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ROLE OF THE NATURE TRAILS AND THEIR SHAPING'S ASPECT SYSTEM

„GREEN SCHOOL-ROOMS” IN PROTECTED AREAS OF LOCAL INTEREST IN BUDAPEST

PhD THESES

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The Doctoral School:

denomination: Corvinus University of Budapest
Doctoral School for Landscape Architecture and Ecology

discipline: Agrarian-technician

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The candidate fulfilled all conditions prescribed by the PhD regulations, accepted the remarks said in the course of the workshop discussion of the dissertation, and when adapting the dissertation, the proposals took in consideration; therefore it can be admitted to public discussion.

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Approval of the school leader

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Approval of the supervisor

It can be asked, why is it necessary, or generally speaking does it sense at all to establish environmental nature trails in a metropolis? Are they able at all to present here something? By now many big cities had lost surely their nearly every by-gone natural values, but this does not hold - to our luck – for Budapest. In the capital there are now a lot of protected and protection deserving forests, grass, wetlands, but more worthy is the variety of forms below the surface, the big number of caves.

Within the administrative boundaries of the town – according to our present knowledge – there are more than 1400 plants and bird species in state of nature. Among the plants, within their entire species number, about 160 are protected; but it is more surprising, that at the birds, the number of the egg-laying species is outstanding high, about 100 – 120 species.

These at random selected examples demonstrate, that we have a lot of cases to be presented. But regarding the nature trails, not this is the real motive what can make Budapest in the near future an emphasised area. Today the species richness does not exist in the entire town. The natural and the life-like habitats are small, mainly isolated inclusions, accumulating the problematic examples. But on one hand they hide many natural values; on the other hand many factors endanger their existence. They can be visited beside a small effort and they can be reached also by the use of the vehicles of the mass transport. In many cases it is sufficient to spend there one hour and a half for the visit of the given nature trail and together with the travelling time we can return home enriched with experiences. We can regard the protection areas in Budapest as school-rooms where the aim is not to safeguard our natural heritage beside the exclusion of the people – in case of some very sensitive habitats – but on the contrary: by creating the nature trails we direct the visitor very purposefully in the nature and beside knowledge transfer we can prevent the stamping down by building of a well-marked walking-path. Already some civilian and state organizations recognized these possibilities and as a consequence in the last decade nearly in every year one-two such objects were put in use.

OBJECTIVES

Both my studies and previous activities are tied explicitly to the environment protection. Over the years it became apparent, that this way of looking did not infiltrate sufficiently into the everyday life of the people. This statement is true above all for Budapest. My experiences, gained during the last more than fifteen years about the treasures of Budapest, proved, that its extraordinary values are hardly known, however the role of the environmental education is gaining ground in the schools and similarly grew also the demand of the population to the acquaintance with their surrounding, mainly under urban circumstances. Perhaps even therefore, and owing to the different calls for proposals, in the country the number of the nature trails increased, but unfortunately they are built sometimes without elaborated topics and systems.

I visited in the last years a lot of home and foreign nature trails, collected and systemized the positive and negative experiences and in the possession of the collected knowledge, I set the following targets for my dissertation:

- Presentation the connections between the environmental education and the ecotourism;
- Estimation of the nature trails inside the protected areas of local importance in Budapest;
- Elaboration of an analysing system for the nature trails;
- Examination of the development potential of the nature trails on the base of this new analysing system and of the previously collected data;
- Introduction of the new tool system beside employment of new-type nature trails and its elements;
- Analysis of the possibilities for the quality improvement of the nature trails.

In so far, as the targeted aims come true, these can promote the realization of a unified nature trail system in locally protected areas of Budapest; these are the indispensable elements of the triple unity of the environmental education, the environment protection and the development of the ecotourism. As Imre Kárász put: “The nature trails enable the nature’s fun-like discovery, cognisance and liking. They eventuate an emotional bonding what is indispensable to the nature protection, because only that can be protected, what we like and we can like only, what we know...”

THEME AND METHOD

The nature reserves of local significance (*Budapest Zoo and Botanical Garden, Nature Reserve Turjános, Nature Reserve Róka Mountain, Nature Reserve Palota Island, Nature Reserve Ördög-orom, Nature Reserve Quarry Fazekas Mountain, Nature Reserve Grassland Denevér Str. and Nature Reserve Upper Rákos Meadow*) shall be presented as locations of my research and the different architectural means of the nature trails. At the onset of my activity in 2010 still every planned nature trail was located inside of locally protected areas; this state had been modified in so far as the Budapest Zoo and Botanical Garden obtained of them at 1st January 2014 protection of national importance.

I elaborated the most part of the analysis of the areas in the course of my field surveys, of the consultations with the rangers, rural constables, together with the members of the Hungarian Ornithological and Nature Conservation Society and of the office of dept. secretary of state of the Ministry of Rural Development, responsible for the Environment and Nature Protection. Above this I studied the decree Nr. 25/2013.(IV.18.)Főv.Kgy., the official documentations about the protected areas of local importance edited in 2011 and 2012 by The Local Government of Budapest; in the course of the wildlife description of the areas the projects edited by the Pro Vértes Public Fond, and the project “With collaboration for the preservation of our natural treasures” working in the frame of the Swiss-Hungarian Collaboration Program. I examined the texts of the tour guides and of the tables of the built nature trails and the connected technical literature.

I prepared for the evaluation of the locally protected nature trails in Budapest an aspect system, consisting of four sections and 22 items. Based on the objectively quantified evaluation it can be identified, which of the nature trails require improvement, further it can be stated or read out, that the intervention where, in which category and extent and at which element is needed. In the unified and complex nature trail evaluation system I evaluated the visitors aspects (the access possibility, noticeability, the attractive components, the reputation, the field conditions) the aspects of the guides, and the existing informative tables with given points 1, 2 and 3. In the case of the environmental education I took in consideration that the given nature trail how could be involved in the teaching and how addresses globally the potentials of the area under investigation.

In case of the nature protection aspects I evaluated the environmental load from different aspects, like the topic of the establishing and of the sustainability. Hence such nature trails, which got in the final evaluation according to my evaluation the maximum of scores, they could be regarded as the best in the protected areas in Budapest. I grouped the aspects in four separately manageable units, that they could be evaluated also in separated way. Through this it will be apparent, that also among the best there is a special nature trail, which requires on the base of the evaluation only on the base of a solitary evaluation, a significant improvement.

Important part of my dissertation is the three year long continuous statistical research activity in locally protected areas of different importance in Budapest, involving altogether 3200 questionnaires and the evaluation of the nature trails built in this area, in own planning. In the frame of this work I filled in 2200 questionnaires by personal addressing. I forwarded 1000 additional questionnaires to the local schools. Of them, as appreciable and representative samples, 8,9% had been returned. So I evaluated altogether 2289 questionnaires.

During 2010 I composed a questionnaire including seven items; the main purpose was the quick and unequivocal filling in and processing, therefore I employed the question/answer method.

For the filling in of the questionnaires I called upon the actually staying students of the Budapest Corvinus University and the Szent István University, the Baár-Madas Reformed High School, participants of local programs, organized by the Hungarian Ornithological and Nature Conservation Society and by the Zoo and Botanical Garden Budapest. For having more answers I distributed some exemplars through E-mail and uploaded on various corresponding lists. As my intention was to assess mainly the awareness of the local inhabitants, I made efforts to ask the inhabitants of Budapest and of the agglomeration to fill in the questionnaires.

I distributed questionnaires during the entire year 2010 and as a result, I got 2000 answers.

In 2010 I asked the people about 20 nature reserve areas, in October 2012 about the 3 areas, where we constructed nature trails, after one year I carried out a survey about the interactive pathway in the Nature Reserve Homoktövis. In these last cases I got 100-100 answers.

On the occasion of the first anniversary of the nature trails Merzse-mocsár and Naplás Lake I carried out a survey in May 2013 in the given districts. I tried to address directly the target-group, therefore I visited in the XVI. and XVII. Districts totally 63 educational institutions by mail. I attached a

questionnaire about the notoriety of the nature trail in the District and attached an addressed envelop with stamp. I thought that this can be of importance, if some schools, nursery homes due to their financial difficulties could not be able to return the filled in questionnaire. It is regrettable, that I got only 7 answers from the 63 letters, one from them had been returned in unfilled state, saying, that they did not visit the nature trail yet. From the 1000 questionnaires I got back only filled in 89 pieces. I have to state, that I could not hit the lower limit (10%) staked for myself.

This means, that 3200 questionnaires had been distributed in all, from these 2289 valuable answers were at disposal for the statistical elaboration. In the course of the survey I raised 32 questions, 28 were of type question/answer, the other four were answerable in words. When summarising the data, I counted both the answers and these and for the sake of the good perspicuity I presented them in form of diagrams.

Above my personal experiences about the Hungarian and foreign nature trails I supplemented them with enquires, what I submitted to the competent offices. Among the national offices the office of the dept. state secretary for the Environment and Nature Protection of the Ministry of Rural Development, the Danube-Ipoly National Park and the Hungarian Ornithological and Nature Conservation Society delivered me information.

In March 2012 I submitted my questions through E-mail to 104 Embassies about the international nature trails existing in their country. I received valuable answers only from 10 offices, however some of these answers included only the titles of home pages of some national parks. I processed the valuable information and selected 11 further natural parks, possessing Europe Diploma and the same number of national parks outside of Europe for asking information also about the nature trails inside of their territory. Further I obtained information from foreign Environment Protection Ministries and from scientific literature of libraries and from scientific dissertations and finally I used also the browser of the Internet. On this base I discovered, that in Hungary does not exist such a literature, which would deal with the nature trails abroad.

Above the questionnaires I examined my own observations, professional conversations, (ELTE, computing and communication companies) the proliferation, employment and the availability of the technical achievements among the circles of the population in the XXI Century, collected both the favourable and not favourable experiences about the existing nature trails; I reviewed them in the Section "Results".

NEW SCIENTIFIC RESULTS

1. ELABORATION OF AN ASPECT-SYSTEM FOR CREATING A NOVEL, SO-CALLED “MOVING” NATURE TRAIL

On the basis of the method of the setting out I proposed for the creation a new nature trail category named as “*Moving Nature Trail*” This differs from a temporary nature trail so far, that it is to be found during the 365 days of the year at the field, because it displays in every month different things of interest on the tables with changeable elements in such a way, that the nature trail maintains its profile. Such moving nature trail, consulted with zoologist and expert in environmental education functioned already in the Budapest Zoo and Botanical Garden in 2007 for some months; its success is proven by the poll, carried out in the circle of the visitors. For its designing the studying of the presentations “ speciality of the month” and other earlier experiences in the field of the environmental education in the Zoo provided the clues.

2. IDENTIFICATION OF THE THEORETICAL BASES FOR THE ELABORATION OF THE EFFECTIVE “MANY AGE-GROUP” NATURE TRAIL ELEMENTS

The people hike mostly in groups of rather various age groups. This is my many-year-long experience on the field and in the practice and this is proven also by the statistics. Therefore I proposed the creation of a new nature trail element, what became introduced from 2012 also in the practice and already had been tested. The stations of this nature trail consist of so-called *tableblocks*, one of its element is a big, with pictures decorated colourful table, including easily understandable, but scientifically formulated information. The second-grade information carrier speaks to the reading children, in forms of questions/answers; transmits the information in short, simple, concise form, sticking to the essentials. For the smallest children shall be displayed tables, including interactive drawings, but without texts. (Since the realization the failures had been corrected, beside continuous control and developing the tableblocks.)

3. SUGGESTIONS FOR THE APPLICATION OF THE XXI. CENTURY METHODS FOR THE NATURE TRAILS

In the course of my about nine-year long studies about the environmental education and about the nature trails it became apparent, that the age-group of the secondary school students is the most receptive and disposed towards the interesting topics. But they are to be addressed more-and more with presentation of innovations and adventures. This is proved by the statistics. However I met at a lot of nature trails with the employment of up-to-date technical tools, their ordering did not take place. The rapid development and the possibilities of an extensive use persuaded me to perform a summary evaluation and the exact identification of their scope.

Based on the above I proposed a method of the knowledge communication for the *employment of the technical means of the XXI. Century*, in which I negotiate the possible forms of the uses, namely the *Audio guide, the Audio guide Toozla program, the GPS, and the QR-code*.

4. REALIZATION OF THE UNIFIED NATURE TRAIL – NET IN BUDAPEST AND THE WORKING-OUT OF ITS SYSTEM

Starting from the consultation of the international nature trails, from my surveys what I carried out in the population and as described under, it seems, that on the base of the possibilities in the ecotourism, it is necessary the creation of a unified nature trail system, which would present the values of the area and is able to address the most wide slices of the society. For this reason I proposed to evolve a uniform image, what suggests a common form, but enables the presentation of the particularities, the selecting along the themes. Accordingly the green colour means forest landscapes, the blue the watery, the grey the flatland habitats, meanwhile the brown indicates the natural monuments. If it is possible to edit a leading tour brochure or home-page, I propose also the use the uniform image.

5. WORKING OUT A UNIFORM, COMPLEX EVALUATION SYSTEM FOR THE NATURE TRAILS

Already a lot of evaluation aspect systems came alight for the examination of the nature trails using the point of view of the landscape architecture. My evaluating system, above the topics of the landscape architecture, takes in consideration also the aspects of the environmental education and examines the time, spent on the nature trail. This latter is a good measure of the efficiency of the environmental education and of the awareness-raising ability of the tables. Accordingly, the evaluation, which includes 22 items, is grouped around four main topics: they are the aspects of the visitors, of the environment, of the maintenance and of the sustainability. Based on such evaluation, performed by use of objective measures, it can be stated, which are the nature trails demanding an improvement, moreover it becomes apparent, in which category and which element.

6. THE STUDIES HAVE SHOWN, THAT THE PROPERLY AWARENESS-RAISING NATURE TRAILS INCREASE SIGNIFICANTLY THE REPUTATION OF THE NATURE PRESERVES, THEIR VISITOR NUMBERS AND INTEGRATE THEIR VALUES IN THE EVERYDAY LIFE.

On the base of my field surveys, public opinion researches and the narratives of the field and environment rangers, it can be said clearly, that on such areas, where a nature trail exists, the trash volumes, the extent of vandalism, the stamping causing deviations from the signed road decreased, meanwhile the visitor's number increased significantly (at about 11%).

PUBLICATIONS AND PROFESSIONAL ACTIVITIES TO THE TOPIC OF THE DISSERTATION

1. Journals

2.

- Zoltán Bajor, Ildikó Járđi, **Rita Lampert**, Boglárka Új, Zoltán Tóth, Judit Házi, Vera Besenyőđi, Hegedűsné Judit Berényi, Barnabás Wichmann, Károly Penksza: *Effect of the conservation management of the sand areas in Budapest (Nature reserves Sea Buckthorn and Tamariska Hills) on the sand grassland vegetation. Applied Ecology and Environment Research, 2014, volume 2. (accepted for publication) ISSN: 1589-1623*
- **Rita Bajor-Lampert** – Zoltán Lampert: *Nature trails in Budapest in service of the environmental education. Madártávlát, 2013/3: 34-39 pp. ISSN:1217-7156*

2. Conference

In Hungarian language

- Vince Zsigmond – Zoltán Hanga – **Rita Lampert**: *Past, presence, future of the Botanic Garden. (pp. 13-19) XXVI. Biological Itinerary Congress, Budapest, 9-10 November 2006. Hungarian Biological Society, edited by the Quick Line Bt., Budapest. ISBN-10: 963-87343-0-2, ISBN-13: 978-963-87343-0-3*
- **Rita Lampert** – Vince Zsigmond: *Importance of the botanic pedagogy in the Budapest Zoo and Botanic Garden (pp. 177-181) XXVI: Biological Itinerary Congress, Budapest, 2006. Hungarian Biological Society, edited by the Quick Line Bt., Budapest. ISBN-10: 963-87343-0-2, ISBN-13: 978-963-87343-0-3*
- **Rita Bajor-Lampert** – Zoltán Bajor. *Survey of the flora und fauna of the Nature Reserve Naplás Lake and their presentation with the help of a nature trail. (pp. 11-14.) Hungarian Biological Society, XXIX. Biological Itinerary Congress, Budapest, 19th October 2012. Edited by the Hungarian Biological Society. Szent István Editor, Budapest, ISBN 978-963-87343-6-5*

- **Rita Bajor-Lampert** – Zoltán Bajor: *Presentation of the Merzse-mocsár Nature Trail*. Hungarian Biological Society, XXIX. Biological Itinerary Congress, Budapest, 19th October 2012. Edited by the Hungarian Biological Society. Szent István Editor, Budapest, ISBN 978-963-87343-6-5
- **Rita Lampert** – Zoltán Molnár – Márta Szabon – Vince Zsigmond: *Man-made edens*. Professional Forum in the Zoo (21st February 2007)
- **Rita Bajor-Lampert**: *Questions and possibilities of the experiential pedagogy*. V. Conference of Environmental and Conscious Consumers, Kecskemét, 2013
- Zoltán Bajor, Judit Házi, **Rita Lampert**, Boglárka Új, Zoltán Tóth, Vera Besenyői, Barnabás Wichmann, Károly Penksza: *Effect of the habitat management produced on the vegetation in the area of Budapest*. (pp. 84-85). “VIII. Carpathian Basin Biological Symposium – I. Sustainable development in the Carpathian Basin”. International Conference, Budapest, 21-23^d November 2013. Editor: Szent István University, University Press, Gödöllő, 2013. ISBN: 978-963-269-387-3

International

- World Association of Zoos and Aquariums Conference (26-30th August 2007)
- **Rita Lampert**: *Budapest's national treasures*. IX. European Zoohorticultural Group Conference, Dublin (2-5th June 2009)

3. **Book, -chapter**

- Persányi – Hanga - (Szabon (editor): *Moments in the Zoo*, Budapest, 2009
(**Rita Lampert** – Vince Zsigmond: *Botanical collection: Novelties in a Botanic Garden* – Chapter), pp. 29-30). Editor: Budapest Zoo and Botanic Garden
- **Rita Bajor-Lampert** - Zoltán Bajor – Attila Csemez: *Building of the nature trail net in Budapest, its role in the environmental education “Green schoolrooms” in the nature preserve areas in Budapest. Landscape Academy – IV, 2014*
(accepted for publication)

4. **References**

- **Rita Lampert** – Vince Zsigmond (according to verbal communication):
Gy.Kovács. “ *and Botanic Garden*”; Zs. Kovács (editor) *Wilderness Magazin*
Nr. 2006/4. Editor: Göncöl Funds, Vác, ISSN: 1586-034

5. **Profession specific works, realized landscape designs**

- **Project plan**
 - Plans for 10 paddocks and garden-parts in the Budapest Zoo and Botanic Garden (1148 Budapest, Állatkerti út 6-10)
 - 2007. Birds-, Insects and Frogslover Garden
 - 2007 August Paddocks of the Xanthus János Ház and ambience
 - 2008 May Gorilla paddock and ambience
 - 2008 May Orangutan paddock and ambience
 - 2008 May Savanna paddock and ambience
 - 2008 May Bear-row paddocks and ambience
 - 2009 June Venomous-house paddocks and ambience
 - 2009 June Zoo-playfield, playground
 - 2010 May Australian house
 - 2014 April Never-land park greeneries

- 2010 June Budakeszi Deer-Park Entrance zone
- Nature trails:
 - From 2007 January Creating the mobile nature trail in the Budapest Zoo and Botanic Garden
 - 2011 September Nature Park Homoktövis, nature trail
 - 2012 September Nature Park Kis Sváb-hegy, nature trail
 - 2012 July Nature Park Naplás Lake, nature trail
 - 2012 May Nature Park Merzse-mocsár , nature trail
 - 2013 April Nature Park Rupp-hegy, nature trail
 - 2014 March Nature Park Balogh Ádám-szikla nature trail
 - 2014 March Nature Park Apáthy-szikla nature trail
- **Maintenance plan for areas under locally (natural or heritage) protection**
 - **Rita Lampert:** Survey of the park state of the Budapest Zoo and Botanic Garden. Budapest, 6th February 2009
- **Prices achieved on design contests**
 - Főkert Nonprofit Company. Should depend on you! – Design contest for planning of annual flower bed. Second place (20th October 2013).

6. PROFESSIONAL PRIZES

- **Rita Lampert:** Vertical examination of the bug company of the oaken X. forest in Sikfőkút with window and light traps, Departmental Graduation fee, 1st July 2005, Corvinus University of Budapest, Department of Horticulture
- X. National Higher Education Student Conference, Eger, 10-12 April 2012 special prize

7. SCIENTIFIC YOUTH-EDUCATION

- Consultation of dissertations, consulting
- Viktor Fülöp: Possibilities for the plant decoration of the America House in the Budapest Zoo and Botanic Garden, Corvinus University of Budapest, Department of Horticulture, 2010
- Annamaria Hordai: Possibilities for the creation of vegetation of the Australia House in the Budapest Zoo and Botanic Garden Corvinus University of Budapest Department of Horticulture, 2010
- Krisztina Molnár. Employment of poisonous ornamental plants in the Zoo. Kecskemét College, Department of Horticulture, 2010
- Krisztina Györgyi: Possibilities in treatment of the organic and communal garbage in the Budapest Zoo and Botanic Garden. Szent István University, Department of Agriculture and Environmental Sciences, 2010
- Melinda Csillag: National Bonsai Collection in the Budapest Zoo and Botanic Garden, 2010
- Orsolya Fekete: Planning of planting in the zoo paddocks. Corvinus University of Budapest, Department of Landscape Architecture, 2011
(Graduation Fee)
- Réka Magyar Meskó: Presentation of the Rákos-patak and surroundings by planning of nature trails. Szent István University , Department of Agriculture and Environmental Sciences, 2014

8. OTHER SCIENTIFIC ACTIVITIES

- **Membership in conference organizing committees**

- Planet Project Conference 1-23 August 1998. Kaposvár-Szeged-Budapest
- Planet Project 1999-2000 Budapest
- X. European Association of Zoos and Aquaria, Zoohorticultural Group Conference, Budapest

- **Other scientific activities**

- 2001-2002 Examination of the stand of the Castle Park Martonvásár
- 2003-2005 Participation in the Síkfőkút project
- 2010 May Qualification as Civilian Conservation Guard

- **Study Tours**

- 2003 July Voluntary professional practice in the Nature Park Fertőhanság
- 2004 June-August Voluntary professional practice in the Zoo to Rome (Bioparco)
- 24-30 April 2006 Millennium Seed bank, Wakehurst Place (Preparatory Meeting about the projects ENSCONET and Pannon Magbank)
- 2007 Active participation in the voluntary habitat management programs of the Hungarian Ornithological and Nature Conservation Society and in the tours, organized for the tours, presenting the nature reserve areas in Budapest.