5.6 The use of digital devices in the research of Hungarian monastic gardens of the 18th Century

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ABSTRACT

Hungarian monastic garden art of the 18th century included several distinct types of garden, which differed according to the specific religious orders and also to their geographical location, producing great diversity. The gardens were forced to change with history, and as a result, there are hardly any monasteries today that still preserve visible remains of the formal garden design. Therefore, the restoration of these gardens to a great extent has to rely on archival research to a great extent. However, owing to the inaccuracy and insufficient quantity of data, further methods are also needed to achieve authenticity. Though the use of digital devices is not new in garden research, it is still not used widely, especially not in Hungary. Yet, in the case of monastery gardens, its application can no longer be omitted, because this is the only way to get useful information on the gardens. This paper discusses how the most frequently used digital methods, GIS and geophysics can be applied in the case of monastic gardens. Generally, GIS software makes it possible to stretch period maps and layouts over today’s more accurate, georeferenced maps and thus find the exact GPS coordinates of the garden elements, after which these can be found on site. Where nothing visible has remained, geophysical surveys can be applied. However, both methods face difficulties in the case of monastic gardens, as will be presented. Still, with the complex use of these digital devices, the models of the theoretical former gardens can be constructed, which is essential in understanding monastic garden art and also for the conservation of these gardens.

KEYWORDS

*garden archaeology, monastic gardens, conservation, restoration, GIS, geophysics*
The Christian religious orders have bequeathed a great amount of spiritual and cultural heritage that embraces all the Christian parts of the European continent. Since their establishment, these orders were the determinants of the prevailing intellectual life. From the Middle Ages, all works that contributed to the spread of literacy were centred in the monasteries for centuries. The heritage of different monastic orders, however, manifests itself not only in intangible, but in material ways as well, seen directly in their environment. Depending on their monastic aims, religious orders settled either in towns or on the contrary, in peaceful, natural environments far from other human settlements. Therefore, partly by their effect on urban life and partly by their landscape-forming activity, nowadays their former estates form an integral part of research in both urban and landscape history.

UNESCO defines three main categories of cultural landscapes among which “the most easily identifiable is the clearly defined landscape designed and created intentionally by man. This embraces garden and parkland landscapes constructed for aesthetic reasons which are often (but not always) associated with religious or other monumental buildings and ensembles” (Mitchell et al. 2009, 20). Gardens, regardless of having a formal, Baroque design or a seemingly natural English style, are considered as cultural landscapes. The term can be applied to monastic gardens without hesitation, considering that most of these gardens have been primarily used for cultivation, although with aesthetic intentions, too.

Moreover, there is an associative value to these gardens, because the activities, symbols and objects of a religious order were reflected in the structure of their architecture and gardens. Nevertheless, as a result of the elapsed period, nowadays these historic gardens reflect how both ecclesiastic and secular culture have left their mark on them, and thus the task of conservation is compound: while preserving the remaining elements of the former Baroque cloister gardens, one has to keep in mind their later, secular use as well (which may last even up to the present day), in order to demonstrate the true history of these peculiar landscapes.

Comprehensive, interdisciplinary research on historical gardens, employing different tools and methods in the process, is common practice in Europe today; however, such research in Hungary is still in its infancy. There are hardly any examples of Hungarian garden restoration where all the necessary methods of historical research are applied together, although in recent years, some initiations have started to reach the European level of research and restoration works (Alföldy 2008; Fatsar 2009).

The conservation of gardens can never be a completely exact science, because there are many variable factors on which restoration depends (Goulty 1993), including their main building elements and the plants. And as a result of this, gardens necessarily fall into decay earlier than other works of art. Nevertheless, it is because of this unique feature that they can be renewed and regarded as a living historic monument (Florence Charter 1981, chapter 2, chapter 3). Thus, their restoration may be possible, even if apparently nothing has remained of them – but this requires comprehensive research, with complex on-site examinations, including garden archaeology.

Garden archaeology, as a special type of landscape archaeology applied to intentionally designed landscapes (Bowden 2006), introduces an interdisciplinary approach, the complex use of archival documents, diverse digital devices and excavations which helps to construct the theoretical models of the former historic gardens. Hence, this method can be used effectively in the case of the gardens of the religious orders, where it is essential for understanding monastic garden art and also for conservation. It is neces
necessary to use these methods to achieve authentic results, which can then be used for the restoration and reconstruction works.

**THE EVOLUTION OF MONASTIC GARDEN DESIGN**

Monastic gardens are peculiar cultural landscapes, representing the designed and associative types of cultural landscapes all in one. These gardens were established for functional and contemplative aims since the Middle Ages. According to their monastic vows, the monks’ environment reflected poverty, chastity and renunciation. The small, inner, enclosed places of the monasteries were used for herb gardens, orchards or kitchen gardens (Landsberg 1995), while in the outer land they cultivated cereals or had ponds for fish (Currie 2005). The surrounding walls of monasteries became a feature in the time of St Pachomius (292-348 AD), and have been a characteristic part of monastic structures ever since (Meyvaert 1986). The walls certainly limited the space and, therefore, it was usual to mix the different functions of places, for instance planting an orchard in the cemetery garden. Pleasure gardens also developed this way, through the beautification of vegetable or herb gardens. The important role of pleasure gardens created only for aesthetic reasons in monasteries was already implied by Albertus Magnus (cc. 1200-1280): “Nothing refreshes the sight so much as fine short grass. One must clear the space destined for a pleasure garden…” (English translation cited from Thacker 1979).

However, the simple design of the monastic environment changed over time. Since cultural and spiritual activity was centred around monasteries, they became quite wealthy, to which donations and legacies also contributed. As a result, by the time of the Renaissance their purity had vanished and hints of luxury appeared – although not to the same extent as in the case of rich aristocrats. The increased wealth could easily be traced in material ways, such as the architecture and decorations of their buildings and gardens. The proportion of places inside the enclosure, created especially for aesthetic reasons and for spending free time, became higher and higher. The cloister garth, once used for orchards or herb gardens, now gave way to ornate parterres and other highly decorative elements (Turner 2005), making these gardens equivalent to the general garden style of the era. The parterre de broderie, later the parterre à l’Angloise, the bosquets, alleys, trellises, clipped hedges, topiaries, fountains, pavilions and orangeries, shaped in an architectonic, formal way, became the dominant parts of the gardens, showing the pompous style of the era and the rule, the symbolic victory of humanity over nature.

This luxuriant behaviour resulted in a rapid decline of the religious orders. Since the opulent way of life was completely in contrast with their original aims of self-denial, it is not surprising that in the Era of Enlightenment, from the end of the 18th century, dissolution of monasteries spread Europe-wide (France, Germany, Hungary, Portugal, etc.). Secular dominance took over the power from the Church, and monastic communities could never again be as determinative as before.

Therefore, the 17th and 18th centuries can be regarded as the last peak of monastic culture and definitely the most valuable time concerning monastic garden art. Garden formations at that time were particularly diverse, but did not depend principally on the wealth and economic status of the order or the monastery. Instead, garden design was linked to the monastic regulations and their way of life, though with adaptation to the higher demands of aestheticism. The differences in monastic gardens were the result of the four main different groups of religious orders of the 18th century:
- monastic orders (living far from human settlements, devoting their time completely to spiritual activities)
- mendicant orders (living by physical work and begging, therefore settled in or close to towns)
- canons regular (clerks living in a particular community in a particular place)
- clerks regular (clerks dealing with teaching and pastoral care, hardly any fixed dwellers at a particular place).

These categories differed in their way of life, and thus gave rise to a wide variety of monastic gardens in the 18th century. Their characteristics are similar throughout Europe, though always with adaptations to the local historical, economic and political background as well as to the climate. Still, it can be generally ascertained that the monastic orders and the canons regular had more and larger decorative gardens, while the mendicant orders and the clerks regular generally restricted the adornments to the cloister garden, using the other parts of their estates for cultivation, though many times formed in an ornamental way.

**WHY WE NEED DIGITAL DEVICES – HISTORICAL BACKGROUND**

Hungarian monastic gardens have had to tide over hard times on several occasions, which have caused changes and destruction. As a result, many features of the earlier gardens have vanished, or appear to have vanished. To understand the necessity of digital devices in the research of Hungarian monastic gardens, a short historical review is required. This will help to explain the background of the present methods of research, and will show why a more comprehensive method of historical research is needed.

Destruction of the gardens was usually caused by cultural changes, primarily secularisation. Monastic gardens could become secular properties in two ways. On the one hand, they could be sold by the monks for financial purposes (a ‘bottom-up’ dissolution). This often happened, predominantly in the case of those orders that accumulated great wealth and could do business, such as the Jesuits, for instance.

The other way of secularisation was by force (a ‘top-down’ dissolution). The unfolding garden art of the Hungarian monasteries was already in crisis by the end of the 18th century, under the reign of Joseph II (1780-1790), who, in 1782, dissolved all those monastic orders which were not concerned with teaching or medicine. Taking into consideration the property of the Jesuits, who were abolished worldwide in 1773, and of the Pauline Fathers (the only order founded by Hungarians), who were extinguished in 1786, the number of the abolished monasteries was more than 150. The properties of the monasteries were distributed or auctioned, and fell into the hands of the state, the military forces or the municipalities. The building complexes gained a completely new function and were transformed into barracks, hospitals, warehouses or granaries (Velladics 2000), which, of course, launched irreversible processes in the gardens.

Though the 19th century was a peaceful, harmonious era for the remaining monasteries, the happenings of the 20th century brought about drastic changes. After World War I, the 1920 Treaty of Trianon reduced the territory of Hungary to about a third, which resulted in the loss of most of the remaining monasteries. The few still belonging to Hungary were further destroyed under the Communist regime from the 1950s onwards. The estates of the Church were taken into the ownership of the state again, and
the new functions and uses devastated almost all value of the Hungarian cloisters. In better cases, the area of the gardens remained and was only transformed; the worst result was when the gardens were used for construction. The destructive processes at this time were so great that most of the gardens could not be saved even with their privatisation (return to the Church) after the change of regime in 1989.

As a consequence of this history, the number of surviving gardens is meagre, and many have been built up or detached from the monastic buildings. Those ones that still form one unit are very rare, and conservation is largely restricted to these cases; however, even for the more well-preserved, it is necessary to carry out comprehensive historic research.

**DIGITAL DEVICES IN THE RESEARCH**

Owing to the degradation and transformation of the monastic gardens, almost nothing has remained visible on the surface, and thus their recognition requires close examination. The primary sources of information on the design of these gardens are mainly the archival period documents, maps and images; however, these alone cannot give a picture precise enough for restoration. Written documents cannot show the exact geographical location of the features, moreover, the images are not wholly accurate, because even if they depict a state that was really attained, the proportions and scales can be wrong. To refine the data, other devices are needed.

Digital devices are used in both archival research and field work. An important aspect of their application in garden research is finding the best method for the job, since the monasteries are in differing states of decay and therefore cannot all be approached in the same way. Digital devices used in the research of landscape architecture include instruments for geophysical prospection, such as GPS and resistivity, and softwares, such as GIS, AutoCad and Photoshop, which allow the results to be plotted in a series of overlays.

A key aspect of the ongoing research on 18th-century monastic garden art in Hungary is trying to establish the most appropriate and informative methods of prospection and analysis. With the presentation of some case studies, the capability of different digital devices used in the context of monastic gardens will be demonstrated. AutoCad and Photoshop are mainly complementary devices and are used particularly in a later phase of the research. As both packages can be effective in design, they are mostly applied for creating visual models of the former gardens, which can form good bases for a restoration work. As they do not play such a great role in the actual phase of field research, they will not be detailed here.

**GIS**

Historical maps often hold information about a garden that cannot be found in any other written source. These may include boundaries, buildings or other physical features, or even land use or vegetation cover. The degree of accuracy of a map is, however, not always precise enough to be able to identify the different features today, because a few-metres precision is certainly not sufficient in gardens. It is almost impossible to align an old map to modern coordinate systems perfectly, as mapping methods of the earlier times...
often represented scale, distance, directions and angles very imprecisely. Therefore, not only the overall scale of the different maps has to be harmonised in order to compare them with each other, but also the proportions and inner scales of the old maps must be changed. The rubber sheeting process available in GIS software makes it possible to stretch period maps and layouts onto today’s georeferenced aerial photographs or digital maps, by selecting control points on the original map that can still be recognised today. After a rough fitting of the map, further adjustments can be made to reach the best combination of the old and new (Rumsey & Williams 2002). The more maps we have of a place, the easier it will be to recreate the history of the garden.

Owing to the size of the monastic gardens, however, we may have problems finding many good maps or layouts. The plans of the design have rarely survived, and since the majority of these gardens were relatively small (compared to the estates of the aristocracy), we usually cannot gain information about their layout from town maps, nor from small-scale maps. These generally depict the gardens as a green area without any further details or with a schematic drawing, thus, we can draw conclusions concerning only the size and shape of the actual garden. Monasteries themselves did occasionally create maps, but usually only when they were required for some particular reason (e.g. fixing boundaries or settling litigious matters concerning the property, and so forth). These, however, still did not focus on the ornamental parts and layout of the garden. The images of monastic gardens found on engravings or planned layouts depict a state which may have never been implemented this way, hence, they should be handled sceptically and cautiously, and justified using other methods, too (e.g. the use of geophysics).

The best image sources for Hungarian monasteries of the 18th century are, therefore, the survey maps made by the Hungarian Treasury at the time of the orders’ dissolution. These surveys are quite detailed, though mainly concentrate on the built elements of an actual property, and hence, other important minutiae of the gardens (such as the ornaments of the parterres or other decorative features) are not fully represented. The surveys were made with economic aims, and thus displayed only those features that were useful in this respect, while plants were depicted in a rather schematic way. Only the explicitly characteristic elements, such as alleys or solitary trees, were represented in detail.

The role of the rubber sheeting method is particularly useful in these cases, and can reveal hidden structures which are not otherwise perceptible. The identification process using the survey maps of the former Jesuit provostship in Znióváralja (today Kláštor pod Znievom, Slovakia) is a good example. The estate originated in the Middle Ages and was slowly transformed into a typical Baroque Jesuit estate, including three granges, several fish ponds, a brewery and a distillery. It also had meadows, arable land, hunting fields and gardens designed in a formal way, with elements such as an apiary, vegetable garden, ornamental garden, a bowling alley, a pool for tortoises and so forth, of which we can get information principally from archival documents (Klagyivik 2010). Today, however, most of the area has been overgrown by the village, destroying the formal unity of the estate, and seemingly leaving nothing of it but the main buildings.

In addition to the survey map, made around the time of the dissolution in 1773 (fig. 1), another survey from 1791 was at my disposal (fig. 2). The later one was much more precise, although it showed fewer features than the other, and only the main buildings and roads could be seen. In two steps -- first adjusting the map of 1791 to the map of today, and then the survey map to the whole, all of the elements could be positioned correctly (fig. 3). The control points used during the process were angles of the cloister building, the main farm buildings which exist today as well, and some characteristic points of the road leading to the monastery.
The use of the GIS software seemed to be effective and brought new results. It became evident that not only does the main road that leads to the cloister still exist today, but also the road running to the south is exactly the same as the old one. Furthermore, the majority of the fence has remained at the original location and still has the same formation as before, with stone pillars, shingled roofs and wooden lathes. At some points, boundaries have stayed in the form of vegetation lines, as can be seen on the southern part of the estate, next to the vegetable garden. However, only the shape and the manner of use of the formal ornamental garden can be detected today, as its layout has changed substantially. Though an old peculiar European hazel (Corylus avellana ‘Pendula’) is still standing in the middle of it, it cannot be identified with the solitary tree seen on the map; it must be the remnant of a later period, of which hardly any
sources could be found. Old oaks, beeches and limes are still living, some of which are probably survivors of a former alley. By georeferencing the old map and thus gaining the exact coordinates of the different features, one small edifice known only from the survey map but not from written sources could also be found on site. The little building which served originally as a place for keeping smaller animals is, however, today only a ruin overgrown by vegetation (fig. 4).

Another example, the former Jesuit garden in Pozsony (today Bratislava, Slovakia), has much less of a connection with the original layout. The garden lay in the suburbs of the town, right in the neighbour-
Figure 3. Znióváralja, digitalised period maps on aerial photograph, before (right) and after (left) the alignment with GIS rubber sheeting method.

Figure 4. Znióváralja, location of the old layout and uses of land. The photos display remaining elements: walls, fences, ruins of an edifice, a meadow and some old trees. See also the full colour section in this book.
hood of the richest decorative gardens of the aristocracy, and it functioned first as a botanical garden and later as an ornamentaly designed vegetable garden (Klagyivik 2007). Today, the area belongs to downtown Bratislava, and is partially built upon, seemingly having lost every mark of the earlier design.

Still, after layering the images of different periods over one another, some marks have turned out to be long-lasting and perceptible even today. The track of the streets, for instance, still follows the original boundaries of the garden. A surviving area of garden is sunken below street level, with a buttress which, though built in the 20th century, follows the line of the original one. The staircase leading to the street level is situated a bit farther on (figs. 5, 6). Nothing has remained, however, of the earlier buildings, which have been replaced by housing blocks built in the 1960-1970s. Neither did the formal botanical garden preserve its vegetation. Even the famous lime tree, which held an arbour built on its branches and existed until the 1960s, does not stand today.

As can be seen from these examples, the main benefit of using GIS in this kind of research is, first of all, to prove the authenticity of the image sources. If evidence is found – as in the above-mentioned case studies – that the drawing in question illustrates a state that really existed, further methods are worth applying in order to find non-visible remnants of the gardens as well. Since with the growth of the towns and villages, many of the monastic gardens have become more or less part of the built-up area, it is very difficult to apply useful methods for on-site examinations for those garden elements which are not visible on the surface. In these cases, we have to content ourselves with the results we can gain by using GIS and archival sources. Nevertheless, in areas which are still open spaces today, further methods like geophysics can also be used. These are presented in the following two case studies.

Figure 5. Bratislava, the digitalised map of the original layout of the former Jesuit garden, mid-18th century (Hungarian National Archives, T2 No. 1495.), stretched on the aerial photograph: 1. previous garden 2. formal buildings. The area is partly a green space today as well. The terrain levels and the location of the buttress are the same. See also the full colour section in this book.
In places which have not been built upon, on-site garden archaeology can play a significant role in the process of historical research. Historic gardens are a unique type of archaeological site, chiefly because they continue to evolve all the time. The living components of them are growing and altering constantly. As excavations are fairly expensive and time consuming, preparatory surveys should be carried out. The role of geophysics in garden archaeology is pretty new, having been applied throughout Europe only in the last two decades (Currie 2005), but it is becoming more and more essential, since it offers relatively good results without disturbing the remains under the ground.

The benefit of a geophysical survey relies on many factors. Apart from the climatic and soil conditions, the success depends on the materials of the garden features: the identification of walls and buildings can be quite good, culverts and drains can also bring nice results. Flower beds or gravel paths are fairly difficult to detect, while small-cut features like planting holes can hardly be revealed at all (Currie 2005). Furthermore, geophysics can be misleading on sites where features from later times can be found, because of the disturbance to the earlier layout. Owing to their historical background outlined above, this is a characteristic feature of many monastic gardens in Hungary. Where distortion of the soil is too high, geophysical survey cannot show good results, not even of the built elements of the garden.

This was the case, for instance, in the garden of the Franciscan cloister in Szécsény, Hungary, which still occupies roughly the same space as it did originally, but which was totally transformed during the era of Communism in the second half of the 20th century. In the beginning of the 18th century, a terraced garden was formed, of which some drawings and descriptions can be found in the Historia Domus of the cloister. According to this, more phases of the development of the garden can be determined. As being the cloister of a mendicant order, the gardens were made mainly for cultivation, comprising vegetable and fruit gardens, fish ponds and canals that led to the ponds (Szacscky 2002). The secularisation of the 1950s gave the ownership of the garden to an agricultural high school, which used it as a place for practice. The terraces were embanked and new terraces were formed at that time, which have remained until today (fig. 7).

**GEOPHYSICS**

Figure 6. Bratislava, photo of today’s layout with the buttress in the background.
After aligning the rather inaccurate drawings of the 18th century to the present conditions with GIS methods, the exact locations of the garden elements could be read and on-site examinations could begin. The geophysical surveys of some parts of the garden have been executed by the Corvinus University of Budapest, Department of Garden Art in 2009. The extent of the 20th-century embankment had not been known beforehand, thus the success of the survey was doubtful. The aim of the survey was to find some traces of the formal buttresses and drains, features which could have been identified under good conditions. The results, however, were not promising: the elements that could have been found were not detectable at all, presumably because they were too deep under the ground, where detection could not penetrate. Moreover, the main material used for the embankment was construction debris, which also reduced the possibility of positive results, since the instrument displayed this spectacularly. Refuse on the surface was also a hindering factor for this method (fig. 8). The instrument used was an RM15 Multiplexer, which measures electrical resistance of the soil, and thus, it is particularly sensitive to debris that might cause anomalies. Hence, it seems that only excavations would be effective enough to show positive results in field research of this garden and to verify the drawings in the Historia Domus.

Nevertheless, on areas where disturbance has not been so comprehensive, geophysics can be really
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Successful. The survey of the Camaldolese gardens in Majk, Hungary, proves this well. The hermitage was constructed in three phases between 1733 and 1770. Ornamental gardens lay next to the communal house and next to each small house. Orchards and vegetable gardens were also part of the estate. Changes made in the garden took place mainly because of the change in popular garden style. The owners followed the trends of the time, while in the meantime still preserving elements such as terraces from the Baroque period. As a result of this, the garden began to preserve the marks of more and more different eras (Baroque, English garden style, as well as the style of the late 19th and early 20th century), thus representing the continual history of itself. The greatest decay in the complex happened in the short period after the World War II. Its conservation and restoration began in 1979, and with some breaks it continues to this day.

The restoration project was based on an all-inclusive, multi-disciplinary research programme that comprised the archival research, on-site examinations and non-destructive methods of garden archaeology alike. The geophysical surveys have demonstrated the existence of many of the garden elements shown in the period maps. The resistivity survey was executed by the same RM15 Multiplexer instrument as the one in Szécsény, but seemed to be a much more effective method in this garden, because the disturbance was not so extensive. The terraced garden is covered with lawn and is out of use today. Depending on the depth of the measurements, different elements came to light. The survey in the garden next to the manor evinced Baroque elements such as canals connecting the building with a pool, as well as the axes of the parterres (fig. 9), while other parts showed the layout of the English style period (Fatsar 2004).

Geophysical survey, accordingly, can be especially effective if the disturbance of a garden has not been significant. This is, however, very rare in the case of monasteries, because after their secularisation, they have generally been managed in a rather unsuitable way. Instead of keeping the heritage the monks created, the principal aim has always been purely functional and economic. The number of monasteries
Figure 9. Geophysical survey in the Camaldolese garden of Majk, 2005. Measurements of 0.75m depth in the lower terrace showed the axes of the garden. The light lines can display marks of paths. The upper terrace shows differences according to the survey depth. At 0.5m depth, marks of a canal connecting the building with the well, while at 0.25m depth, the canals, perpendicular to the main axis of the garden can be seen. (Corvinus University of Budapest, Department of Garden Art. Leader of the survey: Dr Kristóf Fatsar).
where geophysics can be applied effectively are very few, but even among these there are some that can help us to reconstructing the theoretical models of the gardens of different religious orders. Nevertheless, the survey maps that are at our disposal provide so much information, that by correcting and analysing them spatially with GIS methods, we can get much closer to the understanding of monastic garden art.

CONCLUSION

Digital devices are an essential part of the research on Hungarian monastic gardens. As the gardens show hardly anything of their former layout, archival sources are needed – but the number of maps and layouts remaining is meagre, and even these do not present the gardens in much detail. The most useful image sources are survey maps, yet these are also not precise enough. In addition to image sources, one can rely on written documents, which rarely provide any exact locations of the garden elements. Therefore, a complementary method is needed that can combine the historical maps and today’s maps and give the exact coordinates of the garden elements. This is especially important, because it is the only way to reveal such visible elements on the surface which, as a result of the great extent of changes, are not perceivable in any other way.

The use of GIS is not new in garden research, but it is still often omitted, especially in Hungary. However, due to the reasons mentioned above, it should be regarded as an essential tool in monastic garden research. As the presented case studies demonstrate, GIS methods can reveal many new, and sometimes surprising, data concerning the actual gardens. The difficulties in using GIS lie mainly in the lack of serviceable materials. A further step after analysing GIS data is the on-site examination, which is extremely hard in the case of monastic gardens. Owing to their history, there are only a few gardens that are not built up nowadays, and even these few can cause problems for surveys because of the extent of the changes they have undergone. Non-destructive on-site examinations like geophysics are, hence, very difficult to implement effectively and thus the surveys are often unsuccessful.

The interdisciplinary methods discussed in this paper are powerful tools for exploring the principles and design of the different types of monastic gardens. If the theoretical models of several gardens can be created, these models can contribute to and facilitate the research of those other gardens about which nothing is known yet because of the lack of data. Moreover, as the comparison between monastic aims and their garden art was similar all over Europe, results may even be used successfully in other European monastic garden research, and thus aid in restorations as well.

REFERENCES


