Cultural Landscapes in Historical Cartography: Landscape Gardens in the “Green” Bucharest of 1789

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Abstract: At the end of the 18th century, Bucharest, the capital of Romania, was a “green” city (having large orchards, vineyards and even patches of wood), which apparently was in no need of landscape gardens. However, historical cartography and the written documents testify their existence. The study relies on large-scale historical maps ($1:2000 - 1:7250$), which were processed in a GIS Open Source Environment (QGIS software). The Purcel map (1789) shows the existence of eleven landscape gardens totalling an area of 8.63 ha. The retrieval of their exact location may serve as a starting point for a future web page meant to offer virtual travels and to bring back to light the old townscapes through paintings, vintage photos, testimonials of foreign travellers, documents, etc. All these can prove to be very useful for understanding the emotional geography of the old Bucharest, which arouses a particular interest, as shown by the results of a questionnaire applied on 134 subjects.

Key words: emotional geography, historical cartography, landscape gardens, cultural heritage, virtual travel, Purcel Map.

1. Introduction

People have designed and created gardens and parks since ancient times. Suffice it to mention the mythical Gardens of Semiramis in Babylon, “a hanging paradise, a combination of technical virtuosity and romantic dream” (Reade, 2001: 27). The gardens have always been associated with beauty, although this is debatable; “things change their appearance according to our emotions, which is why we see magic and beauty in them, but in reality, magic and beauty are within ourselves” (Gibran, 1998). Unlike all these, the agricultural landscape was not seen as something aesthetic, but was perceived as useful (Perocco, 2010), while the cultivated lands were said to be nice (Turri, 1979).

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It is common belief that gardens are indispensable to the soul: “The house was small and had few rooms, but it sheltered many loggias, pergolas and terraces, from where people could see the sun, the sea and the clouds: the spirit needs more room than the body” (Munthe, 2008: 362). This need for “seeking shelter” in the garden may stem from the loss of the Garden of Eden that is described in the Old Testament. This could explain people’s efforts to create gardens, each of them being a “terrestrial paradise”, which “becomes a place of nostalgia, which everybody wants to rediscover, but which remains the object of an eternal search (...), a kind of antechamber of the heavenly Paradise” (Eco, 2014: 146-147). “Thus, because the everyday life is often painful and hard to live, it seems that most human cultures long for a land of happiness to which they once belonged and where they hope to return some day” (Eco, 2014: 149).

Historical cartography, on the one hand, and the literature and painting of the 18th century, on the other hand, remind us of the beautiful gardens that existed in the European cities and especially around the palaces. Let’s think, for instance, at the paintings showing various French queens or high society women surrounded by the vegetation growing in the gardens. We remember the Goethe’s travel memoirs, who, while visiting Italy, described on March 14, 1787, the Caserta palace and park (which survived the passage of time): “The unmatchable beautiful location, on the most fertile plain in the world, where the park stretches as far as the mountains. From there, an aqueduct brings in a whole river to supply the castle and its surroundings, the huge mass of water creating a magnificent waterfall, which crashes on the artificially arranged rocks. The park fits perfectly in a region that proves to be a garden in itself” (Goethe, 1969: 209).

Such literary, artistic or cartographic testimonials help us to understand the “emotional landscape” (Gregori, 2007a, 2007b, 2009), generated by the people’s emotions and feelings connected with a particular place (still existent or “lost” in a more or less remote past). Thus, “an emotional context” emerges, “allowing everybody (...) to come near the landscape, not only physically” (Gregori, 2009: 512), and “this is the origin of emotional geographies, which study the emotional territories, as well as the sensation and feeling landscapes” (Persi, 2010: 3).

The lost landscapes can be revived by extracting them from beneath other landscapes that replaced them over the time, covering the same area, in a genuine “stratification” (De Vecchis, 2004: 710). This approach must rely on confronting and integrating them with other contemporary sources (Rombai, 2010), like historical cartography, written documentary sources (monographs, travel notes, etc.), works of
Historical maps are a genuine “cartographic heritage” (Biszak et al., 2014), which is part of the historical-cultural assets (Gatta, 2011). It preserves both the structural components and the location of the past landscapes, the historical maps being “a treasure that is largely waiting to be discovered and interpreted” (Rombai, 2010: 69).

Even though, as noted Vallega (2006: VII), “we are not interested to investigate the meaning of place over the time, but its value in our time”, we think that landscape gardens seem to be special if we take into account that the search for Eden and Paradise goes “beyond the time” (Vallega, 2006: 193). Therefore, we deem that a garden, existing or not “here and now”, will produce about the same emotions.

The landscapes are bits of identity of a particular place (Perocco, 2010), because when the place was defined as an expression of a territoriality that has now passed, the territory was not perceived as a landscape, but as a workplace and a living environment (Raffestin, 2005, apud Perocco, 2010: 370). Rediscovered, the past landscape expresses the territorial identity of that place (Turri, 2004).

Once retrieved, the lost cultural heritage is ready to be looked at and to be published on a Web page. Since 2007, cyberspace travels have been considered as one of the new tourism frontiers (Bowes, 2007, apud Gerosa, 2012: 20). The representation of geographical data in virtual environment must observe a number of rules, which will lead to a correct and efficient cartographic effort (Rossi, 2009: 120-124). These cultural landscapes can be turned to account by virtual travels (Gerosa & Milano, 2012), as it is possible to simulate the former landscapes in an online or offline digital environment (Gerosa, 2012).

A number of studies have proved that these virtual tours are capable of generating emotions even stronger than when people really visit a place, maybe because “virtual tourism includes with full rights adventures, travels and explorations in the realm of videogames” (Gerosa, 2012:17), but also thematic maps, pictures, animations, 2.5D or 3D representations, stacked multi-temporal thematic layers, zooming. At present, the “virtual tourism” practiced on the internet in Web 2.0 environment aims both at visiting existing places (in Italy, Great Britain, France, Switzerland, etc.; for instance http://www.italia.it/it/media/tour-virtuali.html, accessed on 12 April, 2016, ) and at “reviving” archaeological sites. The new technologies may be “formidable allies for travel agencies, which can involve and thrill the clients, thus facilitating the upselling and cross-selling” (http://www.lastampa.it/2014/12/03/tecnologia/turismo-futuristico-scegliere-un-viaggio-diventa-unesperienza-virtuale-TlaQxYQH6JwFAoYC7sE3IM/pagina.html, accessed on 10 April 2016). If the interest
for watching the Bucharest’s lost landscapes will increase, it is likely that people will want to come physically to see the city.

It is common knowledge that a stacked multi-temporal representation of the cultural heritage is much more useful and efficient than a mere inventory of the cultural assets of the past. At the same time, it can also be employed for territorial planning and for developing cultural asset maps (Lucchesi et al., 2009). It is exactly what we want to do by this study.

The inhabited territory is also a space of collective and individual memory, in which overlap various identities and where cultural landscapes come into existence (Piccardi, 1986; Vallega, 2003, apud Morri & Maggioli, 2009: 175). For this reason, the finding of the old gardens keeps their memory alive, giving meaning to the changes occurring over the time (Morri & Maggioli, 2009).

2. Aim and objectives

The emergence of the public gardens in Bucharest began during the second half of the 19th century (Pătroescu et al., 2000), a time when all Europe was struggling to meet the recreation requirements of its citizens and to create a pleasant and healthy environment. There are studies (Pappasoglu, 1891; Florescu, 1935; Potra, 1942; Costescu, 1944; Giurescu, 1966; Crăciun, 2016, etc.) that retraced Bucharest’s lost gardens of the past centuries, based especially on historical documents. However, we wonder, do the maps prepared at the end of the 18th century show landscape gardens with recreational purposes, and if so, where were they situated? Starting from this premise, the goals of our study are the following:

a) to make a large-scale cartographic reconstruction, based mainly on historical cartography, of the parks and/or landscape gardens existing in Bucharest during the period 1789-1852, in order to serve as a starting point for a digital database (regarding the Bucharest’s gardens and parks) meant to give access to virtual travels, but also to bring to light the old cultural landscapes, so that people can get to know better the old city. Our aim was to consider the landscape gardens as spatial and temporal sequences of the stacked landscapes, without paying attention to the causes that made them disappear from the townscape.

b) to determine the level of interest for a “virtual tourism” through Bucharest’s landscape gardens on a sample of first and second year students, as well as academic staff, at the Faculty of Geography within the University of Bucharest. This objective is a follow-up of a previous study, which investigated, in correlation with the retrieval of a number of lost landscapes, how the young people relate to disappeared
territorial realities, taking into account that the process of identifying the lost landscapes has also an emotional side (Osaci-Costache et. al., 2016). At the same time, our effort was aimed at "promoting the cultural quality of the landscape, along with the architecture and urban planning product, by popularizing landscape as a message and development vector for the territory" (Crăciun, 2016).

3. Data and methods
This study is based on diachronic cartography, which is why the information was collected from large-scale historical cartographic sources, the only that are capable of showing the landscape gardens existing in the analyzed time interval. In comparison with other European cities, during the investigated period Bucharest is not so well represented on maps. Besides, many cartographic materials were inferior in terms of symbols and geometric characteristics to the maps prepared at the end of the 18th century and the beginning of the 19th century. Last, but not least, we were confronted with documentary gaps and with the fact that Bucharest archives hold few large-scale urban maps.

Firstly, we made a visual screening of the maps that might have offered us information concerning the investigated topic, in order to select the large-scale ones exhibiting the land use (Table 1).

**Table 1. The selected historical maps**

<table>
<thead>
<tr>
<th>Map</th>
<th>Author</th>
<th>Land surveys</th>
<th>Scale</th>
<th>Color/black and white</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ernst Map (&quot;Plan der Wallachischen Haupt u.[und] Residenz Stadt Bukurest&quot;)</td>
<td>Ferdinand Ernst</td>
<td>1791</td>
<td>1:121303)</td>
<td>color</td>
<td>Romanian Academy Library</td>
</tr>
<tr>
<td>Borroczyn Map (&quot;Planul Bucureștiului ridicat și nivelat&quot;</td>
<td>Rudolf Arthur</td>
<td>1846</td>
<td>1:20002)</td>
<td>black and white</td>
<td>Romanian Academy</td>
</tr>
</tbody>
</table>
In Docan’s translation (1912), the title of Purcel Map is the following: “Map of the capital and residential city Bucharest in Great Wallachia, which was subdued on November 9, 1789, by the imperial and royal troops under the command of His Highness Prince Marshal of Saxe-Coburg”. This is “the first comprehensive map known so far of the 18th century Bucharest” (Florescu, 1935: 3).

Although Purcel and Ernst maps are very similar, they also have a number of differences, especially in terms of the land use presentation, where Purcel map is superior. None of these maps has explanations at the legend for the symbols and colors used for showing the land use, but nevertheless these are easy to decipher (although are slightly different from map to map), because they are expressive and rather similar to those used in the European cartography of that age.

Unlike other studies that focused on the old parks and gardens in Bucharest (Giurescu, 1966; Crăciun, 2016, etc.), we superposed the maps in a GIS environment with a view to locate as accurately as possible the landscape gardens.

Consequently, in the second stage, we analyzed the Purcel (1789) and Borroczyn (1846 and 1852) maps in MapAnalyst (version 1.3.23; http://mapanalyst.org/) from
the standpoint of planimetric accuracy and geometric distortion, in order to ascertain if the distortions are small enough to allow georeferencing. With this occasion, we also computed the scales of the maps (Table 1). We gave up analyzing the distortions of the Ernst map (because land use representation is not accurate enough), deciding to make only a visual inspection.

In the third stage, the previously selected maps (Purcel and Borroczyn, both years) were georeferenced in a GIS Open Source environment (Figure 1), by using the QGIS software (http://qgis.org/it/site/), as it offers a high level of precision to the historical-geographical studies (Azzari, 2010; Osaci-Costache, 2009, 2011a, 2011b, 2014).

![Figure 1. Georeferenced Purcel Map of 1789 (right), based on the ground control points (GCP) of the topographic map in the Gauss-Krüger projection in 1977 (left). Screenshot from the QGIS software (2.14 Essen).](image)

The three maps (Table 2) were georeferenced based on a sufficient number of Ground Control Points (GCP), 266 for the Purcel map and 271 for the Borroczyn map of 1852. We ran two consecutive georeferencings (the Helmert general transformation and then the Thin Plate Spline local transformation), as recommended in the literature (Gatta, 2011; Mastronunzio, 2011) and as we also did in previous studies (Armaș et al., 2014; Osaci-Costache et al., 2016). The historical
maps were projected in the Dealul Piscului 1970/Stereo 1970 EPSG projection 31700. The mean georeferencing errors (computed by using the Helmert global transformation) were variable, both within each map (the lowest in the city center and the highest on the outskirts) and between the maps (Table 2).

Table 2. The mean of georeferencing errors in QGIS, computed for Helmert transformation based on the nearest neighbor

<table>
<thead>
<tr>
<th>Map</th>
<th>Year</th>
<th>Scale computed in MapAnalyst</th>
<th>Mean error (m)</th>
<th>Minimum error (m)</th>
<th>Maximum error (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purcel Map</td>
<td>1789</td>
<td>1:7250</td>
<td>59.80</td>
<td>4.63</td>
<td>140.40</td>
</tr>
<tr>
<td>Borroczyn Map</td>
<td>1846</td>
<td>1:2000</td>
<td>5.76</td>
<td>0.34</td>
<td>13.00</td>
</tr>
<tr>
<td>Borroczyn Map</td>
<td>1852</td>
<td>1:5750</td>
<td>15.06</td>
<td>0.71</td>
<td>43.58</td>
</tr>
</tbody>
</table>

The fourth stage consisted in digitizing the thematic elements and in creating a database that might be used for virtual tours (dating, location, names, areas, owners, appearance, etc.). After that, we analyzed all these elements and prepared the maps in QGIS.

Although the objective was to retrace on the maps the gardens existing over the period 1789-1852, we also used other documentary sources (mentioned in the text and in the Reference section), in order to validate and fill up the cartographic data obtained.

To reach the third objective of our study, namely to get to know the level of interest for a “virtual tourism” through the old landscape gardens of Bucharest, we designed and applied an anonymous questionnaire consisting in five closed- and open-ended questions: (1) Do you think that Bucharest had landscape gardens in 1789? (yes/no); (2) Do you think that Bucharest had landscape gardens during the period 1846–1852? (yes/no); (3) If such landscape gardens really existed, to what extent would you like to know them? (not at all/a little/much/a great deal); (4) To what extent would you like to see in a virtual environment (on the web): (4a) 3D representations of gardens irrespective of the period when existed (not at all/a little/much/a great deal); (4b) their location on maps (not at all/a little/much/a great deal); (4c) paintings/pictures/drawings etc. of the old gardens (not at all/a little/much/a great deal); (4d) accompanying texts meant to give information about the old gardens, about the habits of Bucharest residents concerning their leisure activities, etc. (not at all/a little/much/a great deal); (4e) what is now on the places formerly occupied by these gardens (not at all/a little/much/a great deal); (5) What...
else would you like to see on the web page dedicated to these virtual travels through the old gardens of Bucharest? (open-ended). The questionnaire was applied in May 2016 on a sample of 114 first and second-year students, as well as on 20 academic staff working in the Faculty of Geography, University of Bucharest. The answers obtained were processed with statistical software to verify the statistical significance of the association between variables and served as a base for our interpretations.

4. Results and discussion

4.1. The landscape gardens in Bucharest at the end of the 18th century

The aim of our research was to offer an overall representation in the European context of the “green urban areas of Bucharest” in the period 1789-1852, and not to establish if Bucharest was a village or a city. The reports of the foreign travelers that are mentioned in various studies (Giurescu, 1966; Câlția, 2011) show that the cities in the Romanian Principalities had a rural character, as agriculture was still the dominant activity (Câlția, 2011). This fact is mirrored by the colormaps, like Purcel’s, where Bucharest is shown as a green spot (Figure 1).

Figure 2. (a) A map of Budapest ("Pest-Buda–Ôuda beépített területének várostérképe"), dating approximately from the same period (1793), which shows many landscape gardens within the city, among the dense buildings; (b) Fragment from Purcel Map (1789), where one can see the houses scattered through the gardens.

By comparison, other European cities of the same period are not that “green”; this was not because they had fewer gardens, but because these gardens were organized, being situated in particular places within the built-up area (Figure 2a), while in Bucharest the houses were scattered through the gardens, as we are told by the historical accounts. For instance, Del Chiaro (1718: 10) confirms the information given by the historical maps (Figure 2b): “the houses are few and distant from one another, each one having its own courtyard with kitchen and stable, while separately could be seen the garden with various fruit trees, which lend it a joyful and charming appearance”.

As far as the Western cities are concerned (for instance Paris, Rome, Vienna, Budapest, as one can see on the maps published in the frame of the MAPIRE; http://mapire.eu/en/), the green areas shown on the historical maps are situated outside the fortifications that surround the city core, while in Bucharest they are spread all over the built-up area. However, Wallachia was different, being an “open country, without fortresses, without castles and without places surrounded by walls (...), only the courtyard of the Prince in Bucharest having an enclosure wall” (Del Chiaro, 1718: 9).

The historical arguments, also assumed by architects and geographers, help explain this pattern. Thus, in the case of Bucharest, the lack of fortifications (a situation enforced by the Ottoman authorities) boosted the city to develop horizontally, "without a physical confine" (Cinà, 2005: 32), which also explains the presence of the gardens around the houses, as these were not forced to crowd (Câlția, 2011).

Consequently, until about the end of the 20th century, when the density of the buildings began to grow to the detriment of the green areas (a situation that can be observed on the Bucharest Map of 1911, scale 1:10000), “the rural landscape penetrated to the city center” (Cinà, 2005: 19), which explains why Bucharest was a “city-village” (Cinà, 2005: 32) with houses surrounded by gardens. This is the image of Bucharest as it emerges from the historical maps. The historians, however, inferred this aspect from the historical documents, which have allowed them to appreciate that the city “was rather an image of the Renaissance ideas concerning the garden-city, greatly appreciated in the Anglo-Saxon world beginning with late 19th century, than a settlement resembling the Western cities in the 17th and 18th centuries” (Câlția, 2011: 41). This structure and this “green” appearance were surprising for the foreign travelers, who used to associate the idea of a city with the “densely built-up areas” (Câlția, 2011: 43), while the “multipolar and amorphous” structure (Cinà, 2005: 30) was seen as an attribute of the rural realm.
Some foreign travelers justified Bucharest’s village appearance by the “lack of organization”, despite the big number of houses (Câlția, 2011: 42-43), about 6006 in 1798 (accounting for 30,300 residents) and 10,000 in 1831 (accounting for 60,587 residents) (Gabrea, 2009: 12).

In this city, the vegetation concealed “many dwellings and the spatial coordinates remain the church steeples and silhouettes” (Cinà, 2005: 33); however, the documents that certified property transfers made a clear distinction among the garden, the courtyard and the orchard (Câlția, 2011). Likewise, on the investigated historical maps one can see different symbols for courtyards, orchards, landscape gardens, arable land and vineyards (Purcel, Borroczyn, and to a lesser extent Ernst, which poorly displays the land use). However, a number of studies show that in the old Romanian language the term “garden” had a “very wide meaning, generally referring to a planted area (...) garden was not only the place with flowers, as there were also tree gardens, vegetable gardens and even vine gardens, that is the vineyard itself” (Giurescu, 1966: 387).

In conclusion, the historical maps and documents from the period 1789-1852 picture a “green” Bucharest, with houses scattered through the gardens’ vegetation. But are those gardens mentioned by the historical documents shown also on maps? A particular dark green symbol that we spotted on the Purcel map (1789), displaying lines suggesting alleys (Figure 3), which is very similar to the symbols used to depict the Western parks, gives us a positive answer.

**Figure 3.** Examples of landscape gardens shown by Purcel map: a – The garden that stretched on the site of the Romanian Atheneum; b – The garden that stretched on the site of the Bucharest National Military Center; c – The garden that stretched opposite to the Radu Vodă Monastery; d – The garden that stretched near the Church of St. Elefterie the Elder; e – The garden lying outside the city (today at the crossroad between George Coșbuc and Tudor Vladimirescu avenues).

We found eleven such symbols refering to the landscape gardens (Figure 4 and Table 3). Three of them, which were larger, were situated outside the city or in the
vicinity of its confines (the first, in the area of the present-day Mavrogheni Church, approximately on the site of the Romanian Peasant Museum; the second, south of the Church of St. Elefterie the Elder; and the third, near the crossroad between George Coșbuc and Tudor Vladimirescu avenues), while the other eight, with smaller areas, were within the city. All of them had polygonal shapes, with straight alleys that linked their center with the remote spots and, sometimes, with the corners of the tetragons. Some of them had even one or two central round flowerbeds and central round or straight alleys converging to the center, while the areas ranged between 1535.4 m$^2$ and 26,445.2 m$^2$ (Figure 3).

Figure 4. The location of the landscape gardens in Bucharest on the Purcel map (1789). The numbers correspond to the descriptions given in Table 3.
Table 3. Landscape gardens on Purcel map (1789)

<table>
<thead>
<tr>
<th>Code in Fig. 4</th>
<th>Location on Purcel map (1789)</th>
<th>Present location</th>
<th>Features on Purcel map 1789</th>
<th>The situation on Ernst map (1791)</th>
<th>The situation on Borroczyn maps (1846 and 1852)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In front of the Party Castle of Prince Nicolae Mavrogheni (&quot;Fürst Mavrojenisches Lust Schloss&quot;), to the east of the former Turkish military camp &quot;Turken Schantz alte&quot; (east of the present-day Filantropia Hospital). Giurescu (1966: 389) says that in that area was a single store kiosk made of masonry and wood, in front of which was a fountain and a garden with &quot;tulips, carnations and roses (...) crossed by alleys planted with trees, dividing symmetrically the entire area in 16 equal triangles (the Purcel map shows only eight), while at the center was an empty circular space (...); the maintenance was Square; perimeter: 650.8 m; area: 26,445.2 m²</td>
<td>On the site of the Romanian Peasant Museum, near the Izvorul Tâmâduirii – Mavrogheni Church.</td>
<td>It is shown; the park has several alleys.</td>
<td>Undeveloped garden. On the map of 1846, it was labeled “the place of Mavrogheni Church&quot;.</td>
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<td>entrusted to ten people who were exempt from taxes. This was a promenade area for the citizens who had no carriage (Giurescu, 1966: 389).</td>
<td>On the site of the Romanian Atheneum.</td>
<td>Rectangle; size: 56 × 129 m; perimeter: 369.9 m; area: 7150 m²</td>
<td>It is shown exactly the same.</td>
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<tr>
<td>2 East of the Filaret Church, known in the 19th century as “Livedea Văcărescului” or “Livedea” or “the 40 martyrs” (Florescu, 1935: 25); today is extinct.</td>
<td></td>
<td></td>
<td>On the map of 1846, it is shown as an undeveloped garden; on the map of 1852 is missing. However, it appears to be a remnant of the garden existing in 1789, which was later called “Grădina Episcopiei” (nowadays it would be situated among the Victoriei Avenue, Episcopiei Street and Nicolae Golescu Ipsilanti Street) and which, in 1797, was taken care of by the order of Prince Alexandru Ipsilanti (Potra, 1980: 310).</td>
<td></td>
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<tr>
<td>3 South of the “Leftir” Church, that is the Church of St. Elefterie, which had a “beautiful party garden made – as they say – by the Metropolitan monks” (Ionescu,</td>
<td>South of the Church of St. Elefterie the Elder, on the site of a built-up area.</td>
<td>Rectangle; size: about 109.9 × 132.8 m; perimeter: 488.5 m; area:14785.3 m²</td>
<td>It is shown exactly the same.</td>
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<td></td>
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<td></td>
<td>Although it had trees, it was not a landscape garden.</td>
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<td><strong>1902: 522, <em>apud</em> Florescu, 1935: 21)</strong>; it was situated near a construction that was owned by a boyar named “Komeskul”, whose membership is unclear (Florescu, 1935: 21, 131).</td>
<td>North of the “Bresuana” Church, that is Brezoia, today extinct, east of the swamp that was later turned into the Cișmigiu Park.</td>
<td>In the area of the Arestide Demetriade Street, east of the Cișmigiu Park, on the site of several apartment blocks.</td>
<td>Irregular tetragon; perimeter: 199.2 m; area: 2334.9 m²</td>
<td>It is not shown.</td>
<td>Much smaller, looking like an undeveloped garden.</td>
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<td><strong>4</strong></td>
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<td>Southeast of the “Moldoveny” Church – also known as St. Ioan Moldoveni or St. Ioniță (Florescu, 1935: 26), today extinct – and east of a house belonging to “Katarschiu”, identified by Florescu (1935: 126) as being the property of Constantin Catargiu.</td>
<td>On the Ion Câmpineanu Street, across the Novotel Hotel that spreads today on the site of the old National Theater.</td>
<td>Irregular polygon; perimeter: 205.5 m; area: 2638.2 m²</td>
<td>It is not shown.</td>
<td>It is not shown.</td>
<td></td>
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<tr>
<td><strong>5</strong></td>
<td></td>
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<tr>
<td>In front of the entrance of the “Serindar” Church (Sărindari, today extinct), a little to</td>
<td>On the site of the Palace of the National Military Center</td>
<td>Irregular tetragon; perimeter: 313 m; area: 6007.5 m²</td>
<td>It is shown exactly the same.</td>
<td>Undeveloped garden.</td>
<td></td>
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<td><strong>the northwest. Immediately following to the west was a swampy area.</strong></td>
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<td><strong>7</strong> Southwest of the &quot;Serindar&quot; Church (Sărindari, today extinct), east of the Gârla Tabacilor, a rivulet that drained the swampy area that later became the present Cișmigiu Park.</td>
<td>On the Regina Elisabeta Avenue, opposite to the Palace of the National Military Center, today a built-up area.</td>
<td>Irregular tetragon; perimeter: 161.5 m; area: 1535.4 m²</td>
<td>It is shown exactly the same.</td>
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<td>Undeveloped garden.</td>
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<td><strong>8</strong> In a meander of the Dâmbovița River (today extinct because of the channelizing works), on the left bank, near a large building belonging to Prince Brâncoveanu the Elder (&quot;Fürst Brenkovano altere&quot;), identified by Giurescu (1966: 390) as being the house of Ban Nicolae Brâncoveanu.</td>
<td>East of the Church of St. Spiridon the Elder, on the site of several buildings.</td>
<td>Irregular polygon; perimeter: 247.3 m; area: 3535.7 m²</td>
<td>It is smaller; the alley network is different.</td>
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<td>Stretches far downstream on the same bank. On the 1852 edition it looks like a landscape garden, but with winding alleys, resembling the Italian gardens, and not with straight alleys like in 1789 (Figure 6).</td>
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<td><strong>9</strong> West of the Radu Vodă Monastery.</td>
<td>West of the Radu Vodă Monastery and as far as the &quot;Ion Creangă&quot; National</td>
<td>Irregular polygon; perimeter: 281.7 m; area: 4642.5 m²</td>
<td>Smaller and with less clear architecture.</td>
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<td>Very large, undeveloped, but still called garden [grădina]:&quot;Grădina Mănăstirească&quot; (1946) or &quot;Grădina Radu Vodă&quot;</td>
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<td>West of the Radu Vodă Monastery, between the churches Slobozia (&quot;Slobodzia&quot;) and St. Spiridon the Younger.</td>
<td>Between the churches Slobozia and St. Spiridon, on Şerban Vodă Avenue, an area occupied today by buildings and green areas.</td>
<td>Irregular tetragon; perimeter: 294.1 m; area: 5071.2 m$^2$</td>
<td>It is not shown.</td>
<td>Undeveloped garden.</td>
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<td><strong>10</strong></td>
<td>Outside the city, about 1.6 km south-southeast of the &quot;Lefîr&quot; Church (St. Elefterie the Elder), south of a long lake, today extinct. It was impossible to establish its location accurately, because of the lack of control points (GCP) outside the city of that period.</td>
<td>In the area lying at the crossroad between George Coşbuc and Tudor Vladimirescu avenues.</td>
<td>Irregular polygon; perimeter: 462.2 m; area: 12196.9 m$^2$</td>
<td>It is shown roughly the same.</td>
<td>Undeveloped garden and vineyard. In the vicinity was Grădina Gramon, which is likely to be a remnant of the garden shown on the map of 1789.</td>
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The measurements undertaken in QGIS on the Purcel map show that the total area of the eleven landscape gardens was 8.63 hectares, while the whole city (including the courtyards, the undeveloped gardens, the arable lands and the vineyards) stretched on about 1638 hectares. As the Purcel and Ernst maps provide little information it is not clear whether these gardens were public or private. The accounts of 1793 and 1794 supplement the cartographic data. Thus, the first ones
make reference to the “stroll areas” lying along the Dâmbovița’s banks, with alleys and glades, “where one is sure to meet, especially in the evening, a lot of people who are attracted here by the coolness”, while the others mention the “public strolls” along the Dâmbovița’s banks (Giurescu, 1966: 390).

By corroborating the cartographic data with the historical studies on Bucharest (Florescu, 1935; Potra, 1942; Costescu, 1944; Giurescu, 1966, etc.), we were able to ascertain that the landscape gardens belonged either to the boyars and the high officials of that time or to the religious institutions (churches, monasteries). Thus, Giurescu (1966: 388) wrote that under Prince Constantin Brâncoveanu (that is between 1688 and 1714) Bucharest’s gardens had reached “an exquisite flourishing”; imitating the prince, the boyars were making gardens for themselves. Giurescu also tells us that the royal court had a chief-gardener who coordinated 20 gardeners (op. cit.: 388), and the garden was “to be honest, very beautiful, square-shaped and designed according to the Italian good taste. In the middle, Prince Constantin Brâncoveanu erected a nice pavilion (…), in order to rest himself immersed in the fragrance of the various flowers” (Del Chiaro, 1718: 12-13).

Historical documents reveal that the number of landscape gardens was bigger than Purcel map shows. Thus, a document of March 2, 1724 tells about a garden with pavilion, which was created by Nicolae Mavrocordat in the present-day Foșor neighborhood, “for my highness and other gentlemen that might follow in my footsteps should have a place for walking” (Giurescu, 1966: 96, 388). Pavilions were also found in the Radu Vodă Monastery and in the gardens belonging to the boyars who were living in Bucharest. In 1972, among the most wanted merchandise in Bucharest were the flower seeds and even the exotic lemon trees, which had already been reared here and there (Giurescu, 1966).

In other European cities, the situation was different. For instance, a visual inspection of the historical maps available on the web (http://mapire.eu/en/; Layers provided by Arcanum Adatbázis Kft) reveals that during the same period (1797) Vienna had private gardens, like for instance the English garden of Prince Eszterhazy – ”Englischer Garten des Herrn Fürsten von Eszterhazy” (Figure 5a) and the French-style garden (according to the cartographic shape) of Prince Schwantzenberg – ”Garten des Herrn Fürsten von Schwartzenberg” (Figure 5b); at the same time, there were gardens belonging to churches, hospitals, education institutions, etc., as well as public gardens, like the Augarten Garden – ”Der allen Menschen gewidmete Belustigungs Ort”.

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Of the eleven landscape gardens existing on the Borroczyn map (1846 and 1852), only two survived: (1) the garden belonging to Prince Brâncoveanu is shown on the map of 1852. It has a typical appearance of landscape garden, with winding alleys, in the Italian style, and not with geometrical paths like in 1789. It bears the name of “Brinkoveanka” (Figure 6) and is larger (1.49 ha) than in 1789 (0.35 ha); (2) “Grădina Mănăstirească” or “Grădina Radu Vodă”, lacking a specific design on the map, but having a name that points to its destination. These disappearances do not suggest that the area or the number of recreation gardens dropped in 1852, but only that they did not remain exactly on the same places where they had been at the end of the 18th century. In fact, it is on these gardens that we focused our attention with the purpose of representing them on the map. In reality, however, our measurements accomplished in QGIS show that in 1852 there were 24 landscape gardens covering an area of 69.23 ha.
4.2. Public interest concerning the old landscape gardens of Bucharest

In order to assess the interest for the old landscape gardens of the Romania's capital, we applied a questionnaire on a sample of 134 subjects from the Faculty of Geography within the University of Bucharest. The sample consisted of 114 first and second year students (85.1% of the total number), and 20 members of the academic staff from the same institution (14.9%), who filled in the questionnaires anonymously and voluntary. Because the number of subjects was small, the results are not representative, but only indicative.

The answers provided show that, overall, 71.6% of the respondents do not believe that in 1789 Bucharest had landscape gardens. The differences between the students and the members of the academic staff are significant, 60% of the academic staff (in comparison with 22% of the students) being aware of the existence of parks and gardens. The chi-square test has reached statistical significance (df=1, Sig=0.002), thus proving the influence of the level of knowledge on the landscape dynamics (Figure 7). Most of the students (77.2%) cannot imagine that there were parks in 1789; they think this is something novel, which deserves investigation.

For the period 1846-1852 (Figure 8) the situation changes: 90% of the academic staff and 72.8% of the students agree that there were landscape gardens in Bucharest. However, this difference does not achieve statistical significance. As far as the interest for getting to know the old landscape gardens is concerned, it is worth mentioning that every respondent wanted to learn something about these cultural landscapes.
One can see a significant statistical difference (df=1, sig=0.003) between those academic staff and students who wish this thing very much (“a great deal”): 80% of the academic staff and only 39.5% of the students, while 47% of the students wish to know them only “much” (Figure 9). However, at the sample level, 88.8% of the respondents wish to know “much” and “a great deal” the old gardens in Bucharest, which proves that the interest for the landscapes of the past is high (as previous studies have also shown, for instance Osaci-Costache et. al., 2016). At the same time, they think that a web site meant to revive the former townscapes would be particularly useful.
pertaining to the old landscape gardens in Bucharest, are given in Figure 10. Even though the statistical significance is not achieved, the members of the academic staff have a higher level of interest for all the answers. The answer “a great deal” was chosen by more people belonging to the academic staff (between 65% and 80%) in comparison with the students (between 36.8% and 53.5%). Statistical significance is achieved when it comes to the location of the old gardens on maps (df=3, sig=0.009), as 90% of the members of the academic staff wish this thing “much” and “a great deal” (of which 80% wish “a great deal”). Similar options are also expressed for the visualization of paintings/photos/drawings of the old parks, although in these cases the differences between the samples are not statistically significant. Students are highly interested in the landscapes that have replaced the old gardens (90.35% wish “much” and “a great deal” to know them, of which 53.5% wish “a great deal”), but are almost indifferent about the texts that might supplement the visual information.

Figure 10. The answers that show the level of interest concerning the visualization in the virtual environment (on the web) of a number of aspects pertaining to the old landscape gardens in Bucharest.

Likewise, the respondents mentioned some other elements that they would like to find on a future web page dedicated to the old gardens in Bucharest, like for instance:
- how were the old gardens? (i.e. plant species, entrance fees, amenities, maintenance and cleanliness, elements of landscape architecture, including the name of the architects who created them, how could people get to these gardens);
- what was the relationship between the gardens and the social life of Bucharest? ("what social categories used to stroll in the parks?; “information about various personalities of that period who had the habit of going in the respective gardens”; “to what extent influenced the landscape gardens the social life of Bucharest?”);
- the time evolution of the gardens and the changes of the urban landscape (i.e. “virtual tours meant to show the time evolution of the areas occupied by parks”; the parks used as models for territorial planning, if such models existed”; their evolution in relationship with the city’s boundaries”);
- data about the architectural heritage of Bucharest in the area of the old gardens.

5. Conclusions
This research started from the analysis of the large-scale historical maps developed at the end of the 18th century, which at first was done visually, and then, in a GIS Open Source environment, by analyzing the distortions (in MapAnalyst), by georeferencing the maps and by digitizing the geographical information of interest for the approached topic (in QGIS).

The main results were the identification and the positioning of the landscape gardens existing in Bucharest in 1789 and their tracing as far as 1852. A secondary result was the estimation of the geometrical distortions of the main maps employed for our study (Purcel and two editions of the Borroczyn map), which proved to be relatively small.

According to the Purcel map, at the end of the 18th century Bucharest had eleven landscape gardens. However, according to the historical accounts, travel memoirs or literary writings of that time, their number must have been bigger. Historical cartography has proved to be very useful not only for locating the landscape gardens, but also for getting acquainted with their geometrical and aesthetical features, for understanding the spatial relationships within the city, and for validating the historical accounts by comparing them with the cartographic information.

The retrieval of the old gardens through the agency of the large-scale historical maps will allow the creation of a virtual landscape with emotional valences, which may be attractive and very attractive for 88.8% of the interviewed students and academic staff.

Acknowledgement
In memory of Professor Anton Năstase (University of Bucharest, Faculty of Geography).

References


