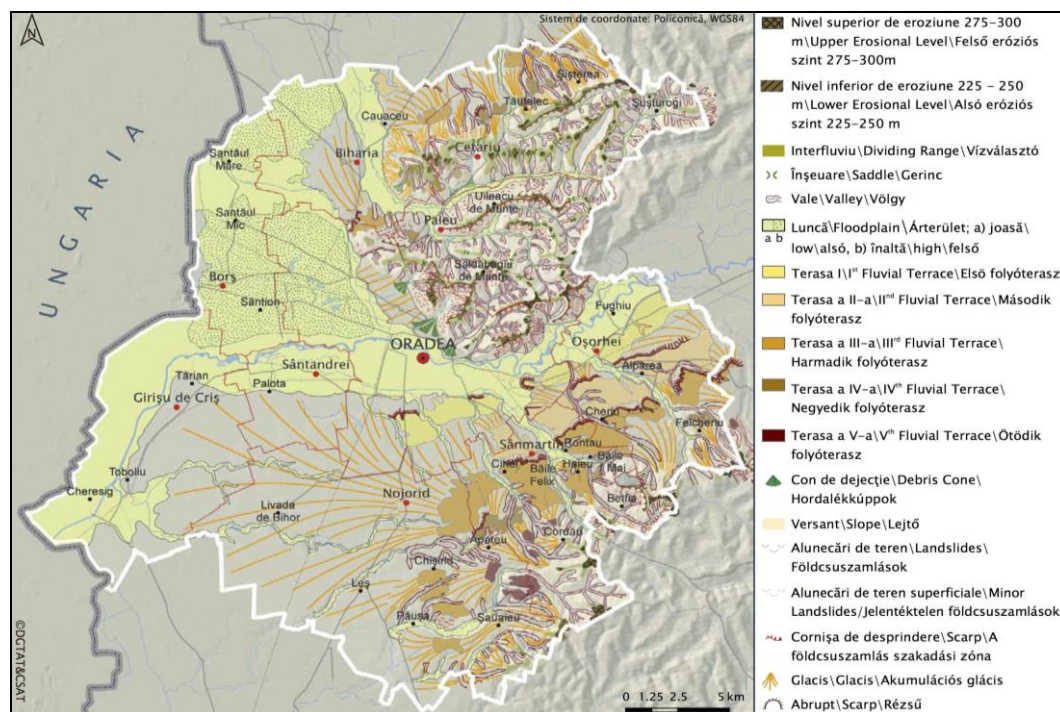


Figure 3. Geomorphological map of the Oradea metropolitan area (Ilieș et al., 2007, 21)



Figure 4. Abandoned river bed (the green belt in the centre of the picture) in the Oradea fluvial plain

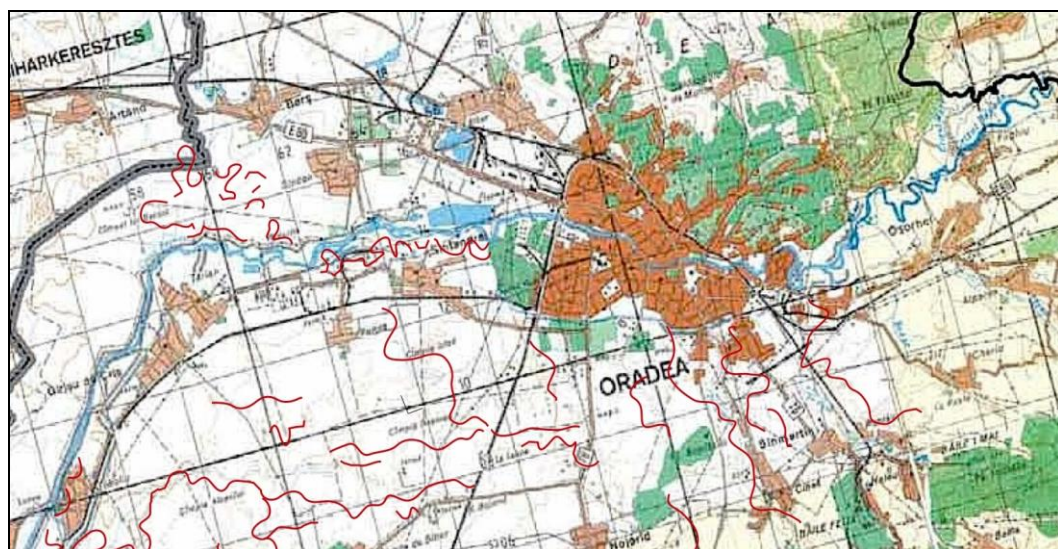


Figure 5. Map of abandoned river beds (red colour) in the Oradea fluvial plain
(Source: topographical map at scale 1:25 000)

METHODS AND MATERIAL

The landscape must be studied as a complex system of interactive elements, through a substantial integration of diverse disciplinary areas of interest (Panizza & Piacente 2003; Reynard et al., 2011). Thus, in the present case study we applied an interdisciplinary methodology for the diachronic study of the interrelationship between man and his landscape. The course of investigation shown here, proposes a phase of

intense and thorough research which is a basic requirement, important for the comprehension of any area, and on which communication and disclosure are founded, involving also the local communities (Coratza & Panizza, 2010). The substantial valuation and the active use of the landscape are in fact the foundations for the ethical construction of a collective memory: due to the interdisciplinary methodology applied, it was possible here to obtain positive results and to open new perspectives for research. The first step for the reconstruction of the past landscape is the comprehension of the modern landscape, as a spatial-temporal *continuum*, not as a group of landscapes, geographically and chronologically separated; the interactions between man and landscape express themselves through complex relationships, in an uninterrupted flux: landscape is a living organism over time. In other words, the elements of the present landscape are signs, more or less ancient, more or less lasting, of its own history (Badiali, 2012). So, it is necessary to characterize a common methodology which, by using different instruments, can be modified to different case studies. The dialogue and interaction between branches of knowledge, on which we've founded our landscape study, is nowadays the topic of an epistemological debate, related to the more general idea of *scientific* method (Donghi, 2006): whereas the current epistemological approach is addressed and based on relations among interacting systems, indivisible into smaller entities, in which the structures of each system derive from the relationship and interconnection of all parts. In this perspective, new meanings must be given to knowledge related to the environmental context, consisting of natural, social, cultural, historical and political factors. Thus a *complex* approach is necessary, and also a complex way of thinking, particularly appropriated to landscape study, in which the parts are not separable from the whole, because they are thoroughly and interactively connected. In other words, a holistic approach can effectively help us to rediscover the geomorphological heritage.

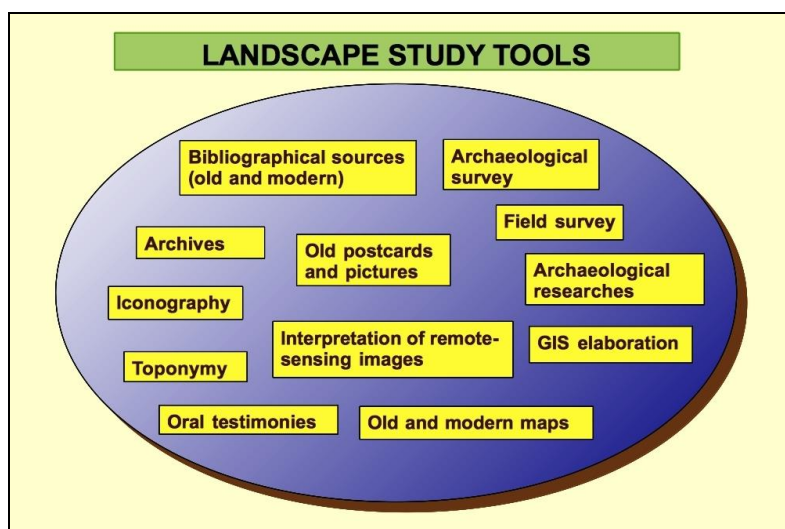


Figure 6. Different tools for a single method: the holistic approach to rediscover the geomorphological heritage

If, for the holistic understanding of the landscape, a deeply interdisciplinary approach is necessary, as shown (Figure 6), related to the involved research fields, then a cross engagement of the society is even more essential. In fact, the study of the

landscape concerns the whole territory, but at the same time, it concerns people living and working in that territory, who can both effectively contribute to research and benefit from the achievements, in terms of sustainable management, planning, protection and enhancement. Therefore, landscape knowledge and communication are closely linked and consequent, and they must even use a common language taking into account both the subjects and the addressees. In other words, even science must learn how to write in everyday language (Donghi, 2006). Although an integral analysis of the landscape would allow us to study all its aspects, it is evident that this is impossible because of various problems like scientific skills, knowledge, time and facilities; however, an integrated analysis seems more realistic including both the breakdown of the system into its more significant parts, and the choice of some elements, in a global view of unitary organization (Panizza & Piacente, 2003). As a consequence of the above illustrated concepts, from a practical point of view, the research has used different analytical tools which can be described as a system of variables interacting with one another (Figure 6). Therefore, the application of this methodology, unitary in its complexity, will provide for the use of different instruments from time to time, because case studies are always different; in other words, the research adapted itself to the continuous transformation, which is the main feature of the landscape.

The relationship between landforms and Oradea's urbanization

Natural factors (geology, geomorphology, hydrology, vegetation, soil, etc) to which were added socio-economic factors, had an important and decisive role, in shaping Oradea's settlement patterns and they have also influenced its evolution (Petrea et al., 2007; Stupariu, 2014). The reconstruction and comprehension of Oradea's urban landscape development has been possible, as stated before, thanks to the comparison of cartographical material and documentation from the 16th and 17th centuries (maps and prospective views of the town and fortress and chronicles from the same period, mostly unpublished, or never studied from this point of view), bibliographical and archival sources, archaeological published research, old postcards and pictures, oral testimonies, integrated and supported by the study of multi-temporal remote sensed images (aerial photographs and satellite images) and by field surveys. In particular, the study of the abandoned river beds shows that the hydrographic network was subject to natural evolution, still ongoing, and to human intervention, such as channelization or changes of river courses. The city centre and the fortress are located in a belt of about 700 meters wide between the Crişul Repede River and the abandoned stream (the old course) of the Peţea River (Figure 7). In particular, the Peţea is a secondary stream which is generated from thermal hot water springs located in the Băile Felix and Băile 1 Mai area (about 10 km away from Oradea figure 1 and 2), well known and used from the Roman Age until today; in the early decades of the last century, its course has been artificially diverted to the southern outskirts of the city. The fortress (Figure 7 and 9) is the most antique part of the city centre, but the traces of the old town were destroyed by dense urban planning during the 19th and 20th centuries.

Oradea fortress was placed very close to the course of Crişul Repede River in order to facilitate the filling with water of the defensive moat around it. Over time, the evolution of Oradea city was strongly influenced by the Crişul Repede River, an important connection route (Josan et al., 2003). Therefore, initially the city developed based on the most affordable landforms for building houses, access roads, water supply etc., which was the lower level of the floodplain of the Crişul Repede River. The sector of Oradea hills are characterized by steep slopes and is affected by numerous landslides (Figure 8); therefore, these geological factors (*s.l.*) limited the city's northward expansion. From the beginning of

the 1990s, after the fall of communism, the city expanded through modern neighbourhoods on the southern slopes of the Oradea Hills (Borcea et al., 2007, 11-12; Balaj & Ilieș, 2003).



Figure 7. Aerial photo of Oradea (original scale 1:25.000, source: geoportal.gov.ro) with the course of the Crisul Repede River, the old and current courses of the Peța River, the fortress, St. Anna Church (1) and a Mill (La Moara Veche, 2) which was destroyed few years ago



Figure 8. Landslides at the north eastern boundary of Oradea city (Ciuperca Hill, 2016)



Figure 9. Aerial view of Oradea fortress. In the background the Crișul Repede River, in the foreground the old moat surrounding the fortress, partly occupied by buildings (left) and partly turned into an urban park (Source: Google Earth- <https://www.google.ro/intl/ro/earth/>)

The fact that Oradea has been built on the banks of a river means that, through the centuries, the city has been, flooded several times by the Crișul Repede River, as testified in several maps conserved in the Historical Archive of the Oradea Municipality. In order for the citizens to remember the flood hazard, the level that the water reached in 1851 is signed on the walls of St. Anna's Church (Figure 10) in the city centre (n.1 in Figure 7).

Among the most significant old cadastral maps used in this study, we would like to briefly remind of three examples that clearly show the wealth of information from the cartographical documents. In a map of the Olosig quarter (which means “*italian quarter*” and it is the name of the quarter even today), dating 1774 (Figure 11), on the right bank of the Crișul Repede River, west of the city centre, the defences of the river banks are precisely described, between the two bridges, and also, the letter R, top-left, indicated a recently flooded zone (*nuperrima exundatione*), where the houses had been destroyed by the rising water levels. A second map (Figure 12) concerns the properties of catholic institutions of Oradea, in 1797. In this elegant cartographic document, with a detailed map legend in latin language, the urban development appears strongly influenced by the Crișul Repede River and Pețea and by the fortress. The city, in blue, occupies the area in which the rivers are closer, and a very broad square extends between the city and the fortress, used for markets and fairs until the 20th century (in yellow); moreover, the map indicates, noted by the letter G (at the top right, not coloured), an important mill (in Romanian *Mola*) on the Pețea (located to the East of the fortress and today destroyed), that worked even in winter, due the presence of its hot thermal waters.

The changes in the hydrographical network are confirmed even in a more recent cadastral map dating from 1857 (Figure 13), that represents the eastern part of Oradea: the

abandoned meanders of the Crișul Repede River, eastward, are clearly mapped out, and progressively registered as agricultural lands.



Figure 10. a. St. Anna's Church (Ursuline Complex); **b.** The arrow indicates the position of the small marble plaque (visible on the right) which shows the water level reached by the 1851 flood from the Crișul Repede River in the city centre

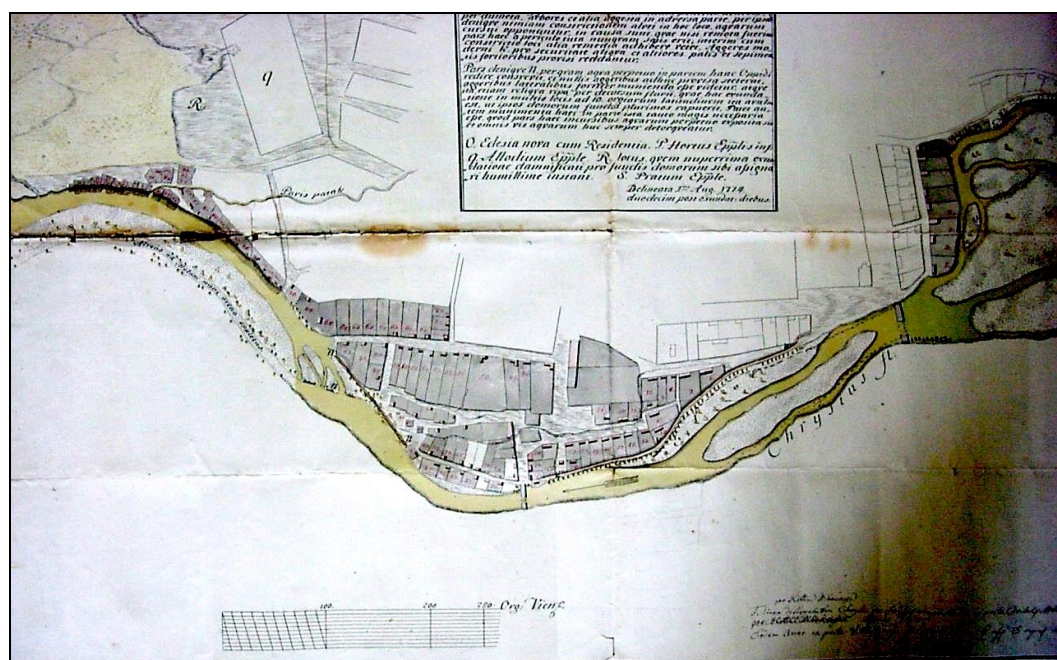


Figure 11. Cadastral map dating from 1774 representing the Olosig quarter: the letter R, top-left, indicated a recently flooded zone, State Archive of Bihor County in Oradea, catalogue number 244 sz (Emödi, 2007)

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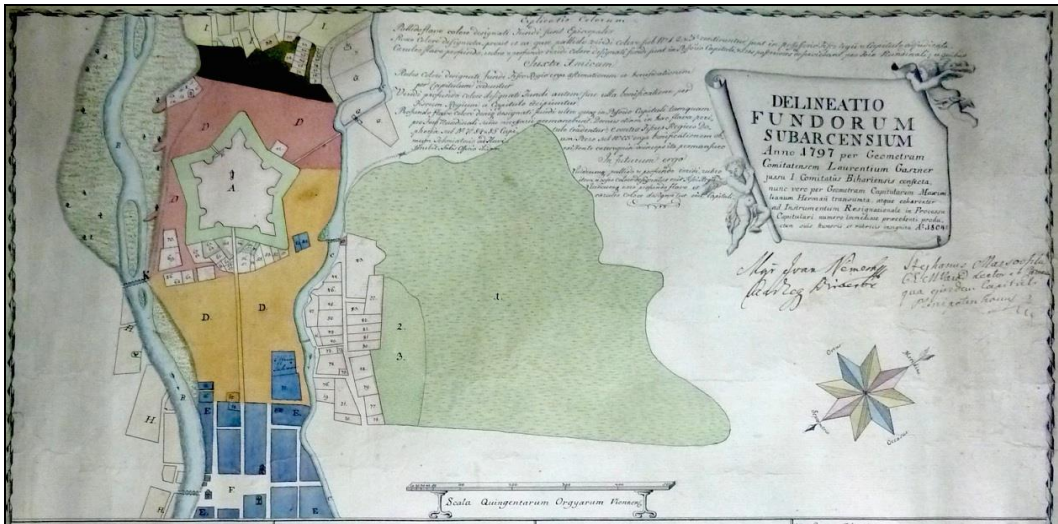


Figure 12. Cadastral map, 1797, State Archive of Bihor County in Oradea, catalogue number 600 sz (Emödi, 2007). On the left (which corresponds to the North) is the Crîșul Repede River, on the right (which corresponds to the South) is the Pețea River, in the middle is the fortress



Figure 13. Cadastral map dated 1857, State Archive of Bihor County in Oradea, State Archive of Bihor County in Oradea, catalogue number 758 sz (Emödi, 2007). On the east side (right side of the map) an abandoned meander of the Crîșul Repede River

The relationship between the fortress and the hydrographic network

The first building of the fortress was a monastery, dedicated to the Holy Virgin Mary, founded by the Hungarian King Ladislau 1st (end of the 12th century), in a place chosen by divine inspiration: a wetland often flooded, so the monastery was situated on a fluvial ridge between the two parallel rivers, Crișul Repede River and Pețea River. The monastery site, already called Varad (“fortress” in Hungarian) became even more important, as a bishop's seat and centre of pilgrimage, and so it was necessary to construct a fortress of wood and stone, with an approximately round ground plan, inside which were the new bishop's palace and the new cathedral (Borcea, 1995; Emődi, 2007). In 1241 this fortress was destroyed by the Mongol-Tatars, and was soon after reconstructed and built up, with high walls of stone, so that, between the 15th and 16th centuries it was described as unconquerable (Maggiorotti, 1939). The third phase (started in 1569), that we still see today, was built by Italian architects in a “new modern way”: a pentagonal shape fortress, with low and thick walls on red-brick and stone, designed to withstand firearms and cannon (Figure 14). Therefore, after being the episcopal seat for 460 years, the fortress became a military fortification of prime importance for the safeguard of the Transylvanian borders (Groza & Prada, 2005-2006). The moat surrounding the fortress was fed by many channels, artificial and/or underground too, which carried there the hot thermal waters of the Pețea Stream. The total area of the fortress, including the moat, was about 150.000 sqm, of which 26.000 sqm were built-up areas, as it is nowadays (Figure 9) (Emődi, 1999).



Figure 14. Map of Oradea (Varadinum) by Joris Hoefnagel, 1617 (Baldescu 2008)

The map in Figure 14 is the 40th table of the *Civitates Orbis Terrarum - Liber sextus* and was draughted by Jacob Hoefnagel in 1617 from a drawing made by his father Joris during the Turkish siege in autumn 1598, as reported in the map legend. This bird's eye perspective has been used as a model by several cartographers in the two following

centuries (Hogenberg & Braun, 2008, Baldescu, 2008). In fact this map is not only an artistic masterpiece, but also gives us several details that can be read in many respects: geomorphology, paleogeography, archaeology and architectural history are involved at the same time in the interpretation of this amazing cartographical document. So, observing this map, we can confirm or specify some aspects, already achieved from studying written documents from the same period. Moreover, such a detailed map makes a lecture possible notwithstanding language problems (many historical and archaeological studies about Oradea have been written in Hungarian), and it can give us information about topics not described in written sources; in addition, a greater emphasis of some details compared to others, something that would normally be considered as a defect, could clarify social and political aspects, that otherwise we couldn't understand. In other words, old maps aren't inexact cartographical documents, but, on the contrary, they offer information that goes far beyond a simple cartographical representation.

The protagonist of the view is the renaissance fortress during its most important construction phase, with the medieval buildings still present inside: the circular high walls and the gothic cathedral. It can be seen very clearly the differences between the constructive stages, and the used materials, such as wood, bricks and stone, and even the surrounded moat, partially occupied by water, and the fortress bridge on woods, as well as all the other bridges in the map. The Hoefnagels' tried to describe the different altitudes between the fortress (northern sector of the map), and the quarter east, in the map legend *Suburbium Venetum*, today Velența. The hydrographic network plays a key role in the layout of the map, which is divided into sectors by the Crișul Repede River northward (with the old hungarian name *Sereskeres*), by the Pețea southward and by the artificial channel that connects them. The city hasn't a defensive surrounding wall, only the west side is protected by a brick-wall, so the overall impression is not of a centralised urban settlement, but of various cores, connected to each other, and to the fortress. The road network is carefully shown, inside and out of Oradea, as well as the broad market place between the fortress and the town. The authors wanted to describe, as well, the soil use in the extra-urban area; thus we can note cultivated crops, some fenced in, vineyards on the slopes, and woods in the more distant areas. From a general point of view, the city of Oradea has been developed in its first phase on an approximately rectangular plan, in the narrow space between two rivers (the Crișul Repede River to the north and the Pețea River to south) and the fortress (to east). On the west side was built an artificial channel to connect Crișul Repede River and Pețea River, and above it a fortified wall on wood, as shown in the renaissance view of Joris Hoefnagel, 1617 (Figure 14). This way, the city and the fortress were completely surrounded by water, with many other channels through the town, so that Oradea was called *Orașul de apă* ("the City of Water"). The presence of water was the basis of the city's development, because handicraft enterprises (mills, tanneries, textile factories, metalworks, sawmills, etc) could develop thanks to the easy availability of hydraulic energy, in particular in the areas close to the fortress, because the hot thermal water of Pețea River could provide energy even during the winter, when the water normally froze. During the economic and social change of the 19th and 20th centuries, hydraulic energy outgrew its usefulness, so many channels and factories disappeared, as well as the Pețea River, artificially diverted southward, outside the city centre. Therefore, the importance of water today is almost forgotten.

Fragments of the architectural and structural elements of the earlier medieval fortress have been inserted into the red-brick walls of the Renaissance fortress, for decorative purposes; in addition, some sections of the late walls (17th-18th centuries) have been built of white limestone, probably from the Betfia quarry, near Oradea city, these rocks have been used to produce hydraulic lime too. The walls of the fortress, with the

medieval stone fragments included (Figure 15), can be *read* as an historical tale, in a real urban geology path, not only to go back through the history of both this extraordinary building and this amazing city, but also to understand the relationship with the geomorphological and geological features of the territory. In other words, it is a new way to carry information about environment and history, highlighting new contents, which bring into contact geological history and city history (Gregori, 2009 a, 2009b, 2010). In the later decades of the 18th century, the fortress lost its strategic importance, and became a military barracks, until the end of the last century (Groza & Prada, 2005). The fortress risked being destroyed in the 1980s, when the Municipality was considering the possibility to use the huge surface of the fortress for new apartment buildings. Fortunately, the fall of the communist regime, in 1989, avoided this destruction so the various buildings of the fortress hosted temporarily a range of cultural institutions, including the Faculty of Visual Arts of the Oradea University and the regional seat of the State Archive. After a long period of restoration, renovation and protection started in 2009 and completed in 2016 the fortress is once again the focus of the cultural life in Oradea. Nowadays in the fortress there are tourist information centres, a hotel, and areas for music concerts and exhibitions.



Figure 15. White limestone, probably from the Betfia quarry (left image) and fragments of the architectural and structural elements of the earlier Medieval fortress (right image) incorporated in the red-brick walls of the Renaissance fortress

DISCUSSION

The grand Renaissance fortress of Oradea seemed the only testimony of the city's past, which was apparently erased by the heavy urban planning intervention of the 20th century. Conversely, thanks to the interdisciplinary methodology applied in this case study, we were able to reconstruct the features and the motivation of the urban landscape's evolution, and of the relationship between the city and the fortress. We have carried out this study, never done before in this area, on the basis of analysing and comparing several cartographic documents (from 16th to 18th centuries), archaeological and geomorphological evidences, remote sensed images and oral testimonies. In this way it was confirmed that the qualifying and binding element of the urban landscape of Oradea has been - and still is - the presence of several watercourses, in particular in the area between Crișul Repede River and Pețea Stream; this situation was also confirmed by old maps and documents, but particularly by the study of abandoned river beds, that has shown a complex hydrographic network, constantly changing. The richness of waters influenced in the first step the choice of the place where the fortress was built, and then oriented the urban evolution; meanwhile, man interacted with the streams, creating artificial channels, or making partial modifications to the natural

watercourse. In addition, the possibility of using rivers for transporting goods, and of supplying energy to handicrafts, has directly influenced the social and economic development of the city. Therefore, in the past, the citizens of Oradea, had specific and technological skills in the hydraulic field, whose effective application depended on the level of administrative capacity and political and social organization of the city (Ortalli, 2010).

CONCLUSIONS

The study regarding the evolution of Oradea's urban landscape might represent an effective tool for rediscovering the geomorphological heritage, between the use of resources and environmental conditioning; the Oradea Fortress can be a chance for developing urban geotourism: in other words, the sustainable development and the active use of the landscape are in fact the foundations for the ethical construction of a collective memory. Moreover, this case study emphasizes the necessity of studying the urban landscape as a complex system of natural and anthropic interactive elements, through a substantial integration of different disciplinary areas of interest. We can suppose that Oradea should have the typical characteristics of a *resilient society* (Costantini & Martini, 2010), able to face environmental limitations; in the meanwhile, limitations have been transformed into incentives to find resources in difficult times. Today, this kind of social reaction, more evident in the first steps of Oradea's evolution, as well as the urban geology (Gregori, 2009, 2010; Reynard et al., 2017), could become a cultural value, not only for tourist evaluation, but also to rediscover the relationships between the fortress, the city, and the territory, between resource exploitation and environmental conditioning.

In synthesis, the present study, contains many suggestions for further investigation and may be, first of all, an important instrument to improve knowledge about the history of Oradea, and also a basis for future actions on urban landscape, not only for tourist development and information of citizens, but also for territorial planning.

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