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Cover photo: Fences are important and characteristic elements of cultural landscapes of the Eastern Carpathians. Valea Rece (Hidegségpataka), Lunca de Jos (Gyimesközéplok), Romania, 2010. (Photo by Ábel Molnár)

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Ecological Anthropological Research in Hungary

Foreword

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Ecological anthropology in Hungary was never studied on such a broad scale and as systematically as it was in the English speaking countries. The theoretical and methodological issues of this discipline were covered more in details [beside a couple of papers by Mihály Sárkány, a man interested in and open to all and any theoretical problems of anthropology (Sárkány 1979; 1984–85)] primarily by Balázs Borsos, one of the guest editors of this volume, who also contributed to the appearance of ecological anthropology – in the sense it is understood in the English speaking world – at the universities in Hungary.[1] At the same time, ecological issues, the relations between the natural environment and human culture raised the interest of many Hungarian research scientists, and there are problem areas (for instance flood plain management, eco-villages, ethnobotany), – even though no schools of thought were inspired by them – which were and are subject to a broad scale discussion. For all these reasons, in the following a restriction on the expounding of a mere outline should be exercised not only due to limited scope herein, but also as a result of the fragmentary nature of the available information, when taking account of the research practices of environmental issues in Hungarian ethnography and border areas without claiming completeness.

Just as in the international arena, the methodology called cultural ecology by Steward was the trigger opening up research dealing with the connections of natural environment and culture in the Hungarian landscape. The professor in Debrecen, who has always been very responsive to the anthropology of the English speaking countries, Béla Gunda set off in several of his articles in the wake of Steward. However, while natural environment was in the focus when he studied ancient crops (Gunda 1983), in other works, such as Nomads providing services (1981) or the 'cultural ecology' of an implement, the rake (1992) the choice of the title is more of a catch phrase. As Mihály Sárkány put it: 'Béla Gunda suggested an application of the cultural ecology concept in which you can not really follow him.' (Sárkány 1997:430–431). However, the impact exerted by Steward still lingers on: Gyula Viga (1995) for instance investigated the landscape transforming

[1] Ecological anthropology was introduced as an independent subject both in basic training programmes and master courses (Budapest, Miskolc), as well as in doctoral schools (Budapest, Szeged)

impact of society in relation to cultural ecology, while János Bali maintained that the cultural core theory introduced by Steward was an appropriate framework for analysis in his monograph (Bali 2005a) written on the raspberry farmers in country Nógrád (Bali 2005b:13–14; 21; 40). The Steward effect could have arrived through North-European mediation just as well: in fact, Bali defined the farming method called the eco-type of the mountain peasant with the help of the definitions found in the works of Bjarne Stocklund (1976), and Orvar Löfgren (1976), both inspired by Steward (Bali 2005b:15–18).[2]

Of all disciplines related to ecological anthropology, historical ecology might be the one which affected Hungarian academia most. Research topics with an emphasis on natural factors and the knowledge of the people about their natural environment (such as foraging, fishing, land-use and management, pastoralism, settlement history etc.) can be found in the works of the forerunners of the discipline as early as between the two world wars [among others István Ecsedi (1934), Sándor Gönyey (1925), István Györffy (1939) etc.]. Several ethnographers were engaged in the transformation of the natural environment throughout human history upon the cultural impacts: it is quite possible that the underlying cause was the predominantly historical approach of Hungarian ethnography or the European parallels. Such work was accomplished for instance – focused mainly on the transformation of the landscape by man – by László Kósa (1982) and – listening to the permanent disruption of the ecological equilibrium of traditional natural environment by husbandry – by Nándor Ikvai (1991) as well. The investigation of natural calamities and their consequences is also an integral part of the oeuvre of Kósa (Kósa 2009; 2014). The role of environmental factors in traditional cultures were studied among others by Bertalan Andrásfalvy (1975; 2007; 2013), János Bárth (1974) Tibor Bellon (2003), Imre Hegyi (1978), László Mód (2016), Miklós Szilágyi (1999), Károly Takács (2000), Lajos Takács (1978; 1980) and Gyula Viga (1995; 2011).[3] Before the 'official establishment' of historical ecology (1986, see R.Várkonyi 1992:32), primarily it was the practitioners of historical geography who paid attention to the continuously changing co-existence of land and man beside ethnographers (for instance Somogyi 1984; Frisnyák 1990). However, once the 'youngest discipline of science' took off, it was not only historians (Dóka 1995; Réfi Oszkó 1997; R. Várkonyi 1992), but archaeologists (Laszlovszky – Kiss 2013; Pálóczi Horváth 2004), geographers (Ilyés 2007; Rácz 1999; 2013; Sümegi 1998) and geologists (Kázmér 2009b) as well who studied the changes in natural environment and the connections between culture and environment throughout history and before. A number of essay collections were also dedicated to this topic (see for instance Andrásfalvy – Vargyas 2009; Kázmér 2009a; 2011; Laszlovszky – Szabó 2003; R. Várkonyi – Kósa 1993; Sümegi 2014).

Of the issues which environmental history is concerned with in Hungary – maybe due to the low lying, landlocked country and the natural environment determined by the rivers – most probably the topic of flood plain economy ('fok' husbandry) received most attention, therefore it might be worth to discuss this question a little bit more in depth. Man has always made efforts to adapt to floods in husbandry, turning the tide to good use, whenever possible. Fluctuations in water flow of the rivers had to be monitored

[2] The term eco-type is severely critised by one of the authors of this paper (Bali 2005b:15, quotes the review on his doctoral thesis).

[3] Mainly more lengthy, more recent and English publications were included.

and incidental inundation of the flood plain prevented. In the views held by Bertalan Andrásfalvy (1975:15–18) flood plain economy was based just on letting floods flowing across canals, the '*foks*' between the river and certain parts of the flood plain to the deeper lying parts, and after the subsidence of the flood it was let back to the river the same way. Miklós Szilágyi holds the view that floodplain management was a complex form of husbandry taking advantage of the water periodically inundating the land along the river (Szilágyi 2008:14), just like Gyula Viga, who claims that it was a collection of various forms of husbandry before the river regulation works and he praises its multilateral approach and the diversity of the different uses (Viga 2009:375). However, the concept of floodplain management provided a number of other interpretations, some of them quite extreme. On one hand, a theory holds that '*fok*' management was a characteristic form of land use, any time typical for all settlements of the Hungarians associated with the river, insisting that it was a conscious and systemised practice (Molnár 1991–94), while on the other, some think that fok management has never existed at all (Deák 2001). However, Andrásfalvy cites a high number of archive data from the Sárköz area which actually all deal with the preparation and maintenance of *foks* (Andrásfalvy 1975:159–231; 2007:153–216). Since the land along the rivers has always been a primary area of occupation ever since the original settlement of the Magyars in Hungary, they were compelled to adapt to its changing environment.

Floodplain management was touched upon on the pages of the most recent large summarising work of environmental history (Horváth 2014), where cultural historian and archivist, economist and historian, and archaeologist and ethnographer describe their relevant research findings. The latter, Gábor Máté is the second from the trade after János Bali who extends the scope of his investigation to the mountain ranges (in his case this meaning the Mecsek-country), instead of the management practices along the river, which is considered to be a typical Hungarian characteristic. Even though in this present paper priority is given to the second half of the 20th century (Máté 2014), in his doctoral thesis he puts particularly great emphasis on the environmental changes caused by the Ottoman occupation (Máté 2013). The basically young team of authors in the volume indicates that environmental history continues to be an important realm of Hungarian humanities. Both environmental history related to floodplain economy and the system-ecological approach hallmarked by the name of Roy Rappaport are characteristic features of the work studying the transformation of husbandry methods in the Bodrogköz, which highlights the dynamic component of the ecosystem concept and makes an attempt to draw conclusions by cartographic, statistical and mathematical analysis of eight variables (ranging from relative relief up to soil types) (Borsos 1995; 2000; 2003; 2009).

The main body of the army is also constituted by young research scientists in the case of the two major research units, which approach some of the partial areas of ecological anthropology described above most. Spiritual ecology[4] and 'movement' ecology are both affected when it comes to the research of the eco-village movement, enjoying a substantial

[4] Even though it seems according to its title, the work by Elek Bartha entitled Religious ecology (*Vallásökológia. Szakrális ökoszisztémák szerveződése és működése a népi vallásosságban. Religious ecology. Sacred eco-system organisation and operation in folk religiousness.* 1992, Debrecen: Ethnica.) does not belong to this line of thought in terms of its contents (use of space by religions), which is also an example to the inadequate use of the term ecology, beside certain works of Gunda.

amount of popularity in Hungary. A summary of this trend can be found in the thematic issue of *Néprajzi Látóhatár* (Ethnographic Horizon), where both the spiritual aspects (the study of the Krishna valley dwellers: Farkas 2013; Giczi 2013; Varga 2013), and the movement aspects (the views of eco-villagers from Nagyszékely to Visnyeszéplak) are represented. A monograph and several studies deal with the analysis of the conceptual framework and implementation of the probably best known eco-village, Gyűrűfű, written by one of the founders, Béla Borsos (Borsos 2009; 2013; 2016).

Cognitive anthropology, ethno-ecology, ethno-botany, and ethno-zoology, the research of sustainable resource-management (extensive land use practices) thrive from the 2000s on and became the most vivid branches of ecological anthropological research both internationally and domestically. Therefore, it makes sense to have a look at the basic concepts in a wider, international context.

The complex relationship of man, society and the natural environment, furthermore the traditional ecological knowledge (TEK) constitute the subject matter of ethnobiological (ethno-botanical, ethno-zoological and ethno-ecological) research (Borsos 2004:82). The ecological knowledge, experiences of local communities related to wildlife, plants and animals, natural resource management and land use pattern directly dependent on the benefits of the natural environment (ecosystem services) are in the focus of such studies.

Traditional ecological knowledge (TEK) is a term reserved for the triplet of knowledge obtained from the older generations, personal experiences and the convictions of the belief system (Berkes 2008:7). This ecological knowledge is a complex set of pieces of information underlying the decision making on land use methods in communities which are in direct relations with nature and which exploit the benefits (resources) of nature in this manner (Menzies – Butler 2006:1–2). The ecological knowledge system embedded in the social (cultural) and natural environment (Pearce et al. 2011:282) contains information related to species (e.g. Berlin et al. 1981), needs of species in terms of habitats assist in effective identification of natural resources (Johnson – Hunn 2010a). This knowledge extends not only on the site specific needs of important plant species and habitats of animals, but the vegetation or population dynamic processes of the key habitats just as well (Johnson – Hunn 2010a; Meilleur 2010; Moller et al. 2004:2). Multidimensional landscape partition set up with the use of several features divides the landscape up into overlapping spots of various habitat types – this is landscape ethnoecology (Fleck – Harder 2000; Johnson – Hunn 2010b; Shepard et al. 2001). Recognition of the repetitive, recurrent patterns helps more effective identification of natural resources (Johnson – Hunn 2010b).

This way the traditional ecological knowledge may readily contribute to discover new species in scientific terms (Diamond – Bishop 1999), it can reveal new floristic and faunistic particulars, giving information on new populations of rare species (Molnár – Babai 2009:125; Molnár et al. 2017) just as well, as the size of populations of and trends in populations of elusive species (Gadgil et al. 2003). It may also assist and facilitate monitoring key state indicators of the environment, the development of efficient and sustainable management plans (Bonta 2010; Gadgil et al. 2003; Gilchrist et al. 2005; Huntington 2000:1272–1273; Moller et al. 2004:2; Roba – Oba 2009a; 2009b). The up to date state of such information is ensured by the elimination of elements which become obsolete as the environment changes, and by the incorporation of new experiences gained by each generation (Menzies – Butler 2006:7). The transfer of dynamically changing

knowledge is shaped by culturally controlled mechanisms (learning and experiencing processes – imitation and observation). Unfortunately, cultural support to these mechanisms are undermined by changing lifestyles and the resulting processes ending up in cultural losses (acculturation) (Godoy et al. 2009; Ohmagari – Berkes 1997:199; Pearce et al. 2011:278; Reyes-Garcia et al. 2007:376–377; 2014). The global economic and social processes underlying the lifestyle changes and acculturation also weaken the social norms (voluntarily assumed self-restrictions) which might have easily ensured sustainable use of natural resources for centuries just as well (Colding – Folke 2001; Johannes 2002; Molnár et al. 2015). As a consequence of these processes which are definitely unfavourable from the perspective of ecology and sustainability the traditional ecological knowledge and extensive land use built mainly on it (relying primarily on human labour) is eroded (Reyes-Garcia et al. 2007). Therefore, ethnobiological research is inspired not only by the wish and desire to learn and document a wealth of knowledge which has developed independently from the scientific endeavour. Such research also makes an attempt to provide an answer to the challenges of the ecological and environmental crisis, which has become a central topic of the 20th century (Berkes et al. 2000:1252; Huntington 2000:1273, Turner et al. 2000:1284).

The purpose of the traditional ecological knowledge and the extensive land use systems is to ensure the natural resources essential for the community and to increase the predictability of their yields. The landscape is formed by the activities of resource management, including its vegetation and wildlife, and operate a wide range of ecological processes in the landscape. While primarily ensuring the survival of the local community, land use also sets specific, diverse habitats for many plant and animal species – this is the cultural landscape (Agnoletti 2007; Fuller et al. 2017; Plieninger et al. 2006; Poschlod et al. 1998). Biological diversity secures the adaptivity of the landscape and of the ecosystem functions, a better adaptive potential to react to changes (Gadgil et al. 2003) thus ensuring common, system level survival of both local community and the diverse living world (Berkes et al. 2003).

However, cultural landscapes, representing high aesthetic, cultural and natural values alike, have been quickly degraded with the disappearance of traditional land use (intensification on one hand and abandonment on the other) due to the urbanisation processes (Agnoletti 2014:68–71; Antrop 2005:26–27; MacDonald et al. 2000). Cultural landscapes and traditional, small-holding farming have survived up to date mainly in the marginal regions of Central and Eastern Europe (Sutcliffe et al. 2014:1; Tudor 2015:29). However, social and economic processes (lifestyle change) result in the rapid suppression and disappearance of extensive (labour-intensive) land use systems in these regions as well (Demeter – Kelemen 2012; Dorresteijn et al. 2015:28-29; Schmitt – Rákosy 2007:859).

In such a situation, the assessment of extensive land use system shaping the cultural landscape and wise, frugal management of natural resources as well as their principles and practices from the ecological perspective has been marked up thoroughly (Babai et al. 2015; Molnár et al. 2008). With the elimination of traditional land use practices and degradation of cultural landscapes the knowledge and experience related to such extensive land use systems vanished just as well (Ohmagari – Berkes 1997; Reyes-Garcia et al. 2014:169; Varga et al. 2016), which is a great loss to community, landscape and conservation efforts alike (Berkes et al. 2000). This lack of information provides

the practical significance to ethnobiological and ethnoecological research documenting the intellectual and cultural heritage, since such studies reveal the sustainable resource management systems, allowing an opportunity to integrate traditional and scientific knowledge and to exercise common thinking (knowledge-coproduction) (Armitage et al. 2011). Such a cooperation forms the management and farming practices with the involvement of the local community, which, in turn, may be very useful in preserving natural and cultural values and biocultural diversity (Maffi 2001; Mascia et al. 2003:649). The final result is a cooperation which benefits the local community and the scientist (as well as the conservationist) as well, providing a livelihood to the local community, serving sustainable management of natural resources, and also securing the conservation of natural and cultural values (Hunn 2007). Such a cooperation might also result sometimes in publications written jointly by scientists and locals (e.g. earlier Majnep – Bulmer 1977; more recently in Hungary by Molnár et al. 2016).

In terms of research into traditional ecological knowledge and land use the European continent can be regarded as poorly represented. The reason for this is the most researchers find it difficult to think that folk or local ecological knowledge developed and maintained independently from the scientific endeavour could possibly survive up to date in a continent where book printing is known for more than five centuries and herbalist manuals continuing to be published since the 16th century shape local knowledge related to medicinal plants. István Györffy formulated this thought in the middle of the 20th century as follows: "educated man mostly does not want to believe in the first place that there is any vernacular knowledge which did not descend to the people from abroad but was produced by the people themselves or which is preserved by them as an ancient tradition" (Györffy 1939:45).

Even though you can hardly believe it, traditional ecological knowledge is present mainly in the marginal regions of South, Central and Eastern Europe up to date. A significant part of traditional land use systems and related traditional ecological knowledge vanished from Western Europe during the dramatic economic transformation following World War II (for instance the development of ski tourism in mountain areas) (MacDonald et al. 2000; Meilleur 1986:22; Niedrist et al. 2009:195–196; Poschlod – Wallis de Vries 2002). However, this knowledge survived up to the 21st century in Central, Eastern and Southern Europe, even though it is functional in an ever lesser geographic area. Research puts the knowledge of healing herbs and edible wild plants in the foreground (e.g. wild edible plants: Dolina – Łuczaj 2014; Łuczaj et al. 2013; Nedelcheva 2013; medicinal plants: Mustafa et al. 2012; Pieroni et al. 2011; 2014).

On the other hand, a lot less research deals with traditional ecological knowledge in the narrower sense. Ecological knowledge is explored mainly in the context of extensive land use, mostly in marginal, mountainous areas. The small-scale farming and characteristics of animal husbandry in the Europe high mountain ranges are well documented in Western Europe as well (France: Meilleur 1986; Switzerland: Netting 1981; more recently in Austria: Glasenapp – Thornton 2011), yet there are hardly any data valuable on the knowledge about sites and habitats (Alps: Meilleur 1986; 2010; Nordic countries: Roturier – Roué 2009).

Turning our attention from the European situation to the Carpathian Basin it can be stated that there are great traditions of the research of classical ethnobotanical topics related to traditional ecological knowledge (e.g. medicinal plants). These studies related

to medicinal and wild edible plants have become more popular first in the 1970s when the various voluntary ethnographical movements (e.g. *Csodabab, Ezerjófű*) encouraged basic data-collection (Szabó – Péntek 1976; the key results were published e.g. in Gub 1996a; Kóczián 1984; 1988; 2014; Kóczián et al. 1975; 1976; Rab et al. 1981). Nowadays the increased importance of food safety and the growing demand for eating healthy food and for using natural medicines reinforces the interest for ethno-botany is practiced by Hungarian professionals belonging to other research areas as well [for instance, Nóra Papp and her team from the Pharmacognostic Institute at the University of Pécs (2014)] or from abroad [for instance János Péntek and fellow workers (2004)] (wild edible plants, mushrooms: e.g. Dénes et al. 2012; Zsigmond 2011; in human medicine: Halász 2010; 2011; Papp et al. 2014; ethno-veterinarian research: Bartha et al. 2015).

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The voluntary ethnographical movements encouraging acquaintance with traditional ecological knowledge on plants did not give any impetus to learn about knowledge on wild animals. There is only a few regions in the Carpathian Basin where local knowledge of animals is properly researched and explored. Local names and a few properties of vertebrate animals are known from the Upper-Szigetköz (Kovács 1987), and the names of vertebrate species and folkloristic phenomena associated with them (for instance, guessing games) have been described from the Salt Country (Sóvidék) (Gub 1996b). Additionally, many ethnographic works hide valuable and interesting ethnozoological references. The monograph by Imre Hegyi on forest use in the Bakony can be mentioned as an example, mentioning in a few lines the use of the forest maybeetle (*Melolontha melolontha*) to feed pigs and poultry (Hegyi 1978:191). These days ethnozoological research efforts have ran up again (e.g. Kicsi 2015; Gyimes (Ghyimeş): Babai 2011; Kalotaszeg: Gránicz 2015; Gömör (Gemer), Drávaszög (Baranja), Szilágyság (Sălaj), Moldva: Ulicsni 2012; Babai et al. 2016). Attention is now given to invertebrate species (Ulicsni et al. 2016), and local perception of animals (Ulicsni et al. in this volume), which rely frequently on exaggerating belief-type narratives which are built on a mentally built up knowledge system and can be observed quite frequently in relation to the animal kingdom (cf. Lammel 1999:312–313).

Almost all corners of the Carpathian Basin bear the impressions of land use – they are all cultural landscapes, the development and maintenance of which assumes deep ecological knowledge not only about plant and animal species, but about natural environment and habitats as well. Studies of this ecological knowledge and understanding is revived mainly through the work of the botanist Zsolt Molnár, his disciples and follow-

researchers. These studies, which initially covered mainly the Hortobágy (Molnár 2012a) and Gyimes (Babai et al 2014) are now extended to encompass the Mura-country, Partium–Mezőség, Middle-Transylvania and other regions, investigating wood pastures (Varga – Molnár 2014) and Eastern counterparts on the Mongolian steppes of the grasslands in the Hortobágy (Avar 2014).

Research of this ecological knowledge about habitats was started in the Carpathian Basin by the determination of geographic place-names carrying botanical meaning (Kalotaszeg: Péntek – Szabó 1985:34–42, Gyergyó Basin: Rab 2001). Beside studies focusing on landscape-partitioning, land use, and knowledge of vegetation dynamics (Hortobágy: Molnár 2012a; 2012b; Gyimes: Babai – Molnár 2009; 2013). Research projects focusing on general development or maintaining of cultural landscapes or a single habitat have also become more common. Studies dealing with wood pastures, representing significant aesthetic, cultural and natural values alike (Hartel – Plieninger 2015; Varga – Molnár 2014), typical Pannonian habitats, alkali grasslands on the flats of Tiszántúl (Molnár 2012b) and seminatural, mountain hay meadows (e.g. Babai – Molnár 2014; Babai et al. 2014) can be highlighted from this trend. Forests as important natural resources have played a significant role in classical ethnographic research as well (e.g. Woitsch 2011), and their ecologically sustainable use was a key issue from the perspective of the Székely village communities (based on works of Imreh 1973; 1983: Molnár et al. 2015), while today short term material gains overwrite the centuries old principles applicable to the use of forests.

This knowledge is available in a few communities of the Carpathian Basin which carry the traditional lifestyle for historical, geographic, ecological or economic reasons, but fragments and memories occur everywhere else just as well. Maybe the multifaceted investigation of this knowledge will never end up in a specific Hungarian ecological anthropological school, yet due to the involvement of young scholars in the work there is good reason to believe that these research projects will enrich the realm of Hungarian and universal science with a number of interesting and important findings.

The writings in this volume, as a snapshot of the interdisciplinary research of traditional ecological knowledge in the Carpathian Basin intend to illustrate the diversity of research projects accomplished by domestic ethno-biological and ethno-ecological workshops, introducing the multifaceted and wide ranging research work, touching upon a number of different topics, which are being carried out in this scientific field these days in academia, research institutes and universities.

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Ecology + Anthropology = Ecological Anthropology?[1]

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Abstract: An attempt is made to summarize the emergence and evolution of a sub-territory in anthropology, namely ecological anthropology. First the name of this discipline is considered, that deals with the interrelationship of culture and nature from cultural ecology to human ecology concluding to ecological anthropology. Here the word ecology appears in an attributive compound suggesting that it is a field of anthropology using ecological concepts as well. The second part of the article provides a brief history of the discipline from the beginnings (determinism, possibilism) through the emergence of the cultural ecology theory by Julian H. Steward and the work of neo-evolutionists (White, Sahlins, Harris), to the most 'ecological' investigations of the neo-functionalists (Vayda, Rappaport, Moran) who introduced the use of the category ecosystem in their research. The latter concept is analysed a bit more in details, mainly with the work of Roy Rappaport in the focus. The third part presents the different approaches of the last 30 years, ranging from environmental history up to radical ecology. It emphasizes the importance of ethno-science and cognitive anthropology, which appear in ecological anthropology in the fifties (Conklin) and flourish up today. Finally the process of 'sacralisation' of the research in ecological anthropology is outlined, namely the emergence of spiritual ecology and the investigation of traditional ecological knowledge which can help in resources management of the modern world just as well.
Keywords: ecological anthropology, evolutionism, ecosystem concept, ethno-science, spiritual ecology

The recognition that culture as a whole and its partial phenomena can not be studied and interpreted in their full entirety without taking the natural environment into account has emerged in scientific theories dealing with human societies long ago. In the light of earlier research almost no one questions the fundamental assumption that culture and environment interact. The real problem lies in the nomenclature, categories and methodological apparatus which are used to study this connection. Whether the tools of cultural anthropology dealing with human culture are used, remaining thus within the

[1] The article is based on the book by the author entitled Elephant on the Bridge. 2004, Budapest: L'Harmattan.

territory of anthropology, or using the toolbox of the other component of the relationship, a natural science discipline studying the natural environment, ecology, the boundary area between ecology and anthropology is covered, assuming all the consequences of the 'border violation' between scientific disciplines. Practice shows that since the 1920s and 1930s anthropologists and researchers of related disciplines tend to use more the categories and methodology taken from biological ecology for the purposes to describe the relationship between culture and environment (Nánási 1992:71).

THE USE OF THE NAME ECOLOGY IN ANTHROPOLOGY

Although there are some ecologists, who – whenever their science is talked about, try to avoid any kind of attributive compounds (Darvas 2000:35), practitioners of ecology are sometimes unable to meet these expectations, given the fact that this scientific discipline can be divided into lesser fields. The denomination of these partial fields reflects the conventional division of biology on one hand (plant ecology, animal ecology), and the organisation level of life the object under investigation constitutes on the other (population ecology, community ecology, etc.). These disciplines however all stay within the area of investigation covered by ecology, therefore the attributive compound is more or less justified. This is the reason why the practitioners of this scientific field feel offended by any kind of such 'border violation' when the ramification of another scientific discipline approaching to ecology applies an expression where ecology is not the attribute but the word qualified by an adjective. Such a border violation can be committed by a discipline of natural sciences just as well, for instance when ethology, studying the environmental aspects of animal behaviour beyond the organisation level of individuals, calling this area of the studies behavioural ecology (Csányi 1994:23).[2] You have to admit, however, that social sciences go astray to 'forbidden waters' more frequently. Since it is most expedient for each branches of science to start clean-up at its own doorsteps. Let's see anthropology! The field within anthropology which studies cultures and their natural environments as a whole in their mutual interactions, that is in an ecological approach, can be called – in a way which can give cause to less critical remarks and describing the discipline more precisely – ecological anthropology.[3] Although this term is most wide spread within anthropology, it is still far from being a general expression. Just a few clicks on the world wide web and it turns out that a number of departments and courses teaching ecological anthropology bear the names of cultural ecology, human ecology or social ecology. The problem with these denominations is that in spite of being social sciences they encroach on the property of a branch of natural sciences while not admitting that they were actually parts of anthropology. Additionally, most of these terms and definitions are used by other scientific disciplines such as sociology, politology, environmental economy, what is more even some provinces of biology bear often the same title. The denomination human ecology is particularly popular: disciplines standing quite far apart from each other claim its use for themselves.[4]

[2] See also Davies – Krebs – West 2012, and Barta – Liker – Székely 2002
[3] See for instance the title of Hardesty 1977.
[4] For more information on the use of names see Borsos 2004: 19–26.

If, in the spirit of what was said above, the name of ecological anthropology is seen as most appropriated for this discipline, the issue of name usage was solved only in the first round, anyway. During the approximately fifty years long history of the ecological anthropology in the narrower sense a number of smaller provinces and branches were set up within this field and at the borderline of other scientific fields, the denomination of which raised the old problem again: the inadequate use of the word ecology. It seems however that to identify all of them depletes human linguistic ingenuity and ecology has to put up with the fact that social scientific and anthropological approaches dealing with the set of relationships between man and the natural environment, but using the aspects and approached of other scientific branches will be given names in which the word ecology appears in an attributive compound, and which identify the original ecological discipline for the purposes of making the distinction with the name of biological ecology (Sponsel 1997a:138).

You can only talk about ecological anthropology, that is the research of the system of interactions between man and the natural environment from the mid-20th century only. Benjamin Orlove breaks down the period reaching up to 1980 into three parts in the history of the discipline: according to him, the first one is characterised by the work of Julian Steward and Leslie White (1940–50s), the second is termed neofunctionalism and neoevolutionism (1960–70s), while the third one is called processual ecological anthropology, which is characterised (among others) by the research of historical processes, as opposed to synchronous studies (1970s) (Orlove 1980:235, 237). He himself admits, however, that these can only be seen as major trends and the three approaches still existed side by side as late as in 1980 (Orlove 1980:246).

THE BEGINNINGS

The fact, however, that research with an ecological eye has only become significant in the second half of the 20th century, does not mean that nobody was interested in the relationship of man with his natural environment before. Research before Steward was characterised by two opposite views: one claimed that natural environment defines cultural features specifically (determinism), while the other argued that it merely provided the framework and the opportunity for the existence of human culture, and does not influence it, or maybe it merely excludes the emergence of certain cultural factors (possibilism).

The very first known appearance of the thought of environmental determinism was the humour theory by Hippocrates. In his views the ratio of the various moistures in the human body, which defines the character of the given person, depends on the climate. Consequently, Plato and Aristotle argued, the environment would also determine governance, moderate Greece favouring democracy, and the tropical climate dictatorship. Montesquieu extended this determinism to religion as well – picking out Christianism as it was 'revealed' –, claiming, that religions based on passivity (such as Buddhism) and on aggressiveness and individual activity are spread in hot climate and cold climate, respectively. Environmental determinism was revived in the 19–20th century as a response to the technical determinism represented by Marxism and the main cause of its popularity felt even up to day is – according to Donald Hardesty – that it represented a good and easily applied means to categorise human variability (Hardesty 1977:1–3). The first attempt to

explain ethnographic and cultural differences was made by Friedrich Ratzel (1882–91) with the help of geographic factors (Bargatzky 1986:24), even though the Ethnology Society founded as early as in 1839 in Paris (*Société Ethnologique de Paris*) called the attention in the research instructions issued to the connections between social life and soil or climatic conditions (Sárkány 1979:564.). The unilateral cause and effect correlation emerges even in the works of authors from the 20th century, although they already don't deny the existence of cultural impacts.[5]

The set of views summarised as possibilism appeared as a response to geographic determinism and has become widely accepted mainly in the 20th century, which has grown out of the historical particularity school by Franz Boas, who derived the origin of cultural traits from historical impacts as opposed to the environment, although he did not deny the limiting and modifying role of the environment. This concept played a substantial role in determining the cultural areas of North America (the works by Mason, Wissler and Kroeber), which approximately matched the botanical regions of the natural scientists. A significant problem of the cultural area theory is that it proved to be difficult to apply it outside of North America (Bargatzky 1986:25). The most famous example on the limiting role of the environment was described by Kroeber (1939) in relation to his investigations how corn farming was propagated. This plant can only be grown where there is at least four months for the vegetation period during which time rainfall is sufficient and no killing frosts occur (Hardesty 1977:4). The British scientist Daryll Forde (1934) can be regarded as a possibilist and a critic of the cultural area concept, who wished to put the emphasis on the study of small cultural units instead of large areas, investigating them both in terms of history and relationships (Ellen 1979:4). Striving for such a complexity however triggered critiques: such an attitude may only result in the end in a conclusion that 'causation is not simple' (Vayda – Rappaport 1968:483).

STEWARD, WHITE AND NEO-EVOLUTIONISM

Though the ecological nomenclature appeared in the writings of the scientists belonging to the urban sociologist trend known as the Chicago School as early as in the 1920s (Park – Burgess – McKenzie 1925.), this trend did not have any substantial impact on anthropology. You can really talk about ecological anthropology only since the emergence of the cultural ecology theory by Julian H. Steward, which had to endure a lot of critique, yet has a significance which can not be by-passed. Unfortunately, he did not summarise the theory in a single major publication, it must be in fact gathered together by posterity from a number of different sources, even though two edited compendiums of his assays (Steward 1955, 1977) are available (Sponsel 1997b:448).[6] In his view it is true for any culture that the same environment would trigger the same adaptive processes, therefore societies in different environments may undergo different development paths, and though there are repetitive significant regularities, they do not necessarily appear everywhere.

[5] The work by E. Huntington: Mainsprings of Civilization (1945. New York) is referred to by both Vayda – Rappaport 1968:480 and Hardesty 1977:2.

[6] A chapter from Steward (1955) was published in Hungarian in Bohannan – Glazer 1997 (Steward 1997). So were studies of Harris (1997), Sahlins (1997) and White (1997).

He maintained that cultural ecology was a 'heuristic device', and he explained with this method the diversity of human cultural development which he called multilinear evolution, trying to replace the futile and unfertile assumption that culture emerges from culture (Steward 1955:5, 36.). To facilitate the investigation and the comparison between cultures he introduced the concept of cultural core, which includes the phenomena related to the environment and subsistence. He also included political, social and religious patterns in the cultural core, provided their close correlation with the aforementioned factors can be demonstrated (Steward 1955:37, 89).

According to him, cultural ecology may operate with three distinct methods: the study of interrelationship of exploitative or productive technology and environment, the study of the behaviour pattern evolved in the exploitation of a particular area and the research whether these patterns have an influence on the other aspects of culture (Steward 1955:40–41). All this, according to him, needs a holistic approach (in other words, the culture as a whole needs scrutiny, ranging from the demography through kinship structures up to settlement patterns). The possibilities which may contradict his theory, namely that it might be possible to find cultures in a given natural environment which is seemingly not bound to it, or that different cultures may also be found in the same physical environment, he tried to bridge by introducing the notion of the level of sociocultural integration. "Cultural types, therefore, must be conceived as constellations of core features which arise out of environmental adaptations and which represent similar levels of integration." (Steward 1955:42).

The most important objections against Steward's theory were the following: the significant correlation between the cultural trait and ecological adaptation can not be proven; it can be questioned that a trait will emerge 'inevitably' due to the causing environment; you can not always prove the unidirectional (coming from the environment) impact in the case of a cultural phenomenon; he only took account of the technological adaptation and other cultural features were attached to it, although it is quite certain that for instance religious adaptation can also be developed upon a certain environmental impact; he disregarded environmental factors beyond the scope of self-sustenance (such as diseases); he also ignored the potential of genetic adaptation (Vayda – Rappaport 1968:485–488); it can be raised that there are some general cultural phenomena which appear in each and every human culture, irrespective of the environment they are developing in (language, prohibition of incest), and in the theory of Steward the phenomena which belong to the cultural core are not defined accurately enough, what is worse, their importance and hence, their taking into account depends partly on the efforts of the research (Sárkány 1979:565). Mihály Sárkány faced the theoretical foundations of Steward with the characteristics of the patrilineal band – investigated by the American scientist himself – in two studies (1979, 1984–85). Mainly through the analysis of the examples taken from the Australian Aborigines, the hydraulic hypothesis by Wittfogel and the 'Asiatic mode of production' Sárkány also detected that the technological determinism held by Steward impedes the success of his own actual investigations just as well, and in fact the theory of Steward on culture is not followed by many ever since (Sárkány 1979:569).[7] Yet his oeuvre – partly just because his views tended to provoke debates – had a fruitful impact on the

[7] For further critiques see also Clemmer et al. 1999.

research efforts in the 1960, and 1970s, and practitioners of ecological anthropology came all forward from Steward's hat.

According to Benjamin Orlove the first level in the development path of ecological anthropology beside Steward is represented by the works of Leslie White (1943; 1949). In White's opinion the comparison and monitoring of the development of cultures can not be accomplished due to their diversity, therefore the focus should be put to the explanation of the development of the human culture as an integral whole. With this standard White looked for a factor to characterise cultural evolution which can be quantified and is not tied up to culture. He found it in energy, which is a key factor in ecological assessments ever since. White associated evolutionary stages with efficiency in energy consumption, where quantum leaps are represented by the exploitation of animal and natural energy using simple machines, later on the depletion of fossil fuels and energy carriers, and in the most recent period the use of radioactive processes for the purposes of power generation.[8] Though there are only a very few people who would deny the importance of the changes related to the form of energy use in human history, White's theory was of course exposed to substantial critique due to its simplifying, exclusive nature (Applebaum 1987:202).[9] The so called 'unilinear evolutionism' by White almost necessarily produced the reaction in the form of 'multilinear evolutionism' created by Steward, which however also considers the advancement of technology as the driver of evolution.

THE 'NEW WAVE' OF EVOLUTIONISM

Provided the first generation of social scientists inspired by the dogmas of the Darwinian evolutionary theory (Spencer, Morgan, Tylor) are called evolutionists, the great reformers of the theory suppressed during the activity of Boas and Malinowski (Steward, White) should be called neo-evolutionists.[10] Therefore, in the same spirit, any scientist emerging after them is rather called to be a representative of the 'New Wave' of evolutionists, as opposed to Orlove who call them neo-evolutionists. [11] The first step was made by the young Marshall Sahlins when he tried to reconcile the multilinear and universal theories of evolution and created the theory of general and specific evolution. General evolution is the tendency of cultural and social systems to increase in complexity, organization and adaptiveness to environment. While the road travelled by each of the cultures (history at Kroeber, multilinear evolution at Steward) is supposed to be specific evolution (Sahlins

[8] See in particular White 1949: 368, 381–382, 386–387.

[9] The argumentation set forth by White is contradictory in itself, since he states as a postulate that "culture evolves as the amount of energy harnessed per capita per year is increased, or as the efficiency of the instrumental means of putting the energy to work is increased" (White 1949:368–369). Obviously these two is taken into account by him the same extent, yet his conclusions state primarily the improvement of energy efficiency as the key driver behind evolution (White 1997:381–382). See the refutation of White based on empirical data in Rambo 1991.

[10] However, scientists thus 'ear-marked' have always protested against this adjective, White stressed that he merely acknowledges the general evolutionist attitude of the 19th century as his own. (Sahlins 1960:42)

[11] These researchers are called neo-neo-evolutionists by Mihály Sárkány (in consent with Péter Somlai) (Sárkány – Somlai 2003:20). On my behalf, I believe this term is a little bit clumsy.

1960:43). From the perspective of ecological anthropology it is worth noting the while Steward considered natural impact factors as environmental actors, Sahlins expanded this category to the social-cultural environment just as well (Sahlins 1964:134).

Uniting (neo-)neo-evolutionists with neo-functionalists by Orlove, is substantiated by the work of Elman Service (1962; 1975). The political evolutionary typology introduced by him (and applied widely ever since) (band – tribe – chiefdom – state) is based on functionalist foundations, because he maintains that the emergence of each stage can be derived of their higher functional efficacy.[12] Ecological approach returns in conjunction with the conflict theory and the environmental factor in the short work by Robert Carneiro (1970), which however made a considerable stir. He thinks political development is influenced by population pressure and the war of cultures. Peoples which are deprived of migration possibilities (for instance the dwellers of the Nile valley in the grip of the Sahara) are dominated by other groups and as a result, the political regime is reinforced and its complexity grows. Though Marvin Harris is reckoned as a neo-functionalist, and by the establishment of the set of tools of cultural materialism wanted to fund an explanation mainly to peripheral cultural phenomena which could be interpreted with difficulties only (Harris 1979), he also left his print in evolutionary theory (Harris 1977): in his views technological advances were not seen in most societies as the sign of progress, on the contrary, they were resisted, since operation of the new techniques required more time and a higher input of human efforts. According to him cultural evolution is driven by population pressure and consequently the resulting deterioration of the environment, because sustenance of a larger population inevitably requires new and more efficient technology. However, a new technology allows further population growth and additional deterioration of the environment, therefore humanity gets in a circus vicious in the course of the changes called development. It is difficult not to notice how much the central issue of Harris' theory matches the phenomenon called Type One error by modern systems theory, which claims that any alterations accomplished in the partial systems (in technology, in the present case) generate system level (i.e. holistic) changes in the system which can be parried only by further, even more severe technological manipulations which however remain effective for an even shorter period of time (Borsos 2002:54).

NEO-FUNCTIONALISM – THE SYSTEMS ECOLOGICAL APPROACH

According to Orlove the second epoch after Steward and White was characterised by the work by neo-functionalists beside that of neo-evolutionists. While neo- (and still more neo-) evolutionists maintained that the key issue was the origin of the state, the civilisation and the culture,[13] neo-functionalists have seen functional adaptation of society and culture to the environment as the most important issue because according to them this adaptation allows functional adaptation of society and culture to the environment, and through this adaptation exploitation of the environment will become possible. Orlove listed cultural materialism – hallmarked with the name of Marvin Harris – as part of neo-functionalism as well. The other branch of neo-functionalism (with the emblematic figures of Andrew

[12] Cf: Sanderson 1997:175.
[13] See also e. g. Flannery 1972, Fried 1967.

P. Vayda and in particular Roy Rappaport) is referred to more frequently as systems (ecological) approach due to the strong foundations in biological ecology (Sponsel 1997a:137).[14] The application of the methods and categories set up by biological ecology thus takes a central position in the toolbox of these researchers. They used population instead of culture as the basic unit of their studies, while the social and cultural system was investigated in a manner analogous with the study of ecosystems. The focus of their research was the measurement of energy flows, assessment of the carrying capacity of the area, and the explanation of the associated cultural responses and phenomena. Cybernetics as the science of self-sustaining systems was held by them in high esteem, because culture was regarded as such, where the various cultural phenomena play the role of negative feedback loops which help maintain the self-regulation of the system (Applebaum 1987:204–205). An important feature of these studies is that cultural traits in maintaining equilibrium were taken into account as non-conscious components.

The specimen copy of the anthropological works based on systems ecology is the book by Rappaport entitled *Pigs for the Ancestors* (1967). The author sees the tribe under investigation (Tsembaga Maring, New-Guinea) in conjunction with their natural environment, in other words he analyses cultural and non-cultural components in a single system. The complex system is maintained by a ritual (called *kaiko*), which regulates dynamic equilibrium in a manner analogous with the natural eco-systems by negative feedback loops. When the study unit is determined, Rappaport initially by-passed the rule set by the system ecological approach, because he did not take biologically correlated populations as a basis, but congregation, a concept developed by the science of culture, which is determined as a collective of individuals who reach their common welfare by joint ritual acts. Namely, congregation in this present case is exogamous, that is it can not be seen as a local population. Therefore he maintains that it was expedient to set up the category of regional population as well, which is the collection of local groups living separately in distinct areas but holding connections with each other. This study unit is finally called by him ecological population and he tries to define it ecologically and culturally alike, how the ritual sustaining the system regulates the connections between the congregation and the environment and how collective welfare of the members is achieved and how the organisation of the society is nourished further (Rappaport 1967:1–7).

Naturally, the system ecological approach was exposed to a lot of critics. Four of them were considered by the colleague of Rappaport, Vayda (together with McCay): "its overemphasis on energy, its inability to *explain* cultural phenomena, its preoccupation with static equilibria, and its lack of clarity about appropriate units of analysis" [Vayda – McCay 1975:293 (emphasis in the original)]. In order to improve the system ecological approach, Vayda and MacCay suggested the introduction of the concept of homeostasis enduring larger fluctuations instead of a static equilibrium and the taking into account of ecological factors influencing both community and individual beside energy (Vayda – McCay 1975:302). Most objections were received by Rappaport for the limitations of the applicability of his model, the difficulties encountered in defining the human populations and the negligence of the difference conscious and individual decisions make.

[14] The term ecosystem was already used by (1935) in the 1930s (Golley 1984:33, 1993:8).

Both the operational and the cognitive model were considered as needing further advancement (Biersack 1999:6; Kottak 1999:23–25).[15]

In the course of assessing the general issues related to human adaptation, Rappaport (1977) tried to unify all cultural responses given to environmental issues by highlighting the possibility of maladaptation or mistaken adaptation. This means a cultural response to the challenges of the environment which finally may lead to the elimination of the culture in question.

In the afterword written to the second, revised edition of the book *Pigs for the Ancestors* (Rappaport 1984) (and a further revision thereof Rappaport 1990) Rappaport acknowledged the methodological difficulties of defining the boundaries of ecosystems and populations, but he pointed out that the same difficulties are encountered in cultural delineation just as well. He defined the boundaries of a human ecosystem with the help of the cultural traits of that human group, emphasising, that this is not considered contradictory to the determination of a cultural or social unit, provided the latter also has a relative autonomy. In fact, no exact systems theoretically developed model exists for either the concepts of culture, social groups, or that of population, therefore the ecosystem concept is worth any of the other culture-explaining concepts. It should be also noted, however, that culture has overgrown the level of the most efficient behavioural adaptation, developing its own goals and values, cherishing itself, living for itself and by this it may destructs it own sustaining medium, the ecosystem (Rappaport 1990:61–67).[16]

Science as a rule is unable to get itself rid of social processes. The fact that anthropological research of individuals and the role of decisions made by individuals in the 1970s and 1980s has become more and more stressed, can not be separated from the neoconservative approach to society, which reached its heyday at this time, just as ecological anthropology was strengthened again with the deepening of the general environmental crisis (Rappaport 1990:69). In the 1960s ecological anthropology has not yet paid too much attention to the impact of individual differences in opinions and deviations between individuals and groups on the behaviour. Albeit the core of individual actions is determined by the generally accepted social principles, yet deviations from those principles exist. *Kaiko* is more or less the result of a community decision, but specific features of the war acts are already influenced by individual decisions (for instance by personal revenge). It is however important to decide when individual practices start to exert a change on the system (Rappaport 1990:62–63). This idea came to the foreground in anthropology (not accidentally) at the time when biological research started to deal with the role of individuals in selection.

There were two extremes prevailing in the analysis of the role of individuals. One of the approaches claimed that the difference an individual can make can be neglected because the established practices are determined by the laws of the culture, while according to the other the culture is nothing else but the entirety of the choices and acts of individuals who follow their own selfish interests. And – although many scientists tended to accept the latter – you must not disregard the fact that self-interest is also culturally determined and hence, may deviate from the shear material interest of the individual. Functional troubles of a society are always reacted upon by the group as a whole. Overstressing the role each of the players play may lead to disregarding the environment or to the assumption that it was a steady factor, by

[15] See also Friedmann 1974; Foin – Davis 1987.
[16] See also Gross 1990:317.

which the fundamental concept of ecological anthropology is lost, that is the research of the correlations between the system and the individuals acts (Rappaport 1990:67).

APPROACHES RANGING FROM ENVIRONMENTAL HISTORY UP TO RADICAL ECOLOGY

The nearly forty years passed since the publication of Orlove's work brought the flourishing of the most diverse ecological approaches. The processualist approach mentioned by him as the third epoch was developed over time into historical ecology, which also identified the relationship between man and the natural environment as its field of research interest, but instead of examining the adaptation strategies applied to the given environment it put more emphasis on the assessment of the environmental transformation impact of human activities. Certain researchers such as William Balée (1994) apply historical ecology as an integrative discipline in order to allow a more comprehensive view to their scrutiny, integrating aspects of ethnoecology, biological ecology and political ecology in their processual framework as well (Sponsel 1997a:138). Although the term historical ecology appeared in the Anglo-Saxon anthropology relatively early (Bilsky 1980), it was institutionalised in Europe as late as in 1986 only as a branch of the sciences of history (R.Várkonyi 1992:32). However, historical ecology in the English-speaking world heeds to the direction of an integrative discipline just as it was raised by Balée (Crumley 1994; Balée 1998), while the discipline dealing with the history of the environmental changes taken effect as a consequence of human activities is called rather by the term environmental history (Sponsel 1999:5).

Of the novel ecological approaches, the closest to life sciences is behavioural ecology, in the sense as well that this approach makes efforts to comply with the strict set of conditions applied to scientific experiments (repeatability, quantitative methods, etc.). The theoretical basis for the research in this segment is provided by the theory of biological evolution, focusing mainly on material analysis (for instance, a cost-benefit analysis is carried out in terms of the energy spent on bringing the prey down and gained from its eating). Since according to the currently accepted view in biology selection affects individuals only and no group selection exists (Csányi 1999:35–37),[17] behavioural ecology also sees selection more at the individual level and from the perspective of reproductive success.[18]

Although the term environmental anthropology is also applied to replace ecological anthropology, it is more a kind of applied science according to its more generally accepted definition: "the use of anthropology's methods and theories to contribute to the understanding of local or global environmental problems" (Townsend 2000:106). Since its objective is to offer solutions, it does not apply anthropology exclusively: the approach is receptive, using a number of scientific aspects, its area of investigation depends almost on the composition of the research team (Moran 1996:383, 386–387).[19]

[17] It is worth noting that certain more recent theories see the omnipotent role of selection a bit more distinctly, calling the attention on the importance of symbiosis (Margulis 2000).
[18] See for this Smith-Winterhalder 1992; and in Hungarian Bereczkei 2002.
[19] See also Moran 2000; 2006.

Due to the search for the solution it has similarly close ties with political ecology and the green movements just like spiritual ecology: the struggle fought with governments and multinational companies to preserve human, animal and plant habitats is substantiated by anthropological research findings. Attention is called to certain factors which have not yet been investigated by anthropological research too intensively: the dangers involved in exploiting the 'underground environment', that is mineral resources, the importance of biodiversity in preserving the health of individual peoples, and the role of environmental harms in the propagation of certain new diseases (Townsend 2000:54–98). Environmental anthropology does not neglect the research of consumer society, either. The concept of 'ecological footprint' developed by Wackernagel and Rees (1996; 2001) is used to compare societies living with difference self-sustaining modes, which represents the size of the area needed to sustain one person and to dissimilate the outcome of this person's environmental pollution: this figure is 4–9 hectares in a developed society, while in India for instance it is 1.6 ha.[20] In other words, anthropologists extend their system of reference and scientists from other research areas use the special results of anthropologists (Townsend 2000:103).[21] The newest trends in environmental anthropology emphasize the applied side of this discipline: 'it has an end goal – it seeks to find solutions to environmental damage.' (Kopnina – Shorema-Ouimet 2013:1) "The intensive study of human nature (...) can possibly bring out a healthier human-environmental relationship than is currently pursued in the name of consumption and economic prosperity" (Kopnina – Shorema-Ouimet 2013:19).

The radical ecological approach of anthropology was developed mainly in the wake of the environmental movements of the 1960s, and 1970s by the 1980s. Its aim is seen by Carolyne Merchant in searching a new kind of image for society and a new form of ethic 'of the nurture of nature and the nurture of people' (Merchant 1992:1). One branch of this school is called political ecology and its followers started to get engaged in the study of the impacts originating from the social and societal environment of the native peoples, in particular threats from the state occupying the areas inhabited by the people in question (economic coercion, violent assimilation, ethnocide). Operation of these scientists inevitably meant a political espousal, therefore applied anthropology and action anthropology also emerged as part of their activities (Stüben 1988; Miller 1993; Stonich 1993; Little 1999). Feminist ecology started from the assumption that dominance of man over nature can be associated with the male-female relations of subordination prevailing in most of the societies. This trend focused on a so far neglected area of ecological anthropology: the role of women in the environmental ties of a given society (Rodda 1991; Shiva 1989). Maybe the best known example to the environmentalist activity of women is the Indian movement called Chipko ('tree huggers') (Townsend 2000:97). At the end of the 20th century signs were present that even postmodern thinking, which holds that everything was a mental construction only, may also appear among the trends having an influence on ecological anthropology. This method might bring in new results in the study of how a society created its own set of views about nature and the environment (Sponsel 1999:8–9). Postmodern

[20] http://en.wikipedia.org/wiki/List_of_countries_by_ecological_footprint (Accessed May 28, 2017) Data from 2012, published in 2016. One and a half decade ago these figures were regularly at 4–5 and 0.38, respectively (Townsend 2000:101).

[21] See more recently Sponsel 2007, and Haenn – Wilk 2006, in particular part 7 (401–468).

critic of science might also encourage to use concepts, models, metaphors and methods borrowed from scientific disciplines other than ecology (Dove 2001:99; 104).

The latter approaches lead us to the field of spiritual ecology and sacred ecology, partly because the recognition that ethics must not be neglected during scientific cognition and scientific studies is present in them. In the case of anthropology ethics must be taken into account from the perspective of both parties concerned with the research: it does not only determine the fundamental standing of the researcher, it is also involved as one of the aspects in the culture of the people under investigation. Sacred ecology stresses the fundamental recognition that traditional ecological knowledge was never a stand-alone entity, it always constitutes an integral whole with practice and beliefs. Sacred ecology finally tries to provide some assistance to overcome the positivist-reductionist methodology which currently dominates science by presenting and get accepted the world view of traditional societies and religions and their information on the environment as a supplementary factor to Western scientific cognition (Berkes 1999:176–177). Cognitive anthropology (the recognition of a society through the views about itself), ethnoecology and ethnoscience (assessment of the knowledge of a people about their own environment) and finally spiritual ecology provide help in this work.

COGNITIVE ANTHROPOLOGY AND ETHNOSCIENCE

According to the definition of cognitive anthropology it deals with the relation between human society and human thinking, studying how members of a community formulate factors of the surrounding world for themselves and what they think of them. The entirety of factors includes physical objects just as well as abstract intellectual constructions, in other words both a wildly grown plant and the concept on social justice (D'Andrade 1995:1). This way it can be seen as a part of cognitive anthropological research when it is studied how a people acquires knowledge on the surrounding world, which kind of opinions are formed about it, and how members of this people relate to the changes of this surrounding world.[22]

Even though modern scientific world view differentiates among three distinct modes of recognition (science, religion, art) these three modes do not separate from each other clearly in a traditional society. For the purposes of easier identification and analysis, the study of the so called ethnoscience is usually distinguished. This distinction has the advantage that, based on the different fields of modern science, ethnoscience can also be divided further: you can study ethnohistory (how a people see and record their own history, their relationship to time), ethno-jurisprudence (traditional legal customs from the inside), ethnotechnology (tool-making from the view of the people in question) and a number of other 'ethno-disciplines'. However, the most researched branches of ethnoscience are natural sciences, and in particular life sciences. This is quite obvious as the study of ethnoscience was first inspired by ecological anthropology.

The level of development of these research areas – not surprisingly – also reflect the development trajectory of Western science. The first and foremost important thing is to

[22] See also Selin 2003.

be able to identify and call by their names of the living beings subject to the research (ethnobiology). This is followed by the examination of the functional relationships and systems of interactions between living beings, which also includes the assessment of the role of the people in question itself (ethnoecology) (Berkes 1999:37).

Even though studies of ethnobiological nature have happened for more than a hundred years,[23] proper research in ethnosciences emerged only in the 1950s. Since learning about the knowledge of a people is possible only after learning their language, initially systems of terminology were described and in this work linguistic methods for collecting and analysing data were used. Not by accident was this area occasionally called 'ethnographic semantics' (Colby 1966). As a consequence, the most developed area of ethnoscience is ethnotaxonomy, the science of the classification system for animals, and most specifically of plants. Similarly to all other sciences, however, 'people ahead of their times' are found in this field as well: Harold Conklin, beside clarifying the classification system, outlined the environmental relations of the people just as well when studying the Hanunóo in the Philippines, thus he can be regarded as a forerunner to ethnoecological science. He did not only established that they are familiar with 450 animal and 1600 plant species, but he also clarified the thorough knowledge of these people on soil types (10 basic and 30 sub-categories), and on the weather, explaining how the Hanunóo were able to develop the swidden method into a complicated agricultural system sustainable on the long term with the help of crop rotation, the use of appropriate cultivation methods and the composition of the plant communities on the clearings (Conklin 1969:228–231). Compared to other systems based on monoculture, the clearing sown and planted with – ideally – a total of 48 plants representing the different levels of vegetation is almost like the diversity of the original native rainforest ecosystem.[24] Ethnotaxonomy provides help to modern science in the issue whether the taxonomy developed in the wake of Linnaeus does really fit the system existing in nature (Gould 1980:207–208).[25] This is of course a double-edged weapon, conformance will mean a joint victory of the Linnaean and traditional taxonomy, but non-conformance – knowing science of our days – may easily lead to the negligence of the traditional taxonomic achievements. A part of the general regularities applying to ethnotaxonomy can be summarised following Fikret Berkes as follows: Knowledge on animals and plants in traditional societies covers primarily species important for themselves (food, medicine etc.). For really important species even a lot more detailed categories may exist, while those of lesser importance are simply consolidated. The higher the taxonomic unit (family, order, class), the less traditional and scientific systems correlate. Names are not standardised and may vary according to dialects or habitation areas, and whether they refer to a genus or a species,

[23] In his book *La pensée sauvage* [Wild thinking] Lévi-Strauss cites the work of D. P. Barrows entitled: The ethno-botany of the Coahuila Indians of Southern California published in 1900 in Chicago (Lévi-Strauss 1962:9). In this, the author describes that the Native Americans gathered not less than 60 edible and 28 herbal plants in their arid desert environment. However, the work by Barrows is also surrounded by mysteries. It is not referred by either Berkes, or the great figure of ethno taxonomy, Berlin, even though it could be regarded as a basic work, what is more, even Berkes quotes Levi-Strauss only (Berkes 1999:38).

[24] Cf. Geertz 1969:8–9.

[25] The Hungarian version published under the same title (Gould 1990), compiled from two collections of assays, the study expounding this idea is not included.

depends on the context. Traditional knowledge may be frequently different according to sex, women know mainly gathered, males hunted species. A given name usually has an additional meaning as well, which can only be interpreted in the context of the given culture (Berkes 1999:42–45).

In the analogy of academic sciences, the next area of ethnobiology ought to be clearly ethnophysiology after taxonomy. Yet, the research of traditional knowledge related to the life processes (autonomy, pathology, etc.) of grown and gathered plants, bred and hunted animals has never really appeared as an independent discipline, information related to such areas was integrated to ethnobiology, beside ethnotaxonomy. What is more, the widely accepted definition of ethnobiology (e.g. the scientific study of dynamic relationships among people, biota and environment[26] already approaches or goes even further than the definition of ethnoecology. This – based on the paragraphs above – might be formulated as follows: inter-cultural comparative assessment of systems constituted by knowledge, practice and beliefs concerning the factors of the living and non-living environment.[27]

SPIRITUAL ECOLOGY, SACRED ECOLOGY

Thus, according to what was said above, spiritual or sacred ecology deals with the religious aspects of the set of connections with the natural environment, but it must be emphasised that this approach is nourished by neo-functionalism. Namely, the best known ecological anthropological investigations up to date which put the role of the religion in the focus in the course of the analysis of the set of mutual relations between man and the natural environment are still represented by the works of Roy Rappaport in New Guinea (1967; 1979; 1999), and by Marvin Harris on the sacred Hindu cow (1966; 1985). Both the material and spiritual aspects of the relationship between man and environment are stressed by Gerardo Reichel-Dolmatoff in the works written on the Tukano living in Columbia, in the Amazonas valley (1971; 1976; 1996; 1999), and this way his "elaborate and penetrating analysis comes closest to a holistic cultural and spiritual ecology" (Sponsel 2001:189). The environmental relations of the Tukana consists of self-sustaining activities, myths, rituals and symbols jointly, and sustainable use of the natural resources is controlled by the community under the leadership of the shaman through different prohibitions. Richard Nelson highlights the spirituality of the approach the Koyukon (Athabascan) people in Alaska and Yukon to nature: they do not make a sharp distinction between man and nature, animals are considered living beings similar to humans, who relate to the world of the spirits, and their relationship is controlled by a complex system of taboos and rites (Nelson 1983). Deploying almost the entire toolbox of modem scientific research (multidisciplinary research team, computerised models, etc.) Stephen Lansing (1991) studied the system of rice growing in the island of Bali showing that how effectively a controlling mechanism based on religion is able to check natural processes. Based on these and on the studies by Berkes and others Eugene Anderson (1996) carried out a comprehensive comparative assessment and maybe he was the most successful so far in "providing a holistic and comparative anthropological synthesis of

[26] https://ethnobiology.org/ (Accessed May 28, 2017).
[27] Which is also very close to the definition of ethnobiology by Eugene Hunn (Hunn 1996:451).

spiritual ecology" (Sponsel 2001:190). The consolidation of the spiritual approach and its appearance in the research of culture-environment relationship as an equal party is indicated by the fact that while Rappaport and Harris were more materialistic in their approach, and Nelson was spiritualist (mentalist), Berkes and the three other scientists made attempts to take an integrative approach. Consolidation of the holistic approach is supported by Rappaport (1999) who moved towards the integrative attitude in one of his latest works (Sponsel 2001:192).

Sacred ecology is assisted in achieving its great goal (that is, to promote the abatement of the environmental crisis by pooling the knowledge provided by traditional wisdom and religion) by innovations in approaches and methodology. Cognitive anthropology dealt mainly with creating cultural models, in other words it studied mental constructions through which a culture is able "to understand and predict the ways in which species interact with each other and with human perturbations" (Kempton 2001:59). Ethnosicence and ethnoecology (in Berkes: human ecology) tries to prepare the integration of natural and social systems, mainly in the course of the complex examination of ecosystems and the habitats of human groups, and by revealing the worldview behind the current strategies of environmental use and their research in a unified framework (Berkes 1999:51–55). Spiritual ecology helps this work by not being content with the position of 'a transdisciplinary arena of academic research' it has grown into a "social, political and intellectual movement" (Sponsel 2001:193), making efforts first through conferences and later on by setting up organisations to find a common denominator in the fundamental principles of the various religions leading to an ethical approach to the environment. A manifesto of this efforts was the Assisi Declaration, signed by representatives of Buddhism, Hinduism, Islam, Judaism and Christianity in 1986 and joined later by the Baha'i and Sikh religions, as well as Jainism and Taoism (Sponsel 2001:183). Selection of the location on behalf of the environmental organisation WWF (World Wide Fund for Nature), organising the Declaration and the conference, respectively, was a conscious one: when it comes to the re-thinking of its relationship with the natural environment, Christianity may draw mainly from the thoughts of Saint Francis and Saint Benedict (Berkes 1999:54).[28]

Whether and to which extent traditional ecological knowledge and the ecological approach of religions are able to get integrated into the Western scientific system – which is predominantly responsible for the current environmental crisis – is an issue which remains to be seen. The case of traditional ecological knowledge is particularly questionable: while great religions will not disappear overnight, traditional societies are very perishable and they are kept alive in many cases only by the external and internal efforts exerted by the surrounding majority society and their members, respectively. A ray of hope might be derived from the fact, that – albeit complex traditional societies are not formed – sustainable long tem resource management practices may still be developed through the recognition of the long term self-interest and by some governmental assistance, such as giving the area to community ownership. Some of the tiny islands in the Caribbean archipelago (St. Lucia, Dominica) which are populated by the descendants of the people enslaved and brought over from Africa and not by the native Americans, provide such examples: resource management practices to be seen in a certain extent as

[28] See also Gottlieb 2006; Sponsel 2012; Vaughan-Lee 2013.

traditional cultivation has been 'built up' during a couple of years or decades in one or more minor communities, which allows sustainable handling of a forest community or some aquatic communities (sea moss, sea urchin) (Berkes 1999:130–139).[29]

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[29] See also Brosius – Lowenhaupt Tsing – Zerner 2005.

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Ecological Concepts and Categories in Ecological Anthropology

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Abstract: Borrowing concepts, principles and categories of other disciplines unavoidably raise problems of their correct use in the host discipline. In this article, the author intends to analyze the use of ecological categories and concepts in ecological anthropology. First the definition of ecology and its related and sub-disciplines in natural sciences are investigated. The main body of the article deals with some basic ecological categories, such as ecosystem, population and niche, comparing the potentials of using their concepts both in ecology and anthropology, relying on the works and ideas of different anthropologists who introduced them in their analyses and explanations about the character of specific cultures (e. g. Barth, Rappaport, Singh et al.). Finally, the author comes to the conclusion that the theoretical definitions of all these categories are wide enough to use them in ecological anthropology as well, but the practice of ecology interprets them in a narrower sense and the different levels of ecological investigation are based on this narrow sense. The summary of the article claims that there are several ways of applying ecological methods in human sciences, but they will give way either to disciplines yet to be developed or to a scientific practice not without contradictions.
Keywords: ecology, ecosystem, population, niche, paradigm shift

Borrowing concepts, principles and categories of other disciplines is not a feature restricted to anthropology, as it is "an old and important source of scholarly advancement and authority in nearly all disciplines" (Dove 2001:96). But this practice unavoidably arise problems of correct use in the borrowing discipline, which are to be solved. In this article I intend to analyze some of them.

ECOLOGY OR ECOLOGICAL ANTHROPOLOGY

The problem of using ecological categories in ecological anthropology can not be explained merely by the differences of human and natural sciences. Ecological categories are not without contradictions in biology, either. The first problem appears at the very beginning, when we come to the definition of the original biological *ecology*, as it is

not without confusion. The term *ökológia* has different meaning in Central European countries like Hungary than the term *ecology* has in Anglo-Saxon countries. "*Ecology* is the scientific study of the interactions that determine the distribution and abundance of organisms" (Krebs 2001:2). It means that the investigation of feature and its background is not separated, while in Hungary, regarding a certain definition, *ökológia* means the examination of the background only. In this context the Anglo-Saxon *ecology* is the same as the Hungarian szünbiológia (*synbiology*) (Láng 2000a:24)[1]. However, some Hungarian ecologists define *ökológia* more closely to *synbiology*, which means more closely to the Anglo-Saxon *ecology* as well (Juhász – Nagy 1987:195–198; Láng 1977/3:297–298; Straub F. 2002/2:178). In Hungarian science the term *ökológia* has at least three different definitions, although two of them are close to each other. The first definition of *ökológia* is connected to the definition of *synbiology*.

1. The definition of *synbiology* (*ecology*) derives from its two basic areas of observation. It examines, first, the measure of regularity of the behaviour of populations in time and space, that is the so called *synfenobiology*, and secondly the environmental conditions that influence the regular distribution of populations, which is the field of *ökológia* used in the strict sense (Láng 2000a:23). So we can see that *synbiology* is not really the same as Anglo-Saxon *ecology*, because *synbiology* still makes a difference between an influencing factor and a factor under influence, while *ecology* does not emphasize this hierarchy of factors when it uses the more neutral phrase of interaction between organism and environment.

2. The dividing tendency mentioned above can be found in a bit broader definition of *ökológia* as well. According to this *ökológia* investigates the interrelationship of living organisms and their environment, but makes a clear distinction between the influencing, thus more thoroughly examined, factor, that is the environment (the object of *ökológia* in the strict sense), and the organism that is influenced by the given environmental conditions (the object of *synfenobiology*) (Dictionary of Biology 1977/3:297–298). The level of integration of the investigated organisms can be different: from sub-individual to super-individual ones. It varies from the levels of molecules (or cells, Odum–Barrett 2005:5) through individual organisms to the levels of populations, biological communities (biocoenosis), ecosystems etc (Krebs 2001:10).[2]

3. From this point we can arrive at a broader (and recently more accepted) definition of *ökológia*, which is closer to that of *ecology* as well. It defines the subject of *ökológia* as the investigation of the causes and the process of the creation and change of the so-called "*coexistential structures*" that consist of organism and environment, and come into being under the influence of given environmental conditions (Juhász-Nagy 1987:195–198).

So we can see that although the second and the third definition of *ökológia* define it in a bit wider sense than the first one, they still refer to the hierarchical connection between

[1] In this case Láng also cites the first edition of Krebs (1972:4). The term *synbiology* is not used in Anglo-Saxon countries.

[2] Anglo-Saxon ecologists use the word *community* for groups of population of plants and animals in a given place (Krebs 2001:619), a term frequently used in human sciences as well. European and Russian ecologists use the word *biocoenosis* instead (Odum–Barrett 2005:5–6), a term introduced by Karl Möbius in 1877 investigating an oyster-bed community (Odum – Overbeck 1999:7). To avoid misunderstandings I always use the term *biological communities* in reference to *biocoenosis*.

organism and environment, while the definition of *ecology* does not. However, since it is the nearest definition to that of *ecology*, in this paper I always refer to this definition when I use the word ecology.

Considering all this, we can conclude that on the one hand the object under influence, that is the object of ecological investigations, can be a certain human community sharing a certain culture as it is also a complex level of integration. On the other hand, the environment that creates the conditions that have an influence on the object can represent a natural environment as well as social and cultural ones. Consequently, biological ecology can be used for investigations in human sciences. But in order to apply it correctly, we have to define the parts of a *coexistential structure* as well: the natural-social-cultural environment and the factor under the influence of it, that is a certain human community sharing the same culture. But these definitions have not been made up yet at all. Not even a rough definition of the social-cultural environment has been made successfully by anyone yet.

This, however, does not necessarily exclude the non-natural environment as the subject of observation. There is a 'world view' in social sciences – calling itself human ecology – which, although assigning a major role to the natural determinations of human life, maintains that the primary environment of man is the world of language. This concept, thus, deviates from the biological concept of ecology not only because it does not consider the natural environment as the primary environment, but also because it regards environmental conditions as consciously shaped conditions rather then forced ones.[3]

As we have seen there is some confusion about both the subject and the name of that branch of anthropology that we call in this paper *ecological anthropology*. Yet, a 'mutual agreement' can be discovered among scholars dealing with this discipline on investigating those features of a culture that are influenced by the natural environment, and the way natural conditions influence the birth and character of a certain cultural phenomenon. As ecological anthropology has its roots in the Anglo-Saxon definition of *ecology*, the strict hierarchy of *ökológia* (namely, that between the two factors of a *coexistential structure* the environment is the influencing one and the object is under its influence) is not taken into consideration. It means that ecological anthropology often reverses the hierarchy of the factors and investigates the impact of a culture on the natural environment. Although by doing so, ecological anthropology can draw more phenomena into its field of survey; it also loses its tight bounds to biological ecology and makes it more difficult to determine its own subject and the application of ecological concepts and terms. The correct determination of the subject of ecological anthropology is not easy even if we insist on the strict hierarchy of the factors of a *coexistential structure*, as only one of them, namely, the natural environment, can be easily defined with the help of biological ecology. To define the object under influence, i.e. a certain human community sharing the same culture, is more problematic. If ecological anthropology wants to take advantage of the concepts and terms of biological ecology, it has to define the object, the certain human community so that it can be used in parallel with the objects of ecology (first of all, population).

[3] For more details see Lányi 1995:76 and Lányi 1999:51–58, whose line of thoughts concluding to this point were based mainly on Mead 1934 and Bertalanffy 1967.

POPULATION OR CULTURE

The relationship of living organisms with their natural environment can be investigated at different levels. Thus traditionally there are two branches of ecology: *autecology* that deals with the interactions between single organisms and the environment, and *synecology* that investigates these interactions at a higher organic level, namely, at the level of populations, a biological community (biocoenosis), and the biosphere (Láng 2000b:271).[4] Some Anglo-Saxon ecologists do not really agree with this: Krebs, for example, pointed out that "this subdivision of ecology has the bad feature of suggesting that the environmental factors relevant to individuals are somehow different from the environmental factors relevant to groups of organisms. Much of what is traditionally considered autecology is really environmental physiology" (Krebs 1985:12). [5] Nevertheless, ecological anthropology is indeed connected to *synecology* as investigations about culture take place at a higher organic level, which are human communities.[6] As the highest organic level, the biosphere includes every living creature, among them the whole mankind, the concepts of *population* or *biological community (biocoenosis)* can be used for an analogy in *synecology* to the subject of anthropological investigation, namely, a *certain human community sharing the same culture*. The most important difference between these two categories is that *population* refers to the coexistence of individuals of the same species, while *biological community* refers to that of different species (Krebs 2001:9). *Population* can be determined by a common quality of individuals. In ecology it means in most cases that they interbreed (*genetic population*) (Odum–Overbeck 1999:192; Environmental Dictionary 2002/2:224). Some authors name groups of interbreeding organisms *demes* or *local populations* and regard them as only a subdivision of *population* (Krebs 2001:116). But any of these definitions show

[4] The effects of tendencies to unify methods of investigations on different branches of science in different countries are weakened by the fact that despite this logical distribution of subjects under investigation, some Anglo-Saxon authors use a more confusing definition. For example Hardesty in his work based mainly on biological ecology defines *synecology* as something that deals with "broad interrelationships" among organisms, while according to him *autecology* investigates "interactions that explain the abundance, distribution, and composition of specific populations" (Hardesty 1977:123).

[5] According to Krebs "synecology may then be further subdivided into population, community and ecosystem ecology" (Krebs 1985:12.). In the fifth edition of his work he does not deal with autecology and synecology any more, although at the end of the volume he gives their definitions (Krebs 2001:619, 622) He also extends the list of investigated levels of integration to populations, species, communities, ecosystems and landscapes (Krebs 2001:10). However, he discusses in detail only the above mentioned three levels: populations, communities and ecosystems. In each edition of his book Krebs improves his original concept and restructures his book according to the new results in ecology. Consequently, he sometimes leaves out previously well-formed sentences that, however, have not lost their relevance. In these cases I refer to the former editions.

[6] Not only loose, but strict definitions are sometimes problematic to conciliate. Ellen claims that "the replacement of autecology by synecology would logically require the end of anthropology, if we define anthropology as a research focusing on the interrelationships between Homo sapiens in particular and the environment, while synecology as an examination of ecosystems as such within which populations of Homo sapiens happen to dwell" (Ellen 1982:93). [He refers to Anderson, J. N.: Ecological Anthropology and Anthropological Ecology. In Honigmann, J. J. (ed) *Handbook of Social and Cultural Anthropology*, 1973. Chicago: Rand McNally.]

that *(local) population* cannot be a correct analogy to *human community sharing the same culture*, as a special culture does not mean unavoidably endogamy as well. But if we take the broader definition of *population* into consideration, we can conclude that scientific investigation can determine other common qualities than the one used by ecology. Consequently, *a human community sharing the same culture* can be regarded as population (*cultural population*).

The problem again lies in the application of further ecological analogies in ecological anthropology. As in ecology *population* means *genetic population*, further investigations cannot be made by the simple use of ecological analogies. After all – if they are not divided by geographical barriers – every single individual of a certain species forms potentially only one *genetic (local) population* and different *genetic (local) populations* of the same species can be joined without troubles. Contrary to this, many *cultural populations* can form – *ad absurdum* – only one *genetic (local) population*, but the union of *cultural populations* call forth nearly unavoidably the change of the character of the individual *cultural populations*. Consequently, species and culture have too different a character to be used as analogies. Ecological anthropology has to find its special tools and methods to describe the coexistential structure of cultural population and natural environment, and has to give up the direct use of ecological categories.

However, ecological anthropology still has the possibility of investigating *genetic population*. The trouble of this solution is that by using it, the possibility to explain culture is lost and culture can be regarded only as a special character of a *genetic population*, a most effective strategy for adaptation (Rappaport 1990:55–57). But the essential contradiction, that the borders of *genetic population* are not identical with the borders of *cultural population,* remains unsolved. We can only disregard this contradiction and investigate either *culture* or *genetic population* (Bargatzky 1986:160; Vayda – Rappaport 1968:497).

Regarding the results of the paragraph above, the next level of integration in ecology, that is *biological community (biocoenosis)*, can also be used in two different ways. If we investigate *genetic populations*, a *biological community (biocoenosis)* means all, (or, for the sake of investigations,, some chosen) *genetic populations* of different species and the structure of their given interrelations (Láng 2002/1:138).[7] To study these *biological communities (biocoenoses)* we can use biological laws and apply characteristics and phenomena that have no meaning with reference to the population level of integration (trophic structure, relative abundance, biodiversity etc.) (Krebs 2001:392). But if we investigate *cultural populations*, *community* does not mean the coexistence of populations of different species, but the *community* of different cultures that all are from the same species (‘*culture-coenosis*’). A special examination has to be accomplished to determine whether categories of ecology can be used at this level or not. There are questions about the nature of methods that can be used for describing the interrelations in a ‘*culture-coenosis’* (community of cultures) and about the possibility of regarding ‘*culture-coenosis*’ as part of a certain *biological community (biocoenosis)*. Naturally, it would be easier to use ecological analogies if this ‘*culture-coenosis*’ was only one *genetic (local) population*. But this precondition is more than questionable,

[7] If interrelationships have a structure, it means that “the species tend to be associated in a non-random manner” (Krebs 1978:375).

since marriage is only one and not unavoidably a constant factor among the interactions of different *cultural populations*.

ECOSYSTEM OR CULTURAL SYSTEM

Sometimes anthropologists investigate certain cultural elements, but their isolation from the other parts of the culture is only a tool to get acquainted with them in details. To find their place in the structure of the whole culture and their connection to other elements, is highly necessary for their correct interpretation.

The main aim of anthropological investigations on a certain culture is usually the explanation of it in a holistic way: with all of its phenomena and interactions. It means that not only ecological anthropology but all the other branches of cultural anthropology regard the object of investigation as a system. Ecological anthropology only multiplies the elements of the system and regards *cultural population* or *genetic population sharing the same culture* together with the natural environment as one entity. Investigating this entity, a term from biological ecology is called forth, namely *ecosystem*. Ecosystem means that we regard *biological community (biocoenosis)* and the natural conditions surrounding it as parts of one system. More correctly, *biological community (biocoenosis)* can be regarded as an *ecosystem*, if we choose one dynamic aspect from among the interrelations of environment and the organism under its influence, and interpret these as a cybernetic (self-regulating) system (Environmental Dictionary 2002/2:184). In most ecological investigations "these relationships are often concerned with the circulation of energy and material (water, nutrients, carbon), but relationships could be defined on the basis of time and space as well" (Krebs 1972:556).

In most of the investigations in ecological anthropology, similarly to those in ecology, the relationship observed is the circulation of material and energy (Hardesty 1977:47–74). This is a practice used from the time of neo-functionalists[8] up to the 21st century. An example by Singh at al. (2001) deals with Trinket, a member of the Nicobar Islands stretching out in the Bay of Bengal. Their thorough investigation on the metabolism of the island and its inhabitants led to the conclusion that Trinket entered the 21st century with more or less self-sufficient and balanced economy, but its ecological and economical equilibrium is threatened by the external pressure due to demand for copra on the world market to replace rainforests with coconut plantations and self-sufficiency by monoculture market economy.[9]

Nevertheless, it is not compulsory to follow the routine of measuring material and energy flow, as any *dynamic aspect* of the interrelation can be used (e.g. the change of land use, circulation of goods and services etc.) (Borsos 1995:134). Ecological analogies are highly adequate when anthropology regards the flow of material and energy as a *dynamic aspect*, since in this sense man is viewed only as a consumer, as the last link in

[8] See for example Rappaport 1967: Appendix 9.

[9] This "natural laboratory" does not exist any longer. Trinket was devastated by tsunamis generated by the 2004 Indian Ocean Earthquake, lost 7 km^2 of its territory and 91 people. The entire remaining population of the island was evacuated to neighbouring islands. http://en.wikipedia.org/wiki/Trinket_Island (Accessed June 13, 2017.)

the food chain, and so (s)he becomes similar to the subject of ecological investigation. But the system of *cultural population and natural environment* can be regarded as an *ecosystem* only if it regulates itself. Those *ecosystems* that do not regulate themselves are only a simplified part of a greater system, and consist of only one producer and one consumer (i.e.: arable land: grain and man) and are regulated by human beings. This is the reason why ecological anthropologists, called also neo-functionalists (Vayda, Rappaport and others), were fond of cybernetics as it is the science of self-regulating systems, and they investigated entities that could be considered as natural cybernetic systems. Consequently, they were looking for cultural phenomena that could act as feed-back in the process of self-regulation and so ensured the *dynamic balance (homeostasis)* of the system and they paid less attention to processes that could cause the change of the system (Applebaum 1987:204–205). Rituals, for instance, were considered by them as factors keeping the balance (Rappaport 1967:6). Their theories were criticised, however, since they stated that balancing factors were unconscious ones (Bennett 1975:286–287). To refine his theories, Rappaport invented the term of *maladaptation* as well, for those human generated processes that act against the homeostasis of a system (Rappaport 1977:58).

NICHE OR REGIONAL GROUPS

The use of the term *niche* as an analogy for *regional group* can attract our interest, since it was the first ecological term used in anthropology. It was introduced by Fredrik Barth during his research in Pakistan because he found that the concept of cultural area was insufficient for the description of the mosaic like co-existing cultures of the Swat-valley. Three ethnic groups live in this valley which developed – according to Barth – different political and economic systems built on each other (a symbiotic model as it was) in the process of cultural adaptation. Each of the co-existing peoples live in their own respective niche, occupied in the course of the competition carried out with each other (Barth 1969:374–375). The strongest group, the Pathan, farm the fertile bottom of the valley, the weaker Kohistani till less and poorer soils, but are additionally transhumance livestock keepers, while the weakest, the Gudjar people are primarily agile pastoralists besides engaged in some farming as well (Barth 1969:363).

Regarding international ecological anthropology, some scientists advised to use it as the basic category in investigations, since culture, a virtual entity is also investigated in cultural anthropology through a regional group that is a real entity (Bargatzky 1986:162).

Barth's critics emphasise that his use of the term *niche* is problematic, as he considers it as a cultural term that represents also a definite type of self-subsistence (agriculture and animal husbandry). They argue that *niche* in ecology means a certain mood of utilisation of the natural environment by a certain species, and while the latter is a result of a *genetic selection*, the former is not (Bennett 1975:273–274). This is true but we have to emphasise that certain problems originate from the fact that the term *niche* in ecology used to have two different meanings. The view of *niche* as a subdivision of habitat and the other one as a "role" of the species in the biological community were incorporated into a redefinition by Hutchinson only in 1958, two years after Barth's proposal. Following Hutchinson, ecologists view *niche* as a virtual space of *n* dimensions that equal with the *n* environmental variables, where each interval of each value determines a range that

allows the species to survive and to multiply (Krebs 2001:190). In this way in modern ecology *niche* has no topographical meaning. It must not be considered as a territory where the individuals of a certain species live together with other species. This territory is the *biota* (Krebs 2001:619). Yet, some authors still use the former meanings of niche but in this sense the term *niche* has an adjective. So phrases like "spatial niche", "trophic niche" and "multidimensional or hypervolume niche" have been coined. The last one is widely used as *the niche* (Odum – Barrett 2005:312–313).

Ecology makes a difference between *fundamental niche* and *real niche*. The former one is an interval of environmental conditions where a genetic population can exist at all, while a *real niche* is a much smaller one, as it is filled in by the competition of different populations requiring the same conditions. An important part of investigations in ecology is segregation and overlapping, and the struggle for a larger *real niche* among various populations (Fekete 2000:275–280; Odum–Barrett 2005:313).

The definition of *niche* in ecology can be used in ecological anthropology, too, as we can determine the *fundamental niche* of *cultural populations* or *genetic (local) populations sharing the same culture*. The use of this ecological term can also be applied to the conditions of the cultural and natural environment of a certain community of cultures ('*culture-coenosis*') as well as to investigating the conditions of the natural environment of a certain *genetic (local) population sharing the same culture*. In the last case the definition of the *fundamental niche*s of different cultures could help us to explain some overlapping and segregation among them, and we could give reasons for the existing topographical pattern of cultures related to the patterns of their virtually required conditions. Perhaps the most evident analogy between *cultural* and *genetic populations* is again offered by the use of *niche*. Fur and pine are expelled from their *biota* with optimal conditions by the more competitive oak and beech. But as fur and pine can live among worse conditions as well (their *fundamental niche* is wider), they flourish in *biota* where oak and beech can not live (Fekete 2000:275). The analogy is obvious: hunter and gatherer societies are expelled from their optimal conditions by people practising animal husbandry, just as well as the latter ones are expelled by the most competitive agricultural people. So hunters and gatherers exist among conditions not tolerable for pastoral tribes, and animal-keepers exist among conditions that cannot support agriculture. Another tempting analogy is the case of the close relative beech (*Fagus*) and southern beech (*Notofagus*) that have similar niche, but their biota is topographically far away from each other, on a different hemisphere. We can easily draw a parallel between tribes hunting and gathering among the same conditions of tropical forests, although they are very far from each other, if either their homeland or physical anthropological features are taken into account (e.g. Indians in Amazonia and Bambutis in the Congo Basin). Despite these examples a careless analogous use of *niche* can easily result in simplification and misuse. And the main problem emphasised by Bennett still remains: *genetic selection* and *genetic adaptation* cannot be an analogy for *cultural selection* and *cultural adaptation*, as the former ones take place among species and during a long period of time, while the latter ones occur among different groups of the same species and sometimes in a very short period of time.

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The use of some ecological categories in ecological anthropology, namely *population, ecosystem* and *niche,* always arises the same problem. The theoretical definitions of all these categories are wide enough to use them in ecological anthropology as well, but the practice of ecology interprets them in a narrower sense and the different levels of ecological investigation are based upon this narrow sense. It has become a constant problem as the work on the theory and methodology of ecological anthropology was inspired mainly by the aim to interpret culture and nature within one system (Rappaport 1979:62–63).

If ecological anthropology chooses the other way and applies the categories of ecology (population, ecosystem, niche etc.), and uses its investigating methods (it means that ecological anthropology defines itself as "ecology rather than cultural ecology" (Vayda–Rappaport 1968:492), then this discipline will face some other serious problems. First of all typical cultural features that do not occur in a natural environment (for example conscious human acts to keep the balance) remain uninterpretable, and only those people can be investigated that are still very close to natural environment.

In the last 30–40 years ecological anthropology has been facing the contradictions and their consequences mentioned above. This has fuelled the scientific debates around its applicability ever since. We still may find consoling the optimist view of Cohen (1994:65), that misinterpretations (and misuses) of concepts or principles of other disciples can lead to fruitful results. And it is true: using ecological categories even in a criticised way has led to unavoidable issues in ecological anthropology.

SUMMARY IN A BROADER VIEW

In this paper we have tried to summarize the problems of applying ecological methods in anthropology. Ecological concepts, methods and terms are widely used in anthropology, but because of their sometimes inconsequent, contradictory and problematic application this practice gives rise to criticism from both human and natural sciences. Presently we have aimed to investigate the relevance and usability of the terms and concepts of ecology in anthropological research through the comparison of their definition and use in ecology as well as in ecological anthropology. We can conclude that there are several ways of introducing ecological methods into human sciences, but they will give way either to disciplines yet to be evolved or to a scientific practice not without contradictions.

As we have seen, difficulties already begin with the definition of ecology itself, as ecology and synbiology are not clearly separated and although a definition of ecology (namely, "the investigations of interactions that determine the quantitative relations among and the distribution of living organisms") is commonly accepted, various researchers emphasize the importance of the interacting factors (object and environment that together create a certain coexistential structure) in a different way. Having studied the different views, we can conclude that the commonly accepted definition of ecology allows us to accept an understanding of the environment not only as a natural one but also as social-cultural environment, hence the object can not only be viewed as a different level of living organisms (organism, population, biocoenosis, biosphere), but also as a human community with a special culture (cultural population).

Then we can make further investigations of the different ways of defining social-cultural environment and cultural population and of the possibilities of the use of ecological concepts

and terms in their research. We compared the definition and use of some ecological terms both in ecology and in ecological anthropology. The terms population, ecosystem and niche are the most commonly used ones in ecological anthropology. We can point out the fact that although the definition of the three terms in ecology is wide enough to use them in anthropological research as well, there are two problems that can not be solved and both of them lead to a contradiction when applying ecological terms in anthropology. These problems have been at the heart of the disputes around ecological anthropology since the 1960s and are many times emphasized by its critics. The first one is that in ecology the terms of population, ecosystem and niche are worked out to investigate different species, while ecological anthropology uses them to study different cultures of the same species. This contradiction leads to the fact that in ecological anthropology investigations of the objects of different levels (population, biocoenosis etc.) can not be compared, although in ecology they are comparable. The second problem is that the distribution and quantity of the populations of different species in the biosphere are always determined by genetic selection, while those of different cultures are not. The ecological concepts and terms were worked out on the basis of genetic selection, therefore their use in anthropology remains always problematic.

Summarizing the investigations and the critical views about the use of ecological terms in anthropology, we can line up three different and sometimes further dividing ways for a science that is engaged in the investigation of the interrelationship of man and his environment. The first cross-road is at the question about the primary environment of man. Is it the social-cultural environment or the natural one?

Route 1. The answer that the symbolic (social-cultural) environment is regarded as the primary one leads to a totally separate science (sometimes called human ecology), in which the terms and concepts of ecology can not be used, as they have been worked out to study the natural environment.

Route 2. The answer that the social-cultural environment has the same importance as the natural environment leads to two possibilities:

2.a. The social-cultural and the natural environment are analytically distinguished, so route 1. or route 3. can be followed.

2.b. This distinction is not made and a separate science has to be evolved with special concepts, terms and a definition for social-cultural-natural environment, for its environmental factors, for the cultural population etc. The terms of ecology can be applied only as distant analogies, while the system consisting of natural environment and man is regarded only as a subsystem. Thus this route can not be followed by ecological anthropology, since one of the main aims of founding ecological anthropology as a special discipline of anthropology was to create a frame of reference in which man and natural environment can be investigated as one system.

Route 3. If we consider nature as the primary environment for man, and want to apply ecological categories, we definitely need to make a paradigm shift in social sciences, including anthropology, and a new scientific model must be developed. This would be the model of ecological anthropology, trying to use ecological methodologies and considering the man and nature environmental system as the primary target of research instead of culture per se. However, by raising the new paradigm we are again on another horns of dilemma when trying to define the subject.

3.a. If we take the specific properties of culture into account, we have to create the notion of cultural population or cultural coenosis, and the co-existential structure, which is subject

of the research, will be the *cultural population – natural environment system*. Here, however, the contradiction emerges that although a wider interpretation of ecological categories allows the use of them in cultural studies, since ecology adopts a narrower interpretation, the notion of cultural population or cultural coenosis defined can not be reconciled with other categories of ecology. An additional problem is that cultural changes are caused by cultural adaptation, while in nature genetic adaptation prevails and these two are incompatible.

3.b. If we do not take into account the specifics of culture and use the scientific ecological methodology, we still have to carry out a paradigm shift and the co-existing structure to be studied would be the *human population as a genetic population – natural environment system*. This approach also has a number of problems. On the one hand, culture would lose its autonomy and appear merely as a useful adaptation strategy, while on the other hand any phenomena which do not occur in a natural eco-system are uninterpretable (such as conscious acts aiming at the maintenance of equilibrium), and, eventually, the research would be inevitably narrowed down to a few native peoples. The contradiction between cultural adaptation and genetic adaptation also remains unresolved.

3.c. If we don't want to make a paradigm shift, but, rather, to search for the answers to certain partial problems in the relation between man and the natural environment, the point in ecological studies (system-type interpretation and research of man-environment relations) would be lost and we are not a bit closer to understand this connection.

It can be seen that none of these routes offers a system without contradictions or a task that is easily accomplished. Due to this reason ecological anthropology (and, in a broader sense, any social research with ecological approach) can have the task to continue developing the characteristic features of man-nature relationship in a manner as detailed as possible, while keeping an eye on the problems discussed above, and to try to interpret the whole as a system not only in the course of studying native peoples, but also when dealing with any issue related to the connections between culture and natural environment. Ecological methodologies and terms can be definitely used because by doing so we can stumble upon such connections and relationships that could not be revealed when using only the conventional tools of cultural research.

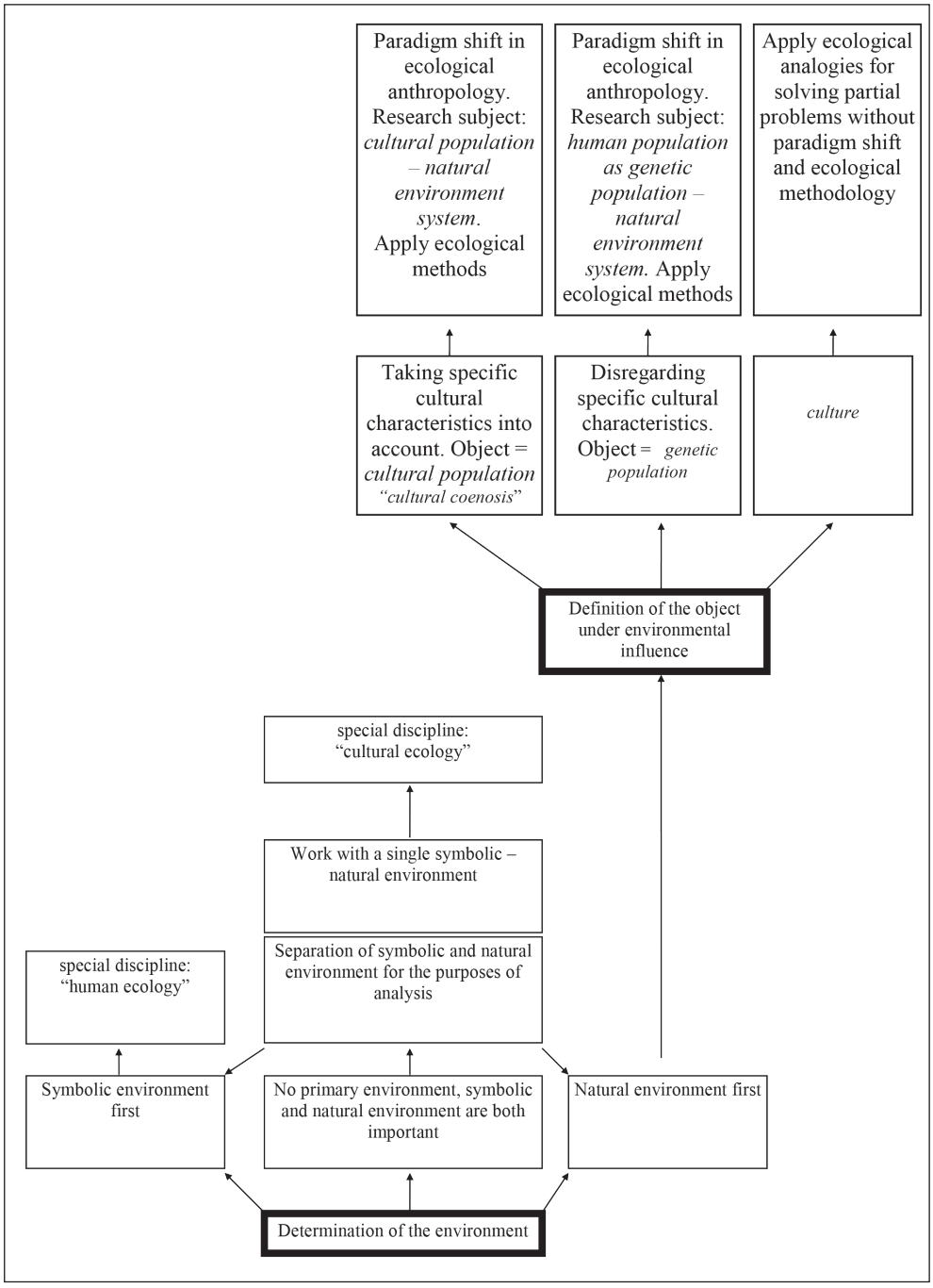

Figure1. Possibilities of using ecological methodology in social science

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See biography of **Balázs Borsos** at the end of guest editors' foreword: Ecological Anthropological Research in Hungary, at page 29.

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‘Very Little Heroes’

History and Roots of the Eco-Village Movement[1]

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Abstract: Although the ecovillage-movement is a relatively new phenomenon (it was first formalised in the 1990s), the initiatives, which aim to integrate, do have a much longer history. The author of this article has been studying ecovillages since 2008. As a cultural anthropologist, her focus lies in the socio-cultural dimensions of the ecovillage-movement. In the present paper the history and roots of the movement are covered by positioning eco-villages within both the history of the broader environmental movement and that of intentional communities; the international and Hungarian history of the ecovillage-movement is presented; and, last but not least, an interpretation is given of the Hungarian ecovillages in the context of rural migration processes. The picture drawn up here is not intended to be an exhaustive one, since the ecovillage-phenomenon can be presented from numerous different perspectives. Yet, the paper clearly demonstrates the multiple embeddedness of the movement, and provides an insight into the aspirations of ecovillage inhabitants and the current functioning of ecovillages.
Keywords: eco-village, the history of the eco-village movement, intentional communities, environmental movements, migration

INTRODUCTION

“Ecovillages are not *the* answer to the sustainability crisis. They are just *one* answer – and we need all the answers we can get.” This sentence was written by Karen Litfin, a political scientist, researcher of the international eco-village movement (Litfin 2011:139). An eco-village is an alternative lifestyle experiment, attracting relatively few people and there are even less who – beyond the good intentions – actually are able to implement it. If you take a look at the number of persons living in eco-villages in Hungary (who actually do not count more than 500 people), you can state with confidence that it was a marginal feature in society. Yet, I think, it is worth dealing with: on one hand, because

[1] This paper was first published in 2014: „Kicsi kis hősök”. Az ökofalu-mozgalom története és gyökerei. *Kovász*. 18(1–4):43–66.

the investigation of the set of values in an eco-village – that is, what against and what for it was set up – might reflect a proper diagnosis to the problems of our current society; and also, because I find that it was an extremely exciting social experiment, offering an interesting field of research for human sciences (as well).[2]

Even though the eco-village movement is a relatively new phenomenon (the origins can be traced back to the 1990s), the ambitions which are united by it have a much longer history. In this paper, I would like to present the roots and background of the eco-village movement in a nutshell: to identify a place for eco-villages in the history of the environmental movements and of the intentional communities; also, I will outline the history of the eco-village movement internationally and nationally, and finally the Hungarian eco-villages will be interpreted in the context of the rural migration pattern. The image so obtained is far from being complete, since the eco-village phenomenon could be studied from a number of different other approaches, yet I hope this presentation will point out the multiple embeddedness of the movement.

ECO-VILLAGE – DEFINITION, GOALS

According to the definitions[3] and their own intentions, eco-villages are human settlements which fit to their natural environment most efficiently and without doing any harm. In order to achieve these goals, their inhabitants farm without chemicals, use environmentally sound technologies for building, waste management and waste water treatment, relying on renewable energy resources in the process. Consumption is characterised with frugality, which includes the recycling principle, in addition to sparing use of natural resources. They wish to earn a living, entertain and trade locally. They are communities striving for autonomy and self-sufficiency, the purpose of which is to "get detached from the umbilical chord," i.e. to get rid of the various networks causing dependence and helplessness, be they social, infrastructural or economic networks.[4]

The ideal number of such communities is seen as one which can be comprehended by the individual, where the networks of relationships based on personal acquaintance interweave and influence the settlement as a whole – this figure is assumed to be between 300 and 500 persons. The majority of eco-villages are so called 'intentional', or 'created' communities, in other words a rural community set up by the conscious efforts of a major or lesser group of individuals. Planning in a great part of the eco-villages includes decision making by the members of the community present from time to time about the admission of new members, and the candidate can only become a full member of the community when passed a multistage process. This approach is intended to exclude the possibility of speculations with the land ownership and to protect the village from

[2] To stick to my field of interest in the narrower sense, that of cultural anthropology: the topic dealing with the relationship between the natural environment and man/culture/society can be placed in ecological anthropology, among the social movements, or as a case study of community research.

[3] See Gilman – Gilman 1991. The self-definition of the international movement can be read on the following web site: http://gen.ecovillage.org/ecovillages/whatisanecovillage.html. For a Hungarian summary of the eco-village definitions see the book by Béla Borsos (Borsos 2016:26–30).

[4] For details see Taylor 2000.

creating other businesses or endeavours within its territory which would not fit into the concept. Such a selection may also be instrumental in the development of a properly functioning and strongly tied community.

In addition to the green thought, most of such initiatives are based on some other types of ideology, such as religion or spiritualism (historical religions, new religious movements, New Age, the so-called guardians of traditions etc.).

Even though eco-village dwellers (in fact, anybody moving to the countryside under the drive of ideological principles) are rather seen by the mainstream as emigrants and the move is interpreted as fleeing, eco-villagers protest against the stigma and they consider themselves not as *utopian fugitives* (Litfin 2011:136), but as participants of the world deeply embedded in the social-ecological system.[5] As autonomous communities, they find that various forms of resistance might be important in case of necessity, but they still are rather proactive communities,[6] which – instead of protesting only – are looking for viable alternatives of everyday life, leading to the common good in the wider sense of the word (Litfin 2011:9; Pickerill – Chatterton 2006:737). Most of them wish to be a role model: they formulate themselves as models of a more lovable, more humane and in particular on the long term more sustainable form of life.

In addition to the common goal, which binds them together, eco-villages are characterised by an extreme diversity, reflecting the diverse natural, climatic and social-cultural media and environments in which they grow. Eco-villages now can be found in many different places and on each of the continents, ranging from tiny villages up to the metropolitan, so called *inner-city* eco-villages, from the jungle to the desert.[7]

Most probably no eco-village would meet the aforementioned definitions in all their entirety – the definers warn so themselves –, therefore most definitions are not a kind of synthesis of existing eco-villages, they much rather formulate objectives and directions for development.

BACKGROUND TO THE ECO-VILLAGE MOVEMENT – ENVIRONMENTAL MOVEMENTS

Ramachandra Guha, a sociologist from India differentiates two major waves of environmentally sound thinking and movements (*environmentalism*) in one of his works on the history of the environment (Guha 2000):

1.) The first wave can be put to the end of the 19th century, but its roots can already be detected as early as in the 18th century. This period is the industrial revolution, the age of industrialisation, when only a very few intellectuals and artists can see the looming hazard

[5] Imre Kilián from Gyűrűfű usually puts it like this: he did not arrive to the back of God, but in his palm. Several founders of Hungarian eco-villages told me that in their younger years they used to be green activists but they got bored with the perpetual and apparently unsuccessful demonstrations, therefore they decided to try how ecological principles can be put in practice using their own lives and own hides. The title of a paper drawn up by Imre Kilián refers to this attitude (Kilián 2006).

[6] Pro-active movements make an attempt to solve the problems by searching the very roots of the issues and by re-interpreting human relationships. Manuel Castells considers alternative social movements and ecological movements such proactive attempts (see Castells 1997).

[7] For more information see: www.gen.ecovillage.org; Jackson – Svensson 2002.

behind the seemingly unlimited potentials. You can see with surprise as some authors of the 18th and 19th century discuss the satanic mills of the industrial age, the factories destroying the Earth, poisons, air pollution, railways (and tourists) spoiling the rural English landscape, environmental and pollution related causes of diseases, etc. (William Blake, William Wordsworth, John Ruskin, Edward Carpenter, William Morris, Thoreau). Wordsworth, the poet (1770 –1850) was an ardent hiker, according to the data of Guha he walked 175 thousand miles in his life, and in the meantime he had hands on experiences of the dark side of the industrial revolution and the devastation of the natural environment. He praised rural life as opposed to city life. John Ruskin (1809–1900), painter, art writer, aesthetician maintained that air pollution was the consequence of desecration of nature, seeing correlation between environmental pollution and human diseases. He opposed the penetration of the railway because he thought it was an important cause of destruction of nature, for instance, because with the help of the railway industrialisation is facilitated. He supported the sustenance of handicrafts, created an association, a farm, a crafts shop, and found the preservation of subsistence was important. William Morris (1834 –1896) industrial designer, author, Socialist activist was one of the great prophets of the 'back to nature' idea in this period, a thinker of great influence who is considered as the father of a number of art and social movements. His influence was felt in the oeuvre of the Socialist poet and philosopher, Edward Carpenter (1844–1929), whose work *Civilisation, Its Cause and Cure* (1889) has become the Bible of the social movements. Octavia Hill (1838–1912), presented by Ramachandra Guha as the first female environmental activist, may also be included here. Hill was a friend of Ruskin, a social activist who had the idea to tackle environmental issues, the struggle for the poor and the social reforms jointly, her suggestions to solve the issues encompassed them in a complex manner and she proposed complex management. The authors referred to above had a great impact on the fledging social movements of the era, the 19th century through both their ideas and practical actions.[8]

2.) The second wave of environmental thinking and the related movements – according to Guha – can be put into the 20th century when the so called period of innocence (the era was characterised by unlimited faith cast in progress and sciences, technological optimism and, in parallel, by complete ecological ignorance) was followed by a slow and gradual recognition of the crisis situation after World War II. The second wave is distinguished from the first one by this, the interpretation of the ecological issues as a *crisis*, and the fact that at this time, not only a narrow group but the wider public also had to face the problem. Guha illustrates the difference between the two waves with a story (Guha 2000:79): in the Spring of 1969 a couple of students interrupted the class on natural sciences at the University of Copenhagen, rushing in, carrying a mallard soaked in a marine oil spill and reciting anti-pollution slogans. According to Guha this story is a good example to reflect the difference between the two stages showing the radicalisation of the movement (and indeed, this period is to become the era of ecotage and ecological terrorism),[9] and the fact that environmental issues attract the attention of a wider public now. He points out that the period to come will be dominated by bottom up grassroots initiatives just as much as lobbying forces on the top level, that is by

[8] Beside the start of the social movements, the initial steps to preserve the natural environment with scientific rigour, the establishment of nature conservation areas can also be put to this period.

[9] For the radical movements see Taylor 1995.

radicalisation and professionalism alike, which finally led to the current green discourse and the inevitability of sustainability issues – at least on the communication level.

Albeit there are great differences between the two waves outlined by Guha, one more common feature can be pointed out here beside the identical foundations, that is the recognition of environmental issues: the fact that potential solutions and efforts include the attempt to create self-sustaining communities in both the 19th and 20th century. Ruskin created an association, a farm striving for self-sufficiency and a crafts shop; and Carpenter – inspired by William Morris, Walt Whitman and Henry David Thoreau – created a community in the environs of the city of Sheffield, where they started to grow vegetables, baked their own bread and described their rolling, undulating countryside intersected with streamlets and grooves as a real Arcadia. And, in the second part of the 20th century, the foundation of eco-villages started.

BACKGROUND TO THE ECO-VILLAGE MOVEMENT – CREATED COMMUNITIES

As it was seen earlier on, most eco-villages are intentional communities, in other words communities which were created by the conscious efforts of a bigger or lesser group of individuals based on the ecological principles.[10] The roots of such special communities stretch back to long ago, as Louise Meijering pointed out in her work on rural intentional communities (Meijering 2006). With reference to Zablocki (Zablocki 1980), the author divided up the history of these groups into eight stages (Meijering 2006:14–16):

1.) The first community seen as intentionally set up is thought to have existed in the times of the Roman Empire, with an example of the Essenes, a religious group operating in Palestine in the first century before Christ, but the first Christian communities emerging in the 1st century A.D. are also classified here. The goal of these attempts was to retreat into their own world in order to fight the hegemony of the Roman culture and the forced assimilation. They were frequently characterised by a 'common purse' and decision making by consensus.

2.) The second stage is put to the times of the Catholic monastic communities with the 13th century as the Golden Age, and examples like the Franciscans, the Dominicans, the Carmelites and the Benedictines.

3.) The third period is described by the emergence of heretic communities. The most important of those is considered the lay Christian movement of the Brotherhood of the Free Spirit in Western Europe (or elsewhere: Brothers or Brethren of the Free Spirit). In the meantime, as North America is colonised, the intentional communities started to appear on this continent as well.

[10] The definition of created communities according to Meijering is as follows: intentional experiment to implement a joint alternative lifestyle outside of mainstream society. Criteria listed most frequently include: 1.) the community is not or not only dominated by relationship among the kinship, 2.) it has at least 3–5 adult members, 3.) membership is voluntary, 4.) geographic and psychological isolation from the mainstream, 5) common ideology, adopted by all, 6.) common or partly common ownership, 7.) group interest dominates over individual interests. Intentional communities – adds Meijering – have reached various degrees of the aforementioned criteria, and they separate themselves from mainstream society to various degrees (Meijering 2006:19).

4.) A great part of the intentional communities of the 16th to the 18th centuries are Protestant (Shakers, Hutterites, Mennonites), persecuted by religious intolerance from Europe to North America. The New World represented a great force of attraction for these communities not only because of the freedom of religion experienced there, but also as the homeland of unlimited opportunities.[11] While these communities were attracted to traditional social models and values, such as the patriarchal family, respect of authority, simplicity and rejection of modernisation, others

5.) were mainly secular communities which started to grow in the fifth stage at the beginning of the 19th century. They were dominated by the Socialist ideology and the protest against the industrial society; the promoters of these communities were inspired by the ideas of Robert Owen, Charles Fourier and Étienne Cabet. Owen himself created a community called New Harmony, and a number of others – albeit short lived – were inspired by the example shown by Owen. In his work studying among others the roots of intentional communities Michael Blouin picked out Brook Farm from this period, created by Transcendentalists in the surroundings of Boston during the 1840s, which showed the influence of the doctrine of Charles Fourier as well (Blouin 2007).[12]

6.) By the end of the 19th century, yet another wave of communities based on Leftist ideologies was created, with ideological foundations provided mainly by the works of the Anarchists, in particular Peter Kropotkin and Lev Tolstoy. These communities also existed for a short period of time only, not being able to compromise between ideas and the real world and practical challenges. Meijering notes it seems religion based communities tend to survive longer than those with secular basis (Socialists, Anarchists). Blouin goes even further, arguing with the example of the Shakers – as one of the longest standing successful intentional community – pointing out that the immigrant religious groups in the New World built their communities on the pre-existing (Old World) contacts and relationships, which might have been a guarantee to success, and most of them were farmers, for whom hard work and farming was nothing new, and in addition they were able to submit themselves to their leaders. New types of communities emerged in the 19th century, the members of which were not farmers any more but Americans not having the track record of a farmer and had no experience of the land. They created their

[11] Further examples not mentioned by Meijering can also be cited: William Penn, a key figure in the Quaker movement founded a colony in 1681 in Pennsylvania, promising free exercise of their religion to all. A persecuted religious group, the Shakers left England in 1774 and arrived to New York, then they started to organise an independent village in the 1780s under the direction of their leader, Ann Lee. Immigrant groups included German Pietists, the first one of this kind arrived to the United States in 1683. A prominent group, The Harmony Society arrived in 1804 and created three communes in Pennsylvania and Indiana states. The community called Ephrata was also created by German immigrants in 1732 and in the 1740–1750s 300 members lived there together. The Amish or the Mormon communities, established in the end of the 1800s can also be listed among them.

[12] The following data can be read from Blouin: 119 utopian and commune type communities were established in the United States of America between 1800 and 1859, 60 of them in the 1840s. In the next phase, between 1860 and 1914 140 communities were founded which were more of artist colonies, new communes, religious communities and so called social experiments (they included for instance the Oneida community operated between 1848 and 1881 in New York State). They are typically smaller and less hierarchic than former intentional communities, and private ownership (land) and the profit gained more ground, the reason for which – according to Blouin – was the fear of Communism.

communities because they were not satisfied with mainstream society, had enough of an institutionalised world and the American way of life in general.

Meijering focused primarily to intentional communities of the West, and touched upon the Israeli Kibbutzes only shortly as significant intentional communities with a great impact. The first Kibbutz was founded in 1909 and the related movement (United Kibbutz Movement) was formed in 1927.

7.) Returning to the classification scheme set up by Meijering: the seventh phase in the 1960s brought a huge wave of intentional communities surfacing from the counter-culture of the period, in the United States of America alone, more than 2000 communities were founded at this time. They consisted of young and highly trained people who refused to accept the cultural standard and set of values held by their parents and wanted to resist consumerism, wishing to live a life with more freedom. The communities emerging in this period are very diverse, pending on what the emphasis was put on: you can find some striving for spirituality, sensible life, self-accomplishment, closeness to nature, self-sufficiency, Socialism, etc. Their members are frequently motivated politically, are involved in the counter-culture movement, raising their words against poverty, social and economic inequality and the Vietnam war. One of the best known such community building on a life close to nature and nature related spiritual values was the Findhorn Foundation established in 1962 Scotland, which later has grown into one of the most significant communities of the eco-village movement.

8.) Finally, Meijering dates the eighth stage from the end of the 1990s, within which period the communities established can be divided into two distinct types: cohousing[13] and eco-villages.

Communities following the teachings and spiritual views of their respective religion and trying to live an environmentally conscious lifestyle started to grow from the 1960s on, thus becoming later on a kind of role model for the ecological communities and the international eco-village movement – what is more, eco-villages themselves. Such a community is the Scottish Findhorn, referred to by Meijering, or the South-Indian Auroville, and The Farm in the United States. These communities were set up in the impetus of the counter-cultural, spiritual period in the 1960–1970s,[14] and put a great emphasis on harmonious co-existence with nature, therefore ecological awareness

[13] Co-housing is a movement of close community life from the 1970s in Denmark and The Netherlands. Members are neighbours, living in their own houses but carry out most possible activities jointly (such as preparation of food, cooking, child care, gardening, community management), and use common premises (kitchens, dining rooms, playgrounds/rooms for children, offices, guest rooms, recreational premises). The Jacksons, who played a dominant role in launching the international eco-village movement, lived in a co-housing arrangement for a while themselves, therefore it was apparent that the movement had an influence on the emergence of eco-villages. On the other hand, no significant co-housing movement exists in Hungary. For co-housing see McCamant – Durret 2011.

[14] The first inhabitants of a forming community settled in the village of Findhorn in Scotland in 1962. Auroville (City of Dawn) was established in 1968 by Mira Alfassa (or, as she is named by her disciples: The Mother), a woman of French origin. Auroville was built on the teachings of Shri Aurobindo Hindu teacher, and turned towards the implementation of the ecological principles. The Farm was created in 1971 by San Francisco hippies in Tennessee State, advocating non-violence and the respect of the Earth.

and lifestyle, and the concept and term of eco-village caught up with them later on.[15] Thus their early operations can be seen as a self-fulfilling prophecy and shows a close relationship with sustainability, the key issue of the 21st century.

INTERNATIONAL HISTORY OF THE ECO-VILLAGE MOVEMENT[16]

In the 1970s, thus, the environmental movements have gained strength and acquired new methods on one hand, while community building manifested in new experiments on the other. The first eco-village initiatives emerged against this social background. The term itself appeared back in the 1970s, but did not gain wide recognition at the time. According to a historian of the eco-village movement (Bates 2003) the magazine called *Mother Earth News* (Hendersonville, North-California) started to set up organic gardens and energy saving houses next to their offices in 1975, which also functioned as education centres, and they started to call themselves *eco-village* from 1979 on. More or less the same time a protest movement was launched in the city of Gorleben, Germany against the proposed nuclear waste landfill site there. Activists created a small habitation colony resting on ecological principles which they called *Ökodorf* (eco-village). Even though the police evacuated the camp, the idea remained and eco-villages sprung up nationwide. Also at this time, in the 1970s, the co-housing movement started to blossom in Denmark. Robert and Diane Gilman in their paper called *In Context* (Seattle) commenced to report on this and similar initiatives at the turn of the 1980s–1990s. They believed such initiatives may serve as a model for sustainable ways of life. The paper was soon discovered by a couple, Ross and Hildur Jackson who operated the organisation called *Gaia Trust*, and a cooperation was launched between the paper, the organisation and the eco-village projects. The 1990s can be seen as the years of prosperity for the eco-village movement, when the first meetings happened, which represented a substantial progress in the history of the movement. The first such meeting was held in Denmark in 1991, with the aim to define an eco-village concept and to formulate a strategy of propagation. The meeting showed that there are a number of similar initiatives ignorant about the others. In 1993 the Danish eco-village network was set up, the first of this kind, which later served as a model for the later launched international eco-village movement. The international network, *Global Ecovillage Network* (GEN) was launched in 1994, in which the Hungarian Gyűrűfű project has already been involved as one of the funding members. The internet, gaining ground at this time, assisted in the spread of the eco-village idea and hence, the set up of a number of eco-villages to a great extent: this is the period, when computers and the world wide web have become affordable and accessible for more and more people, allowing a wide outreach for GEN through its web site, facilitating the propagation of the movement and transfer of eco-village patterns. The first international eco-village meeting took place in 1995 in Findhorn, Scotland,

[15] In Hungary, a similar story is that of Krishna Valley: the community created a room to live in harmony with the teachings of their religion, which fit well in the eco-village idea, therefore they also joined the eco-village movement in the beginning of the 1990s, and they started to reinforce the eco-village nature of the compound consciously.

[16] Based on Bates 2003; Borsos 2016; Hári 2008; and Hungarian eco-village founders.

organised and sponsored by the Gaia Trust and the Findhorn Foundation. The title of the event – *Ecovillages and Sustainable Communities. Models for the 21st Century* – formulated and marked out the road precisely on which eco-villages intend to walk.

ECO-VILLAGES IN HUNGARY – BACKGROUND: ENVIRONMENTAL MOVEMENTS, INTENTIONAL COMMUNITIES

Domestic eco-villages are closely related to the Western template, the founders have incorporated their hands-on experiences obtained from foreign (mainly European, but also Australian and Indian) eco-villages in the Hungarian initiatives. Even though the first eco-villages were officially established in Hungary after the political transition at the beginning of the 1990s, but most of them – through their respective founders – shows some connections with the underground green and alternative social movements of the late-Socialist era.[17]

Environmental movements have been instrumental in the political transition in Hungary (and also in the changes which occurred in the political regime of other Central and Eastern European countries). The state of the environment in Hungary was a cause for concern, albeit still relatively good, in particular in comparison to some Western and most Eastern countries in Europe (Stanners – Bourdeau 1995). Yet, environmental problems were consistently denied by the holders of power (saying that pollution is generated in Capitalist systems only and the Socialist type of man instinctively protects nature), and all moves intended to protect the environment were seen as suspicious and suppressed to the extent possible (for details see Illés – Medgyesi 1998; Persányi 1993). In spite of this, the environmental issues played a central role in the set of problems raised by the ever stronger social movements and separatist groups of the 1980s. Thomas Homer-Dixon states with respect to environmental issues and social conflicts, which is – in my mind – true for the Hungarian political changes as well: "since in oppressing regimes the state of the environment is one of the topics in public discussions with respect to which society is able to organise political activity in a relatively unobstructed manner, opposition groups frequently touch upon environmental themes to incite discourses" (Homer-Dixon 2004:14). Environmental problems and protests against the regime were closely linked in Hungary as well and the dispute about the barrage system on the Danube united most political resistance forces with reform Communists within the party and the entire environmental movement in summer 1988 (Persányi 1993:147). Stopping the construction of the dam has become a symbol for the collapse of the political regime. That is, political and environmental opposition was tightly bound together, partly because the environmental movement functioned as a core, around which politically active members rallied, and partly because the goals of environmentalists and the forming political opposition seemed to be identical (Illés – Medgyesi 1998:148–151).

Founders and initial dwellers of the eco-villages took part or at least dropped by and informed themselves in the ecological movements, alternative social movements dealing with environmental issues, emerging and operating in the 1980s (Interdisciplinary Student

[17] The connections between the environmental movements of the 1980s and the national eco-village movement were covered earlier on with respect to the story of Gyűrűfű, see Farkas 2009.

Circle, ELTE Nature Conservation Club, Danube Circle, the Green Circle of the Budapest University of Engineering, Circle 405, 4:6:0 Peace Group, etc.). Various illegal, semi-legal and regular papers and publications on which the great generation of the alternative environmental movement was raised had a distinct role in regular dissemination of information. Such media included the *Gaia Sajtószemle (Gaia Press Review)* of the ELTE Nature Conservation Club, *Lev-Lap* by ITDK, the periodical *Természetvédelem* (Nature Conservation), *Kari Paper* by BME and the *Kék Bolygó* (Blue Planet) (Illés – Medgyesi 1998:139–146; Maurer 1993). *Harmadik Part* (Third Shore), a periodical launched at the time of the political transition, considering a third way between Capitalism and Socialism, which finally reflected the disillusionment after the changes was also part of this set. These papers include the writings of eco-village founders (such as Béla Borsos, Imre Kilián, Géza Varga, Péter Zaja), and they were the same forums where the germinating green thought including the eco-village idea was formulated.

In his work reviewing the history of the movement in this country Imre Kilián, one of the founders of the Hungarian eco-village movement and still an active representative, also refers to the green movement as one of the underlying originating factors (Kilián 2014). Beside the story of the Bős-Nagymaros dam, he indicates two more dominant groups: the Communard City Project and IGyÉSz. Communard City in his interpretation is outright the oldest similar initiative which was a source for eco-villages (Kilián 2014:1).[18] The project was envisaged by the Interdisciplinary Scientific Student Circle launched in the Rajk László College for Advanced Studies, University of Economy helyett University of Economic Sciences in 1981, where they envisaged a new type of settlement and social model using the theoretical foundations laid down by István Síklaky and drawing from the traditional rural examples of self-organisation. The plans were polished further in summer building and creative art camps and on regularly organised club events, with the help of invited speakers.[19] The other forum indicated by Kilián was the Information Gathering and Providing (IGyÉSz) Workshop, led by György Mauer and their publication called *Lev-Lap* (Kilián 2014:1).

Beside these examples, initiatives being a specific form of migration flowing from the cities towards villages, emerging from the alternative movements, should be mentioned here. They can be seen as Hungarian models of *intentional communities* in the 1980s, even though most probably their promoters did not even know this term, yet they can be seen as the forerunners of Hungarian eco-villages in a sense. Albeit in this period the ruling power did not tolerate civil organisations which were declared to be against the regime, a few such 'retreating' groups tried to create their own room to live at the edge of the alternative movements gaining ground in the slackening dictatorship of the 1980s.

[18] In my experiences the Hungarian eco-villages do not know it, yet a very early initiative is quite similar to an eco-village, the Bubáni colony in Szentendre. People mainly from Budapest and Szentendre planned to created a colony in the 1930s based on self-sufficiency and close community ties in the environs of Szentendre, the Bubán quarter (hence the name). The scarce documentary evidence available (founding charters, newsletters) demonstrate that the participants started design with very similar motivations than the current eco-villages: their narratives show striking resemblance with the anti-urban and green discourse of these days, and design details also are almost identical with the eco-village concept. Implementation was swept away by World War II.

[19] As far as I know Communards City was envisaged in Ráckeve, but the project was not implemented at the end.

Magyarlukafa in the Zselic can be classified as such, where a lifestyle inspired by the Hungarian folk culture was followed by immigrants. And a small village near the city of Pécs, hidden in the mountains of the Mecsek, Vágotpuszta has seen the settlement of a Yoga community from Pécs, where they lived together for a couple of years.[20] According to Imre Kilián the members of this group protested with their feet: "these young people, mainly with intellectual background, seeing their former city life as false and senseless, looked for another place in the world where they took the land and built a country" (Kilián 2004:1). In addition to the examples referred to above, he also lists the experiment made by the experimental theatre workshop called Studio K in his text reviewing the story of the Hungarian eco-villages,[21] the members of which – having made a detour in Szentendre – moved to Pilisborosjenő and set up their common life there.

HISTORY OF THE HUNGARIAN ECO-VILLAGE MOVEMENT

The idea of eco-villages emerged in Hungary in the ecological, social and economic context outlined above, and after the political transition, during the 1990s the circumstances allowing the design and implementation of the first eco-villages have been settled (such as the opportunity to establish formal organisations, funding sources, cheap land acquisition, etc.).

The first initiatives were created at Galgahévíz (Galgafarm), Gyűrűfű, Visnyeszéplak and Drávafok. When the founding fathers revoked the beginnings beside the festive cake at the 20th eco-village summer meeting at Ópusztaszer this year, the meeting at Drávafok in 1993 was specified as Meeting 0, where the informal Hungarian Ecological Settlement Development Alliance, MÖTSZSZ (pronounced as MÖCCC) was created. In the second half of the 1990s further newly formed eco-villages joined the alliance, first Krishna Valley, the Gömörszőlős initiative and Agostyán-eco-village, in 2004 Máriahalom, in 2008 KÖRTE in Nagyszékely, then Magfalva, and in 2011 the Alliance of Eco-Farmsteads at Szer, called SZÖSZ. According to the memories the still informal and unregistered organisation most probably adopted the name *Hungarian Network of Living Villages* in 2009.[22]

Members of the Hungarian Network of Living Villages today include the following members (as demonstrated by their web site, see: www.elofaluhalozat.hu): Galgahévíz eco-village, Gömörszőlős, Gyűrűfű, Krishna Valley (Somogyvámos), MAGfalva (Monor), Máriahalom Bio Village, Nagyszékely KÖRTE, Ormánság Foundation (Drávafok-Markóc), Alliance of Eco-Farmsteads at Szer (SZÖSZ, Ópusztaszer and environs), Foundation for the Natural Lifestyle (TEA, Agostyán), Visnyeszéplak. Members of the movement meet twice a year, in summer and in winter, each time in

[20] The memories of a founding member were published recently on the life of this community (see Felcser 2010). The work draws up an excellent picture on the age, where both the powerful and the mainstream society, which have difficulties in tolerating differences, try to make the life of the group impossible.

[21] More precisely, the experiment of the Orfeo-group.

[22] The reason why the name does not contain the term eco-village is the degradation of the word on one hand and the existing multiple definitions of it within the movement on the other. The term living village was adopted after lengthy negotiations and discussions, but several members of the movement still use the term eco-village for themselves.

another eco-village. News are printed and distributed electronically on a quarterly basis, an electronic newsletter is published in every two weeks, a joint website (www.elofaluhalozat.hu) and a mailing list are operated.

The diversity of eco-villages referred to in this paper earlier on is typical for the Hungarian subset as well: villages based on the most state-of-the-art alternative technology (Galgafarm), phasing out high tech to the extent possible (Krishna Valley, Visnyeszéplak) and amalgamating the two (Gyűrűfű) can all be found among them; there are communities tending towards isolation and others entirely open; and also, their religious and ideological background is also very diverse (New Age, Krishna-faith, Catholicism, 'pure' green ideology).[23] Some of them were implemented as greenfield projects (Galgafarm, Krishna Valley), and there were initiatives which tried to convert an existing and functional rural settlement into an eco-village (Gömörszőlős). However, most Hungarian eco-villages were set up in the place of a formerly existing but later abandoned village site (Gyűrűfű), or in and around villages in socially and economically backward situation (Krishna Valley, Visnyeszéplak), just because these villages are relatively isolated and their natural environment is more or less intact. With the youngest member of the movement, SZÖSZ a new type of settlement, the (eco) farmsteads were put on the Hungarian map.

HUNGARIAN ECO-VILLAGES AND RURAL MIGRATION

As I mentioned before, you can not really talk about created or intentional communities from the second half of the 20th century in Hungary – with the negligible amount of exceptions referred to above. However, it might be worth to interpret the eco-villages within the migration patterns: on one hand, you can find forerunners here which are somewhat similar in their efforts to the eco-village concept, which – as I can see during my research – represents an attractive alternative for more and more (but still, not a very significant number of) urbanites.

Beside the strong migration flow towards the cities from the 1960s on, a varying tendency of moving back to rural settings could also be detected in Hungary. According to the data collected by György Enyedi, three million people moved away from the rural settlements between 1960 and 1974, but some of them settled in another village and not in the cities. What is more, from the 1970s most migrants went to the country. Moving from the cities to villages was not very usual at this time yet, between 1970 and 1973 approximately 40,000 people moved mainly to the suburban belt of big cities (Enyedi 1980:40–41). According to the data by Gábor Vági concerning the mid-1980s, 51 persons from 100 migrants ended up in a village community (Vági 1991:71). This figure included both village to village and city to village movers, where the target village usually means a major settlement of the village system which represents the centre of a district, but receiver villages also included small villages. Due to the centralisation zoning efforts of the 1960–1970s this was the time when the latter started to be depopulated and selective migration accelerated: "Houses available for moderate prices have become attractive

[23] For this see Farkas 2012; 2014.

for those who could not get a council flat in major settlements, in particular in cities or could not buy an apartment at market prices" (Ladányi – Szelényi 2004:78). Moving to tiny villages (the so-called back filtration) is divided in three types by Gábor Vági: 1.) the first one was motivated by unemployment: agricultural cooperatives (TSZ), general consumption and sale cooperatives (ÁFÉSZ) attracted young people into these villages who wanted to accumulate funds and create a home quickly. 2.) The second type can be described by the process of ghettoising: ageing and emptying small villages are occupied by the poor, mainly Roma families. 3.) The third type can be associated with the growing strength of the second economy: people were drawn to villages by the opportunity to create family farm holdings (Vági 1991:71–72).[24]

From the 1990s on a large part of the people moving to the villages is led by two main and radically different driving forces: the first type represents classic suburbanisation, populating suburbs and settlements close to cities. The key actors of this type are social groups who continue to earn a living in the city (they work there, their children attend schools there, etc.), but they can afford to move to valuable places as residence with high natural and recreational standards. The other type includes those moving for social purposes, people with modest income who hope to save money on moving to the countryside, in a distance (50–100 km), where from they are still able to commute to their city based workplace by railway relatively easily (Kovács 2003:56). At the same time, small villages are still characterised by social, i.e. negative migration: the poorest pensioners or families with many children who are not able to maintain their city properties any more, move to the small villages (Virág 2007:143).

Maybe lesser in numbers, still in terms of motivation to move to the country also important is the type of migration which was investigated by Zsolt Szijártó and others on the Balaton-highlands. This process meant typically the moving out of such – in the words of Szijártó – independent and regime-critical intellectuals (artists, painters, film makers) starting in the 1980s, whose step was nourished by concepts of crisis and longing to be away, and who this way created a counter-world and expressed their opposition against the fundamental values of the current political, social, and cultural regime (Szijártó 2002; 2007). In this sense, their move was not motivated by economic reasons, but their goal was to set up a better life in terms of moral, cultural or ideological sense, and the target of their migration was interpreted by those who moved there as a declining cultural region in need of salvation (Pulay 2002:40). You can also take the story of Kisújbánya, abandoned by the 1970s and studied by László Mód. According to Mód: "Families purchasing a house or plot in Kisújbánya wanted to create a specific world in their effort to preserve the ideal value of things" (Mód 2007:129).

Experience or welfare motivated migration of Westerners towards small villages starting in the 1990s is also not very notable in terms of numbers compared to classic suburbanisation or back filtration, yet it is the more interesting. The findings of the study made by Katalin Járosi suggests that reasons include low property prices: when moving to Hungary, Western migrants are able to preserve or even raise their standard of living of their active years in retirement. These Western migrants want to live far from the maddening crowd and from locations occupied by mass tourism. Their motivations

[24] The tendencies seen in moving to small villages was covered earlier on in relation to the story of the old Gyűrűfű village, abandoned by the 1970s, see Farkas 2009.

include experience orientation: the beauty of the landscape in question, individual expectations, harmony with the environment and liveability of the houses. They aim is to conserve, spare and retain the harmony thus discovered (Járosi 2007:190–193). For eco-villagers this kind of migration can represent a kind of competition in settlements where there is no community land ownership and it is not the community which decides who will move in the neighbourhood: Western migrants are able to pay more for the residential houses which would be ideal dwellings for Hungarians heading for the countryside.

It is an illuminating experience to find a place for eco-villages in the grouping set up by Zsolt Szijártó to illustrate three types of spatial structure and spatial practice (see Szijártó 2007:170). Due to their attitude, eco-villages could best be placed beside the example from Inner Somogy. This type is characterised by naturalisation of space, i.e. a kind of approach to space where ecology, nature conservation are important aspects; biological diversity is a key concept, space appears as the 'co-existence of biological habitats' and the goal is to protect them from human interference; in the sphere of economy they prefer mainly natural husbandry, and in tourism eco-tourism (Szijártó 2007:167–168). At the same time, a few elements of the Szijártó typology described for the Balaton-highland migration pattern are true for eco-villages as well, such as a part of the ideological foundations, the imagination of the counter-world, usage of space in a communal nature, creation of old/new festivals and holidays.

Katalin Járosi distinguishes two types of migration, classic and welfare: classic migration is characterised by the escape from something, while experience and welfare migrants are motivated by the wish to move towards something (Járosi 2007:200). Eco-villagers may also be characterised by this yearning towards something: a strong opposition to cities, moving out from the designed, pre-determined cities and into eco-villages. The eco-communities known by me are characterised by a conscious construction of their own world. Their forerunners may also include the moving to small villages for instance in the South Transdanubian region of regime-critical urban intellectuals strongly tied to the folk dance and green movements started in the 1980s.[25] Eco-villagers are also mainly urban intellectuals, from a very broad range (IT specialist and entrepreneur, teacher and agricultural engineer), but – as opposed to for instance those who moved to the Balaton-highlands – relatively few artists can be found among them. In terms of their motivations they are mainly distinguished from the other migrant flows towards the countryside by their intention to create a non-mainstream lifestyle based on ecological commitment. This need does not only manifest in their relationship with their environment, but permeates all aspects of individual and community existence. In terms of their goals, they differ from other village-movers by emphatically assuming the function of role model: their aim is – as it was outlined in the section on eco-village concepts – not only to implement a socially, economically and environmentally sustainable lifestyle, but to transfer of their experiences and practices.

[25] For the connections between the folk dance house movement and critique of the regime see Taylor 2011.

CLOSING WORDS

As it was mentioned in the introduction of this article, domestic eco-villages don't constitute a dominant part of Hungarian society. At the same time they are exposed to a number of difficulties which are typical for the Hungarian rural setting (such as the provision of economic resources, providing a livelihood, in particular the issue of local livelihood, retention of access to educational institutions and a number of other adverse impacts of centralisation), thus their difficulties might be a kind of barometer reflecting the problems of the countryside and in particular those of the small villages and dead-end villages. On the other hand, eco-villagers – a great part being middle-class intellectuals – are generally characterised by strong reflectivity: they reflect on the global issues and express their opinions on current social issues (consumer society, globalisation, centralisation, environmental, economic, ethical crises, alienation, etc.). Their lifestyle is also a critique of the society at the same time, based – in addition the judging, evaluating intellectual thinking – on the special approach, a kind of alternative attitude providing an interpretation to the world different to that of the mainstream. This approach and attitude are not exclusively theirs, however: they can be encountered in worlds radically different from the eco-villages, which puts the eco-village discourse into a wider context again.

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Post Industrialist Pioneers

Gyűrűfű: An Ecological Anthropological Experiment

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Abstract: Gyűrűfű, a small village in Zselic, South-Transdanubia depopulated in the 1970s, is the site of an eco-village experiment since 1990. In addition to some of the physical aspects of the project not covered earlier on, this paper deals with the human ecological features of the new community. Social-anthropological considerations such as community development, social background of the participants, the Communist past, which all are determining factors of the social model emerging on site, are discussed from the systems theoretical perspective which states that certain properties of a subsystem are always defined by the superimposed supersystem, both in physical geography and social organisation. The resulting tensions stretched social cohesion in the past 10–15 years, but new developments such as creating jobs by modern telecommunication means and achieving energy independence through the deployment of solar panels and passive energy conservation solutions off-set for these difficulties. The future of the experiment depends very much on three factors: generation change, immigration/emigration and conflict resolution.
Keywords: eco-village, systems theory, human ecology, sustainable rural settlement, community development, anthropology, Gyűrűfű

THEORETICAL BACKGROUND

As traditional societies including native tribes modernise and leave their characteristic lifestyles behind, modern ecological anthropology turns towards contemporary social experiments which try to redefine the relationship of human societies with the surrounding natural environment and its functional characteristics. A special set of such experiments is commonly called eco-villages. They seemingly easily lend themselves to scientific scrutiny from the ecological anthropology perspective. However, the methodology of such research endeavours is far from being smooth and straightforward. The problem of human sciences approached with the toolbox of 'hard core' natural sciences such as biology or ecology has been the subject of extensive debates in the scientific community (Borsos, Balázs 2005). Nevertheless, an attempt is being made here to scrutinise eco-villages with one of these toolboxes: that of systems theory.

Many people in the mainstream society believe that there was a need for reorganisation of the current societal, economic, political and spiritual circumstances. After the bioregional concept (Sale 1991), a new approach to re-furbish human-nature relationship emerged called biomimicry. Biomimicry is an approach to innovation that seeks sustainable solutions to human challenges by emulating nature's time tested patterns and strategies. It maintains that there are simple and elegant solutions to be found all around us in the structures, patterns, strategies and organizing principles that have stood the test of time. To learn them, you just need to ask the right questions and learn how to listen again. It is a long held view in ecology, that despite competition and the pervasive predator-prey relationships that keep populations in balance, living systems are fundamentally cooperative. Ecovillages can be seen as biologically inspired solutions to social organisation that reflect the most elegant, efficient and sustainable strategies for living within the operating conditions of this planet. They constitute a foundation of social organisation for the mature human species. "Like the rest of the natural world, ecovillages are diverse, decentralised, locally attuned and adapted, self-organised, and premised on cooperative relationships" (Brown-Hansen – Marantz 2017). Ecologists researching the traditional ecological knowledge (TEK) found that urban dwellers leaving the city and getting in a new environment close to nature – such as an eco-village – are able to acquire a great part of this age old knowledge, primarily the part built on own personal experiences (Babai et al. 2014:18).

HISTORY: 25 YEARS

The history of the Hungarian eco-villages has not been extensively researched and documented, only a few papers deal with the issue (notably Farkas 2014). A more comprehensive coverage presenting most of the design principles exists at the international level, illustrating their implementation on examples from eco-villages throughout the world including the members of the Global Eco-village Network (Bang 2005; Joubert – Dregger 2015). The Gyűrűfű experiment itself started in south-west Hungary in the Zselic region, at the same location where a 700 years old village existed, has its own long standing history. During the development of the model experiment some 25–27 years ago, the concept focused on systems theory, human ecology (Marten 2001), and most predominantly an agricultural design system called Permaculture (Mollison 1991). It was seen that "one of the methods of facing the challenges of the worldwide ecological crisis is the implementation of the resulting principles of sustainable development at the rural development level". Spatial planning was one of the dominant features of the design work with overlapping thematic maps and bioregional properties. The practical experiences gained from the implementation of this design concept were summarised with a view to human geography and small scale settlement patterns in (Borsos 2013b). The focus of the experiment in the first two decades of its existence related mostly to its connections with the natural environment substantiated by a system theoretical background (Borsos 2009). In human terms, however, it was not without legal complications that the site of the local watershed was acquired by a foundation set up for this purpose, and later on changes in the law and shortage of funding made the realisation of the original concept of a common land ownership even more difficult (Borsos 2006).

A comprehensive report on the first 25 years of history was published in a book (Borsos 2016). In the paper below, the focus is put more on the human factor.

ANTHROPOLOGICAL IMPLICATIONS

When you want to organise an eco-village, the organisation and set-up of human and social relationships is of paramount importance due to several reasons:

Eco-villages are 'intentional' communities, they are not the result of an organic, natural development process in society. They stand out from the surrounding society as a foreign body: city dwellers turned farmers, or simply strange creatures living in a queer and awkward way in the eyes of the general rural population. They are uprooted from their former social environment and planted in foreign ground. Therefore, inhabitants of such communities need a stronger social cohesion to identify themselves as a stand-alone entity which still merges with the surrounding other communities in many aspects.

The approach eco-villages take is outright the opposite of mainstream 'development'. One of the main differences is that such communities are not only workplace entities or residential neighbourhoods, they are both. Eco-villagers – at least in theory – work and live at the same place, which is shaped and taken care of by themselves and not by some distant forces (municipality, the state, etc.). They need strong determination and stamina to cope with all the difficulties arising from these factors and from the fact that they spend a lot more time with each other than urban residents do.

They are in a new situation which needs active organisation. In most cases, people settle in existing communities and their main intention is to adapt to the existing rules, social habits and practices. In the case of an intentional community, however, the participants of a project are all newcomers, a non-existing entity. The system of relationships, the social organisation, the institutional background need all be created afresh. Additionally, they do not want to create just a community. They want to create an organic community.

For all these reasons, such a community, created artificially, is additionally supposed to fit and adapt to the closer natural environment of the eco-village. This means adaptation to the dynamics of the natural systems in their environment, which is the key to ecological sustainability and which is the main goal they are organised for.

An organic community relies on the resources of the natural environment. The goal of a community like this can not be anything else but to get to know natural resources, processes and connections in a depth which allows their long term, truly sustainable use and has a built-in alarm system which makes avoidance of their overuse possible (Babai et al. 2014:20). The ecological knowledge of those communities which eke out a living from the surrounding natural environment (hunter-gatherers, pastoralists, and traditional peasant communities in some cases) must not be content with the identification and use of the various resources, plants or animals, they need to have an intimate knowledge of population dynamics and the intricate web of ecological connections in order to actively manage the habitats and ecosystems, to adapt them to the changing boundary conditions and again, to recognise the signs of over-exploitation or even anticipate and avert such signs.

Figure 1. The Community House at Gyűrűfű, Zselic, Hungary, 2013. (Photo by Zsolt Pálfia)

SYSTEMS THEORY REVISITED

The system theoretical considerations apply not only to the relationship of an eco-village with its natural surrounding, but they are equally true in terms of its social structure: you can not get rid of the supersystem around you. In principle, three different kind of systems might exist: the organised whole is more than its constitutional parts, the organised whole is less than its parts (in other words, the parts block each other's functions), and in a neutral system the organising and disintegrating forces and impacts quench each other's impact, thus the system is nothing else but the entirety of its constitutional parts (Gorelik 1975). Natural systems and social systems are both organised systems, and, as such, they can be conceived as organic, integrated sets of super- and subsystems. The most interesting feature of such systems is that they will acquire new properties on each distinctly new level of organisation, which properties can not be derived of their constituent parts, can not be found in them and the systems will not have them, either, if they are arbitrarily compiled only, without systemic arrangements (Borsos 2003:90). That is, they fall into the first category of systems: they are more than merely the components they consist of. These unpredictable new properties are called emergent properties, popping up from nowhere at the new level of organisation. Their emergence can be attributed to the organised network of connections and relationships between parts, the very essence of system functionality.

Organised systems are connected to the larger entity above them – the supersystem, providing an environment to them – in many points and react to the changes thereof by adapting to them. Such adaptation is achieved by control and regulation, that is a dynamic balance of positive and negative feedback loops. As long as the environment allows, positive feedback loops reinforce a functional element of the system, but as soon as it reached the limits set by the boundary conditions, the function in question – growth,

Figure 2. Visitors at one of the Yurts, Gyűrűfű, Zselic, Hungary, 2013. (Photo by Zsolt Pálfia)

energy consumption, reproduction, etc. – will be restricted through negative feedback. Feedback has a lag time, which may result in the appearance of periodical fluctuations (such as predator-prey population sizes). However, periodical features can be controlled by lag time regulation only (Borsos 2016).

Contemporary society is a multiple complex system, and to make it more complicated, it is organised in two different ways. It has an institutional organisation form (government and its institutions, business entities, churches, etc.), where the individual is of secondary importance and organisation itself provides the framework, and there are organic relations, the family, relatives, neighbourhood, colleagues, where individuals create spontaneous or institutionalising organisations themselves, along their perceived interests and values (Gyulai 2009).

The latter include eco-villages. Their super system includes the surrounding society, mainly its institutions (such as municipality, county, region, nation state, EU). However, in addition to a geographic embedding of social structures a set of other types of embedded hierarchies can be envisaged. The hierarchy of settlements and physical entities can be conceived as a vertical hierarchy, while belonging to a political party, a church, an ethnic group, a language, a trade, economic sector, field of interest, etc. should be imagined as horizontal arrangements of individuals in a society. These two kinds of model organisation provide the output of social functioning in close interactions with each other, and the final result will be what the resulting force of the interactions in the system determined. As long as the eco-village is merely an isolated and tiny subsystem only, the resulting force will clearly point towards the existing supersystems. However, the eco-village itself – albeit at the cost of certain compromises and due to its small size – can exist successfully in the framework of its supersystem.

The relationship of the Gyűrűfű eco-village with the surrounding natural supersystem was covered earlier on extensively (Borsos 2009). However, an eco-village is also a

subsystem of the surrounding society. Consequently, whenever and wherever an eco-village is set up, it can not get rid of its social and historical environment entirely. As long as eco-villages are isolated subsystems, and not a part of a larger bioregional entity, their existence and functional limits are inevitably determined by their relationships with the surrounding supersystems of society. However, human behaviour in the contemporary social supersystems is characterised by secularisation, a consequence of 18th century enlightenment, and – in the wake of the emerging market economy – instrumental rationality based on abstract conceptual thinking, a feature hardly known before. Such rationality strives to realise arbitrarily set objectives with the use of the most suitable means, where the question whether such goals were appropriate is suppressed by the all-pervasive wish to improve efficiency of the means (Takács-Sánta 2008).

SOCIALISM LURKS IN THE SHADOW

Residual traces of the organic community and co-existence with nature are restricted to a very few and small places in Europe and the Western world in general. The prevailing paradigm is action to implement the arbitrary goals as mentioned above. Naturally, eco-village projects could not separate themselves from such approaches in the mainstream. Therefore, the structure of communities which define themselves as an eco-village can be one of two alternatives: either it reflects the social organisation, sociology and psychology of the surrounding society, or it wants to be an outstanding, isolated subsystem, a distinct entity. Certainly, these are the extremes and a number of transitional arrangements can be envisaged, but the community of most eco-villages can be classified into one of them (Borsos 2013a).

Eco-villages which are distinguished as independent subsystems are organised in many cases along spiritual or religious lines (Farkas 2012). Gyűrűfű took a more conventional approach, it has no declared faith and never wanted to be seen as an isolated subsystem. The original concept was a kind of post-industrialist approach, where the latest achievements of technology are mixed carefully with those of the traditional methods and practices which can be exercised in a 21st century environment without too much difficulties. However, this also meant that the members of Gyűrűfű came from the existing society. Naturally, this is not to say that they actually represented the Socialist ideas of contemporary Hungary at the end of the 1980s. In fact, many of them came from protest groups of various forms. Thus, it can be stated that the Hungarian eco-village founders – including those at Gyűrűfű – represented a spin off of the environmental movement just as well as the impacts of the Western New Age penetrating Eastern Europe.

In the case of Gyűrűfű, however, a special factor also emerged: the symbolic attitude towards settling in a place which used to be a small rural community, and a victim of the village destructing furore of the powerful in the Socialist era. A community marching against the current trends (urbanisation, urban migration, consumer society, attitude towards the environment etc.) made an attempt to settle down at a location where the small rural village exposed to the whims of power existed before. It can be contemplated that the self-sustaining, difficult to access, and hence, difficult to control and influence rural existence was seen as non-desirable by the political power in the times of the Socialist state, while the village has become unviable for those who lived there due to the

consistent suppression of their opportunities from top down. The new 'dwellers in the land' moved to this place just for the same reason: to create a self-sustaining, difficult to access eco-village in an environment which was not prone to the invasive industrialisation practices of the previous decades, which lacks the conventional infrastructure and which is a small, secluded site away from the buzz of the cities (Farkas 2009).

In spite of their good intentions, members of the Gyűrűfű community could not shed their skins and get rid of the Socialist past. Arguably, the project started practically in line with the political transitions and the free elections in 1990, consequently all the founding members had lived in the Socialism before. There is no reason to wonder that in most eco-villages launched in this period in Hungary, the 'existing' Socialism – a pejorative attributive noun commonly used at the time to indicate that things did not go quite as anticipated – was mirrored in them in some way or another.

Everybody in that generation carried the burdensome heritage of the Socialist past in various extents and in different ways. Beside the environmental activists and dissidents, children of party secretaries and presidents of agricultural cooperatives were found among the pioneers just as well as unemployed miners and descendants of has-been proletarians. Therefore, a frustrated attitude towards the communistic ideas of the New Age or hippie movements – many of them deeply rooted in eco-villages of the time in the West – could be experienced. Communistic ideas proved to be dysfunctional in the Socialist period and they were regarded with suspicion when encountered in a new form, the 'everybody for everyone' approach seen in – for instance – Gyűrűfű. However, a properly functioning eco-village is not a commune and is not an enemy to private ownership. As it was stated earlier on, the eco-village of the present is inevitably entwined in a double sided organisational structure: while it is in principle desirable to restrict the all-encompassing inclusion of private property to protect natural systems, it can not be accomplished under the boundary conditions of the social supersystem without running into difficulties and suffering competitive disadvantages in getting to the necessary resources (Borsos 2013a). Unfortunately, as it was described in another paper, the solution chosen for Gyűrűfű was not a lucky one (Borsos 2009).

RESULTS

It was observed that in the wide scope of approaches taken by Hungarian eco-villages, ranging from purist tradition and religion or spiritualism up to all-embracing technology and innovation, Gyűrűfű stands somewhere in the middle (Farkas 2014:56): while not neglecting the past and trying to learn the lessons from the traditional methods, a key role was envisaged for the post-industrialist, non-invasive and non resource-intensive technologies, such as telecommunication and alternative energy systems.

Nature-humans relationships

Research has shown that societies in the past made an attempt to ensure their livelihood with as little destruction as possible. Ethnographers and cultural anthropologists have repeatedly demonstrated that in most traditional communities the intention to preserve

Figure 3. Wood pasture on the eastern hillside of Gyűrűfű, Zselic, Hungary, 2013. (Photo by Zsolt Pálfia)

the wealth of the natural environment was quite conscious (Andrásfalvy 2009). For instance, this was accomplished for centuries by the land use patterns and water governance practices in the Tisza valley (Borsos 2014).

In hilly or mountainous landscapes, such as the Zselic, Gyűrűfű is situated in, wooded pastures represent an excellent example of sustainable management of hillside grasslands and clearings (Varga et al. in press). Recent research in many places in Central and Eastern Europe demonstrate, that such practices are still present in some rural communities, and also, that by proper use and adaption of such practices they can be continued for an undefined period of time without disrupting the delicate and dynamic ecological balance of the specific habitat they are applied in. In fact, secondary succession can be actively managed on wooded pastures by the appropriate methods and hence, not only the state of affairs can be maintained, but a kind of adaptation is also possible in the light of changing boundary conditions – such as, for instance, the local impacts of the impeding climate change (Babai et al. 2014).

Although the direct predecessors of current Gyűrűfű dwellers did not practice such grassland husbandry methods, the area is absolutely fit for such an approach. Lessons from the past and the current possibilities allowed to set up several such plots in the watershed, which provide grazing grounds for horses, sheep and cattle and set secondary succession to a path managed by humans.

Figure 4. Goats on pasture at Gyűrűfű, Hungary, 2013. (Photo by Zsolt Pálfia)

Organisation, man-nature relationship, ownership

Gyűrűfű was designed along the lines of a strictly ecological approach, but this statement applies to physical design only. Human factors were confused, neglected, idealistic and mistaken from the very beginning. The Foundation as the only organisational scheme failed as soon as individual interests clashed with those of the community. Since a foundation has no membership and is led by a Board of Trustees, democratic decision making mechanisms could not be effectively practiced. As a result, the community has no clearly defined leadership up to date, which is a disadvantage when quick and responsible decisions would be needed for the sake of the common interest.

Attempts were made to create artificial traditions to make up for the missing religious or spiritual ties. The most consistently practiced such rite is the Autumn Equinox Celebration, a festival organised each year by the participants with many visitors coming. The date selected for the event symbolises both the new paganism of the New Age and the celebration of the traditional village saint.

Beside the difficulties in community based decision making, the structural setup and the conflicts of the village society also have several shortcomings. The 18 to 35 age group is practically missing from the texture of the population, while elderly people – with one notable exception – come only as visitors to their offspring or families. The reason for this is clear: the initial settlement of the new project was implemented by a relatively homogeneous age group then in their thirties, who are now between fifty and

sixty. Children of the first generation grew up to young adults and most of them study or look for jobs elsewhere. It remains to be seen, whether the younger generation will come back to replace and take over from their parents or will there be a generation gap in the population of the community, to be filled by newcomers (Erdélyi et al. 2014).

Social cohesion has been and to some extent is still being tested by land issues and road issues and immigration. Land issues are represented by long lasting, protracted litigations which prevent free and easy leaseholds, while the road issue is embodied mainly in the condition of the access road, the only artery connecting the village to the outside road in physical terms. Its deterioration was stopped by common efforts in the summer of 2014, demonstrating, that in spite of the struggles, inhabitants are willing and able to cooperate when absolutely necessary. It should be noted that access to the village is an issue which divides the inhabitants. Those who need to make trips frequently or earn a living from hospitality industry, prefer better roads, while those who see visitors a nuisance and want to leave the site only now and then think that a difficult to pass dirt road would be more than sufficient.

The problem of newcomers is manifold. The village needed further settlers to increase the number of permanent inhabitants in order to reach a 'critical mass,' able to provide the functions of an independent subsystem. Additionally, over the years some of the settlers were forced to leave the site for various reasons (family quarrels, divorce, unbearable tensions with the community, administrative problems of ownership, lost lawsuits, failed livelihood, just to name a few). The drop-out ratio is not high but significant.

Newcomers face a lot of trouble upon arrival. There are only a few lots available, even less land to let, and the problematic community life does not seem to create a very attractive and welcoming environment. They need to comply with complicated and arbitrary conditions such as a leasehold agreement with the foundation before building permits are issued and in certain cases the resistance of the community – or some members of it – aggravate the situation. In the meantime in the supersystem, both in Hungary and internationally, the prosperity of green ideas and the fashion of alternative lifestyles have passed and less and less people see the eco-village as an alternative path of the future for themselves. In spite of this, immigration did not stop entirely, just slowed down, compared to the 1990s.

The impacts of the social supersystems around Gyűrűfű have been manifested recently in the development of new technologies, which could not have been possible just a couple of years ago. There are two such novelties which – although present in the original development concept – could not be implemented at the level of technology advancement of the 1990s: energy and telecommunication.

Energy in the promising future

Renewable energy sources were considered thoroughly in the design phase for Gyűrűfű. Initially, however, no comprehensive plans were envisaged to replace grid-derived electricity and the main course of action included the conversion of biomass stored in the form of wood as well as passive solar and insulation techniques to reduce the need for heating energy during winter times (Borsos 2005). Up to the beginning of the 2010s, grid based power supply had no viable alternative at Gyűrűfű.

Figure 5. Photovoltaic cells on the roof of the Community House, Gyűrűfű, Zselic, Hungary, 2014. (Photo by Béla Borsos)

However, this situation started to change some ten years ago. Developments in the photovoltaic technology resulted in a downfall of commercial prices for solar panels, and accession to the European Union by Hungary mandated the government to set up subsidy schemes to promote the use of renewable resources. Consequently, in a period ranging from 2009 up to 2013 there was a possibility for installing solar systems which could be successfully exploited by Gyűrűfű as well. A total of four systems were installed, three of them on a commercial basis. Due to the power generated by these systems the power balance of the cluster of plots supplied from the national grid with the help of a transformer station was reduced on an annual basis to near zero, meaning that the meter on the transformer pole shows a value near zero: the overall amount of energy produced by the photovoltaic cells installed in the four locations out of the nine lots in the cluster was sufficient to supply the entire cluster throughout the year. Certainly, the temporal pattern is different, there were times when the solar cells fed onto the grid and there were other times when power had to be drawn from the grid. According to an analysis carried out for the consumers in this cluster, it can be stated that the system was nearly self-sufficient and relatively energy saving, considering that most people in the cluster both live and work and that two commercial establishments are also operated there (Borsos – Munkácsy 2014).

Independence through microwave networks

The other aspect where the original post industrialist concept was reinforced by the latest developments is telecommunication. It has always been emphasised by developers at Gyűrűfű that if you want to attract a major population to rural locations where physical traffic is cumbersome and expensive, you need to offer some alternative means of communication to replace the need for physical movements and to provide opportunities

Figure 6. Dióliget. Passive solar house at Gyűrűfű, Hungary, 2014. (Photo by Béla Borsos)

such as home-computing, teleworking, etc. In geography, traffic is also a form of communication. Traffic is a technique used to conquer space, and virtual communication is a logical advancement of such a technique. In the fifth round of such techniques designed to overcome large distances since the Industrial Revolution, after the steamboat, the railway, the electric grid and the highway networks, these days the transmission of data and information seems to be – at least theoretically – more important than physical transportation of goods and passengers (Erdősi 2004:25).

In Gyűrűfű, however, several stages had to be endured before the current arrangements would have become technically, financially feasible. Initially, there were no communication possibilities at the site, whatsoever. During the first few years amateur ham radio sets were used to set up connections between the construction site of the community building and the headquarters at Ibafa village. In the next phase, a mixed version of wireless radio-telephone sets and fixed line networks of the telecommunication company MATÁV (called RLL which stands for radio in the local loop) were used, making very unreliable and poor quality voice connections possible only. With the advent of the mobile phone era, the entire territory of the country was developed to provide coverage everywhere – except a few remote locations like Gyűrűfű, which is situated among the hills and the microwave towers of most service providers could not reach the properties in the valleys.

In the next phase, a national project of the fixed line service provider MATÁV was applied for and implemented. This meant the installation of a 3.5 km long underground cable from the neighbouring village Dinnyeberki, the replacement of the overhead line connecting Dinnyeberki with Bükkösd, the closest branch exchange, and the setup of a private branch exchange in the Community Building in order to allow the commissioning and operation of a technology called ISDN (integrated services digital network). This service was also very unreliable, yet the first possibility for data transfer.

It operated for a couple of years, but the now final solution came from the side of development of wireless technologies. They were promoted in recent years and provide a lot higher quality parameters than before. Having regard to the fact that several individuals in Gyűrűfű earn their living by working on and with computers, a company was set up to make its own investment project and to erect a proprietary microwave network for both Gyűrűfű and the surrounding small villages on a commercial basis. By the end of 2014 proper broadband high speed coverage was established in 18 communities in the region (Borsos 2016).

CONCLUSIONS

The boundary conditions for the eco-village subsystem are gradually closing down on the small, isolated unit. It has to be stated that Gyűrűfű represents a very narrow and artificial segment of society, which is extremely difficult to set up and sustain, but it has also to be stated that it survived, after all. Researchers see the main function of such initiatives as the entities providing role models for mainstream society (Farkas 2014). Tensions and conflicts stretched social cohesion in the past 10–15 years but new developments such as creating jobs by modern telecommunication means and achieving energy independence through the deployment of solar panels and passive energy conservation solutions off-set for these difficulties. The future of the experiment depends very much on three factors: generation change, immigration and conflict resolution. Further settlement is indispensable for achieving a viable size, generation change for ensuring long term sustainability in social setup and population dynamics, and an effective conflict resolution process is absolutely necessary to enjoy functional community relations.

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Landscape Reconstruction of the Southern Transdanubian *Puszta* (1683–1735) Based on 18th-Century Border Litigations[1]

In memory of Zoltán Ilyés

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Abstract: *Puszta* is a widely known phenomenon that primarily denotes a deserted countryside and not the flat areas, vegetation, cattle grazing and some picturesque landscape items that are usually associated with. In Southern Transdanubia, a borderline during Ottoman rule for 143 years, settlement desertion became a crucial and overwhelming factor from 1543 to 1686. My paper addresses the age of reorganization (1686–1720), right after the Ottomans were defeated, and focuses on land use and the general appearance of the land. There are two major views on this situation. Some historians hold that the elaboration took place in a scarcely populated and "wild," natural area, thus the process of colonization was inevitable. Meanwhile, other scholars who worked with local archival sources have pointed out that plenty of families survived there whose livelihood changed during the Ottoman occupation but they filled the land with human activities. This resulted in a different type of land structure, which was far from the so-called medieval landscape.

In my paper I follow the second theory and depict the landscape in a minor area on the basis of archival data. I analyze the practices of land use in order to show the way the "*puszta*" did and did not exist. I also investigate the key factors that affected a new landscape shift, which brought about the colonial landscape.

Keywords: landscape history, historical ethnography, environmental history

THE *PUSZTA*

The *puszta* (Hungarian steppe) is surely a familiar term even to non-Hungarian readers, which originally meant desolate land, designating the boundaries and in-lots of abandoned settlements. Lands that have become desolate and deserted proliferated in Hungary as a result of wars in the Ottoman period (1526–1686). In Hungarian scholarship, the process

[1] During research for this study, the author received the MTA Bolyai János Research Fellowship (BO / 00 620/14/1).

leading to the destruction of villages is called the desolation, and it is divided into two periods. The first phase of the destruction of settlements can be placed in the 14–15th century, which is discussed as the early or first desolation. Behind this desolation are factors that are characteristic of other regions of Europe, too, especially epidemics, negative climate changes and the resulting outbreaks of famine, which then triggered a decrease in rural populations and their migration into the cities (Duby 1978; Neumann 2003; Simms 1976; Szabó 1971:183–188). The phenomenon can be primarily observed on the Great Hungarian Plain, but at least as far as research shows, it has caused no significant change in Southwestern Transdanubia, the subject of this study (Müller 1975:40–42). The second period of desolation emerged as a result of the Ottoman invasion. After the lost Battle of Mohács (1526) and the occupation of Buda (1541) and Southern Transdanubia (1543–44), more than half of the territory of today's Hungary became a buffer zone between empires, a borderland – in other words, a "permanent frontier" where thousands of villages withered away and turned to wasteland (Hofer 1965; 1985; Hollander 1960–61; Szakály 1997:151–163). As such, the *puszta* is not rooted in a constructive era of economic and cultural growth, but can rather be regarded as the legacy of a particularly decadent period of destruction of people and structures. This is so even though a kind of dialectic prevailed, and after the devastation it was repopulated from time to time. The Hungarian *puszta* admired in romantic 19th-century paintings is only a figurative representation the landscape, vegetation, and economic activities maintaining that landscape, especially extensive animal husbandry and pastoral culture. These are, so to speak, superimposed, lifestyle-related landscape features. It transmitted this secondary set of phenomena to the world during the developmentally arrested but somewhat consolidated era of the 18–19th century, when the symptoms characteristic of the former conflict zones have not yet completely disappeared.[2] The environment-dependent lifestyles typical of the *puszta* survived on the Great Plain the longest, thus the *puszta* became the distinct landscape of the Great Plain. In Southern Transdanubia, these areas were eradicated through various re-populating efforts in the early 18th century, so the *puszta* remained only in name, and even its meaning has changed. The meaning of the expression '*puszta,*' instead of desolate village, destroyed landscape, became 'landlord's plant', since this is where the landlord developed his estate centers, where he settled large numbers of agricultural workers.

Hungarian scholars have long been concerned with the question of what the *puszta* was like in the Ottoman era. Ethnographic, historical and demographic research was primarily focused on the changes in population and settlement systems; presentation of the landscape – inseparable from the above, yet an independent issue – usually served to support quantifiable information. In presenting the landscape, they relied mostly on reports of 17th-century travelers, ambassadors, military officers, romantic stories of missionary priests, early 18th-century works describing the country, and letters written by new settlers addressed to those left in the old country; in other words, their information was gained from contemporary narrative works – written mainly from an external perspective – that considered the landscape dreary, wild, uncultivated (Bél 1728; Szilágyi 1983:44–49; Szita 1987; Molnár 2006:111–116; Gaál 1984; Várnagy

[2] For the 'discovery' of the Hungarian Plain and the herdsman see: Sinkó 1989.

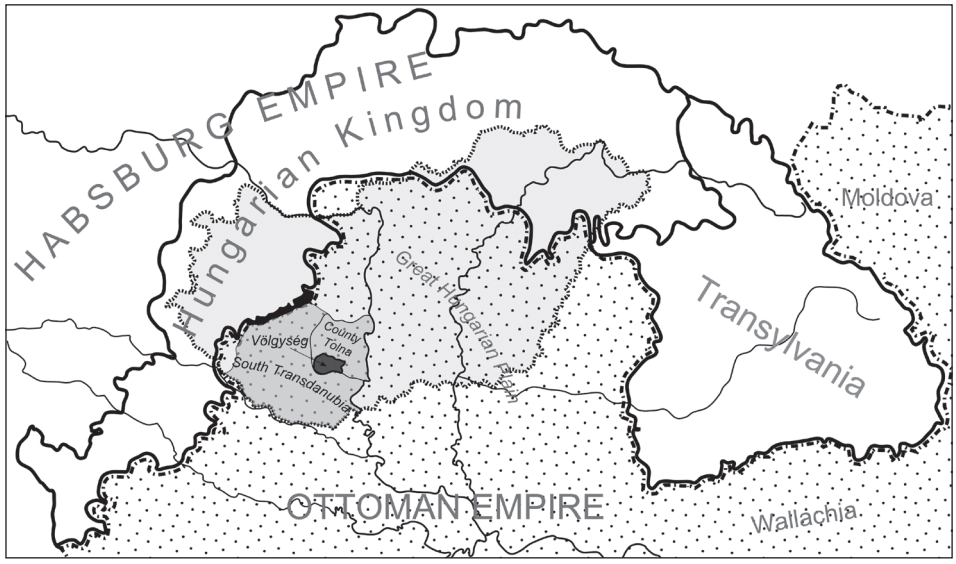

Figure 1. The location of Southern Transdanubia and the Völgység on a 1683 map of the Carpathian Basin

1990:156). The professional literature of the era sometimes adopted uncritically the views of the narrative sources, and paid little to no attention to other contemporary experiences or messages from other sources.[3] It is a widespread and still popular belief that after the expulsion of the Ottomans, the settlers of Southern Transdanubia were greeted by an untamed environment, a wilderness that they then converted into a cultivated landscape (Ács 1987:43–45; Bai 2008; Follajtár 1942:4; Glatz 2006:276, 285; Kosáry 1990:56–57; Polónyi 1966:226–227; Schmidt 1939:13–15; Szekfű 1936:393–395; Szita 1993:9; Wellmann 1979:12; 1987:62; Weidlein 1935: 673, 681). At the same time, numerous authors painted a more nuanced picture of the turn of the 17–18th century.[4] Already in 1933 Tibor Mendöl pointed out that the terrain was neither unoccupied nor uncultivated, but the land was poor, ruined and devastated (Mendöl 1993:170–178). The other, divergent viewpoint which assumes wilderness and barbarism, persists to the present day; throughout its four editions, in the Chronicle of Magyars, for example, we can read: "The central regions hit with the worst devastation were home to a society accustomed to living in temporary makeshift houses in a brushy, marshy environment, in tattered clothing, devoid of their humanity and amongst degenerated social morals" (Glatz 2006:276). Historians agree that besides the Long Turkish War (15-year war) of the turn of the 16–17th century, the greatest destruction was caused by the wars of the turn

[3] Good summary: Makkai 1987:1425.

[4] Andrásfalvy 2011:264–265; Ágoston – Oborni 2000:86–92; Katus 2010:538; Makkai 1987:1425–1430; Maksay 1976:50–54; Takács 1976:19–35; an excellent study in terms of source criticism and methodology about the forts and their surroundings in Tolna County is provided by: Gaál 1984. A fundamental work in terms of medieval villages, local place-name research and landscape history: Weidlein 1934; 1935; 1936.

of the 17–18th century. This highly destructive era itself can be divided into three war events: the siege of Vienna (1683), the liberation of Buda and Transdanubia (1686), and Rákóczi's War of Independence (1703–1711).

This study examines the effects of the resulting settlement and landscape deterioration, as well as the landscape changes after resettlement. The scene is a smaller geographical unit in Southern Transdanubia, the so-called Völgység, where roughly 87% of the late medieval settlements perished during the Ottoman era.[5] During the reorganization (18th century), about 42% of them were revived, making their area approximately 2–3 times larger than it was for the medieval villages. Therefore, the key question of this study is: to what degree was the environment "aboriginal" before and during these wars, and did the *puszta* truly devolve into wilderness or something else?

BORDER LITIGATIONS

My paper is based on 18th-century border litigations that proliferated after the Ottoman era and provide an excellent regional coverage for the history of the environment. These border litigations arose mainly after the repopulation of the area (1730–1760s), when the number of *pusztas* has been greatly reduced, and in this context it became an important issue where the boundaries between settlements ran, which theoretically continued with the same boundaries after the liberation as in the Ottoman era. In practice, however, the boundaries changed.

The starting point of lawsuits was almost always a dispute among peasants. Some were more peaceful in nature, such as illegal plowing or grazing. When caught, the offender had to pay a ransom (plow, ax, ox, etc.), or he was bound and dragged into prison, that is, the perpetrator himself became a pawn to be redeemed by his associates for money. The border disputes sometimes degenerated into bloody brawls or even domineering led by *ispáns* (county heads) and *hajdús* (mercenary soldiers).[6] Luckily for the researcher, however, settlement of these estate litigations was not reached via concessions among each other but entrusted to the county jurisdiction.

The litigations gave rise to several types of documents, which I will not describe here. Only the so-called witness testimonies (*metalis inquisitio*), most valuable from the ethnographic point of view, will be discussed, which recorded the knowledge base of local people (peasants, shepherds, *hajdús*, etc.) regarding boundaries. Of the litigations in the western part of the Völgység, I used 21 *metalis inquisitio*, which included a total of 242 witness testimonies. But before I turn to the substantive analysis, it is necessary to speak about the main structural units of the testimonies in order to understand what these documents are suitable for and what they are not.

1. The boundary specification *(ductus)* records the location of the boundary line point by point. The *ductus* was not always composed into the document. Of the 21 documents examined, only eight contain a *ductus*; in two cases the cause of action *(de eo utrum?)*

[5] Of 88 medieval settlements, 77 were lost during the 16–17th century (dominantly during Ottoman period).

[6] More details on the ethnographic research of borderland litigations: Bárth 1990; Égető 1989; T. Mérey in 1967; Tóth 1987.

conforms to the boundary specification, and in eleven cases the boundary signs are listed by the witnesses in their testimonies (*fassiones testis*).

2. The cause of action (*deutrum* or *de eo utrum?),* edited by officials, contains questions regarding knowledge of borders, the location of the *puszta*, etc., which were posed to the witnesses.

3. The witness testimony *(fassiones testis)* contains the sworn affidavit of the witnesses.

The boundary was 'common knowledge' among the summoned witnesses, which was sometimes – as already mentioned – composed into a special *ductus*. If the boundary description occurs in the testimonies, the witnesses usually describe the boundary with slight deviations, which noticeably does not even reflect their own words, but rather the mutually experienced information recorded by the clerk. However, the recollections of the witnesses are mostly unique and divergent, as they got to know the terrain differently and at different times. From the point of view of source criticism, it is notable that since the witnesses received money from the landlord, their testimony does not necessarily coincide with what happened. Of course, in most cases there is no question about it, because the witnesses took an oath before the officials. In terms of the reconstruction of the history of the environment, any iniquity would not be of great importance, as during border inspections *(oculata),* the border points inspected in the presence of the sheriff and jurors were certainly real. And memories relating to the distant past had to be believable, that is, true to life in their time.

Of the structural elements presented, the most important are the boundary description and the testimony. The *ductus* mainly describes the structure of the landscape, the species, landforms, and the characteristics of the landscape. The testimonies contain much less information about vegetation. Conversely, they provide very valuable data about the activities carried out on the land, about farming and everyday events, and they also provide the historical outlook of the lawsuits, since the witnesses mostly recalled the historical landscape (20, 30, 40 years ago) and confronted it with the present. Of course, the boundary lawsuits cannot reflect the peculiarities of land use typical of the entire landscape; especially lacking is the information relating to the inner areas of the former villages and their environment. I tried to compensate for these 'inherent weaknesses' when choosing the study area. My goal was to find a border for analysis that was as long as possible, revealed land segments with different characteristics, and encompassed the entire terrain of perished settlements. The selection of the trail was guided by my empirical knowledge gained during the processing of other lawsuits and my own survey of the land.

STUDY AREA

Based on the border lawsuits, I put together a reverse S-shape boundary line running north to south in the western half of the Völgység (Figure 2), which stretches along the borders of revitalized settlements and *pusztas*. The main dividing line is 37 km long.[7] In two locations I added auxiliary sections, which return to the main border line

[7] Measurement were made with the help of the MePAR browser using a topographic map overlay.

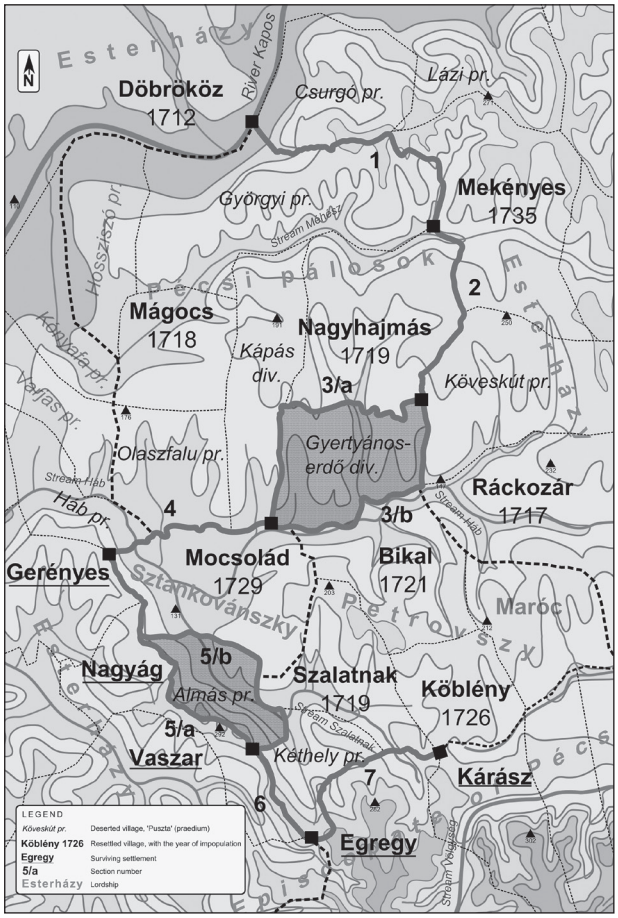

Figure 2. The villages and *pusztas* of the study area[9]

in a way that the auxiliary and main borders each encompass a larger piece of land. The northern piece of land is a disputed border section, the so-called "Gyertyános forest" (805 ha), where there was a short-lived Serb settlement attached to Nagyhajmás (puszta Nagyhajmás) at the turn of the 17–18th century. The southern piece of land is also contentious land, likely the entire terrain of a perished medieval village (Almás) (442 ha). The two auxiliary border sections run about 12 kilometers.[8]

The main dividing line starts in the groves of the Kapos river and ends at the headwaters of the Izmény-Györei watercourse. I tried to 'draw the border' so that the topography, vegetation and microclimatic features of the landscape would be most pronounced. Section I of the land survey intersects the asymmetrical hilly lines fundamentally characteristic of the region (geographical Völgység) (1, 2), which have steep northern sides and southern sides that slope and run long. It passes through the south-facing slopes of the Nagyhajmás and Kápás hills dissected by streams (3/a; 4), while the auxiliary section (3/b) encircles the space called Gyertyános forest along the streams. Section II of the land survey passes through the top of the Gerényes hill (5/a), and the auxiliary section descends from here and goes up the west-facing Róka-hill (5/b), then curves back to the main line. The main line continues along the top of the ridge toward Egregy (6) in a southeastern direction. The last section (7) passes through areas dissected by initially north- then east-oriented south-north directional ridges, stream valleys and small pools.

[8] In the table, supplemental border sections are specially marked.

[9] The map does not show all destroyed late-medieval villages. The boundary lines are exact only in the case of the studied borderlines, the others are approximate.

Part	Section	Settlement borders used in documents[10]	Year	Reference number	Litigating estates
I.	1	Csurgó (pr.) – Györgyi (pr.)	1757	MNL Est. Rep. 92. f. 8. n. 316. a.	Esterházy – Pauline Fathers
		Mekényes – Györgyi (pr.)			
	2	Mekényes – Györgyi (pr.)	1759	MNL Est. Rep. 92. f. 8. n. 317. a.	Esterházy – Pauline Fathers
		Mekényes – Nagyhajmás			
		Köveskút (pr.) – Nagyhajmás			
	3/a	Nagyhajmás – Bikal; Mágocs – Bikal	1751	MNL BML IV. 1. f. 3. VIII. 206.	Pauline Fathers – Petrovszky
	3/b	Nagyhajmás – Bikal; Mágocs – Bikal	1752	MNL BML IV. 1. f. 3. VIII. 238.	
	4	Mocsolád – Bikal	1745	MNL BML IV. 1. f. 3. V. 123.	Sztankovánszky – Petrovszky Sztankovánszky – Pauline Fathers
		Mocsolád – Mágocs			
II.	5/a	Háb (pr.) – Mocsolád	1756	MNL Est. Rep. 92. f. 10. n. 306.	Esterházy – Sztankovánszky
		Gerényes – Mocsolád			
		Vaszar – Almás (pr) (Mocsolád)[11]			
	5/b	Almás – Ravaszlik	1756	MNL Est. Rep. 92. f. 10. n. 386.	Esterházy – Sztankovánszky – Petrovszky
		Mocsolád – Almás			
		Szalatnak – Almás			
		Kéthely – Almás			
	6	Vaszar – Kéthely	1765	MNL BML IV. 1. f. 3. XXII. 655	Petrovszky – Esterházy
	7	Egregy – Kéthely	1743	MNL BML IV. 1. f. 3. III. 76.	Petrovszky – Bishopric of Pécs
		Egregy – Szalatnak			
		Kárász – Szalatnak			

Figure 3. Sections of the border line; municipalities and *pusztas* intersecting within the section (pr.); date of the lawsuit; reference number of the archival document primarily used for the reconstruction; and names of the estates involved in the lawsuit. (MNL = National Archives of Hungary. Est = Archives of Esterházy Family BML = Baranya County Archives)

[10] The chance of reconstructing the total perimeter of the borderland of a settlement from a single document is minimal. Documents usually refer only to sections of the borderland between settlements.

[11] The location of Almás was the subject of the legal case.

THE EXTENT OF DESTRUCTION, THE RE-GRANTING OF ESTATES

There were 14 villages in the time of the border litigations listed in the table (1743–1765). In addition, nine *pusztas*, that is, legally separate settlements with no residents, as well as two legally not independent boundary regions were registered, which in medieval sources appeared as villages. Memories of them were lost during the long Ottoman rule, but it is also possible that the resourceful stewards and peasants deliberately denied their village status in order to acquisition the land. During the 18th century, the *pusztas* were granted by the landlords to the villages for use, to facilitate the accession of settler communities then at the turn of the 18–19th century, most of them were administratively incorporated into one of the neighboring settlements. By then the landlord was no longer looking out for the interests of the peasants; the former *puszta* was used to develop his own estate, erecting barns, granaries, hunting huts, and other economic structures on it, even building his castle or mansion on it. Comparing all data in the examined documents, there remains a recollection of 24 former settlements on both sides of the borderline. The number of villages was even higher in medieval times, there still being 34 settlements along the borderline at the end of the 15th century.[12] Of the 34 settlements, only five were not destroyed in the 16–17th centuries (Gerényes, Nagyág, Vaszar, Egregy, Kárász). The whole area north of the five indicated settlements was part of the *puszta* landscape, on which Serb settlers who surrendered to the Ottomans arrived in the 17th century. The Serbs[13] retained the names and boundaries of the Hungarian villages, or rather the Ottoman administration preserved them, to which the Serbs adapted. However, the Serbs rarely occupied the interior of perished Hungarian villages; they mostly built their houses in new locations. Nevertheless, it was their villages that the desolation affected, some of which have become uninhabited by the time of the siege of Vienna (1683), and the somewhat restored Serbian settlement system as a whole was destroyed during Rákóczi's War of Independence.[14]

After the liberation, the region was initially overseen by the Simontornya and later the Pécs provisorate (inspectorate) of the royal chamber. The only new-old landowner was the Diocese of Pécs, whose medieval estates were returned in 1703 as a new endowment.[15] The Esterházy family bought the villages of the Völgység in 1692, which were part of the Dombóvár Dominion (Ódor 1992:67). The Pauline Fathers became owners in 1719 (Borsy 2001:99). Count Farkas Rindsmaul and the Lengyel family acquired lands in the region around 1720. The Lengyel family sold their villages to

[12] Döbrököz, Csurgó, Lázi, Györgyi, Mekényes, Nagyhajmás, Köveskút, Bikal, Kozár, Móri, Vargány, Mocsolád, Kápás, Olaszfalu, Varjas, Háb, Ravaszlik, Almás, Gerényes, Nagyág, Vaszar, Köszvényes, Bágyon, Kéthely, Szalatnak, Ábel, Bakóca, Lipóca, Petrőc, Bolda, Egregy, Kárász, Köbli. Based on historical sources (K. Németh 2015), the settlement of Varsa can also be placed in the Mekényes Valley.

[13] Determining the ethnicity of the Slavic populations from the Balkans that migrated north during the Ottoman era is very problematic, in this paper I use the term 'Serb' instead of 'Rác' which is generally used in historical data, although 'rác' denomination is accepted in Hungarian professional literature as a generic name of 18th century orthodox Slavic population of South Hungary (see: Hegyi 2002:29).

[14] In detail: Máté 2016.

[15] Borsy 2003:191. The bishopric/see owned the settlements even during the Ottoman rule (Füzes 1997:109).

the Sztankovánszky family,[16] Rindsmaul to the Petrovszky family, and thus the lawsuits were executed by them.[17] The villages were repopulated in different times, as can be seen in Figure 2 and Figure 4. It is important to note that during the resettlement, the majority of the villages were already inhabited and the landscape was being used; the data indicates the re-settlement and the departure (displacement) of the old residents.

Landowners	Esterházy family	Petrovszky family	Pauline Father's Monastery of Pécs	Bishopric of Pécs	Sztankovánszky family
Date of entry into possession	1692	1732	1719	1703	1724
Village (*pagus, possessio*)	Mekényes (1735) Ráckozár (1717) Gerényes (old) Nagyág (old) Vaszar (old)	Szalatnak (1719) Köblény (1726) Bikal (1721)	Mágocs (1718) Nagyhajmás (1719)	Egregy (old) Kárász (old)	Mocsolád (1729)
Estate (*praedium*)	Csurgó Köveskút Almás (contested affiliation)	Kéthely	Györgyi	–	Ravaszlik Almás (contested affiliation)
Borderland (*diverticulum*)	–	–	Olaszfalu Kápás (contested status and affiliation	–	–

Figure 4. Ownership and types of settlements during the border litigations (1743–1759)

[16] The Lengyel family received it from the chamber after paying the liberation fee; the repopulation of the *puszta* occurred during the Sztankovánszkys (Füzes 1998:74–75).

[17] József Petrovszky I bought Köblény and Bikal from Farkas Rindsmaul in 1724 (Sonkoly 2001:87), and Szalatnak from the Sauska family, where Serbs lived – with the exception of Szalatnak and Kéthely. In place of the Serbs Petrovszky settled Germans.

THE EVALUATION OF THE LAND SURVEYS IN TERMS OF LANDSCAPE HISTORY

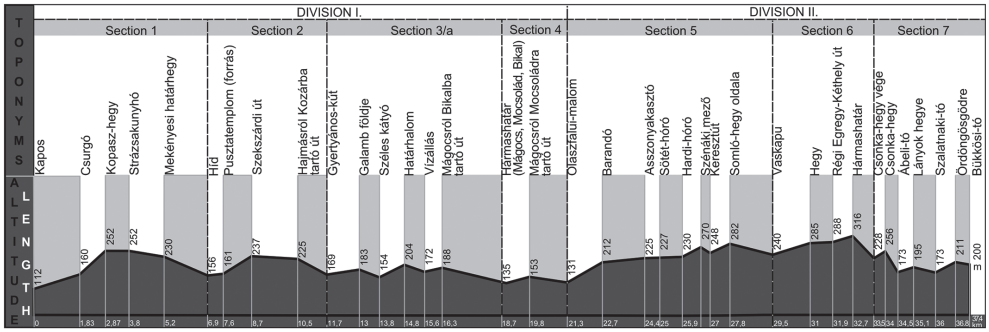

Figure 5. Cross section of the main line with the most important boundary points

Border lawsuits are an extremely versatile resource. Ethnography has utilized the information immanent in them in several areas, such as in researching migration, clearing farming, settlement decay, but the most comprehensive analysis was conducted in the field of legal ethnography.[18] They contain rich analysis opportunities from the aspects of environmental history and landscape history, due to the fact that they include additional data not only about boundary marking objects (boundary trees, boundary mounds), but also other objects endowed with boundary roles (trench, unmarked tree, dilapidated building, etc.), as well as farming and land use.

Conclusions drawn from the physical conditions of boundary mounds (conditions and locations of clearing)

In reports of land surveys performed in the first half of the 18th century we see few boundary mounds, but their numbers grow over time. This is mainly observed in those regional sections (No. 1; No. 7) from which several land survey reports are readily available. A tendency is detectable in which the mounds multiplied mainly at the expense of natural elements (landforms, waters). Do not think, however, that this was the result of a 'modernization' process crowding out the more ancient or primitive boundary markers. Rather, during periods of depopulation, boundaries were associated with natural objects out of necessity, as landscape activity was reduced and fewer arable lands and meadows were used. It is noteworthy that in the early border lawsuits from the early 18th century, witnesses recall boundary mounds established during Ottoman times and surveyed in the presence of the Ottoman landlord. From all this we can conclude that artificially formed boundary markers, especially the creation of mounds, was a consequence of more consolidated conditions, while during periods of desolation, elements that were 'not created' but lived in memory or were associated with natural objects took on the main role.

[18] Some important examples: Bárth 1989; Kocsis 1979; Takács 1976; 1980; 1987.

From the environmental history aspect, the investigation of the decades-old mounds might be successful, because even if the environment changes, the mounds will pass on the vegetation. It is not unusual, for example, that a tree would be planted in the center of the mound in order to protect the mound from erosion, or vice versa, they would pile a mound around the tree so that the marker would be even more evident. In the examined lawsuits, however, only two cases serve as an example of this. The grass cover of the mounds demonstrated how old and undisturbed they were. From the perspective of vegetation history, however, they do not carry a significant meaning, since boundary mounds in a wooded landscape – especially at the edge of a forest – will obviously sooner or later grow a grass cover. It is more useful to turn our attention to the counties surrounding the mounds, where we are more likely to observe climax plant communities characteristic of the landscape. In phase 3, for example, after the resettlements, in place of the forests between Bikal and Nagyhajmás, the original vegetation shrank to a single shrubby, bushy county. The shepherds grazing their oxen on the nearby croplands rested on the boundary mounds erected in the county, which were followed by wider, grassy, wooded strips of land. In the shrubby borderland we can obviously see the vestiges of vegetation developed during the desolation, the remains of which are now completely gone. Recollections about the mounds often contain ethnographically important references to daily life and farming, which support the witness' knowledge of the landscape. From such stories we can learn about the brawl that broke about among the shepherds of Nagyág and Kárász because of grazing, or that a shepherd slept on top of the boundary mound. Ethnographically very valuable is also the information about a swineherd that summoned his swine from the top of the mound with a horn.[19]

It is not closely related to the subject, but it is important to note that the borderland is associated with a rich world of beliefs. It was a popular belief that there is treasure hidden underneath the boundary mounds. And it may also be more of a legend that the Ottomans hid burned wine or dead coals under the mounds. Whether the acts related to the boundary mounds are true or not, their role was similar to other memorial (repeated) rites on the mound (child beating, cursing, or gifting), which basically served to maintain the memory of the mounds and the borderland.

Species and conditions of boundary trees, forest types, and natural conditions today

Landscape surveys always recorded boundary trees according to species. In the 21 documents that this study is based on, I found a total of 91 relating to trees (Figure 6). Of the boundary sections under investigation, only section 3/b did not have a boundary tree, as the border followed a stream and then a road; the only mention relating to a shrub occurred in the testimony. Moreover, this section had only one mound, which can be explained with the rapid decay of the tiny village that was established here. The table does not include data relating to tree species from other land surveys conducted in the same section but at different times, because I could not have ruled out the eventuality that a tree might be included in the database twice, and land sections with good resources

[19] MNL BML VII. 197. 1749.

(3–4 documents each) might have been over-represented. The data in Figure 6, of course, do not apply to trees of the same age; they provide samples of vegetation native roughly from the mid-17th century until the mid-18th century.

Of the boundary trees on the borderline, most are oak, followed by beech and Turkey oak. Their high ratio is not surprising. After all, they are the most resistant tree species, and the natural vegetation of the area is made up of their pure stands or their associations, which (especially the beech forests) get also mixed with linden. Among the hardwoods, compared to the current situation, the spread of the beech shows the greatest change. The data show that the beech was native in the whole territory of the Völgység, and it was especially typical in the wet valleys and on the western and northern slopes. The beech in the Mecsek and Hegyhát mountains are even today known for the so-called elevation inversion, that is, when a species, in contrast with its usual location on the mountaintop, grows in the damp, cool microclimate of the valley. Its wider spread and decline is confirmed by current place names in the region. It is noteworthy that the beech occurs most often in section II, where it is still a potential species. In section 5/b, the boundary runs for a while within a beech forest, presumably in an old timber forest, which was probably the same in the Middle Ages as well. Due to changes in forestry concepts and the extension of arable lands, beech is no longer typical neither here nor in parts to the north of here.

Among the softwood trees, it seems that the maple was considered relevant as a species for boundary markings. It occurs on numerous occasions in the land surveys listed in the table. The poplar appears rarely, and not as a marked tree but as a scenically orienting direction marker (dry, tall). From miscellaneous lawsuits we know that the alder may have had a similar role. Based on this, we can say that even near the valley floors hardwood trees as well as other border markers, especially mounds, were preferred. Among the fruit trees pear and walnut are the most common. Pear trees have a notoriously long life; it was a typical borderland tree in the 19–20th century, being preferentially planted at the edge of arable lands and meadows. Its occurrence is certainly linked with more intense human presence. Grapes are discussed as part of the woody vegetation, which are mentioned as being near the continuous villages as well as Csurgó. Among them, one was certainly newly planted (Ravaszlik), and two were old (Csurgó, Nagyág).

An essential and, from the aspect of vegetation history, interesting issue to mention is that in one case, an old, disused road was marked by a pine tree. Since this place was a south-facing hillside with a warmer microclimate, our first thought might be that the pine tree was planted. During a nearby land survey, it was spruce (i.e., forest fir) that was used as a boundary marker between Köblény and Vékény.[20] The trees here, however, were mentioned not as south-facing but in their position at the valley bottom. Are these data indicating then the former natural occurrence of pine? Perhaps so, as 20–30 km west, around Zselic, there were still pine forests in the 18th century, which were certainly not planted but arose naturally through spontaneous afforestation (Reuter 1962). If this was so, then perhaps due to the colder climate of the Middle Ages the pine may have been native in the studied region, appearing as a kind of weed (similarly to birch) and forming mixed stands. However, this could only be determined with certainty if more data were to surface.

[20] MNL BML IV. 1. f. 3. III. 76. 1743.

Sections	Part I					Part II				I. r.	II. r.	S.	%
	1. 1757	2. 1759	3/a. 1751	3/b. 1745	4. 1745	5/a. 1756	5/b. 1756[21]	6. 1765	7. 1765				
oak	1	12				3	6	4	6	13	19	32	35%
Turkey oak	3	1	3		1	1				8	1	9	10%
beech		1	1			2	18			2	20	22	24%
maple		1			2					3		3	3%
hornbeam		1	2						1	3	1	4	4%
linden		1	1				4		1	2	5	7	8%
pear					1	1	1			1	2	3	4%
pine					1					1		1	1%
hazelnut						1	1				2	2	2%
walnut						1					1	1	1%
grape[22]	1					2				1	2	3	4%
poplar		1					1			1	1	2	2%
birch				1		1				1	1	2	2%
Total	5	18	7	1	5	12	31	4	8	**26**	**54**	**91**	**100%**

Figure 6. Species-based distribution of trees on the boundaries according to the documents listed in Figure 3

Conditions of boundary trees and circumstances of the destruction of forests

As I mentioned in the introduction, the literature about the local area painted the landscape conditions after the Ottoman era with very dark colors. For example Nóra Tóth Andrásné Polónyi writes about it as follows: "the once thriving cultural landscapes of Transdanubia sank to the lowest level of decay," where "the newly sprung wild vegetation, the thicket obscured the fruits of human hands, of human labor, sometimes even their traces. In place of populous settlements, cultivated lands and lush vineyards, barren, desolate wilderness overgrown by thicket and thorn bushes – '*Heide*' according to foreign travelers – took over." The main question then is, what size forests were there in the area? Did the region become a wilderness, which only regained its cultural landscape condition thanks to settlers?

After the wars of liberation, was it really a wilderness that welcomed the settlers? Can the landscape truly be considered a wilderness, and did it turn into a cultural landscape pleasing to the human eye thanks to the work of settlers – especially Germans?

The landscape descriptions and testimonies provide a reliable and emotion-free picture of the conditions of the region's landscape in the late 17th and early 18th century, which

[21] Section of borderland between settlements signed with special trees.
[22] Meaning vineyard.

cannot be said of all contemporary records. Then again, it is completely understandable that not much good has been written about this region. The newcomers had to cope with not only a more continental weather and adversity caused by economic difficulties (lack of seeds and animals), but also with epidemics and hundreds of other problems while they settled in the region and made it their home. In the following I analyze the region's forests and deforestation at the beginning of the 18th century by dividing the main boundary line into two sections.

The section between 1–4 intersects two asymmetrical rows of hills, then continues along the southern foothills all the way to the Olaszfalu mill. The upper row of hills (no. 1), which runs between Mekényes and Csurgó, is woodlands today. At the top of the hill there were clearings in Ottoman times, so they were abandoned at the end of the 17th century and only after the 18th-century resettlement were they cultivated again. At the top of the hill is a cropland called Kur Pasha's Beech, which indicates that the area was under cultivation even in the Ottoman world, but also beautifully expresses the original wooded nature of the area. Witnesses report large clearings near the Tisztás Valley in the 1730–40s. The boundary leaving Pusztaszentegyház in Mekényes and creeping up the southern knolls finds cleared croplands with hornbeam and oak, which were formed in the 1730s, 1740s. At the top of the southern ridge there were forests previously, which continued up to the border point of section 2, to the aptly named Hornbeam Fountain, and beyond that to the Nemerőd water. Witnesses spoke of timber woods above the Hornbeam Fountain, too. The vast woodland was only interrupted in one place by a small cropland. The data suggest that a part of this continuous forest that falls closer to the border might have been old-growth, while the parts closer to the villages may have developed after the liberation wars (1686). The clearings also began in the forests closer to the former villages, which must have been 20- to 30-year-old shrubby groves and young forests. The area surrounded by sections 3/a and 3/b was a forest at the turn of the century. The Serbs of Nagyhajmás fleeing the county tax collectors built their houses and lived in this borderland for about ten years. It is unfortunately not known whether at the time of their settlement this area had been a forest, but we do know that the turkey oak forests above it began to be cleared in the 1710s by Hungarians from Kárász, since at the time Bikal and Nagyhajmás had very few residents, and without draft animals to boot. In the 1730s the reinforced Croats also joined the deforestation. The Hungarians cultivated not only this area but also Rácbikal, which was abandoned by the Serbs in 1704. They began to clear the medieval location of Bikal village, which was about 1.5 km from the Serb village. Forests probably dominated between Bikal and Nagyhajmás as well, since the Croats from Bikal settled on the fields newly cleared by the Hungarians, while the settlers of Hajmás settled in the forests. The high degree of forestation is supported by the testimony of another witness from Hajmás, who in his memoirs described the landscape as follows: "all forest then, being that fields were limited."[23]

There are no forests and clearings mentioned in the border section south of Mágocs, running from Kápás to Olaszfalu (no. 4), which may indicate that it may have had inherently fewer forests and was used as arable land during Ottoman times. It is not an insignificant factor that this is where the most productive croplands with brown chernozem soil begin, which lie flatter and are easily cultivated.

[23] MNL BML IV. 1. f. 3. VIII. 224. 1751.

In the second section (Nos. 5/a to 7) the landscape is much more forested. The border climbs to the top of Barandó Hill and to the end of section 5/a, running along a ridge all the way to Vaskapu. Despite the difficult terrain and soil conditions, there are fields, fruit trees, roads and other anthropogenic elements in this borderland, thus the landscape is already more humanized in nature, which is supported by a variety of old Hungarian place names related to economic and historical events. West of this border we find continuous settlements (Nagyág, Vaszar). Of course there were clearings here, too, even some newly cut and overrun by buckwheat, and clearings planted with corn were also mentioned, which the residents of Nagyág divided among themselves by drawing arrows. The ridge with the clearings was not really suitable for plowing. Presumably they were only cleared and plowed in the 1730s, which perhaps intensified as a result of provisions from the surrounding estates prohibiting the use of the *puszta*. At the same time, some of the local lands may have been cultivated since the Middle Ages, seeing that the Bodó castle stood nearby and the fields, in a fashion characteristic of medieval agricultural techniques, ran longitudinally, a narrow isthmus stretching along the ridge, and there were vineyards as well.

Sections 6 and 7 are hilly, sometimes mountainous in character, forested almost all the way, and deforested lands are found in fewer places. From Vaskapu to Lányok Hill there were fewer arable lands, while from Lányok Hill to the Bükkös Lake there were more. In these two sections, the medieval settlement network regenerated slower than the average, with only Szalatnak having been rebuilt in the 18th century. The majority of the small medieval, partly noble villages (Ábel, Bakóca, Petrőc, Kéthely, Szalatnak, Lipóca, Ciklód, Bágyon, Köszvényes) has been depopulated by the end of the 16th century, their boundaries therefore no longer used by the Serbs but rather the Hungarian residents of Mecsek villages. At the site of the settlements, forest husbandry became the dominant form of economy. The situation changed when leasing options for the *puszta* ceased, from the 1730s onwards. They could no longer use the arable lands around Mágocs, Bikal, Szalatnak, so the Hungarians of Mecsek began clearing and dividing amongst themselves the areas of the small villages consolidated in the 16th century. First and foremost they plowed the flatter mountaintops, but definitely not the hillsides or valley bottoms where meadows lay until the end of the 19th century. Within the studied area, due to the lack of landscape reorganization, this is where the characteristics of the environmental changes associated with desolation were most preserved.

Changes in the land use system

In the case of old villages continually inhabited in the past, even in Ottoman times, a land use system made up of three zones evolved. Under Ottoman rule, feudal legal relationships were terminated, the significance of the lot diminished for taxation purposes, and as a result, much of the land became communal property over time. Communal lands were divided among themselves by the drawing of lots. It can be, however, presumed that there survived a three-field system of farming inherited from the Middle Ages, at least on croplands close to the villages. The villages' inner zone of arable area could have been in permanent use. The same cannot be said of the more remote arable lands between forests. In these places, they certainly practiced fallowing, that is, periodically letting

the forest grow up, then with a slash-and-burn method clearing the underbrush which ensured the nutrient supply in the hard-to-cultivate, clay-based agricultural land. The third area used by the continuous villages was the borderland of the perished villages. In the more distant *pusztas*, sometimes at half a day's journey, land use was based on privately owned, freely acquired plots. They only paid one-ninth taxes after the harvest, being exempt from the tithe. Of course they cultivated not only the croplands but also the meadows and forests of the *puszta*, after which they paid sheaf tax and acorn tax to the landlord, and in Ottoman times the spahi from Pécs and Nádasd occupying the area's villages also demanded money or produce for the use of the *puszta*. Peculiar, persistent agricultural elements of the southern villages were the mountain croplands developed during the Middle Ages (Egregy, Vaszar, Kárász), which were in continuous use, or were put into use in the early 18th century through deforestation (Egregy: Csonka Hill).[24] These lands, formerly typically called 'wheels,' tended to align with the hills in long, ribbon-like strips, had a slight slope, and were often located in forests.

In the case of settler villages, land use of freely acquired plots was less important. After a short period of communal land tenure, they became allotment-based villages using the three-field system according to the standard feudal landlord-tenant system of relations. Thus the new villages became the embodiment of a system that was endemic elsewhere.

It was characteristic of both settler and old villages that greater deforestation took place in community collaboration, whereby they won not individual but rather common lands, which were then allocated through division to owners of draft animals for as long as the communal land existed. The development of these so-called arrow lands is also documented in the case of the resettled Mágocs (Kúr Pasha's Beech) and Nagyág (Somló Hill). In the 1730s the Croats of Nagyhajmás "did terrible clearing" in the forests adjacent to Köveskút, and cultivated the land thus obtained in classes. The relatively overpopulated settler villages quickly exhausted their resources and set their eyes on the spare lands of the nearby villages. At the end of the 18th century the Germans of Szalatnak and Köblény commenced some fierce deforestation in the borderlands of neighboring villages, where they destroyed old beech and oak forests suitable for acorn grazing.

The two- or three-field land use system, which was endemic in this area in the Middle Ages and which replaced cultivation of privately owned and communal lands as well as farming on cleared lands, all formed due to the desolation under Ottoman occupation and changing farming conditions, was restored in the area by the mid-18th century. It is quite possible that expansions of land through deforestation continued for another 200 years.

Forest animal husbandry

As the extent of forests in the area has grown significantly due to desolation, forest husbandry has obviously become a major activity in landscape utilization. This primarily meant raising hogs, but sheep, goats and cattle also grazed in the forest. The most important was certainly hog-breeding. The hog was important not only because of its role as food, but also because of its marketability. It is no exaggeration to say that

[24] About persistent and relict elements: Ilyés 2007.

hogs were as important in the utilization of the *pusztas* of Southern Transdanubia as cattle were in the utilization of the *pusztas* of the Great Plain. The hogs were kept in the woods in summer and winter. Each village had its own hog pasture where hogs meant for domestic consumption grazed. Hog herds awaiting sale were mostly herded into the remote corners of the extended villages of Mecsek and to the forests of the *pusztas*, where they were fattened up on acorn. Not all peasants had the means to do this, only richer peasants who could afford to hire shepherds and merchants leased the *pusztas*. The beech and oak forests were leased out by the landlord for acorn fees. Acorn grazing happened when the acorns dropped in August – September, but mostly when the more muggy, humid weather set in and the fallen acorns already begun to germinate. Early winter was the best time for acorn grazing. At acorn ripening the demand for forests increased, "acorn-seeking" shepherds and hunters roamed the old woods, assessing and seizing the forest for their clients of for themselves. These were often residents of remote villages, in local terms "country folks," peasant farmers from Apar, Somberek, Szakcsi, but most commonly the droves and flocks came from the immediate neighborhood.

The domestic swine, also called "the sörtvés (or sörtvéles) swine," was distinguished from the "forest swine," often just called "sylvan," by visible morphological features. We do not know the variety of the hogs bred here, unless we consider them to be the siska (ziska) swine recorded by Bél, which according to him was characterized by large drooping ears and occurred in the Serb population (Bél 1979:337). In the Serbian language siska means oak gall, in Hungarian it means a hog with drooping ears (but it does not refer to the variety). According to Lajos Takács siska is equal with Szalonta swine and was typical in Hungarian households in the 18–19th century (Takács 1985:24–26).

Although it was an extensive husbandry, forest husbandry could not dispense with structures and the presence of a swineherd. The swineherd built a sty or barn for the swine, and a farmstead for himself, which did not depart too much from its 19–20th-century peers. Swine farms were mostly in the valleys, close to springs. Swineherds used dogs to herd and keep the flocks of swine at bay, and even a shepherd's horn that has gone out of use in the 19th century. Data referring to feed also records that in the groves and areas of softwood, the swine were "beaded," that is, the mistletoe growing on the trees was collected for them.

The forest grazed by hogs did by no means have the appearance of a 'wilderness.' On the contrary, the grazed forest was much cleaner, because the hog turns the forest floor, digs and chews shrubs, roots, tree stumps, thus its shrub level remains clear. Wilderness was only visible in the fallow meadows in the early phases of succession, or in the sometimes truly impenetrable groves. It is certain that the area was basically favorable to hog breeding; testimonials referring to raising beef cattle are not known from this region. Data are also available about the keeping of oxen in connection with land clearing and plowing. Sheep and goats required a living space similar to hogs, both of which can feel at home in the rapidly budding bushes and fallow croplands. Sheep- and goat-raising cropped up almost exclusively in connection with Serbs, which is certainly not random but can be explained by differences in lifestyle. Given that these two domesticated animals consume the bushy and grassy vegetation, over time they significantly transform the landscape structure. This obviously played an important role in the process of deforestation and clearing, and in the preservation of the openness and grassland vegetation of certain regions.

Livestock farming on the *puszta* was practiced freely until the estates were repopulated. However, with the arrival of settlers, the landlord leased out fewer and fewer forests. Forest pastures almost completely disappeared in the eastern and central areas of the geographical Völgység during the 18th-century deforestation. In contrast, in the more forested parts of the Mecsek and the adjacent Hegyhát, the tradition of grazing lived on until the end of the 19th century. Although not strictly part of the topic of the study, it is important to note that the folklore of the Hungarian villages, especially of the oldest communities that survived the Ottoman occupation, was woven through with thousands of motifs related to forest husbandry that burgeoned in Ottoman times and to the struggles against the Turks. According to György Martin, the most archaic layers and types of Hungarian dance culture can be found here, whose preservation is partly due to the survival of extensive animal husbandry. Their typical old dance style is the swineherd's dance (jumping dance), which remained remarkably popular until the late 19th century. Their old style folk songs belong to the most archaic, descending quint-switching tunes in the whole Hungarian language area, reflecting even in their texts the natural and social features of pastoral life.[25] In other words, local folklore used this world as its last great "inspiration," which made it well distinguishable from other regions at the turn of the 20th century.

Hydrographic elements, pasture management

The area is very rich in water, the average annual precipitation is 700–750 mm. According to climate historical data, the 16–17th century was even wetter. It is therefore not surprising that there is a lot of data in the land surveys referring to water and waterways.

It says a lot about the condition of the valleys that three of the region's key creeks are referred to as "mud" in the sources, and the waterside was often called a grove. These terms suggest a slow waterflood, a marshiness of the valleys. Méhész Creek, Hábi Creek, and the Izmény-Györe stream were also called "mud" by the witnesses, which on the one hand refers to the natural bedrock conditions of these waters, on the other hand to their impassability. In wetter periods, without a bridge, they were probably difficult to cross. This is clear in one of the witness testimonies, which states that, for lack of a bridge, people from Nagyág carrying wine barrels were forced to drag their wagons through the mud.[26] On the border of the *puszta* between Kéthely and Almás, an extensive grovey, swampy section formed, which was called Black Grove in the sources, and its remaining parts are today called Black Mud. The land surveys often mention potholes and soaks, which were places for hogs to drink or wallow. The water level is also a synonym for these names, with the Serbian equivalent of kalilo.[27] Potholes were found not only in the valleys but also on higher grounds, especially near springs, or on hills with bad drainage and clay soil with high rainwater retention. Pothole featured often

[25] Martin 1970:51; on the music of jumping dances (Southern Transdanubia, with examples from Egregy): Paksa 2010:39–63.
[26] MNL BML IV. 1. f. 3. VIII. 238. 1752.
[27] On the farmsteads of the Serbian Morović swineherds, there were bogs called *kaljužište, kaljuga*, which play a similar role as the kalilo.

in the memoirs of shepherds grazing in the area. According to the testimony of Thodor Regylics, for example, shepherds of several villages would gather at the pothole on the southeastern border of the Almás *puszta* to water their swine.[28] This also shows that watercourses were also important in terms of social relations. With the decrease in swine farming and deforestation, the role of potholes and soaks also decreased, and because of the expansion of arable lands, they were even covered. Such was the case along the road between Mágocs and Szekszárd, where a large pothole was filled with tree stumps, then filled with soil until it became arable.

From the point of view of landscape history, it is a key question whether unregulated waters and the expansion of groves were new phenomena in the landscape; was it degradation or the consequences of the Little Ice Age? The perished medieval villages were along creeks and springs. The settlements were located in the bottom of the valleys, on the outskirts of the floodplains of the creeks. It is inconceivable that the reedy, willowy groves and thickets around the villages had poor drainage, since it was not possible to make a living from them; moreover, they would have hampered transport. They certainly kept the waters of the valley at bay, and watermills were key in benefiting from and managing water. The testimonies mention numerous watermills, the history of which was fractured by the period of liberation struggles and Rákóczi's War of Independence. Some of the mills can be associated with medieval settlements (e.g., Kápás mill, Olaszfalu mill, Ravaszlik mill), so we can speak of the continuity of mill sites. Only the new settlers began to rebuild them in the 1720s, the last known owners being Serbs. The mills had either channels or trenches, their levees in both cases providing passage through the valley.

We encounter mentions of only three lakes in the land surveys. Interestingly, all three were located in the 7th section of the borderland, near a perished medieval settlement. *Ábel* Lake must have been near Ábel, Szalatnak Lake near the medieval Szalatnak, and Bükkösd Lake near the settlement of Bolda, which raises the possibility that they had also been mill ponds. The meadows' succession can be easily followed through the land surveys. The abandoned meadows turned into areas of sedge and reed, then groves of alder and willow appeared; such run-down meadows, abandoned 50–70 years ago, can still be found in the region today, indicating that in recent decades a similar trend of land-desertion has emerged. In the 18th century, birch grew on these abandoned fields and meadows, evidence of which can be found only in place names, besides the testimonies. The presence of the birch was so unthinkable in the middle of the 20th century that the eminent linguist and forester Camillo Reuter associated the place names related to birch forests with the terms wet and damp, rejecting any connections with the tree type (Reuter 1961:31). Although the meadows responded extremely sensitively to depopulation and many meadows became groves and thickets, some areas remained usable all along. Such is, for example, the meadow near the *puszta* church in Mekényes, which continued to be used even after the destruction.

We need to mention the springs as well, because some of the springs were of paramount importance. Csurgó puszta was probably named after the spring that lay on the vineyard hill; the spring was called Csurgó or Szentkút (Holy Well), which may indicate the sacred importance of the spring in the past. And the fountain near Pusztaszentegyház in

[28] MNL Est. Rep. 92. f. 10. n. 394. 1757.

Mekényes was probably the main water source for medieval Mekényes. A distinguished border marker was the spring called Gyertyános Fountain, where the borders of Köveskút, Bikal and Nagyhajmás met. Not only was it a memorable triple border, but also a site suitable for shepherds' farmsteads.

Community objects, roads

A dominant part of the landscape consisted of objects related to the old settlements. The land surveys mention three church ruins (Mekényes, Mányok, Szalatnak) and two cemeteries (at the border of Bikal and Mágocs). In addition, there are six direct references to the demise of Serb villages in the 18th century (Györgyi, Nagyhajmás, Puszta Nagyhajmás, Mágocs, Mocsolád, Bikal). Houses, interior objects are less often mentioned; in the section of the landscape this study focuses on, witnesses only mentioned the perished pit-houses of Nagyhajmás. Along the borderline we have far more data about perished sacred buildings than what the lawsuits recorded. In Györgyi a monastery and a church, in Mágocs a monastery and a parish church, in Kéthely, Köblény, Petrőc, Mocsolád, Kozár and Nagyhajmás each the ruins of a church could be found, all of which still carried the memories of a disappearing Hungarian world.[29] Since the medieval borders were more or less inherited, church ruins are less frequent near the borders. On the other hand, mills or mill races on the outskirts of the border are often mentioned (Mekényes, Kápás, Olaszfalu, Ravaszlik, and perhaps the Bardi well on the northern border of Kéthely). The sources only rarely and succinctly speak of the desolation. If they do say something, they speak mostly about the wars or war events causing the devastation, or about the approximate time they happened. Near the borders, the most frequent objects were those associated with animal husbandry, such as barns, stables, pastoral farmsteads, but these did not have a permanent site. Nonetheless they were still important in terms of identifying sites.

The most important border marking objects were undoubtedly the roads, which were sometimes followed by the border for a kilometer, but they were mentioned in the land surveys even when they just approached or crossed the borderline. It is obviously because they are recognizable landforms that preserve their form for a long time. The region is covered in loess of alternating thickness. Because of traffic, the soil readily erodes and the path is scored into the loess. As a result, loess reefs of varying depths and forms developed. It sheds light on the importance of roads that in the border descriptions of the nine legal cases used for preparing the land survey (map, table), 22 roads were mentioned. In the files, the roads were allocated various quality indicators, from which we can infer their physical parameters (trenched, deep, hooked, plowed, etc.), age (old, new, trodden, bare, newly dug), and their specific use. In all cases the land surveys recorded the direction of the road, that is, the villages connected (directly or indirectly) by the road. The disintegrated roads linked mostly the old medieval Hungarian villages, but certain routes were already in use in much earlier times. Due to space constraints, I forgo further analysis of the network of roads (Máté 2014).

[29] in detail: K. Németh 2015a

Forestry, hunting, beekeeping

In the previous chapters we have seen that it is reasonable to speak of a reforestation period after 1683. Was the expansion of forests a consequence of non-use, or what travelers and settlers complained so much about, the dominance of wilderness?

There is no doubt that the tree was an essential raw material. Forestry meant the utilization of the forest, the cutting and collection of firewood, the extraction of timber for construction (shingles, pillar wood, walling, etc.) and wood necessary for making tools. When we consider the fact that in the region wood construction was common and dominant until the end of the 18th century, and that large numbers of animals were raised in the forests, we must recognize that this was forest husbandry rather than a wilderness sprawling at the edges of the villages. But let's look at the details unfolding from the legal cases. It is remarkable that the witnesses never went to the forest to "cut wood," but to conduct activities related to the utilization of wood. They cut hoops for barrels, went to collect nuts, looked for pillar wood, cut timber for beams, etc. The trees of the wooded landscape were thus selectively used. At the same time, forestry was inseparable from hunting, animal husbandry and beekeeping, which was usually conducted at the same time, in the same space.

The witnesses often reached the plot of land which was the focus of the legal case during a hunt, where a more knowledgeable, older hunter listed for them the border marking points, which is why this ancient activity is often mentioned. Thus the hunt did not happen in an 'unknown territory,' in the wild; hunters were well aware of the boundaries of former villages, having a share of their goods. Hunting and other 'browsing' activities were significant not only for the quarry; it also deepened their knowledge of the landscape important for subsequent settlement and *puszta* leasing (meadows, acorn forests). The legal cases provide data about two hunting methods: catching prey with a trap and hunting with a rifle. Trapping is remembered as the so-called wolf's pit, which was mainly used to trap wild boar – not wolves. Rifle hunting was likely done with weapons left over from the wars against the Turks. Serbs and Hungarians alike established a way of life conducive to self-defense, but the armed men also joined the larger troops crossing the countryside (the Hungarians the Christian troops and Rákóczi's kuruc troops). Beyond the acquisition of a quarry, it was passion that drove the hunters, which we can infer from the wording ("he being a lover of hunting"). Hunts were organized along strands of kinship and friendship. In terms of rifle hunting methods, we have data about scouting, that is, beast-seeking, stalking forms of stealth hunting, as well as ambushing methods. Most often they hunted "old beasts" (big game) – roe, deer, wild boar. No matter how surprising, peasant rifle hunting was a licit activity. Tolna County, for example, only outlawed the right to bear arms in 1726 (K. Balog 1978:256), which shows that there must have been a relative abundance of wildlife, and also that public security and general conditions drifted very slowly towards the conventions of feudalism. Nevertheless, contemporary narratives that speak of huge damages by wildlife and of fearsome beasts and thereby paint a much more horrific picture of the degraded natural and social conditions must be considered excessive, or rather one-sided. In the original home of the settlers, their opportunities for peasant hunting were probably much more limited because the landlord may have already appropriated that right for himself.

The habitat of the forest wild game coincided with the habitat of the grazed livestock, thus – and because of unregulated hunting – there could not have been too much wild game. By today's analogies, in order to preserve the purity of breed characteristics, it is necessary and important to restrain the wildlife and separate it from the domestic livestock. The swineherds along the river Sava, for example, pay great attention to the separation of wild and farmed animals (at least during times of reproduction), because the wild boar grows slower, and its meat is of a different structure and taste. We must therefore say that the proliferation of wildlife was a consequence of the unregulated use of the landscape, the freedom to hunt, and a more extensive, basically forest-based animal husbandry. However, this situation was experienced by the locals not as a 'drop in production levels,' but as an opportunity, such as the Hungarians of Diósberény, who, according to a contemporary memoir, benefited greatly from the forest (Galambos 1989:201).

The collection of wild honey was also a popular activity. There are a lot of data about it, but they do not provide details of the activity so honey extraction methods are not very well known to us. On one occasion we learn that the operation caused the destruction of the tree, while in the other cases honey extraction methods are not mentioned. The testimonies do not specify it, but we know from other bailiff's files that the honey was bought by the estates, and we do not doubt that honey was a well-marketable product during Ottoman times as well. Just think of the particular dietary habits of the Turks in which sweet dishes made from honey played a very big role. Surely they had specialists dealing with it. A visual inspection of the topic of hunting, forestry and honey collection reveals that the miserable conditions described by Glatz cannot be substantiated; rather, we must speak of communities that seized sales opportunities, lived in the landscape, and seized the potentials the landscape provided.

SUMMARY

Summing up the data found in the border lawsuits relating to the environment, we can paint an environmental picture that is more nuanced yet in certain respects equivalent to the landscape descriptions, logs and missionary reports.

In the examined period, the biggest change occurred probably on the meadows influenced by the water. Although there are data about the use of meadows even from the years after the liberation, this is after all the scene where we find most of the perished objects. Villages, mills, mill races, roads along streams (even national roads) perished, and the valleys became difficult to traverse. The proliferation of lake-bed remnants, potholes and soggy groves indicates that water management in the period under review was lesser than before, and this was the collateral of the 1683–1686, then the 1704–1711 depopulation and desolation. In addition to the degradation, we also have data about the reaping of the meadows, therefore it is a change of strategy in land use rather than a total destruction that we should talk about.

In 1683 an afforestation commenced, which was replaced in the 1710s by intensive deforestation. Summarizing the data relating to the clearing, we can conclude that the image and condition of the forests was very varied. Some areas were never forested. Where no one settled for an extended period of time, or where there were few people, forestation began. Large forests of timber trees suitable for acorn foraging sprung up on

the sites of old villages. However, around the settlements populated by Serbs, because of more frequent population movements, we can count on the presence of degraded, forested fields and thickets.

The most successful economic sector in the region was forest husbandry, in which both the Hungarians and the Serbs living in the region took an equal part. While on the Great Hungarian Plain it was the cattle, in these parts swine was the most marketable product. The farmers and traders living in the region also kept animals. However, there is a striking difference between the Serbian and Hungarian populations in terms of sheep. The Serbs probably kept larger numbers of sheep and goats, while the Hungarians shaped the landscape by cultivating arable crops. They roamed the countryside equally on the occasions of hunting or collecting honey, and despite bloody wars between the two people, their days consisted of intensive exchange relations and friendly encounters as well. People did not disappear from the region even after the arduous decades. Even before the big seigniorial resettlements commenced (1717), all *pusztas* had their users, sometimes they even had permanently settled Hungarian and Serb residents who have been forced to move out because of the resettlements. Even if they were few in numbers, through their work the seigniorial resettlements relied in fact on seeds of settlements, settlement initiatives, as they cultivated to a sufficient extent the meadows, arable lands, and forests for their self-reliance, and sometimes for their enrichment. The resettlements therefore did not happen in the wilderness. Two thirds of the medieval villages were not resettled, and the vast majority of the villages established by the Ottomans also did not become villages. The new land owners were no longer interested in the collection of natural assets, but rather in asset management. Thus, the attitude has changed; new arrivals on the landscape looked with aversion at the forested wilderness, the ruins, the people used to carrying arms who had earlier wished to pursue effective economic strategies. Their chances for that were decreasing after the resettlements, as by then a whole new cultural landscape was emerging, which in its birth bore the 'denial of the old,' just like any other turning points in landscape history. Like, for example, upon the dissolution of feudalism and the socialist reorganization of agriculture.

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‘Innovation from the Past’

Silvopastoral Systems in Hungary in the Light of Hungarian Ethnographic Literature

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Abstract: Silvopastoral systems are a crucial part of the European cultural landscape and biocultural heritage. In Hungary, due to the intensification of agriculture and forestry management, silvopastoral practices were nearly totally abandoned during the last decades. In this paper, I review Hungarian ethnographic literature to discover the traditional silvopastoral management of Hungary. The papers were published in Hungarian, mainly in different ethnographic journals and in several books. In Hungary, until the passage of the Forest and Pastureland Separation Act (1853), forest grazing was a free right along with other silvopastoral methods, except pannage. Woodlands were natural shelters and sources of diverse fodder. Collecting leaf-fodder, leaf-litter, wild fruit and acorn were integral and common parts of traditional extensive livestock husbandry. The importance of silvopastoral systems increased during extreme weather conditions. All of them were controlled to avoid overuse and forest damage. Today, wood pasture management and illegal forest grazing is still alive, but the new forest law once again gives permission for regulated forest grazing in some cases. The openness towards silvopastoral managements is influenced by the new agroforestry innovations movement.
Keywords: traditional knowledge, agroforestry, Central and Eastern Europe, landscape history, extensive livestock husbandry, herders, forest grazing, acorn, leaf fodder, wild fruits

INTRODUCTION

Among the many benefits associated with ethnographic research projects, a particularly important role is their availability as resources for posterity. These resources capture intellectual or material cultural heritage, the importance or necessity of which is suppressed or completely forgotten at times (Andrásfalvy 1984; Berkes et al. 2000; Bürgi – Grimmi 2007; Drew – Henne 2006). Hungarian silvopastoral systems belong to these heritage categories, the importance of which was stressed by several authors of ethnographic research, for example: István Tálasi (Tálasi 1939), Tivadar Petercsák (Petercsák 1977), and Bertalan Andrásfalvy (Andrásfalvy 2007; 2009). This extensive form of pastoralism has had a determinant impact on the management of forested

landscapes in Europe, including their natural and cultural heritage (Hartel et al. 2015; Rackham 1998). Silvopastoral systems are currently listed as one of the most important rural development tools (Burgess et al. 2015). They offer a type of agroforestry system where perennial woody plants and animal husbandry are connected in time and space in very diverse manners, as a function of the management needs, legal environment and local landscape conditions (Mosquera-Losada et al. 2009). Regulation (EU) 1305/2013 on support of rural development of the European Union addresses this approach, and this principle is reflected in the Hungarian Forestry Act adopted on 16 May 2017, which grants permission again to grazing in the woodlands of Hungary, after a total ban in place since 1961 (European Commission 2013; Magyar Közlöny 2017). The underlying reasoning is that the role of woody vegetation in extensive grazing practices has once again been recognised as indispensable (Varga et al. 2016). Silvopastoral systems contribute enormously to the continuation of valuable agricultural practices which are protective for nature, are sustainable, provide healthy food and ensure a high nature and cultural value (Fagerholm et al. 2016; Plieninger et al. 2015; Rois-Diaz 2006).

A rich body of references is available from several European regions, describing former and current practices and types of silvopastoral systems (Plieninger et al. 2015). Main categories of the European silvopastoral systems are wood pastures characterised usually by ancient and large trees with wide spreading branches; closed forest grazing; pannage (masting on acorns), and pastures spotted with shrubbery and groves (Hartel – Plieninger 2014; Mosquera-Losada et al. 2009). All these silvopastoral types– subject to the conditions of the site – are closely associated with gathering of foliage and fallen leaves for forage and/or bedding, as well as the gathering of wild fruits (acorns, wild pear) for the purposes of animal feeding and human consumption alike (Bürgi – Grimmi 2007; Hartel – Plieninger 2014).

The interest of ecologists and conservationists, including mine, was drawn first to the significance of forest grazing in Hungary in landscape ecology and nature conservation more than ten years ago, by various works, on landscape history (Molnár 1996; Varga – Bölöni 2009). In part, this led me to review the scientific literature available on the topic. The purpose of my research is to reveal the information contained in Hungarian ethnography on silvopastoral systems. In the course of that work, I reviewed articles and papers on the subject of silvopastoral systems in the entire List of References of the work *Hungarian Ethnography* (Paládi-Kovács 2001) and the Table of Contents of the periodicals *Néprajzi Értesítő* (Ethnographic Bulletin) and *Etnográfia* (Ethnography). Writings published in relation to this topic were collected by reviewing references of additional articles and the bibliography of their respective authors. A large part of the work was conducted in 2007 and 2008 in the National Széchenyi Library, when no electronic search engines were yet available. Additional, supplementary research was carried out in Winter 2016. In the current study, the husbandry methods found in the collected references most closely matching the innovation objectives of agroforestry systems are reviewed mainly from the perspective of vernacular practices (for instance forest grazing, pannage, forage and litter gathering and their control). Based on the sources which were processed, I present here data typically from the 18th, 19th and the first half of the 20th century, including, wherever they are available, particulars from the Mediaeval period as well. Forest mowing and the accompanying sociological, folkloristic and folk art research are not covered by the present article. The aim of the paper is

to highlight how silvopastoral practices constitute an integral part of the Hungarian landscape and folk culture. On the other hand, we can also conclude that the knowledge of earlier ethnographic particulars may effectively contribute to the current research and the development of future innovations in agroforestry.

HUNGARIAN ETHNOGRAPHIC STUDIES RELATED TO THE TOPIC OF SILVOPASTORAL SYSTEMS

As a result of folkloristic studies, the figure of the herder or shepherd grazing in the wood, resting under the wide branching tree at noon, or feeding his livestock on acorns has long appeared on various objects, in folk tales and in songs (Békefi 2011; Herman 1914; Madarassy 1935; Malonyai 1911). Research on animal husbandry practices and the knowledge of pastoralists did not focus initially on the silvopastoral components of grazing systems. This could be explained by the investigative focus on the lowland pastoralism of the treeless, steppe region (Győrffy 1941). Research on silvopastoral systems started with the exploration of land use methods prevailing in hilly and mountainous regions (Ébner 1933; Gunda 1938; Tálasi 1939). Most studies were published around the 1930s and 1940s, and then later between 1960 and 2000. The methodological guideline published in 1959 under the title *Az erdő néprajza* (Ethnography of the forest) dedicated special attention to the issues and references related to this subject (Erdélyi 1959). Silvopastoral systems are mainly covered in the chapters dealing with livestock management or forest use in the monographs concerning specific landscapes or regions. The preponderance of information is available from the environs of Bakony (Hegyi 1978; Herkely 1941; Tálasi 1939; Vajkai 1959;), Belső-Somogy (Takáts 1986), Ormánság (Gunda 1938; Kodolányi 1946), Sárköz (Andrásfalvy 2007), Bereg (Csiszár 1974), Mátra (Petercsák 1984), Bükk (Petercsák 1986; Viga 1988), Zemplén (Szabadfalvi 1968a) and woodland regions of the Great Plain (Bellon 2003; Nagy-Czirok 1959; Penyigey 1980; Szilágyi 1966; Wittner 1978). The majority of the studies available are historical ethnographies, relying on archival and oral history data, but some disclosed contemporary data as well. Scientists mainly used materials from the 18th and 19th century in the course of their research in the archives (Takács 1980), but in certain cases earlier sources from the 14th and 15th centuries were processed (Belényesy 2011). Oral history collections present information from the end of the 19th century and into the first part of the 20th century (Takáts 1986). In addition to published articles, memoirs of peasant and shepherding families are also available (Gaál 2003; Tamás 2009). Exploration of the hand-written materials deposited in data stores of museums may lead to the discovery of further sources (for instance Gábor Máté personal comm.: Takács 1983).

A SHORT HISTORICAL OVERVIEW OF THE HUNGARIAN SILVOPASTORAL SYSTEMS

Silvopastoral practices in forested landscapes date back as far as extensive livestock management systems, and extended across the Hungarian landscape (Belényesy 2011; Paládi-Kovács 1993; Szabadfalvi 1970; Tálasi 1939). Looking back to the past

Figure 1. Most wood pastures have been developed by the thinning of a closed forest stand of former woodlands, such as the Kasztó wood pasture in Bogyiszló (Andrásfalvy 2007), Bogyiszló, Tolna County, Hungary, 2017. (Photo by Éva Ágics)

millennium, Hungarian silvopastoral systems have undergone their most serious changes mainly in the past 200 years (Tálasi 1942; Hegyi 1978; Petercsák 1984; 1986). The first written data are available from land granting records of the 11th century, in which areas suitable for pannage and masting of pigs are mentioned (Tagányi 1896). The significance of these modes of use is indicated by the fact that forested areas listed as acorn forests were seen as more valuable than other forests up to the first half of the 19th century (Ébner 1933; Csiszár 1974; Hegyi 1978; Szabó 2009; Takács 1983). The use of woodlands for forest grazing is difficult to separate from grazing in wood pastures up to the end of the 19th century and the beginning of the 20th century (Andrásfalvy 2009; Petercsák 1986; 2001). The underlying cause is that forest grazing was a freedom right of serfs (Andrásfalvy 2009; Csiszár 1974). In consequence, the boundaries of forests proper and wood pastures merged into one another and grazing was an additional of forests alongside pannage and gathering of supplementary forage (Andrásfalvy 2007; Hegyi 1978; Imre 1955; Takáts 1986). In relation to the floodplains of the Danube, Bertalan Andrásfalvy formulates this practice as follows:

> "The term pasture was seldom used alone up to the beginning of the 19th century. One of the reasons is that grazing was not limited to definite areas up to that time. In other words, the term pasture did not mean a piece of land with a definite set of conditions and a definite purpose of usage, since any part of the fields could be used for grazing. A number of examples could be seen of the above. When the forests were introduced that in the 18th century and in the beginning of the 19th century the term forest was used not only for areas with a dense stand of trees, but also the wooded areas used as the commons, the common grazing areas of livestock. (…) Up

Figure 2. Silvopastoral systems are perfect for keeping traditional livestock breeds. Hungarian Grey Cattle in the wood pasture of Cserépfalu, Borsod-Abaúj-Zemplén County, Hungary, 2015. (Photo by Anna Varga)

> to the end of the 18th century, forests are taken everywhere as land where cattle live and graze. Grazing livestock was excluded only from those parts where young trees shooting up after felling had to be protected from the mouths of the cattle. (…) Additionally, forbidden forests were those dedicated to exclusive use by the landlord, mainly for pannage or producing timber." Andrásfalvy (2007:356–358)

The initial trigger that led to the demolition of this typical agroforestry system in the classical sense of the word, was the Urbarium by Queen Maria Theresa in 1767 (Andrásfalvy 2009). A further undermining occurred with the passage of the Act on the Separation of Pastures and Forests, adopted in 1853 (Petercsák 1977; 1984; 1986). The main point of the Act was to separate the land parcels used by former village serfs from those used by the landlord. The dramatic adverse effect of the latter Act on Hungarian silvopastoral systems and on husbandry and society as a whole is mentioned by almost all studies of ethnography (e.g. Andrásfalvy 2007; Hegyi 1978; Szabadfalvi 1963; Zólyomi 1968). There were forested hillsides and mountain regions where the size of land available as pasture to the former serfs living in the villages was curtailed to a substantial extent overnight. Typically, villagers received 3–10% of previously available pasturage in Zemplén, Mátra and Bükk regions, while it was somewhat higher in Börzsöny, ranging up to approximately 30–40% (Petercsák 1977; 1984; 1986). The significance of husbandry practices of this type was further reduced by the intensification and industrialisation of agriculture and forestry, and changes in transportation modes (Paládi-Kovács 1993; Tálasi 1942). These changes included the use of maize and corn as feed, the emergence of intensive livestock farming, growing needs for timber and declining use of draught

animals (Hegyi 1978; Eperjessy 2006; Máté 2009; Paládi-Kovács 1993). At the end of the 19th century and in the first half of the 20th century, former serfs of the villages continued grazing on pastures cut out from forests during the separation process dictated by the 1853 Act, and on forested areas. On forested land, grazing parcels became wood pastures due to environmental conditions (Andrásfalvy 2007; Bellon 2003) (Figure 1). In manorial areas, the further use of silvopastoral practices was continued subject to the decision of the landlord (Andrásfalvy 2009; Hegyi 1978).

The significance of silvopastoral systems was further reduced at the end of the 19th century and the first half of the 20th century as a consequence of changing husbandry needs, historical events and the restrictions put on them by laws and regulations. Forest grazing and pannage were completely banned under the Forest Act of 1961 (Varga – Bölöni 2009). The measure curtailed this practice legally, but even so it was not eliminated, and in many parts of the country it continued illegally under the framework of extensive grazing practices (Varga et al. 2016).

PEOPLE IN THE SILVOPASTORAL SYSTEM

Key actors involved in the use of silvopastoral systems include those who carry out grazing operations, and gather forest fodder and litter, as well as those taking active part in the maintenance and control of grazing land (Eperjessy 2006; Hegyi 1982; Petercsák 1983; Tamás 2009; Vajkai 1959). Grazing could be practiced in different ways across regions and even within a given site, or in a mixed system, which accommodated the social and economic needs in place at the time (Paládi-Kovács 1993). Basically, there are three kinds of systems in which grazing operations were carried out: individually, by turns and with contracted herders (Belényesy 2011; Hegyi 1978). Individual grazing practices occurred widely nationally (for instance in the Őrség, Bakony, Baranya, Sárköz, Mátra, Bükk, Bereg) (Andrásfalvy 2007; Csiszár 1974; Hegyi 1978; Imre 1955; Petercsák 1983). In the course of this 'individual' method, elderly or younger members of the family kept watch on grazing livestock, sometimes alone and sometimes in groups of the other similar individual grazers of the village. These individuals either returned home each day, stayed in the forests overnight, or stayed out for longer periods – months, even year – to 'graze in the forests' (Andrásfalvy 2007; Csiszár 1974; Hegyi 1982). The importance of this practice in Hungarian husbandry and society is shown by the repeated legal efforts to restrict the participation of young people in this type of grazing, or to ban their free movement in the fields throughout the 19th century (Hegyi 1978). The practice was largely eliminated only by collectivisation and complete abandonment of grazing (Andrásfalvy 2007; Csiszár 1974; Hegyi 1978). Pasturing geese and ducks, accomplished mainly by the female members of the family, can also be considered as a silvopastoral practice here (Hegyi 1978; Békefi 2011). In grazing by turns, masters of a given community took turns overseeing grazing. They herded their own livestock as well as those of the other farmers in weekly or biweekly shifts (Tamás 2009). For the purposes of grazing by contracted shepherds and herders, separate 'professionals' were hired: '*csordás*' for cattle turned out to graze on a daily basis, '*gulyás'* for the cattle reared in the open air all year round ('*rideg*' cattle). '*Kondás*' (pigmen) cared for swine going out daily, and there were also places where separate

swineherds were hired for the purposes of pannage. Sheep were pastored by shepherds, whether by their owners or hired herders (Eperjessy 2006; Gaál 2003; Paládi-Kovács 1993; Petercsák 2003; Takáts 1986). Gathering foliage, forest litter or wild fruits, an activity constituting an integral part of the silvopastoral systems, took place individually or with the involvement of the whole family (Csiszár 1974; Hegyi 1978). Grazing land was cared for and shrubs cleared by hired farm hands for big estates and by the respective owners of the grazing stock for the village commons up to the end of the 1950s and 1960s, when landed property was nationalised (Petercsák 1984; Takács 1980). After this time, the task was carried out by workers of the agricultural collectives. In sum, the decline observed in the use of silvopastoral systems and reduction of the size and extent of grazing land was accompanied by a decrease in the number persons involved in animal farming. Traditional occupations vanished along with the knowledge necessary for practicing them. As a Somogy pastoralist put it back in 1957: "The old shepherd's pot was shattered to pieces. The shepherds go with the pastures" (Takáts 1986:36).

LIVESTOCK IN SILVOPASTORAL SYSTEMS

All species kept in extensive husbandry methods in Hungary were and still are grazed using silvopastoral systems (e.g., cattle, sheep, pigs, horse, donkeys, buffalo, goats, geese, ducks, poultry) (Hegyi 1978; Paládi-Kovács 1993; Szabadfalvi 1986). The livestock best adapted to the disadvantages and taking greatest advantage of the benefits of silvopastoral systems are always ancient or native breeds accustomed to the specific conditions of the landscape or region (Belényesy 2011; Eperjessy 2006; Hegyi 1978; Vajkai 1958) (Figure 2). Changes in preferred and promoted breeds starting in the course of the 19th century meant that the native regional Carpathian Basin varieties and races best suited for extensive grazing diminished to a significant extent nationwide by the beginning of the 20th century (Eperjessy 2006; Paládi-Kovács 1993; Zólyomi 1968). Hungarian grey cattle and badger-coloured cattle merit a mention here. The change of breeds was driven mainly by different emerging uses and new feeding methods (Paládi-Kovács 1993; Petercsák 1983; Tálasi 1942). New breeds could not endure the tough conditions of forest and extensive grazing (Andrásfalvy 2007). Pig breeds developed in the Hungarian silvopastoral systems disappeared as early as the mid-19th century. Those pig breeds were famous for its wildness and high tolerance (Ébner 1933; Hegyi 1978). This variety was entirely replaced by the semi-intensive Mangalica by the end of the 19th century (Hegyi 1978; Tálasi 1939; Szabadfalvi 1986). In the 1970s, pig grazing was discontinued overnight and the English breeds – widely used by that time – have become overwhelmingly dominant (Tálasi 1942). Changes in breeds of sheep also started in the 19th century with the propagation of the Merino sheep, which, although it needs stabling, is basically accustomed to extensive grazing (Hegyi 1978; Paládi-Kovács 2003).

THE VEGETATION OF THE SILVOPASTORAL SYSTEMS

During a year of the extensive grazing management there was a continuous migration between forest pastures, grass producing areas in the valleys, fallow land parcels,

Figure 3. Wild pear tree. Marcali, Somogy County, Hungary, 2014. (Photo by Anna Varga)

uncultivated land and land under crop (Andrásfalvy 2007; Belényesy 2011; Eperjessy 2006; Tálasi 1939; Viga 1988).

There were no regions where animal husbandry would not have been connected to some components of the silvopastoral management (Eperjessy 2006; Imre 1955; Paládi-Kovács 1993; 2001; Szabadfalvi 1970). There were forests under whose canopy the ground was trodden hard by animals, and others under which stock merely passed across. Some were used only for pannage, others, into which livestock was driven in only in times of great need, and some were the location of regular or occasional gathering of livestock. In forested landscapes this seems to be apparent, substantiated by the merger of the nomenclature of forest and pasture land documented by Andrásfalvy (Andrásfalvy 2007) as a trait typical of the area along the Danube. Furthermore, the general importance of forests is also confirmed by the statement made by Imre Hegyi concerning the Bakony: "No treeless pasture existed in the Bakony up to the first decade after the turn of the [20th] century" (Hegyi 1978:122). The almost continuous forest cover between Lake Balaton and the area along the Dráva River was also grazed (Hosszú 2009; Takács 1982), while Petercsák (1984) wrote a study on the role of forests in folk cattle breeding in the Zemplén, the Northern part of the country. Notwithstanding, it is important to note that areas covered by woody vegetation constituted a fundamental and basically indispensable part of even the pasturing systems of the plains. For instance, livestock grazing in the Steppe of the Hortobágy throughout the year was wintered in the Great Forest (Nagyerdő) belonging to the city of Debrecen (Penyigey 1980), while other animals were driven to farther regions to be fed on acorns and winter in the forests there (Balassa 1973; Csiszár

1974; Szabadfalvi 1968a; 1968b). On the other hand, an important role was given to shelter groves, woodlots around farmsteads, and the forest belts along roads (Balogh 1958; Nagy Czirok 1959). Ethnographers mention silvopastoral husbandry methods in the case of woodlots and groves consisting of oak, beech, sand poplar, wild fruit trees, denser stands of trees and gallery forests made up of soft wood or hard wood in the floodplains (Andrásfalvy 2007; Belényesy 2011; Petercsák 1977; Szabadfalvi 1963; Takács 1980). It should be noted that in vernacular terminology, the lesser or greater clearings surrounded by dense forest stands are also referred to as forest pastures (Paládi-Kovács 2011; Takács 1980). However, detailed description of the habitat types used occurs only in a few cases (e.g. Andrásfalvy 2007; Belényesy 2011).

In the development of a silvopastoral system, the greatest challenge was represented by the establishment and maintenance of specific ratios and quality of woody, perennial and herbaceous, and annual vegetation. In forested landscapes this meant suppression of woody plants, while in treeless regions planting trees was required (Csiszár 1974; Szabadfalvi 1963; Tálasi 1942). A dominant component of grazing systems is the grass meadow, which can only be created and maintained by human interventions in a naturally forested area (Andrásfalvy 2007; Takács 1980). This operation was accomplished using the methods of swidden agriculture. Each farmer had to present himself for a predetermined number of days for pasture clearing, in proportion to his grazing rights. The days dedicated for clearing might vary. Family members participated; every now and then even children joined. Axes, hammer picks, prong hoes, and hoes were used. Thorny species were collected, weeds were burnt. The activity was a community effort lasting from early morning until late in the evening. It also happened that farmers were granted the right to graze additional livestock because of having spent a greater number of days of pasture clearing (Petercsák 1983; Takács 1980). But also the herders were responsible to keep the pastureland clear and suitable for the livestock as well (Hegyi 1978). If grazing intensity declined, or the regular clearing operations were omitted, parts of pastures were easily overgrown by bushes (Andrásfalvy 2007; Takács 1980).

BASEMENT OF THE EXTENSIVE LIVESTOCK MANAGEMENT: OUTDOOR LIVESTOCK KEEPING IN THE FOREST THROUGHOUT THE YEAR

When silvopastoral systems are considered, it is important to note that extensive livestock management was encouraged by the larger areas and forest conditions under which grazing was possible (Andrásfalvy 2007; Eperjessy 2006; Petercsák 1977; 1984; Tálasi 1939).

A master could pasture livestock in two groups depending on their age and type of use, a possibility that proved of great help to peasants in their everyday lives. Some animals returned home daily, such as milk cows and home-going pigs (Csiszár 1974; Hegyi 1978; Petercsák 1983). On the other hand, there were animals reared in the open air, which were not used on a daily basis and which did not have to be kept in stables. Such livestock included young beef cattle, porkers, sheep and colts. Outdoor holding could be maintained out throughout the year (such as forest raising of pigs) or seasonally from springtime to autumn (for instance the outdoor cattle herd) as well as from autumn

through to spring (pigs driven out for pannage), but it could also be shorter, for a night or two (for instance, draught animals) (Andrásfalvy 2007; Belényesy 2011; Ébner 1933; Eperjessy 2006; Hegyi 1978; Petercsák 1977; 1984; 1986; Szabadfalvi 1963; 1968b; 1970; Takács 1983; Takáts 1986; Tálasi 1939; Vajkai 1959).

Forest pasture vegetation provided the resources and shelter for the animals. The silvopastoral system components are determining factors in both cases, but may be even more important in the case of outdoor rearing. Farmsteads were set up to accommodate shepherds and herders in simple huts, with livestock driven mainly into pens surrounded by thorny bushes to stay there overnight during extended forest pasturing (Balassa 1973; Eperjessy 2006; Hegyi 1978; Takács 1982; Takáts 1986).

Benefits of outdoor management of livestock in the period ranging from springtime up to autumn included relieving the farmer of the need to deal with animals which could not be set to work or be milked (for instance, youngstock, infertile individuals or those designed to be fattened) (Hegyi 1978). Extensive management also reduced the pressure and burden on the grazing land close to the settlement.

> "We had two or three sows which farrowed out in the woods. We made a hedge for the flock using thorns. A little part was covered with straw, so that when the rain came, the livestock could retire there. Piglets came over to me as well, when they were of the size of a porkling. By the time they got home, they rated a pen. You were very glad about the nice little pigs coming home with their mother." (Szabó Ferenc, Abara, 1991 quoted by Bellon 2003:105–106)

This kind of keeping was typical throughout the country, for example: in the floodplain forests of the Danube (Andrásfalvy 2007) and Tisza (Bellon 2003), in the oak and/or beech dominated forests in the Bakony (Hegyi 1978; Tálasi 1939), in the Bükk and Zemplén countryside (Petercsák 1983) and in the oak forests of the Great Plain (Penyigey 1980). Farmers visited outdoor livestock in every week or two weeks and brought salt to them (Bellon 2003; Szabadfalvi 1963; Vajkai 1959). This act also served to remind the animals who their master was and permitted owners to visually review their livestock.

In the autumn the animals kept outdoors over the summer were joined or replaced by others turned out to pannage (see in more detail below). Supplying winter forage has always required high energy investment on the part of farmers, so grazing in winter had high importance (Andrásfalvy 2007; Belényesy 2011; Penyigey 1980; Petercsák 1977):

> "As long as snow did not fall, the part of the forests used for regular grazing provided the feed to outdoor animals. However, as the snow fell and covered up the nibbled off short grass, pawing it out from underneath the snow would be a more difficult task. It seemed to be more advisable to drive outdoor livestock to a location where grass was kept with a longer stem and snow could not cover it up, as was the case with the flat pastures. For this purpose, less intensively exploited forests were best suited, as well as groves and boggy land, where grass grew longer under the trees, protected by bushes and thus was accessible in snow as well. The long grass of the forest floor, which had dried out by winter, thus became an important auxiliary means of wintering." (Takács 1980:40).

Patterns of grazing across the entire landscape in association with outdoor livestock keeping constitutes an integral component of traditional extensive animal husbandry. Livestock was driven to better grazing sites, richer forage, acorns, or just as part of driving livestock on their feet to the marketplace (cattle, sheep, pigs) through wood and meadows at lesser or even several hundred kilometre distances (Hegyi 1978; Szabadfalvi 1968a; 1968b; Viga 1988). During these drives, forests could serve both as final destinations or as resting places (Tálasi 1939). A number of ethnographic findings describe the arrangement and itinerary of such drives (Császár 1974; Hegyi 1978; Paládi-Kovács 1993; Petercsák 1978; Szabadfalvi 1972; Viga 1986).

The migration with livestock and the year-round outdoor keeping were started to dramatically abandoned after the collectivisation and disappeared from some regions (Máté 2009; Petercsák 1983; Szabadfalvi 1972).

Tree buds and mistletoe

A source of feed in the winter months and primarily during early springtime was provided by the woody vegetation mainly in the form of tree buds, or, as it was called in many places, twig tips or sprouts (Paládi-Kovács 1983; Takács 1980; Tálasi 1939; Viga 1988). Such buds were cut by the person tending the livestock, sometimes even entailing the felling of the whole tree. But the animals themselves readily fed on trees and bushes directly: "Sheep ate the delicate young shoots in springtime, they looked for a better life, yearned for the forest" (Tálasi 1939:17). There were places where tree sprouts were used regularly, such as in the floodplain region of the Danube and in the Mecsek where "mountainside oxen kept on straw only were strengthened in springtime by driving them to the fringe of the forest and people cut swelling buds for them using axes" (Paládi-Kovács 1983:196; Andrásfalvy 2007:362–368). Favourite tree sprouts were those of oaks, hazelnut and beech. Pussy willows were liked for their fragrance. Buds were fed to livestock shredded and mixed with straw (Petercsák 1986).

The significance of animal feeding using tree buds is shown by the great number of written pleadings and document on forest rules referring to their gathering or prohibition, mainly from the 18th century (Takács 1980; Tálasi 1939). This activity could easily cause considerable losses in younger stands from the forest management perspective. The practice of collecting tree buds was recorded by Lajos Takács: "Less affluent people who ran out of feedstuff cut tree tips from the bushes of the Mátra forests and fed these to their starving animals" (Takács 1980:42).

Additional supplementary feed was provided by mistletoe (*Loranthus europaeus* Jacq.) in winter periods, though its use had effectively disappeared by the second half of the 20th century. It was collected for sheep and cattle, but primarily for pigs (Herkely 1941; Hegyi 1978; Paládi-Kovács 1983; Vajkai 1959). Mistletoe was cut usually from older oak trees using a special curved knife (Herkely 1941; Takács 1980).

Figure 4. The best resting places are under the large trees. Kasztó, Bogyiszló, Tolna County, Hungary, 2016. (Photo by Anna Varga)

In the heat – Resting places at noon: shadowy trees, forest outskirts

From late spring up to the cooler days of autumn, grazing was basically conducted on areas dominated by open, grassland dominated habitats. Even so the woody vegetation had a major role during this time as well. Freestanding, scattered trees were consciously selected on the open pastureland, mainly wild pears or oak trees, and saplings promising the most beautiful leafy crowns were spared (Hegyi 1978; Takács 1980; Bellon 2003). Trees and clumps of trees stood in more open areas scattered throughout the landscape, or they connected to the fringes of the forests (Eperjessy 2006; Takáts 1986, Tálasi 1942; Andrásfalvy 2007).

Multiple benefits were attributed to these spreading, large trees and resting places, contributing mainly to the well-being of the grazing stock and their masters. Such a tree could ensure shelter and shade for animals and people; its fruits could be eaten by livestock, or, in the case of wild fruit trees, by humans as well; it also provided scratching substrates for livestock; secured a habitat for beneficial birds which fed on the horseflies and other flies disturbing the animals (Bellon 2003; Eperjessy 2006; Hegyi 1978; Paládi-Kovács 1982; Petercsák 1983; Tálasi 1939; 1942) (Figure 3). The best resting places were situated in locations exposed to the wind, which was even more helpful in cooling off and removing annoying insects from the stock. Another important component of resting places were water sources suitable for watering the

animals. Therefore a streamlet, creek, spring or well with a watering trough beside it were usually also present (Eperjessy 2006; Hegyi 1978). As a rule, noon rest started at around eleven or twelve o'clock and finished by two or three in the afternoon, when the stock was watered again (Eperjessy 2006; Hegyi 1978). During the noon rest the animals were usually not enclosed. However, several records exist for pigs that describe spreading trees surrounded by a fence consisting of thorny bushes. At noontime, the herders also took a rest. Usually they were delivered lunch, had a nap or passed their time by wood carving or playing the herders's pipe, or, if it was necessary, treated the animals. Younger herder boys gathered things, fowled or cut handles for implements in the forest (Eperjessy 2006; Takáts 1986).

Leaf fodder

Uses of leaf fodder was widespread in all Hungary, but the importance of this forage decreased with intensification of the livestock keeping and the growing ability of the hay (Andrásfalvy 2007; Paládi-Kovács 1983). In regions with more rigorous climates, however, its use was part of the regular silvopastoral activities until the middle of the 20th century (Paládi-Kovács 1982; 1983; Takács 1980). Data from the Medieval and the Early Modern period are known mainly from written pleadings and forest rules. Herders willingly cut foliage for the livestock, sometimes even excessively, in forest managers estimation, such that in places it was forbidden to carry axes or hatchets (Belényessy 2011; Tagányi 1896; Takács 1980).

Feeding of cattle, sheep, and goats on leaves is referred to most often in the literature, but pigs ate them with pleasure as well. The most popular tree species giving leaf fodder included oaks, lime trees, ash trees, hazelnuts, poplars, honey locusts, alders and willow (Andrásfalvy 2007; Paládi-Kovács 1983; Petercsák 1986). Leaf fodder was collected by pruning, beating and pollarding (Paládi-Kovács 1983; Szabó 2002; Takács 1980). As a result, characteristic leafy crowns were created. Pruning was accomplished by the use of cutting, pruning, and trimming implements. A typical leaf cutting implement is the round-ended large knife, which could be used to fell branches up to the diameter of one's arm (Takács 1980). In certain areas climbing irons were used – permitted by the Forest Act in winter only. Cut leafy branches and leaves were dried and stored in dry places such as the loft of stables, or put in sheaves or stacks. If dried heedlessly, leafy fodder could go mouldy quite readily (Paládi-Kovács 1983). In other instances, the leaves were scalded, shredded and given to animals mixed with bran or hay (Petercsák 1983). Besides peasant farms, foliage was collected on the manorial estates as well. Benefits and disadvantages are reported in agrarian professional periodicals from the end of the 19th century and beginning of the 20th century. In Környe community, which belonged to the Esterházy estate, 5176 leafy branches were granted to the sheep farmstead in 1834 (Paládi-Kovács 1983).

Leafy branches held sacred meanings in animal husbandry, as was reported by the Bakony shepherd woman Vilma Kis-Tóth Károlyné Tamás:

> "The branch of a leafy oak tree was cut on 20 October and put into the loft of the sheep-fold. When the sheep were first fed, this branch was broken up into as many pieces as the number of the

> mangers. Each manger got some of it and to the branch was attributed strength that would protect livestock from perishing in the hard winter times. Saint Wendell preserves it." (Tamás 2009:30)

Leaf litter

Livestock pick up fallen and dried leaves by preference on their own. "The leaf of the wild pear was very good once the hoarfrost nipped on it, if the beast chews on it half raw and drinks deep, its belly would grow neatly" (Tálasi 1939). The same is reported by the shepherd woman Tamás (2009):

> "If they got to the bushes, they gnawed on twig tips and dry leaves as well. Lambs from the previous year, in other words the 10–11 months old young sheep nipped on them bleating, 'firnyákolva'. But the shepherd understood the complaint well. He or she could hear that 'its tip pricks, baa…'. When the much-experienced ewe – usually the mother of the young sheep, since they grazed together for a long time – replied: 'Leaf it is, baa, have it down, baa'." (Tamás 2009:30–31)

In some regions and in times of straw shortage, fallen leaves were gathered mainly for bedding, but, should the need arise, they could be fed to starving livestock (Hegyi 1978; Petercsák 1983; Szabadi 1960). Oak leaves were good primarily for bedding, while the leaves of maple and elm-trees were mostly fed to calves. Oak leaves were the favourite for they were larger, prolific and less fragile than the others (Petercsák 1986). Before gathering, you had to negotiate with the local forester in the Bakony and you had to join the forest works (gathering acorns, tending seedlings) in return. Carrying away the duff layer from under the young trees was not allowed (Hegyi 1978). The best time for collecting forest litter was the dry autumn season. Leaves were collected exclusively by using rakes. Collected leaves were mostly transported in a big hemp bag, or in bulk on a cart with the sides heightened by planks or sticks, with the leaves inside trodden down (Paládi-Kovács 1971; Petercsák 1986). Litter was stored in a dry place. When the forest floor was used as a stable bedding, it was mostly put in front of the livestock so that it would not be soiled as much and remained suitable for feeding (Herkely 1941).

It is also noted that moss was gathered and used like leaf litter, as bedding and as fodder (Hegyi 1978; Herkely 1941; Tálasi 1939).

Wild fruits

The most popular tree species in silvopastoral systems, chosen deliberately for the wood pastures, are those which could also be used as feedstuff, such as wild pear, crab apple, and European cornel (Hegyi 1978; Szabadfalvi 1963; Takács 1983) (Figure 4). However, oak species and beech providing acorns and beechnuts can also be listed here (Ébner 1933; Hegyi 1978; Szabadfalvi 1963). The fruits of these trees were picked up by the animals themselves during grazing, but they were also gathered by humans (Hegyi 1978; Vajkai 1959). Livestock, not only pigs, but cattle, sheep and the others were so fond of wild fruits and acorns that it was difficult to control them when the fruits were ripe (Andrásfalvy 2007; Tálasi 1939; Vajkai 1959; Viga 1986). "When the herd depleted the

hay meadow, it would sense the smell of the forest after the birthday of the Blessed Virgin Mary (…) Livestock was first driven to the more forested areas and fed on the falling fruits and acorns in the beginning of September (September 8)" (Tálasi 1939:17–18).

Feeding on acorns

Acorns have been a prominent source of feedstuff for grazing stock kept extensively in Hungary for millennia (Csiszár 1974; Hegyi 1982; Paládi-Kovács 1993; Tagányi 1896; Takáts 1986). The Latin denomination '*glandiferra Pannonia'*, acorn bearing Pannonia, reflects the suitability of South Transdanubia for pannage (Plinius Secundus 2012). The important role of this practice is substantiated by a number of documents from the Mediaeval period and later ages, and by the fact that forests fit for pannage were kept in especially high esteem up to the end of the 19th century (Balassa 1973; Takács 1983). Pannage was more profitable in the 18th and 19th centuries than grain crops (Hegyi 1978, 1982). The importance of acorns in animal feeding diminished as maize and corn took over and it was almost completely forgotten by the end of the 20th century (Andrásfalvy 2009; Balassa 1973).

Feeding on acorns was implemented in three fundamental forms: 1.) free ranging grazing and consumption at will (see above); 2.) feeding on collected acorns in stables; and 3.) grazing on acorns in places designated for this purpose (Csiszár 1974). The last practice is called pannage (Petercsák 1986; Takács 1983). Acorns were consumed with pleasure by the cattle, sheep, horses and goats as well (Szabadfalvi 1963). In Hungary, oak species for acorns included mainly English oak, Cornish oak, downy oak, Turkey oak and beside them, beech. Opinions differ which of these was best (Balassa 1963; Eperjessy 2006; Szabadfalvi 1968a; Petercsák 1977; Tálasi 1939). Turkey oak acorn was most reliably predicted, yet not favoured, because the animals got heartburn from it (Tálasi 1939). Animal fat became softer from oak acorns and harder from beech mast. Sometimes a deliberate effort was made to have both (Petercsák 1977). Eating acorns had the most dramatic influence on the quality and amount of bacon and fat: the bacon of the mast-fed pigs is yellower and softer. Its fat is also yellowish and thin like goose fat, it hardens only granulously. Its taste better than the corn-fed pigs (Szabadfalvi 1968a).

Acorns did not provide a steady and safe staple food for livestock rearing and fattening. It was collected for years of scarcity during times of abundance and in such periods livestock ate almost exclusively acorns, even out on the fields. Sometimes three to five years or even ten years pass before a heavy mast year occurs again (Balassa 1978). Acorns started to fall initially at the beginning of the autumn season, first the worm-eaten ones and later, when they were nipped by hoarfrost, healthy fruits fell easily as well.

Acorns were gathered and put aside for times of need and they were also used as a 'delicacy' supplement to feedstuffs. Both men and women went out to gather acorns. When not enough were found, acorns were knocked off the trees with long poles. They were transported back home in bags and dried in properly ventilated places, or put in the oven after baking bread to let them dry. Livestock would get them scalded or ground (Szabadfalvi 1963). There were locations where acorns dedicated for feeding were stored in pits, covered with straw and watered to get them to germinate because pigs liked them better this way and their teeth did not wear away from the hard shells (Balassa

Figure 5. Outdoor forest pig grazing is still living silvopastoral management in the floodplain forest of the Sava river in Serbia. Morović, Srem, Serbia, 2014. (Photo by Anna Varga)

1973; Bellon 2003; Hegyi 1978; Szabadfalvi 1963). Data on feeding animals with gathered acorns are available from the 1960s and 1970s from different locations across the country (for instance Zemplén, Bükk, Hajdúság, Bakony) (Hegyi 1978; Szabadfalvi 1963; Viga 1986). Acorns were collected not only for livestock but for sale to forestry companies (Csiszár 1974).

Pannage is a special kind of forest grazing both in terms of legal control and practical implementation (Balassa 1973; Takács 1983; Paládi-Kovács 1993). It is almost the only area in silvopastoral practices that has always been controlled by the owner of the land, so it could be freely conducted in exceptional cases only (Szabadfalvi 1963). Pannage was scheduled in a similar way throughout the country. Persons appointed by the land owner (for instance, the magistrate or chief counsellor for cities) estimated the yield of the given year and decided how many livestock could be allowed to feed on them. If they were able to receive outside herds on top of their own, the possibility was announced by the beating of a drum or, later on, more frequently in newspaper advertisements (Balassa 1973; Csiszár 1974; Filep 1989; Kodolányi 1942; Szabadfalvi 1968a; Szabadfalvi 1968b; Takács 1983; Wittner 1978).

Relatively little information is available on the practical implementation of pannage in ethnographic references. Swine herds and flocks of sheep set for pannage spent the nights in the forest and a special farmstead was set up for the herders and for the livestock (Szabadfalvi 1963, 1968a,b; Takács 1983; Takáts 1986). Iván Balassa describes on an example from Bodrogköz that pannage had two rules of procedure: “herds were set off

radially from the farmsteads and visited a drinking place or spring en route. The other solution was to graze around the farmstead and to return for watering the stock" (Balassa 1973:73). It was pointed out several times that good places for pannage were sites where watering could also be accomplished, because animals desire water strongly after feeding on acorns. In practical terms pannage was continued from end of August, September up until the first major snowfall or freezing of the water sources dedicated for watering, albeit the law permitted feeding on acorns up to March of the next year (Balassa 1973; Kodolányi 1942; Szabadfalvi 1963; 1968). Special permits were sometimes granted for pannage in springtime, for instance in the Great Forest of Debrecen (Penyigey 1980). The grazing schedule was agreed upon by the masting herders pasturing on the same area (Szabadfalvi 1968a). Drive of livestock was determined mostly by the extent the acorns were consumed (Szabadfalvi 1968a).

Like gathering acorns, the last data on pannage come from North-Eastern Hungary, dated in the 1970s (Viga 1986).

BENEFITS OF FOREST GRAZING AND PROHIBITIONS

Most information on former silvopastoral operations are available from written pleadings and rules and regulations, since generally these were recorded in written form (Andrásfalvy 2007; Filep 1989; Takács 1983). Silvopastoral activities were more strictly controlled and regulated by forest rules since the 19th century on, about which many archival sources are available.

In contrast, few details are known concerning forest grazing. Bertalan Andrásfalvy states that grazing of forested areas was initiated only when seedlings grew higher than what the grazing cattle could destroy (Andrásfalvy 2007:363–365). This had to be observed as fresh shoots were a favourite delicacy for cattle, which could be fatal for younger trees. No grazing was permitted in thickets during winter, either. As for goats, they were banned from virtually everywhere (Hegyi 1978).

Forest rules required bans on silvopastoral activities before and after felling. The length of the prohibitions might have been subject to change depending on regions and forest stands. Data refer to 7, 14 and 25 year-long prohibitions (Petercsák 1984; Viga 1988). Forests in the 19th century were still grazed almost without limits. Therefore so-called alternating pastures were introduced to reduce the pressure on and associated damages to individual pastures, and to secure replenishment of tree stands. The areas grazed this way were periodically renewed. Trees were painted white at a man's height at the boundaries of areas that were and were not allowed to be grazed. Eventual damages were the responsibility of the herders, while grazing was controlled and regulated by the forest inspectorate (Viga 1988). Beside the adverse impacts forest grazing exerted on the landscape and the environment, benefits were also reckoned, for instance in the case of the Hajdúság forests Imre Szabadi asserts:

> "Beside caring for the livestock, grazing had an important role in forest management. On the one hand, livestock fertilised forest grounds and hence trees grew better, and on the other the forest was rid of too much grass, which frequently dried out from spring winds and sunshine, causing forest fires in many cases." (Szabadi 1960:305)

Figure 6. Herder and the nature conservation ranger are meeting at one of the renewed wood pastures in Marcali. Marcali, Hungary, 2012. (Photo by Anna Varga)

OUTLOOK

From the available references and resources found in ethnographies, the dominant, fundamental role, functioning and history of the silvopastoral systems from the 18th century to the first half of the 20th century are reviewed here. It showed that the silvopastoral systems were crucial part of the Hungarian cultural landscape and biocultural heritage. The management of the silvopastoral practises decreased and some of them disappeared nearly totally. Essentially the wood pastures and illegal forest grazing are representing the silvopastoral systems in Hungary nowadays (Varga et al. 2016; Varga – Molnár 2014).

Similar tendencies can be observed with respect to the traditional silvopastoral systems of the already forested parts of Europe, only across different time scales (Hartel et al. 2015; Johann et al. 2012). There are regions where this kind of land management is entirely abandoned (for instance in Germany or Czechia), while in other countries they are still continuously applied (for instance, forest pig raising by the Sava river in Croatia and Serbia) (Forejt et al. 2017; Gugić 2009; Hartel – Plieninger 2014) (Figure 5). In spite of all this, silvopastoralism is still the most widely used agroforestry method in Europe up to the present day (Herder et al. 2017).

Just as in many other countries in Europe, silvopastoral systems, especially wood pastures, have been revitalised in recent years in Hungary in connection with conservation-focused forest management practices, agricultural subsidies and the rising interest in

extensive livestock management itself (Molnár et al. 2016; Roellig et al. 2016). It is hoped that the process will be promoted by the expected renewal of permission for forest grazing. Growing numbers of renewing and rethinking silvopastoral farming include some farmers and livestock keepers, for instance a cattle farmer, *Mozsi farm*, in Somogy, who fattens calves on acorns as an innovative approach, or another family, *Váczakő farm* in Bakony, who rejuvenated an overgrown wood pasture by clearing and leaving wild fruit trees in place deliberately to process and market their fruits or an another family farm in Bakony, *Tűzkövesbörc farm*, where renewing traditional outdoor livestock keeping in silvopastoral system. Furthermore, it is possible to identify a number of conservation management practices that are intended to renew and maintain wood pastures in national parks in Hungary (Varga et al. 2017) (Figure 6). Many examples could be cited from across Europe: the renaissance of pannage in the oak woods of the Iberian peninsula (Olea – San Miguel-Ayanz 2006), or the efforts made to revitalise leaf-fodder gathering in Transylvania (Hartel et al. 2016) could both be highlighted here. All this is supplemented by the reform of the agroforestry strategy in the European Union as a whole, wherein innovation on silvopastoral systems is given special attention (Burgess et al. 2015; European Commission 2013; Plieninger et al. 2015).

All in all, the findings of ethnographic research studies conducted in the past century contribute significantly to understanding traditional land use forms, but to be able to provide a definite answer to questions of the ecological implications of these practices, further research will be needed.

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"If You Got a Forest, You Got Gold"

The Joys and Woes of Forest Use in Gyimes (Eastern Carpathians, Romania)

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Abstract: All over the world, rural communities developed mainly stable and sustainable, traditional (extensive) land use systems to manage natural resources. Resource management and related traditional ecological knowledge based on understanding of the functioning of the ecosystem help local communities to maintain important resources, like forests. Forest plays an important socio-economic role in the life of rural communities. Wood is one of the most elemental raw materials used in households, but its non-timber benefits play just as important a role.

We examined sustainable use of forests in a Csángó community in Gyimes region (Eastern Carpathians, Romania), providing insights into attitudes within folk forestry towards natural resources, driving forces, and changes in human relations with the forest.

Wood as a raw material is a resource that largely determines the daily life of the Csángó community, while non-timber products (e.g., forest grazing, forest fruits, herbs) play a complementary, yet important role in Gyimes life. The survey of forest flora and vegetation confirms that Gyimes farmers are familiar with the plant species that reach significant coverage in the canopy, shrub and herbaceous layers, they are well versed in the forest types occurring in the landscape, their dynamics, their most characteristic stages in the succession after felling. Overuse is an undisputed and acknowledged part of the forest-management, threatens social-ecological system-flexibility. As long as natural systems are able to renew themselves (forests can regenerate), there is chance for the further use of this important resource and in a broader context there is chance for the survival of the local community as well.

Keywords: forest management, traditional ecological knowledge, Eastern Carpathians, sustainable resource management

SOCIAL-ECOLOGICAL RESILIENCE AND SMALL-SCALE FARMING

All over the world, rural communities that farm traditionally (extensively) have mostly been operating land use systems that are stable and sustainable in the long term (Plieninger et al. 2006; Robson – Berkes 2011). These land use systems developed and maintained cultural landscapes that represent certain ecological,

cultural and aesthetic values (Agnoletti et al. 2014; Antrop 2005; Dorresteijn et al. 2015; Rist – Dahdouh-Guebas 2006). The forest patches enlaced with arable lands and grasslands which also play a very important socio-economic role in everyday life are important elements of these landscapes (Hegyi 1978; Petercsák 1992:5–6; Woitsch 2011).

The purpose of extensive farming is to ensure the quality and sustainability of the natural resources providing for the needs of rural communities (e.g., firewood, hay), along with the forest (Hartel et al. 2014:4). This primarily means the complex management of habitats and plant communities (e.g., Babai – Molnár 2014; Meilleur 1986; Molnár et al. 2015). The land use system is based on a dynamic, constantly expanding traditional ecological knowledge (Berkes 2012; Menzies – Butler 2006), and its stability and adaptive capacity are safeguarded by social (informal) institutions (Colding – Folke 2001; Molnár et al. 2015). The framework of land use is in many cases based on the high-level understanding of the functioning of the ecosystem (ecological understanding model: Turner – Berkes 2006) or on experiencing resource depletion (depletion crisis model: Berkes – Turner 2006; Colding – Folke 2001). Informal institutions do not generally develop where there are abundant resources that regenerate well (small fishing communities in Oceania: Colding – Folke 2001; Johannes 2002; spruce forests in Székelyland: Molnár et al. 2015).

For its wood and other benefits, the forest as a natural resource has played a very important role in the life of rural communities in Europe, as well as in Transylvania (e.g., Gimmi – Bürgi 2007:237; Woitsch 2011). This is indicated by Székely village acts (Molnár et al. 2015) or Saxon directives (Dorner 1910) as well as recurrent contemporary social debates (e.g., Lukács 2015). Wood is one of the most elemental raw materials of material culture (utensils, tools, dishes), but its non-timber benefits play just as important a role (Stryamets et al. 2015; Woitsch 2011:155–156). Contemporary forest use is characterized by the duality of traditional forest use based on local ecological knowledge and a materialistic approach focused on profit. We examine this ambivalent situation with the help of data collected in a Transylvanian Hungarian community, among the Csángó in Gyimes region, providing insights into attitudes within folk forestry towards natural resources, driving forces, and changes in human relations with the forest (cf. Johann 2007:55; Woitsch 2011:155).

AN EXTENSIVELY FARMING EUROPEAN RURAL COMMUNITY: THE CSÁNGÓS OF GYIMES

Extensive land use – heterogeneous mountainous landscape

Data related to the sustainable use of natural resources, particularly forests, was collected in Valea Rece (Hidegségpataka), a community of 2,340 in Lunca de Jos (Gyimesközéplok, Eastern Carpathians, Romania) (Varga E. *n.d.*; for more, see Babai et al. 2014).

The settlement is located within an extensive network of valleys formed by the river system of the Tatros. The bedrock of this mountainous area is sandstone (Pál-Molnár 2010), its climate montane-boreal, with an annual average temperature of 4–6 °C

(Pálfalvi 2001:166) and annual rainfall of 800–1200 mm (Ilyés 2007:45). Most of the mountains reach an elevation of 1250–1350 m (highest point: 1553 m; Naskalat), while the valley bottom lies at 850–900 m.

Due to the mosaic structure of the habitats, the flora of the area is extremely rich (Babai 2014; Pálfalvi 2001; 2010; 2012). As of now, research in the area has detected a total of 641 vascular plant species (Babai 2014).

The vegetation of the Gyimes landscape consists of spruce forests (*Hieracio rotundati-Piceetum*), and to a lesser degree beech forests (*Symphito cordati-Fagetum*). The fragmentation and decline of the once continuous forest cover are due to the development of seminatural grasslands that ensured the feed requirements of livestock in winter (hay) and summer (pasture), i.e., the establishment of a mosaic cultural landscape defined by animal husbandry (forest cover is less than 30%; Babai 2014) (Ilyés 2001; 2007). The cleared meadows that formed in place of forests (acidic and mesophilic grasslands – *Arrhenatherum elatius, Festuco rubrae-Agrostetum capillary, Anthoxantho-Agrostietum capillary, Violo declinatae-Nardetum*) dominate two-thirds of the landscape (Babai – Molnár 2014; Babai et al. 2014).

Users of the landscape: Gyimes Csángós and small-scale farming

The Csángós in Gyimes are a Catholic, Hungarian-speaking community that settled in the area about 250 years ago (Hofer 2009; Ilyés 2007). Today the land use system developed in this young cultural landscape provides feed for the livestock of a 14,000-strong community (Babai – Molnár 2014; Babai et al. 2014; Ilyés 2007).

Even today, the semi-subsistence farming systems are still based on small-scale plant cultivation and animal husbandry (cf. Tudor 2015:31–32). The average size of holdings nears the 3.2–3.6 ha Romanian average (Knowles 2011; Tudor 2015). The main pillars of the economy are animal husbandry (dairy-producing cattle breeding), and the main agricultural crops are potatoes (*Solanum esculentum*) (Babai et al. 2014). Similarly, to 2,854 villages in Romania (Huband – McCracken 2011:60), the socialist transformation of agriculture in the Gyimes region took place only partially: forests and pastures were nationalized.

METHODS

The goal of the ethno-ecological research taking place since 2006 is to learn about the flora (Babai 2014), understand the biological meaning of local plant names and folk taxa (Molnár – Babai 2009), explore the names and ecological content of local habitats (Babai – Molnár 2009; 2013), and examine in detail the traditional (extensive) grassland management (Babai – Molnár 2014; Babai et al. 2014; 2015). The research also included traditional knowledge related to vertebrate animals (Babai 2011).

To explore the ecological knowledge and economic activity related to forests, we prepared semi-structured and structured interviews and questionnaires. A total of 48 people participated in the study (26 men, 22 women), all of them farmers (one forester), with a mean age of 56.3 years (the oldest informant was 87, the youngest 12). All

interviews were conducted in Lunca de Jos, Valea Rece in Hungarian. The interviews were recorded on a voice recorder.

The botanical survey of the flora of the forests was conducted through samplings (coenological relevees) of 100–400 sq m quadrants using the Braun-Blanquet method (Braun-Blanquet 1951). The shape of the sampling unit was adjusted to the shape of the forest patch. The dominance of plant species was determined in percent values. Then we compared the forest's botanical flora and the flora associated with the forest by the locals, and calculated the resemblance using the Microsoft Office suite (Excel) (Jaccard index). In the calculation of the index, the number of common species (C) between the two sets [folk flora (A) and coenological records species list (B)] is divided by the value derived by subtracting the elements of the common set (C) from the sum of the elements of the two sets (A+B): $I_{Jaccard} = C / (A+B-C)$.

In the text we list all species by their name used in Gyimes (indicated in italics), followed in brackets by their scientific name. Figure 1 provides the scientific, official Hungarian, and Gyimes names of all species included in coenological records and on the Gyimes flora list.

Quotes of are indicated in italics, and what various informants said are separated by the " / " sign.

Scientific name	Common name	Local name (Hidegségpataka)
	Tree species	
Picea abies	Norway spruce	veres fenyő
Abies alba	silver fir	fehér fenyő
Pinus sylvestris	Scots pine	lúcs
Fagus sylvatica	European beech	bikk, bükk
Acer pseudoplatanus	sycamore	jáhor
Betula pendula	silver birch	nyírfa
Salix caprea	pussy willow	rakottya
Populus tremula	common aspen	nyár
Sorbus aucuparia	rowan	kórus
Taxus baccata	yew	tisza
Cerasus avium	wild cherry	vadcseresznye

Shrubs		
Lonicera xylosteum	honeysuckle	csontfa
Daphne mezereum	spurge laurel	farkashárs
Rubus idaeus	red raspberry	málna
Rubus fruticosus	blackberry	szeder
Ribes uva-crispa	gooseberry	szőrös füge
Ribes alpinum	alpine currant	leánkafüge, vadribizli
Clematis alpina	alpine clematis	erdei felfolyó
Sambucus nigra	common elder	fekete bojza
Sambucus racemosa	red elderberry	piros bojza
Corylus avellana	common hazel	magyaró
*Spiraea chamaedryfolia**	elm-leaved spirea	gyüngyemény
Rosa canina agg.*	dog rose	hecselli
*Juniperus communis**	common juniper	borsika
Vaccinium myrtillus	bilberry	fekete kokojza
Herbaceous plants		
Oxalis acetosella	wood sorrel	erdei sósdi, madársósdi
Euphorbia amygdaloides	wood spurge	árior
Streptopus amplexifolius	twisted stalk	nyúleper
Lycopodium annotinum	bristly club-moss	serkefű
Galanthus nivalis	common snowdrop	hóvirág
Allium ursinum	wild garlic	vadfokhagyma, medvehagyma
Fragaria vesca	wild strawberry	berkeeper, piroseper
Fragaria viridis	creamy strawberry	tokos eper
Gentiana asclepiadea	willow gentian	gyertyánfű
Galium mollugo	hedge bedstraw	ragadvány

Herbaceous plants		
Pteridium aquilinum	bracken	ördögborda
Campanula patula, C. rotundifolia, C. trachelium	spreading bellflower, harebell, nettle-leaved bellflower	harangvirág
Chamaenerion angustifolium	rosebay willowherb	vészvirág
Myosotis sylvatica	wood forget-me-not	nefelejcs
Viola reichenbachiana	early dog-violet	ibolya
Antennaria dioica	mountain everlasting	mezei gyapár
Briza media, Festuca pratensis, Festuca rubra	quaking-grass, meadow fescue, red fescue	imola
Brachypodium pinnatum	tor grass	zablevel
Urtica dioica	stinging nettle	csihány
*Cirsium eriophorum, C. erisithales, Telekia speciosa**	woolly thistle, yellow thistle, heartleaf oxeye	medvesaláta
*Origanum vulgare**	oregano	ezerjófű
Alchemilla spp.*	lady's mantle-species	zsanika
*Leucanthemum vulgare**	ox-eye daisy	papvirág
*Helleborus purpurascens**	purple-flowered Christmas rose (hellebore)	eszpenz
*Tussilago farfara***	coltsfoot	podbállapi
*Petasites albus***	white butterbur	keptelán

Figure 1. Intersection of coenological records and the number of taxa considered forest species by the locals in Gyimes

* meadow species, which are present in the herbaceous layer because of forest grazing;

** species characteristic for spring-fens in the forest

RESULTS

The forest is a habitat that determines the character of the Gyimes cultural landscape and is very important economically as well. Wood as a raw material (firewood, timber, tool wood, etc.) is a resource that largely determines the daily life of the local community, while non-timber products (e.g., forest grazing, forest fruits, herbs) play a complementary role in Gyimes life.

The concept and interpretation of the forest in Gyimes

In the forest-perception of the people of Gyimes, forest types are determined by dominant and characteristic tree species:

> "what kinds of forests do you have around here? / We have beech (*Fagus sylvatica*) and birch (*Betula pendula*), then white pine (*Abies alba*) and red pine (*Picea abies*)." (KB 31 01 '08) // "How many types of pine forests do you have? / Of pine, these three, the red pine, white pine, and lúcs (*Pinus sylvestris*). These three pine trees. / But of pine forests, how many do you have? / That's it, these are all pine trees, they are forests, the difference is only that some are red pine, some lúcs, and some white pine. But these are all pine forests, there is only that much difference." (JA 27 01 '08)

It is interesting that the representatives of the herbaceous forest flora grow among the trees, not in the forest: the wood fern (*Dryopteris* spp.) grows "in rather shaded areas, among the forest" (FD 04 02 '08).

The botanical and folk botanical features of forests

In Gyimes there are two dominant forest types: "of forests, we have two types. Evergreen forests (*Hieracio rotundati-Piceetum*) and beech forests (*Symphito cordati-Fagetum*). 'Cause here there are none of those leafy (deciduous) forests, only beech trees. (...) There used to be birch forests, too, but there's few of those now, they only grow in patches" (TS 29 01 '08).

In the coenological records taken in the forest and on the list of species associated by the people of Gyimes with the forest, there are a total of 200 plant species, of which 179 were found during the coenological survey, while the people of Gyimes mentioned 72 typical forest species. The intersection of the two species lists (the common species) contains 51 species (25.5%) (Figure 1, Figure 2).

In the following we will present the most important of the 51 species that are considered dominant in the forests of Gyimes, based on both the botanical survey and the opinions of farmers in Gyimes.

The world of pine forests

The forests in Gyimes are dominated by the *red pine* (Norway spruce, *Picea abies*): "the red pine, it is most prevalent here in all forests" (PK 05 02 '08), spruce forests (*Hieracio rotundati-Piceetum*) are the most common types of forests in the landscape. Silver fir (*Abies alba*) is often mixed in, because "they (the red and white pine) are not separate" (JA 27 01 '08). Of the deciduous species, it is mainly the birch (*Betula pendula*) and the beech (*Fagus sylvatica*) that can be observed individually.

In the shrub layer, the poisonous spurge laurel (*Daphne mezereum*) and the fly honeysuckle (*Lonicera xylosteum*) – used as a whip handle for its extremely hard wood – are most common. Other typical shrubs are raspberries (*Rubus idaeus*), gooseberries (*Ribes uva-crispa*) and rowan (*Sorbus aucuparia*).

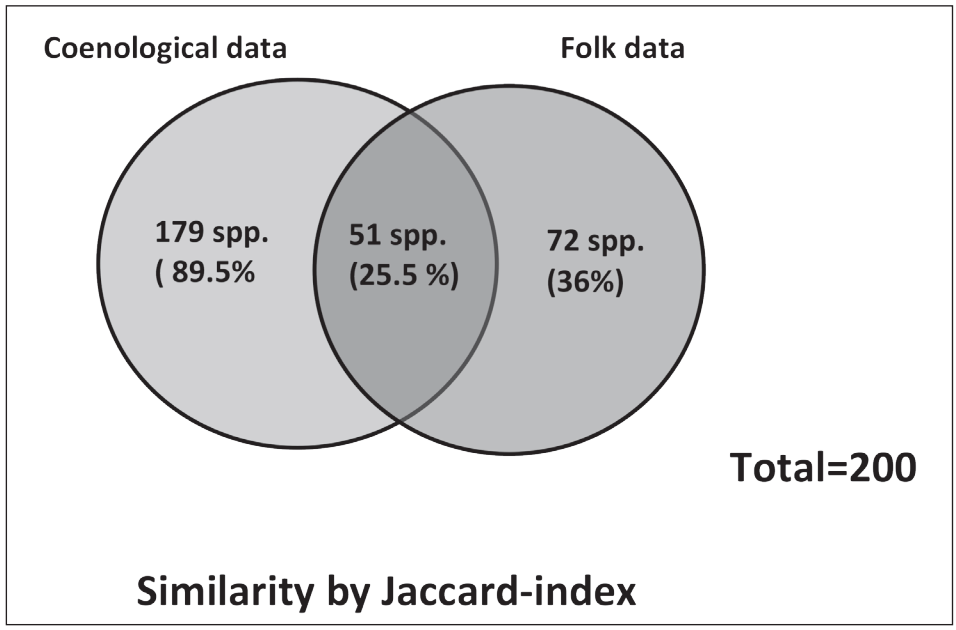

Figure 2. The number of species of plants in the coenological records, and the number of taxa considered forest species by the locals in Gyimes, and their intersection

The alpine clematis (*Clematis alpina*) represents a particular life form as it "sets out, and climbs the trees, creeps around them" (KB 31 01 '08).

The development of the herbaceous layer depends on the density of the forest: "where the forest is dense, there is no lawn to grow grass. Where the forest is sparse, it's turfy, the grass grows there" (TE 01 02 '08). The herbaceous layer is often dominated by wood sorrel (*Oxalis* acetosella, *oxalidetosum* subassociation): "there is a lot of it here, in our woods" (TS 29 01 '08). The people of Gyimes most often associate this species with spruce forests (Figure 3): "in more shaded places, and beneath the spruce trees, where there are spruce forests" (FD 04 02 '08). Wood spurge (*Euphorbia amygdaloides*) is a common herbaceous plant, occurring primarily in the more open, less closed forests: "in sparse forests, not in the dense ones, where the forest is more piddly" (JA 27 01 '08). Other common species are the club-moss (*Lycopodium annotinum)*, the edible twistedstalk (*Streptopus amplexifolius*), and the black bilberry (*Vaccinium myrtillus*). The latter is less often associated by the people of Gyimes with forest habitats because "where the forest is dense already, it is there, too, but it will not produce fruit there" (TE 01 02 '08).

A vanishing species in pine forests is the yew (*Taxus baccata*): "it only grows in piney areas" (JGy 02 02 '08); it "resembles the white pine, but differs in leaves. Its leaves are flatter and wider than the white pine's ... so it is needle-leaved, too. It is very rare around here, there are some, but very, very few" (JGy 08 02 '08).

The world of beech forests

The area of beech forests (*Symphyto cordati-Fagetum*) dwarfs in comparison to spruce forests, although once there were larger populations in the landscape, "a long time ago

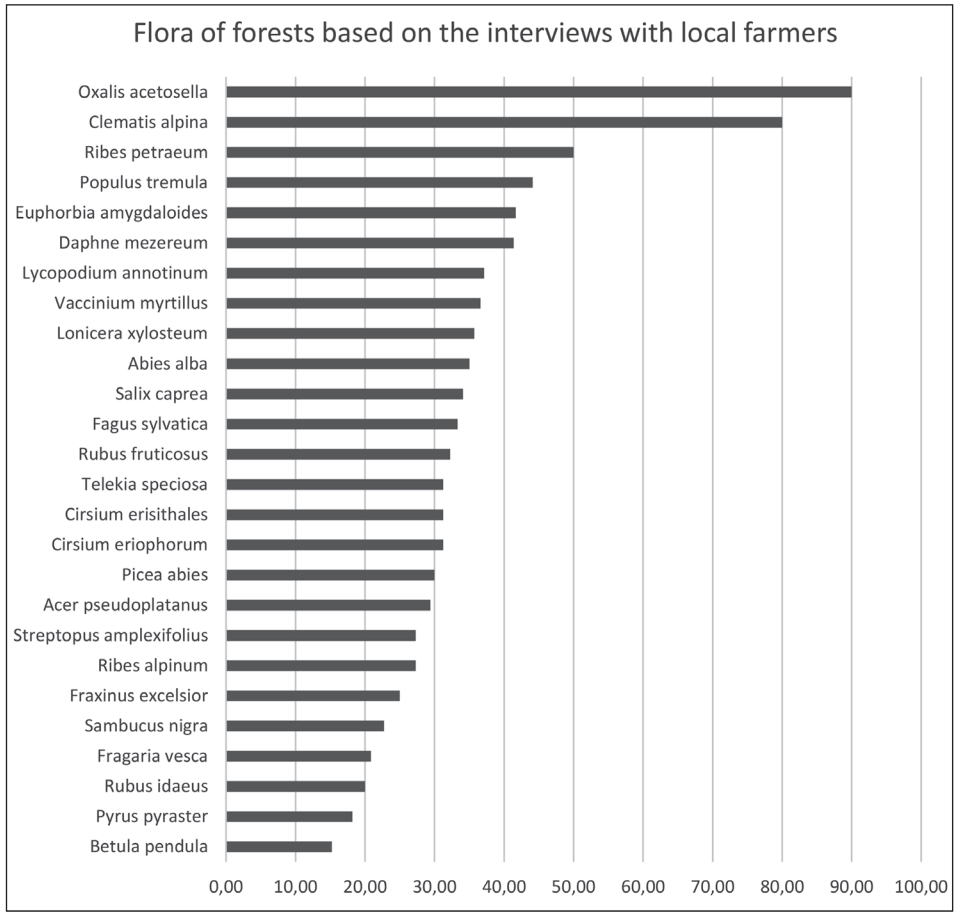

Figure 3. The flora of forests and forest edges, based on the perception of the local farmers (percentage of all habitat-mentions during 30 structured interviews about 150 different plant species - above 10 %)

there were such huge forests of those..." (BE 04 02 '08), which have, however, almost entirely disappeared by now because of overuse. So today the beech has a marginal role in the canopy: "around here there are none in extended areas, as beech-only forests, just mixed with pine" (FD 04 02 '08). Typical species in the canopy layer of the remaining small-scale patches of beech forest are the beech (*Fagus sylvatica*), but Norway spruce (*Picea Abies*) and silver fir (*Abies alba*) are common as well. Rare species is the wild cherry (*Cerasus avium*), the rowan (*Sorbus aucuparia*) and the sycamore (*Acer pseudoplatanus*). In the shrub layer, spurge laurel (*Daphne mezereum*), fly honeysuckle (*Lonicera xylosteum*), and gooseberry (*Ribes uva-crispa*) are typical – similarly to pine forests. In the herbaceous layer of beech forests, there are few herbaceous plants that have a local name. One such is the snowdrop (*Galanthus nivalis*) and the rare wild garlic (*Allium ursinum*).

The benefits of a forest

The utilization of timber

The forests of Gyimes are dominant sources of timber used for different purposes. The tree species with the most versatile and most common utilization (e.g., firewood, tool wood, lumber) are the beech (being depleted) and the Norway spruce (*Picea abies*): "pine wood is made into furnishings, windows, doors, fences (and slats, too). They make buildings, houses, farm structures, that's what the pine trees are used for" (VK 08 02 '10). In terms of furniture making, "beech wood is more valuable. One is that it is for furniture manufacturing" (VK 08 02 '10).

One of the key benefits of forests is firewood. Beech as "fuel is first class, it's the best" because "it's a hard wood, it lasts a long time in the fire, heats very well" (VK 08 02 '10), but the Norway spruce, the most common tree species, is used for this purpose in the greatest amount: "in general, here we mostly have pine trees" (VK 08 02 '10).

For making tools, they use primarily deciduous tree species: "beech, and sometimes there's birch, too. For tool wood, the birch is very good" (VK 08 02 '10). Sycamore (*Acer pseudoplatanus*) is also made into tools: "it's a soft wood. In the past they carved it into troughs, wooden spoons, everything" (KB 31 01 '08). But the Norway spruce is also suitable as tool wood: "young pines are made into rake handles, 'cause the pine wood is light, and stakes for beans" (PK 07 02 '09). For wagon rods, birch and beech are suitable: "birch trees are cut, many of them for horse rods. And the young beech tree, we call it beech *figó*, it is used for making horse rods" (VK 08 02 '10). Of the softwoods, the pussy willow (*Salix caprea*) is most commonly used as a pitchfork handle" (JP 31 01 '08).

The wood of the yew (*Taxus baccata*) is extremely valuable, which, due to its hardness, is used to make nails: "shingles were nailed with yew nails. That wood was so strong that it could be hammered into the wood" (TS 29 01 '08). Silver fir (*Abies alba*) is utilized as a Christmas tree because "it doesn't lose its pins as soon as the red pine" (JP 31 01 '08). From fly honeysuckle (*Lonicera xylosteum*), "they made whip handles, and when there were still oxen, yoke sticks for the yoke" (TS 29 01 '08).

Non-timber products

Besides timber, the forest provides many other ecosystem services (wild berries, mushrooms, herbs, foliage feed, etc.) to the Gyimes community.

Once an important benefit, beech mast grazing has appeared in the first half of the 20th century along with the larger beech forests. The extensive beech forests still alive in memories used to be roamed by the pigs and turkeys (!) of Gyimes farmers (the beech mast was also fit for human consumption): "the pigs went out, there were so many, so many beech masts, and we collected them. And we dried them, and in winter, oh, how good it was to eat them! (...) Sometimes we didn't even have to fatten them, they gained weight when there were many beech masts. And its bacon was so good" (BE 04 02 '08).

In years of extreme drought there is less hay and aftermath, so the leaf-fodder provided by the forests plays an important role in the overwintering of livestock. For cattle, leaf-fodder is only dearth feed: "some poor farmers that could not produce enough hay, in the winter they went out and cut off the spruce branches, and the cattle ate those" (BE 14 02 '10). The sheep, however, love spruce foliage, it makes their wool more beautiful: "the

sheep need it for their wool. The sheep [eat] this green branch, this green bough, 'cause the wool grows better. Great food for the sheep" (TT 11 02 '10).

Forests are also important autumn grazing areas: "there was good grass in the forest, and there it wasn't burned (by the sun), 'cause we've had some heatwaves. There the grass didn't even get burned, it survived there, and the cattle grazed on it very well in the autumn" (KP 06 02 '09).

The forest provides food not only to animals but also to people, although these play merely a supplementary role in the diet. Several species of forest flora are suitable for human consumption (fruit, leaf). Fruits can be collected mainly in clearings ("*perilous site*"), especially in the second year following the cutting, when the raspberries bear fruit: "there were so many raspberries like litter. We picked the raspberries, cooked the compote. There it was, if we needed raspberries, if we needed strawberries..." (LG 07 02 '09). Commonly collected fruits: raspberries (*Rubus idaeus*), blackberries (*Rubus fruticosus agg.*), wild strawberries (*Fragaria vesca*), gooseberries (*Ribes uva-crispa*), mountain currants (*Ribes alpinum*), and bilberries (*Vaccinium myrtillus*).

Mushroom picking is also an important activity in Gyimes, especially in spring and autumn, when they gather large quantities of a variety of fungal species [e.g., chanterelle (*Cantharellus cibarius*), king mushroom (*Catathelasma imperial*)].

The tart leaves of the wood sorrel (*Oxalis acetosella*) commonly found in forest undergrowth quench the thirst of forest goers: "it's happened that we were felling the trees, and the water was far away, we did not have any water, and there was wood sorrel, and we ate it, and then our thirst was quenched" (TE 01 02 '08). Much rarer is the twistedstalk (*Streptopus amplexifolius*), the fruits of which "can be eaten. But in the summer it is not good, rather it is good, and I have eaten this, in the winter when it ripens (in the hay) and is edible" (TE 01 02 '08).

The resin of the Norway spruce (*Picea abies*) (locally called *tar*) "was picked and chewed by the people. Here, when they were still weaving in those times, to have saliva, they chewed the *tar* all the time so that they would have saliva and they could moisten the yarn" (KP 06 02 '09). Of its cone and fresh shoots syrup was made.

A plant typical of sparse forests and forest edges and commonly utilized in veterinary medicine is the wood spurge (*Euphorbia amygdaloides*), its brew used for treating horse injuries: "especially for horses, if they get a wound, and to keep flies off. They brew a tea from it, and wash the wound" (FD 04 02 '08).

Not only the flora but also representatives of the forest fauna got a role in the diet. Besides large game, "doe, deer, wild boar, its meat is also delicious, rabbit" (LG 07 02 '09), which today are scarce, several species of small mammals and birds were also consumed: the wood grouse (*Tetrao urogallus*) ["it was big like a turkey, and we ate its meat." (LG 07 02 '09)], the hazel grouse (*Bonasa bonasia*), and of the small mammals the red squirrel (*Sciurus vulgaris*) ["we pulled off its coat and grilled it" (LG 07 02 '09)].

Forest dynamics and management

The clearing emerging after the forest has been cut down is usually taken over by a series of characteristic plant associations dominated by a specific species. The process (succession) is well known by Gyimes farmers, and they even name a number of characteristic stages.

The location of the forest clearing, the glade, is called the "*perilous site*": "where the forest is cut down and they don't collect the branches, there they call it peril" (TS 29 01 '08). The clearing is first overtaken by wild strawberries (*Fragaria vesca*) – a strawberry glade (*Fragario-Rubetum*): "the wild strawberry here in the fresh clearing. Already when the forest is cut, it is crawling in, swarming in. And then it remains there for up to a year" (BE 04 02 '08). Soon, the strawberry glade is overtaken by raspberries – a raspberry glade (*Rubetum idaei*): "the raspberry is taking over, and then the strawberry begins to disappear" (BE 04 02 '08).

After five or six years, the raspberry glade is also further transformed: "[the raspberry glade] takes long to die out, it just grows old and dwindles" (BE 04 02 '08), while "other bushes sprout, they start to grow, they give shade, and so the raspberry completely disappears" (PK 05 02 '08). Raspberries are replaced first by a young forest dominated by pioneer tree species (*Populus tremula, Betula pendula, Salix caprea*): "when the raspberry glade has died out, the pussy willow (*Salix caprea*) starts growing, and birch trees, and those young spruce trees. (...) So that it becomes a thicket. Such a one that you can't even walk through it" (KB 31 01 '08). The main features of pioneer deciduous species are sudden, rapid and vigorous growth and rapid disappearance after a few decades: "when the forest is felled, when they had cleared it, the first to grow are those: pussy willows and raspberries. The willow soon covers the clearing, but then when the forest grows, it remains in the shade, then it dies out" (TS 29 01 '08).

Over time, in the area dominated by pioneer deciduous species, "spruce trees take over, and when they grow tall enough to cast a shadow, underneath them everything, all the rest dries up" (PK 05 02 '08). Thus, pioneer forests are gradually replaced by young, dense spruce forests: *bezseny* – "all those small spruce trees together, they grow so one can't even cross between them. It's dense. It grows thick, because the cones of large trees drop so many seeds, and they all sprout" (FA 05 02 '09).

In extremely dense spruce forests, the process known as self-thinning begins: "the forest that grows freely, was not planted, it grows so dense, like hemp (this is the *bezseny*). And it grows up, it kills off the weaker ones, they dry out, only the robust ones, they grow up, and then it will become a beautiful timber forest" (VK 08 02 '10).

The spruce that grows during the first self-thinning becomes so-called '*trifle*': "when the *trifle* grows to six or seven meters, that's when it can become a rake handle first" (GyJ 29 01 '08). *Trifle* then develops into a so-called '*stake*' forest, which provides stakes for a fence: "when they pass two meters, they begin to grow sticks, they said in olden times that's when they're good for a fence" (GyJ 29 01 '08). As the *stake* forest continues to grow, it becomes a so-called '*beam*' forest: "the *beam* forest, it has twenty-six, twenty-seven, twenty-eight centimeters at the trunk, which is good for building houses" (VK 08 02 '10). If the forest is still not cut down in this stage, it becomes a '*pillar*' forest, which provides the appropriate timber for lumber: "the *pillar* forest is the one that goes to the gangsaw. Sixty-seventy centimeters in diameter, that's a pillar forest. That has the highest value" (VK 08 02 '10).

According to the majority of Gyimes farmers, cultivating forests that provide good quality wood does not require treatments:

> "it just developed, we did not have to artificially intervene. So it was naturally quite beautiful. You see, I experienced this myself, it was a pasture, but grazing ceased, and spruce trees grew

there. (...) That is beautiful, I do not do anything to it. I let it be as it is naturally, let it grow, and it will only become beautiful. (...) Didn't need to thin anything there." (JGy 12 02 '09)

A few consider some treatment (thinning, trimming) necessary so that the forest may grow properly: "everything needs a little curing. The forest, if it grows very dense, it will not grow to be beautiful" (FA 05 02 '09).

Protection of forests

For the people of Gyimes, the forest is an important natural resource, and the diversity of its benefits and the depth of ecological knowledge regarding the management and dynamics of forests also indicate this.

The relationship between Gyimes farmers and forests is an ambivalent one. They highly appreciate the forest as a provider of numerous benefits and ecosystem services, the only resource that could be monetized in recent years. At the same time, the forest is one of the greatest threats to the clearcut meadows so important for their livestock, which they have to battle day after day so as to retain the meadows and pastures: "where there are forests around, there they come shortly, the seedlings, and if you do not destroy those, the pasture will be lost" (PK 07 02 '09). In the once forest-dominated landscape the regeneration of woody vegetation types works well – for now – and it is natural to the locals: "the pine forest domiciliates itself, the wind carries the seeds, wherever they fall, these seeds survive" (FD 04 02 '09).

Besides the everyday battle for the survival of pastures, in the past two and a half centuries two great waves of deforestation swept through the forestlands of Gyimes. The first came in the first half of the 19th century, following the settlement of a larger population, when the development of grasslands necessary for animal husbandry took place, creating the grassland-forest ratio characteristic to this day.

The second wave of deforestation intensified after the regime change. When the forests and pastures were nationalized in 1959, only the meadows remained in private hands: "everyone kept the meadows, the pastures were taken, and the forests" (FD 04 02 '09). The management of forests was assumed by the state forestry: "it belonged to the state. There were no private forests, everyone's were taken away" (VK 08 02 '10). Forestation took place under state forest management, and some of the pastures were afforested: "in the Cheau-world, the good pastures were planted with seedlings. It was also mandatory, you had to, you didn't get your token for firewood unless you went sapling-planting" (FA 05 02 '09).

Timber theft has already started in this period, even though the system was still "very strict" (VK 08 02 '10). In addition to the legally harvestable amount of wood, everyone obtained what was yet necessary: "back then there were more forests. We had to steal, but it was terrifying. Now they wiped them out and soon there will be none" (VK 08 02 '10). And why did they need the wood? "We did not steal for anything other than for building and for fuel, it had to be obtained for that, there was no other place to get it" (VK 08 02 '10).

With the collapse of communism, after 1989 chaos reigned due to messy land tenures: "theoretically, everyone knew how much they had, where it was, what it was like. And

then when they gave them back, everyone insisted on getting their own back. But there are a great many litigations, quarreling" (FD 04 02 '09). The uncertain situation resulted in the overexploitation of forests, the escalation of timber theft. This was partly due to disorderly land tenures and weakened inspections, which were unable to forestall timber theft. The other reason is to be sought in the economic and social crisis following the regime change, when "after the Cheau-world, somehow the people were taking (the wood), 'cause there was nothing else to grab, and while there was wood, they monetized (FA 05 02 '09). By this time

> "It has become a way of life [tree theft], for many it is their livelihood. They are stealing the forest, selling to the patrons (entrepreneurs). They live from it, they make money from it, if there are no jobs, there is nothing, and thus the forest is being cleared. As it became a democracy, everybody set out for the woods, and they made money from it, so the forest was very very depleted." (VK 08 02 '10)

Thus, a substantial part of the forestland "wandered off" the mountainside into the valley's (often illegal) sawmills, to be then transported, processed as lumber, from the valley whose inhabitants are now sometimes hard-pressed to obtain even firewood: "soon there will be no forest to get firewood from" (BE 05 02 '09).

The destruction progressed until the usable forests around the settlement were exhausted: "Today we're at a point where whatever we still do have is in such an inaccessible place that it is hard to get to. In easier areas, where there is better access, there it is ... it is ruined" (VK 08 02 '10). The lack of timber is already perceived in everyday life, causing serious difficulties: "We know very well that our forests are doomed. And we continue to annihilate them. Unfortunately, that's how it is, for how long, I don't know. This is unfortunate, that we do not appreciate them. The people are forced into it, because it is their livelihood. But it does not lead to any good for anyone" (JGy 02 02 '08).

The warning signs raise awareness about the needs of future generations: "when a man has his own, he has to ration it a little bit, 'cause you never know what the world will come to. There are children still, they will need something too" (FD 04 02 '09). After all, the forest is a slow-growing, long-term resource: "a pine needs about thirty five-forty years to be such that you can build a house from it 'cause it can be used for construction. And the *pillar* forest, the circumference needs to be sixty-seventy centimeters, and it takes about a hundred years" (VK 08 02 '10).

DISCUSSION OF RESULTS

The forest is a very important natural resource for rural communities, and so it is for the people of Gyimes as well (cf. Woitsch 2011:155). The survey of forest flora and vegetation confirms that Gyimes farmers are familiar with the plant species that reach significant coverage in the canopy, shrub and herbaceous layers (Babai 2014). They are well versed in the forest types occurring in the landscape, their dynamics, their most characteristic stages in the succession after felling, the world of beech and pine forests. The memory of traditional forest use is still alive, even though in practice the economic pressures and demands override it. Memories of former forest use are of great importance

because, in large parts of Western Europe, traditional knowledge related to forests and forest use has disappeared (Rotherham 2007:101–102).

Wood, a determining factor of everyday life, is equally important in private and industrial use (Johann 2007). Beyond selective cutting (different species fit different purposes) and timber extraction meeting local needs, the desire to make money by taking advantage of the continuous, high market demand brings on a larger-scale extraction of timber – leading to overuse, temporarily eliminating the relationship between forest use and socio-cultural values (Johann 2007:60).

Gathering activities exploiting the forest's resources focus on non-timber products (e.g., wild berries, mushrooms, beech mast for human consumption, etc.) (Petercsák 1992:115) and are diverse and important in Gyimes, as they have been in all of the forest-dominated (mountainous) landscapes examined in the Carpathian Basin (e.g., Bakony: Hegyi 1970:448–449, 1978; Balaton-highland: Vajkai 1941; Bükk: Barsi 1987:62; Petercsák 1992; Gerecse: Gunda 1938:213; Göcsej: Bödei 1943:73–75; Gömör: Márkus 1941; Paládi-Kovács 1988; Bodnár 1988:735; Bődi 1999; Kalotaszeg: Kruzslic 2007; Mátra: Petercsák 1992; Pálosné 2000; Zemplén: Ujváry 1957; Petercsák 1992; Zselic: Füvessy 1997:209–210; Dénes et al. 2012). These food and herbal sources are significant in many parts of the world to date (e.g., Brazil: Riberio et al. 2014; Mexico: Hernández-Barrios et al. 2014; South-East Asia: Uprety et al. 2016; Solomon Islands: Furusawa et al. 2014).

The role of coniferous forests in Gyimes animal husbandry does not reach the level of significance highland deciduous forests dominated mainly by oak or beech, play in forest grazing, leaf-fodder or pannage (cf. Petercsák 1988; 1992:101–114). Leaf-fodder also plays a rather complementary role in Gyimes, just like in the Hegyköz (in case of insufficient hay harvest) (Petercsák 1977:295). The less significant role of pine forests utilized as livestock pasture shows well that while animal husbandry in villages in Zemplén in the late 19th century operated in 67% average forest cover (Petercsák 1981), in Gyimes in this period there was about 30% forest cover, which is stable to this day, as it is grasslands that are the main scenes of animal husbandry here (Babai et al. 2014).

The timber utilization of forests fluctuates. Overuse is inevitably followed by lower use, renewal processes coming to the fore. The people of Gyimes have a detailed knowledge of the vegetation changes of this cyclical process (cf. Gadgil et al. 2003). The well-known functioning of regeneration may be the reason for the lack of informal institutions and ideas related to the protection of the forest as a resource (cf. Berkes – Turner 2006; Molnár et al. 2015). The negative perception of overuse does appear in the interviews, yet they continue this exploitative forest management until the source is almost completely exhausted, secure in the knowledge of its good regeneration capabilities. According to Petercsák (Petercsák 2010:41), when the forest is abundant, the free use of forests is in place. However, this leads to a lack of resources in a short period of time, and since we are talking about a slowly regenerating plant community, the overuse could result in a timber deficiency for 30 to 40 years. This is why the perception of the value of forests appears in the interviews: "if you got a forest, you got gold."

In Gyimes and throughout Szekelyland, due to the ubiquity of pine forests, their use is not restricted by community rules (in Kászon/Caşin, of the 898 Village Acts related to ecosystem services, including 300 related to forests, not a single one addresses pine forests – Molnár et al. 2015), although the spruce can be considered a culturally key

species (cf. Garibaldi – Turner 2004). Regulations are primarily focused on the more rare deciduous forests (Imreh 1973; Molnár et al. 2015). The protection of the latter is more important because in the spontaneously regenerating forests of the larger clearings of mountainous areas, deciduous tree species are suppressed (Johann 2007:58) and barely renewed (Gimmi – Bürgi 2007). The proportion of deciduous species in Gyimes also decreased, and regrowth is dominated mainly by *Picea abies* seedlings.

The forestry experience of Gyimes farmers focuses primarily on the production of timber of appropriate quality. Unlike on hayfields, in the forest they prioritize natural regeneration (cf. Babai et al. 2014). German type of forestry has been recommending artificial renewal since 1863 (Johann 2007:58). Timber utilization is extremely versatile. In many local communities, disturbance is a current, adaptive management method (Davidson-Hunt – Berkes 2011:65), but in Gyimes, no treatment is done in the forests, to ensure non-timber benefits. At the most, they are sometimes thinned, trimming the trees to improve the conditions of forest grazing. Interestingly enough, raspberry glades (*Rubetum idaei*), ensurers of important forest benefits, are never treated. They do not slow down the succession process of the clearing vegetation, thus extending the life of the raspberry glade stage, a practice which, in the case of berry-type stages, is well known among North American First Nations communities (Johnson 2010).

Due to poverty and lack of employment opportunities, in the marginal (mostly mountainous) areas small-scale, subsistence farming has been preserved well into the early 21st century (Hartel et al. 2014; Tudor 2015), becoming the most important survival strategy (Tudor 2015). In the Ceauşescu era, farming served as a wage supplement alongside one's industrial job in Miercurea Ciuc (Csikszereda) for the production of good quality and large quantities of food, especially dairy and meat. The drastic and rapid changes occurring after the regime change, the collapse of communities, the rise of individualism, the weakening of local formal and informal institutions, and the lack of cooperation posed serious challenges for these communities (cf. Hartel et al. 2014; MacDonald et al. 2000; Reif et al. 2008:18). After the regime change, the majority of the people in Gyimes lost their jobs in the city, so the family farms re-emerged as the only opportunity for a livelihood. The obvious possibility of earning money lied in the timber in the forests (cf. Johann 2007).

The existence of adequate ecological knowledge and knowledge transfer mechanisms (Johann 2007:55; Reyes-Garcia et al. 2004), despite weakened community regulations, was incapable of curbing the intensified selfishness of individual interests, the careless handling of the easily monetizable forests. The erosion of sustainable forest management based on tradition (continuous forest cover, usability both now and in the future) (Johann 2007:55) entailed not only the loss of knowledge but also the loss of biological diversity.

Due to longer cycle periods, the cyclical operation of social-ecological systems is not so well-known (Berkes et al. 2003). The collapse and reorganization, renewal, and recovery of the system form parts of the cycle. It is important, however, that the cyclical processes can only function if the system's flexibility is maintained, so that the system's self-identity survives (Folke et al. 2003). Thinking in cycles does pop up in the use of forests in Gyimes, but overuse, which is now an undisputed and acknowledged part of the system, threatens its flexibility. As long as the system is able to renew itself, the forests will regenerate, and the chance for the further use of a very important resource and the survival of forest species remains.

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See biography of **Dániel Babai** at the end of guest editors' foreword: Ecological Anthropological Research in Hungary, at page 29.

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Conflicts of Economic and Cultural Origin Between Farmers and Wild Animal Species in the Carpathian Basin – an Ethnozoological Approach

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Abstract: The multi-faceted relationship of society and wildlife is partly shaped by local perception determined by cultural or economic factors and resulting in positive or negative attitudes. The approach taken may influence the survival and the range of species and species-groups, in particular species associated with extremely negative emotions.

Connections between local communities and wild vertebrate species were studied in four regions within the Carpathian Basin (Gömör/Gemer – Slovakia, Szilágyság/Sălaj – Romania, Gyimes/Ghimeș – Romania and Drávaszög/Baranja – Croatia). During the work, spontaneous manifestations obtained in semi-structured interviews aiming at the exploration of the locally known fauna were taken into account.

Reviewing the five generally known families of vertebrates it can be stated, that – similarly to the global trends – the perception of amphibian and reptile species is extremely negative in the Carpathian Basin just as well. Most positive attitudes are related to bird species but due to presumed or true economic reasons some birds also include less favoured species. As to mammals, large predators are seen as harmful pests for husbandry and fearful for humans. The antipathy felt for bat species is an interesting phenomenon, mostly explained by their special physical constitution and mysterious lifestyle.

The perception of local communities originating from cultural or economic factors and resulting in varying signs may have an impact on the size of the populations of certain species or species-groups. Ethnozoological research provides significant help to deeper knowledge about background of connections between local communities and species of wildlife, motivations behind the activities of society has become of paramount importance for development of conservation strategies.

Keywords: perception, human-wildlife conflicts, ethnozoology, Carpathian Basin

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Introduction

Snakes, frogs and large predators – they were never welcomed by human communities, while certain bird species enjoy invariably high degree of love and respect. Relations between human culture and wildlife are shaped by deep-rooted, even thousands of years old cultural and/or economic habits, prejudices with positive or negative signs, social-demographic factors (sex and education), in addition to the complex set of interconnections provided by ecosystem services (Pinheiro et al. 2016).

Land use practices of and reliance on ecosystem services by human communities living in regular and close intimacy with the natural environment requires a deep-rooted and thorough knowledge of the natural environment and wildlife (traditional ecological knowledge) (Berkes 2012; Menzies – Butler 2006). Modernising, urbanised communities get into closer contact with the natural environment a lot less frequently (such as outdoor sports) and only through recreational and cultural ecosystem services, therefore their ecological perception and knowledge is often superficial and not built on hands-on experiences (Pilgrim et al. 2007). The difference between the knowledge of the two groups is significant, yet, whether more or less frequently, both of them have encounters with the representatives of the living world, and pay special attention to certain species, be it in the positive or negative sense just as well. Such a distinguished attention and sometimes extreme attitude is primarily directed to the representatives of the animal world, relations with plants are more neutral in nature.

Bad reputation may even seal the destiny of some species or groups of species, in spite of the fact that a community in direct dependence on the natural resources recognises the role and function of the group of animal species in the ecosystem (Rego et al. 2015) or in agriculture (pest control) (Lamarque et al. 2009; Pandey et al. 2016; Rego et al. 2015). Such prejudices afflict amphibians (such as frog and toad species), and reptiles (for instance, snakes) most frequently (Ceríaco 2012), including the Carpathian Basin (Babai et al. 2016; Gub 1996; Kovács 1987). Human communities feature extremely ambivalent, yet mainly negative relationships with amphibians and reptiles. Snakes emerge as worst of them. Perception and attitude towards snakes may be both positive and negative in human communities (Pandey et al. 2016), but for most cases the relationship is extremely biased, some species belonging to snakes are the least liked animal species of the living world (Alves et al. 2014; Fita et al. 2010). There is a significant human-caused mortality of snakes e.g., in Nepal (Pandey et al. 2016), India (Joshi – Joshi 2010), Brazil (Alves – Filho 2007; Moura et al. 2010), Kenya (Wojnowski 2009) and Australia (Whitaker – Shine 2000). The underlying cause is often the fear from venomous snakes (Pandey et al. 2016). The same attitude prevails in the Carpathian Basin as well, where a number of legends and tales demonstrate that the perception of snakes has been ambivalent, but predominantly negative in Hungarian folk culture (Babai et al. 2016; Erdész 1972; 1984; Róheim 1925).

Even though the sharp distinction made between useful and harmful species based on the economic damages they cause seems to be an obsolete approach these days (cf. Herman 1901), yet, doubtlessly, farming communities still keep in evidence that there are species which cause harm or which are useful with respect of their specific activities (Babai et al. 2016).

The relations between human and wildlife including the related traditional ecological knowledge is a significant area of ethnozoological research, which frequently gains

specific importance in conservation efforts (Alves 2012; Huntington 2000; Nadasdy 2007). The need of an approach to nature conservation from the perspective of human sciences (Mascia et al. 2003) is shown particularly well by the complexity of the cultural and economic relations between human communities and wildlife (Pandey et al. 2016; Salick 2003). The efficacy of nature conservation efforts may be improved substantially by the exploration and a better understanding of the land use patterns and land transforming activities of human communities, including the underlying mental, cultural perception and motivations (Colding – Folke 2001; Middleton 2012). Research into traditional zoological knowledge may offer a great advantage to nature conservation in this respect (as well), drawing the attention of the experts to those groups of species the protection of which requires the consideration of various perceptions with cultural or economic origins. Culturally transmitted fears, distaste or love concerning certain groups of animals may result in the survival of certain species, while others may become extinct due to such reasons (Ceríaco 2012; Dickman 2010). For certain groups of animals it is not only cultural and/or economic aspects which make conservation work more difficult, but aesthetic considerations as well. Such approaches are seldom in the focus of attention, even though emotional factors and aesthetic factors (such as morphological characteristics) may bear great significance in the eyes of a supportive public or of decision makers (Biró et al. 2014; Ceríaco 2012).

Based on the ethnozoological research conducted in the four regions of the Carpathian Basin, the perception of Hungarian folk culture related to animals, in particular to vertebrate species is reviewed in this paper, and it is revealed that the cultural or economic judgement of which species or groups of species may have an impact on conservation efforts and which of them contradict the ecological significance of the species arising from their roles in the ecosystem.

MATERIALS AND METHODS

The research was made in four small regions of the Carpathian Basin (Gemer / Gömör – Slovakia, Sălaj / Szilágyság – Romania, Ghimeș / Gyimes – Romania and Baranja / Drávaszög – Croatia).

In three of the regions studied (Gemer / Gömör, Sălaj / Szilágyság, Baranja / Drávaszög) the typical climate is moderately continental, with an average annual amount of precipitation ranging up to 600–700 mm, and an average annual temperature of 8–10 °C (Bartoly – Bozó 2003). Potential vegetation is the climax community of deciduous oakwood forest with a mosaic pattern of wetland habitats (*Quercetum petraea-cerris, Waldsteinio-Carpinetum*). In Ghimeș (Gyimes), at an altitude of 800–1300 metres above sea level, a boreal-montane climate is the predominant climate type with an average annual temperature of 4–6 °C, and an annual amount of 800–1000 mm precipitation in average (Ilyés 2007; Pálfalvi 1995). Potential vegetation consists mainly of woody plants (fir woods – *Hieracio rotundati-Piceetum*, to a lesser extents beech-woods – *Symphyto cordati-Fagetum*). The once continuous forest cover is now replaced by large areas of cleared, seminatural grasslands – mountain hay meadows and pastures: *Trisetetum flavescentis, Arrhenatheretum elatioris, Festuco rubrae-Agrostetum capillaris* (Babai et al. 2014).

Extensive (traditional) land use is still a widely held practice in the regions investigated, maintaining a species rich anthropogenic cultural landscape. As a consequence, most respondents are full time workers in the agricultural sector. A total of 99 respondents were interviewed (16 in Gemer / Gömör, 20 in Sălaj / Szilágyság, 30 in Ghimeș / Gyimes, and 33 in Baranja / Drávaszög). Their average age was 72.5 years (71 in Gemer, 78 in Sălaj, 67 in Ghimeș and 74 in Baranja).

The primary goal of the research project was to draw up a basic assessment of ethnozoological knowledge. Traditional ecological knowledge was documented in relation to a total of 212 vertebrate species (Babai 2011; Ulicsni 2012; Ulicsni et al. 2013; 2016). A number of unprompted statements were recorded in these interviews, dealing with the preferences of various species or groups of animals. Folk taxa, groups of species subject to positive or negative views from cultural or economic aspects were selected and the consequences of such attitudes on behalf of the respective communities were evaluated in terms of nature conservation. In the course of the mostly indoor interviews, free-listings (Which kind of birds, snakes etc. live here?) and, with the use of coloured photographs, structured interviews were accomplished, in a duration of approximately 120 hours. In average, the pictures of six similarly sized species of those found commonly in the surroundings of the settlement in question were put on an A4 format page, which were the starting points for respondents to talk about the species on the pictures and about those which occur in their surroundings. The method proved to be a practical tool to facilitate the perception of the scale, which caused difficulties in many cases during the preliminary assessments. When the characterisation given was not unequivocal enough, the exact determination of the species or species group in question could be appointed through the answers received to cross-questions concerning its less frequent properties. Interviews were transcribed word by word and all unsolicited data on the cultural perception of the species concerned were picked out of the texts. Such data were analysed hereinafter. Cultural and/or economic perception of each species was evaluated on a five stage scale (-2 – +2) in the four communities under investigation, and the average values of the figures received were illustrated on a graph, analysing specifically cultural and economic perception. Wherever it was possible, the reason for the bad reputation or for the respect was determined (cultural, economic, or both).

RESULTS

Approaches towards the various animal species are shaped by a number of cultural and/or economic aspects. In a review of the species included in the five conventional families of vertebrate animals it can be concluded that positive reputation of cultural origin would concern mainly birds. Negative approaches derived from cultural and/or economic factors can be observed in relation to amphibians and reptiles, plus a few mammals (Figures 1 – 2).

In the regions under investigation the fish species are considered as neutral living beings in terms of culture and economy, practically no known fish species occurred in the statements and opinions with outstanding positive or negative cultural or economic aspects.

Amphibians and reptiles are inflicted by a typically bad reputation (apod reptiles, larger or strikingly glandulous-skinned frog and toad species). It is interesting, however,

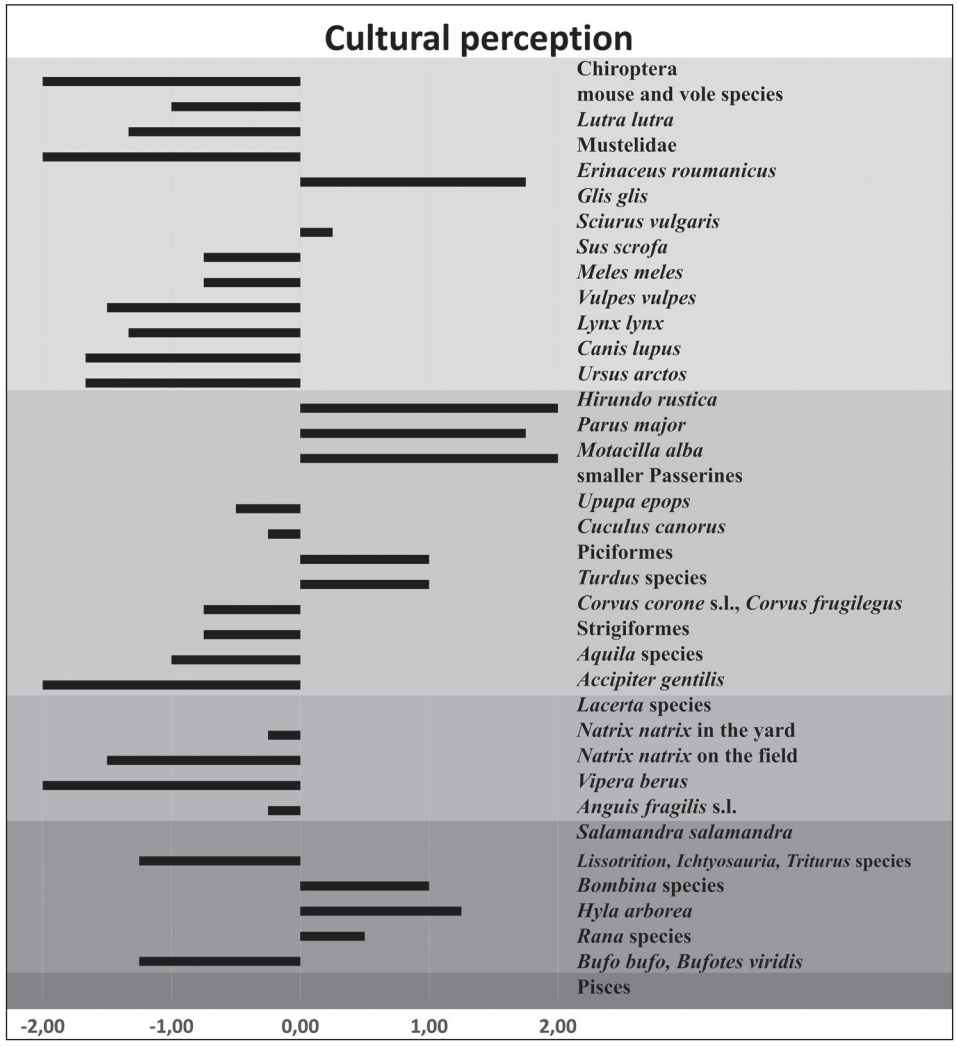

Figure 1. Estimated cultural perception of selected Vertebrates in the Carpathian Basin based on spontaneous statements of the informants during semi structured indoor interviews

how a few species (in Gyimes the common frog – *Rana temporaria* or, from the reptiles, the limbless elongated lizard, the Eastern slow worm – *Anguis colchica*) enjoy unusually high esteem, they are even featured in peasant Bible tales:

> "we do have slow worm (*Anguis colchica*) here, it has a butt-edged tail. It was said, it has a butt-edged tail because when Noah had made the bark, it leaked and water poured in. And when the slow worm went there, it could plug it in … It was the Devil who bore it with a drill, and the slow worm was able to put its tail in, so that no water could go in." (Gyimes, AB 05 03 '10)

Figure 2. Putative economic perception by local people of selected Vertebrates in the Carpathian Basin based on spontaneous statements of the informants during semi structured indoor interviews

Hate towards toads (*Bufo*/*Bufotes* species) has specifically deep roots culturally. One of the reasons for this intolerant behaviour is that these species are seen as animals of rather poor aesthetic appearance: "maybe it would not harm me, yet I don't like to see it even on a picture" (Gömör, TK 27 08 '12). A strongly cultural background confirms the negative perception related to toads in Gyimes region: "there are some people, who catch the scabby frog (common toad – *Bufo bufo*), it would make animals run dry (cows). Cows then will have such bad milk, thin milk, they kick, you can't milk them. This is true, this is reality. The warty frog is dangerous, maleficient kind" (TF 22 02 '10). However, the impact of media can also be detected: "a harmful animal. And, on the other hand, it kills off the spiders, poisonous spiders from the pastures. It kills them off, this is why you

must not destroy it" (Gyimes, GyJ 26 02 '10). If this regulatory ecosystem service gets more and more to the foreground and the false beliefs related to drying cows are fading (professed by the elderly generations only, while personal experiences are restricted to a few people), the bad reputation of some toad species which are getting rare in several regions may be subject to change. These species, namely, became scarce indeed in two of the studied regions, in Gyimes ["the large, black scabby frog is very rare" (LG 23 02 '10)] and in Gömör as observed and witnessed by locals ["it seldom occurs, by the way. Before, there were parts of the fields, or mainly in the woods, there were a lot. No big ones exist any more" (Gömör, KL 28 08 '12)].

Snakes have a strikingly bad reputation even among reptiles. The reasons can be of religious and cultural origin, but also economic losses. The latter aspect emerges less frequently, but in such instances the dangerousness of vipers to children and farm animals is highlighted: "should it deal only with its own business, nobody would do any harm to it. However, it is hurt because it bites a number of cows and children as well. This is why a child must not be put on the ground. It is a beast, well, yet hardly anybody spares it" (Gyimes, AJ 25 02 '16). As a consequence, almost all specimen of snakes detected are killed in the regions studied: "when hay making starts, they pull away, because folks set off, they persecute them. They have to leave because they go around in fear of their […] lives." (Gyimes, PB 05 03 '16) Additionally, according to some opinions, killing a snake might be beneficial for you: "if you hit a snake, you will be freed from seventy seven sins" (Gyimes, PB 05 03 '16).

The destruction of snakes is irrelevant whether or not the snake species in question is dangerous, venomous or harmless. Members of traditional communities (for instance, Gyimes) behave the same way in other regions where no venomous snakes exist (a story from Hungary about the nonvenomous Aesculapian snake):

> "[…] he did not drove on it, the man stopped, went there and grasped the big snake by the tail from behind, took it away and put it down. He said, you must not hit them. He told János so [the guest worker from Gyimes]. [But] János was afraid of them badly, hit them whenever he caught sight of one. […] He killed them instantly and cleared them out, whenever the boss not near. However, when the boss was present, he always warned him not to hit them, they cause no harm to man. […] It must be true for if not, they would be chased." (Gyimes, TS 01 03 '16)

In the Gyimes region dead snakes are hanged from trees, fences and rocks, they are seldom left on the ground (Figures 3–5), because it is held that even the bones of an adder (*Vipera berus*) was poisonous, and it is not good for the grazing livestock or man to step on the bones of a snake: "he threw (the body of the snake) into water. Sad, to fling in, you never can tell, where it goes, how it goes, the cattle or anything, treads on the bones, it will sting it, it would lose its legs" (Gyimes, TA 26 02 '16).

In all the four regions under investigation, a widely held belief says that a killed snake perishes irretrievably only after the Sun has set: "you have to break it, smash at its head. Why, it will be killed. It is said, before the Sun has gone down, it will still survive … however you crash it, as long as the Sun is up, it will survive" (Gyimes, JGy 02 03 '16).

Snakes found in open nature are smashed to death without exception, provided there are the appropriate tools and ways available to do so, although many are aware that adders and grass snakes (*Natrix natrix*) are quite useful by killing farm pests like small rodents

Figure 3. A viper killed during hay cutting, put on a rock. Háromkút, Bárány-hegy, 2009. (Photo by Ábel Molnár)

Figure 4. The body of a viper killed earlier on and hanged from the branch of a fir tree. Gyimesközéplok, Hidegségpataka, 2008. (Photo by Ábel Molnár)

Figure 5. A viper smashed to death and left on the road. Gyimesközéplok, Hidegségpataka, 2015. (Photo by Dániel Babai)

Figure 6. A freshly killed slow worm. Kárpátalja, 2013. (Photo by Viktor Ulicsni)

(mice and field voles). However, water snakes found around the house or in the stable wall are injured only on the rarest occasions. This practice, however, is not explained by their usefulness, rather by the superstitions associated with the mysterious house snakes:

> "they say you shouldn't be afraid of that, it will do no harm. Lucky is the house where snakes live. They say it is like a watch-dog. And you don't be afraid of the other snake, […] it will not hurt the children, if this one is present." (Drávaszög, SzI 22 07 '12) / "A young man saw a white snake at the corner of the house, he stroke it dead. Why, in two weeks time […] he was kicked by horse on the head that he died instantly. You must not harm such snakes." (Szilágyság, FA 12 06 '10)

Birds include species with positive and negative esteem alike. Some of them are thought to be harmful or others which really cause damages (e.g. hooded crow – *Corvus cornix*), but others are positively liked or even widely liked (for instance, the common white stork – *Ciconia ciconia*, barn-swallow – *Hirundo rustica*). Of the birds, mainly birds of prey have bad reputation, in particular the northern goshawk (*Accipiter gentilis*): "goshawks have always been shot, because it can catch doves and pigeons, damn it" (Drávaszög, LL 17 07 '12). From time to time songbirds may also cause harm, such as the great tit (*Parus major*) which often pilfers cheese ["It punches the cheeses, that's what it does" (Gyimes, GyJ 26 02 '10).] or a member of the thrush family (*Turdidae*), the fieldfare (*Turdus pilaris*) may also be unpopular for tapping fruits: "it likes fruit trees greatly, they nest there and eat the fruits so that you can't prevent them from eating. When the fruit is ripe, they eat it" (Gyimes, TS 27 02 '10). It is interesting, how bad a reputation of the not too abundant white-throated dipper (*Cinclus cinclus*) has as a plunderer of fish: "it makes a lot of harm to small fish. It picks out fish eggs from the water, and the small fishes as well" (Gyimes, TS 27 02 '10).

Popular birds mostly include smaller songbirds (Passeriformes), which deserve such reputation by their singing: “it sings so nice, meaning spring is coming” (Gyimes, CsI 27 02 ‘16). The cuckoo (*Cuculus canorus*) is in the focus in many places because of its special lifestyle: “I went out and heard the cuckoo singing, as it called up here yonder and it felt so nice” (Gyimes, PV 02 03 ‘10); “Oh dear, how is it… When it sings, we are also pleased with the cuckoo” (Gyimes, 01 03 ‘16).

As to mammals, you have to underline the case of large predators, which cause significant economic losses at some places but are basically held in low esteem everywhere (brown bear – *Ursus arctos*, grey wolf – *Canis lupus*, lynx – *Lynx lynx*). Large sized predators proliferating due to conservation efforts are typically a problem primarily in Gyimes, but they occur in Gömör as well, while in Szilágyság their memories are still living. Economic losses and the fear related to such species confirm negative judgements, in particular due to the strongly reproducing populations of bears and wolves. At the same time a kind of respect and curiosity can also be observed with respect to large predators, people are quite knowledgeable about the lifestyles of these species, their activities are followed with great interests, their traces are tracked in the land: “this ant-hunting bear […] walks around rather during the night. I keep on listening, when I came away in the evening, there were no bear prints, and when I went there again in the morning to cut the hay, a big hole was dug and such an ant-hill in which he plundered in the night” (Kászon, SzJ 30 07 ‘14).

Mainly smaller carnivore mammals like Mustelids are inflicted by unfavourable prejudices of cultural origin. This can most frequently be observed in relation to their name sake, the least weasel (*Mustela nivalis*): “the old people before used to say, the weasel bites on the udder of the cow. And it will swell up and will become painful and you have to get a treatment for it […] its udder is spoilt” (Szilágyság NK 19 07 ‘10); “It can be healed with the hide [of the weasel]” (Gyimes, TS 01 03 ‘16). The fact that the least weasel is able to cause serious damages not only to cows but poultry stock – and in a wasteful manner, too, – does not improve its situation either: “it only sucks its blood, it will not eat the meat of the poultry” (Szilágyság, LL 14 06 ‘10).

In many regions the representatives of the dormice are deemed to be a great pest which is specifically problematic (in particular the edible dormouse – *Glis glis*): “how it tortured me in the summer shelter. It chewed on the cheese. Somehow it came in. Well, it ate them all, chewed around it. […] It ate enough there, whatever it could get hold of” (Gyimes, TT 01 03 ‘16).

The basically negative perception of bats (*Chiroptera*) is typical in all places, with interesting beliefs associated with them such as sticking to the hair [“we worried all the time that the bat would stick into our hairs […] there was a doctor, he then wanted to go up on the attic of the church, but he was attacked” (Szilágyság, BE 14 06 ‘10).] or transformation of old mice and shrews into bats [“my dad said to me that the bat will come from the old, old mice. Mice are getting transformed into bats through many-many years” (Gyimes, NI 05 03 ‘16)]. The unfavourable attitude related to bats is magnified in a great extent due to their poor aesthetic appearance and mysterious night life: “I am afraid of it, it looks so ugly. It has ears like a mouse, I do not like mice either, they are not my friend” (Gyimes, FD 02 03 ‘16).

DISCUSSION OF THE RESULTS

Beliefs and emotions of people on their environment and the surrounding wildlife determine their behaviour towards them a great extent (Pooley – O'Connor 2000). False beliefs and negative perceptions originating from folklore influence people's approach to certain animal species clearly (Ceríaco 2012). Such fears may be irrational, cultural issues (Bjerke et al. 2001; Kellert 1996) others may be specific phobias (Bjerke et al. 2001), or emotional reactions (Knight 2008). The cause of the negative opinion may be assumed or true damage to husbandry (Treves et al. 2006). Therefore, the ethnozoological information gathered from local perceptions primarily to the negative and/or their economic background supports the efficacy of conservation measures related to species in need of protection due to human activities with important data (van Maanen et al. 2001).

In the regions studied by the authors, practically no beliefs and assumptions or experiences related to damage causing behaviour exist with respect to fishes which would push the opinion on these species to an unfavourable direction. Their use as food reinforces their positive appreciation. In regions (such as along the river Tisza), where fishing and fishes are given a more important role in livelihood and nutrition, more definite positive and negative views from the economic or even cultural aspects occur (Borsos 1997; Solymos 2005).

Amphibians and reptiles have to endure an almost general aversion, in spite of the fact that they do not cause any substantial economic damages (though the people of Gyimes use such pretexts with respect to the adder – *Vipera berus*), what is more, several species are explicitly useful due to their ecological roles (Pandey et al. 2016), as a source of food (Ferrand et al. 2001), or for medication (Alves et al. 2008) eventually as other raw materials (Pough et al. 1998). The very low esteem of toad and snake species originating from cultural and partly economic reasons is indicated clearly by the statements on specific species turning up spontaneously during interviews in the Carpathian Basin as well.

The distaste for toads can be highlighted among amphibian species. The negative perception of the toad is triggered by the false beliefs related to the cows going dry or curses inflicted by witchcraft. Direct experiences related to such beliefs are held only by the elderly these days. Younger generations know about them only by indirect awareness obtained through story-telling: "are there any still around? / You can't hear about them nowadays. I hear, before, there were these old witches, I don't know, that […] they kept toads" (Drávaszög, LJ 23 07 '12). Thus, fading of the belief and the mitigation of the negative judgement can be expected (cf. Keszeg 2002). These beliefs had caused ruthless destruction of toads for instance in the Gyimes region, up to complete extinction just as well. In the meantime, more and more people have recognised the usefulness of these species (such as their feeding in insect pests). The impact of media (educational television channels, documentaries on nature) and environmental education efforts (cf. Burghardt et al. 2009) have been instrumental in changing perceptions. Negative attitudes and emotional reactions towards toads are driven not only by fears and beliefs but aesthetic reasons as well (Knight 2008).

Reptiles are surrounded usually by greater hate than amphibians (Ceríaco 2012). This attitude can mainly be seen in the Carpathian Basin in the extremely negative perception

of snakes. It is particularly typical with respect to snakes that their negative judgement is determined mainly by their dangerousness to human and potential risks rather than the role they play in the ecological system (pest control) (Ceríaco 2012; Pandey et al. 2016). This negative approach is particularly complex and developed in parallel with human evolution (Isbell 2006), irrespective whether it goes about venomous or non-venomous snakes (Pandey et al. 2016). Earlier on, reckless devastation mostly inflicted snakes detected in the outskirts of settlements, in the fields of the villages (Erdész 1984), and spared those living near the house, because killing a snake close to your home meant bad luck and even a mistake which may cause death to the owner or a close relative. In certain locations, the belief held in the first place is that man is unable to kill snakes living in the house (Salánki-Fazekas 2011). Today this belief has weakened and in Gyimes, for instance, vipers appearing beside the house are hit to death just as much as the specimens found in the hay meadows.

In Gyimes, the adder (besides large predators) is public enemy number one, which is killed systematically whenever encountered. Whenever a snake is killed, people think in Gyimes the animal will not perish until sunset and will continuously moving on up to that time. An explanation might be that it is always the head of the reptile which is smashed, thus the spinal chord is left intact and therefore the body would wriggle for a long time after the blow (Figure 3). Vipers are surrounded by hate and fear, because it would threaten the physical integrity of children and farm animals (cf. Australia: Whitaker – Shine 2000; Nepal: Pandey et al. 2016). It can be said in general that in the case of snakes the maximum potential damage they might cause has a greater weight than the real danger or damage when the actual frequency of the incidents is taken into account.

Deliberate killing of snakes, mainly venomous ones was typical throughout Europe during the 19th and 20th century, and still representing one of the biggest threat to the survival of the species up to date (Brito et al. 2001; Cox – Temple 2009). As a consequence, several species and populations died out in this period (for instance, the extinction of the Hungarian meadow viper in Austria, its repression in Romania – Langton – Burton 1997; in Portugal – Brito et al. 2001). The adder population in Gyimes, however, can be judged as stable, in spite of systematic persecution. Although there are no exact figures available on the existing population, local farmers continuously monitor the changes in the number of individuals setting up the population based on the number of individuals killed, and they do not feel any significant reduction. The substantial killing may be off-set by the non-targeted habitat protection fostered by traditional land use practices (Brooks et al. 2008).

Protection of amphibians and reptiles is definitely influenced by the surviving beliefs up to date, the resulting bad reputation and the poor accuracy of folk taxonomy, which is characteristic mostly for snakes (Ceríaco 2012). Locals sometimes are unfamiliar with the snake species present in the region they live in and they kill off all and any individuals encountered for the potential sensation of danger which can be derived from evolutionary (Sagan 1977) and aesthetic (Knight 2008) reasons as well (Pandey et al. 2016). Such an approach is a disadvantage for the grass snake (*Natrix natrix*), which appeared only recently in Gyimes and is otherwise harmless. This must be taken into account when conservation efforts are planned (Ceríaco 2012; Pandey et al. 2016).

For the perception of bird species**,** the economic damages caused by for instance eagles or great tits are evaluated more realistically compared to other baleful taxonomic

groups and the basically positive cultural approach are of great significance in terms of the judgement of the species. Positive images are formed about several bird species as a consequence of their assumed capacity of weather forecasting and predictions in relation to a number of other topics (Gránicz 2015). Cultural ecosystem services such as the role of bird songs in recreational power are seldom mentioned by local farmers, yet most of such statements relate to bird species.

The views on mammal species are equally influenced by perceived and genuine economic aspects. The least favoured group is that of the bats, as this can be observed in many parts of the world (for instance in Brazil: Fleck et al. 2002; Raymundo – Caballes 2016; Rego et al. 2015). Bats are able to adapt to urbanised human environments, they survive in chimneys or buildings, therefore they are present and sometimes even thrive in settlements (Rego et al. 2015). The prejudices they are victims to are caused by bad reputation nourished by beliefs, in addition to the unfavourable aesthetic appearance (Prokop – Tunnicliffe 2008). In several cultures in East-Asia encounter with a bat is a good sign (Mullen 2005), but in most cultures worldwide (in particular in Western civilisation) these species are considered to be carriers of diseases and death (Frembgen 2006). In Brazil, the hate of bats can be derived from the blood sucking ones – most people judge the whole species group based on a few species only (Rego et al. 2015).

The underlying cause for the significant regional differences between the opinions on the various species of dormice is thought to be the difference in the land use practices present among the regions studied. Dormice are not eaten in Gyimes and in Szilágyság (Ulicsni et al. 2013), and in the former region its perception is basically unfavourable due to the damages made to cheese production (Babai 2011). The presence of the sophisticated catching techniques in the regions can be associated with the hunting practices existing here earlier on and existing still elsewhere (Carpaneto – Cristaldi 1998).

Certain mammal species become the target of human communities for fear and economic losses they cause. This can mainly be observed in the case of large predators representing a risk for both man and farm animals (such as the grey wolf, brown bear, snow leopard), which were deliberately killed in almost everywhere (e.g. Bagchi – Mishra 2006; Bjerke et al. 2000; Ceríaco 2012; Kleiven et al. 2004; Treves – Karanth 2003). Sometimes quite detailed and yet surprisingly accurate pictures are drawn up on such species (for instance lynx in the Gyimes and Macedonia, bear or wolf in the Szilágyság), with which there is a virtual absence of interactions (Lescureux – Linnell 2010). Populations of these species strengthened lately, thanks to conservation efforts. The phenomenon worries the population of those regions where they are present in greater numbers (for instance, in the Gyimes region).

CONCLUSION

Positive or negative relations to various vertebrate species may have a great impact on the conservation activities related to these species.

Our results also highlight which of the species would benefit from strengthened communication, mutual respect and acceptance of each other's position between nature conservation and local communities. It also point out the topics where awareness raising and improvement of environmental educational efforts for local communities are very

important (Megaze et al. 2017). The use these means, such as information dissemination on the real role of the different animal species in the ecosystem – by highlighting the less apparent correlations – might be a lot more efficient than protection by the law (Ceríaco 2012). Folkloristic analysis may also be important in order to understand the kinds of beliefs surviving in contemporary communities, why they did survive and what consequences they will trigger in terms of the survival of the species concerned (Ceríaco 2012). In the meantime we should never forget that certain species are threatened by the vanishing traditional value order and the elimination of the taboo-like protection, causing a serious problem to conservation efforts (Aiyadurai 2016; Colding – Folke 2001).

All in all, it can be stated that studies in ethnozoology may provide a significant amount of help when conservation strategies are developed by exploring local perceptions of species to be protected and the origins of such perceptions.

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See biography of **Dániel Babai** at the end of guest editors' foreword: Ecological Anthropological Research in Hungary, at page 29.

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Ethnomedicinal Treatment of Gastrointestinal Disorders in Transylvania, Romania

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Abstract: Ethnomedicine using mostly plants is of pivotal importance nowadays in several Transylvanian regions in Romania. In this study (2007–2015), one Swabian-German, one Hungarian, three Csángó-Hungarian and nine Székely-Hungarian villages were selected to collect ethnomedicinal treatments for various gastrointestinal diseases. Some of the studied villages have partial or no permanent medical and pharmaceutical services. The 374 inhabitants interviewed used mostly medicinal plants based on ancient knowledge. The 78 (53 wild and 25 cultivated) plants documented have 181 local names and are used to treat ailments such as loss of appetite, bloating, stomach ache, gastric ulcer, and diarrhea, mostly in tea form. This knowledge decreases continuously because of loss of interest among young people and through frequent use of media sources and books. Although some of these plants have also been described in official medicinal sources, several data suggest the need for further fieldwork and new experimental analyses to highlight the valuable role of these plants in recent phytotherapy.
Keywords: ethnobotany, fieldwork, medicinal plant, Transylvania

INTRODUCTION

Ethnomedicinal home practices, involving the use of plants, animals and minerals, have been known in Transylvania for several centuries. People living in isolated villages have unique experience on plants' use because of lack of medical services. This indigenous knowledge is based on special observations on how to apply both wild and cultivated plants. The number of used wild plants is in relation with flora diversity, while cultivation depends on ecological and environmental factors (soil type, exposition to sun and wind, temperature, water supply etc.) in each region of the country. This relationship between people and plants means an important surviving practice in the everyday life of rural people.

Several ethnobotanical surveys were launched from the 1960s in Transylvania, part of Romania (Holló – Rácz 1968; Rácz – Füzi 1973), focusing on traditional knowledge of using plants, applying both fieldwork and literature surveys, e.g. in works collected data from 81 references (Dénes et al. 2012:381–396; 2013:35–86). Among

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the studied regions, some villages of the Homoród-valley were observed by Jenő Gub (Gub 1991:14–16; 1993:95–110; 1996), who presented valuable records on local use of wild and cultivated species. These published data involve local medical terminology, useful parts, administration, and related folk beliefs of plants. In our preliminary works ethnobotanical data were published from the Homoród-valley (Boris 2010; Dénes et al. 2014:227–241; 2015:1301–1307; Gyergyák et al. 2015:257–269; Papp – Horváth 2013:83–92; Papp et al. 2011:1459–1560; 2013a:177–199; 2013b:1423–1432) and Covasna County (Bartha et al. 2015:11:35) in Transylvania, and from Turulung in the Partium region (Tóth – Papp 2014:117–129).

Nowadays these widespread home practices are influenced by external sources like professional medical practices, books, magazines, and other kinds of media, therefore it is an urgent task to collect, interpret and preserve the archaic data before disappearance.

The aim of this study was to collect ethnomedicinal data on curing gastrointestinal disorders in the Homoród-valley to complete the earlier records described by Gub, and in Uz-valley, Gyimes (Ghimeş), Turulung (Túrterebes) and Covasna (Kovászna) County to highlight new, maintained and disappeared records compared with professional sources (Ph.Hg.VIII. 2004; F.Ro. 1993). In addition, we aimed to find potential new sources of herbal drugs for further analyses which can give new data for actual phytotherapy.

MATERIALS AND METHODS

Study sites

Fieldwork was conducted in 14 settlements in Transylvania in several Székely Hungarian communities in Covasna (Kovászna) County [Băţanii Mari (Nagybacon), Băţanii Mici (Kisbacon), Ozunca-Băi (Uzonkafürdő)] and in Harghita county in the Homoród-valley [Crăciunel (Homoródkarácsonyfalva), Lueta (Lövéte), Martiniş (Homoródszentmárton), Mereşti (Homoródalmás), Petreni (Homoródszentpéter), and Sânpaul (Homoródszentpál)] in the Uz-valley [Cinod (Csinód), Egershec (Egerszék)], also among the Csángó Hungarians in Gyimes (Ghimeş) [Lunca de Sus (Gyimesfelsőlok)] and in the Partium region in Satu Mare (Szatmár) county among Hungarians in Porumbesti (Kökényesd) and Swabian Germans in Turulung (Túrterebes) from 2007 to 2015 (Figure 1). Among the selected villages only three are provided by permanent pharmaceutical, human and veterinary medical service (Lunca de Sus, Martiniş, Satu-Mare County), while Băţanii Mari, Lueta, Mereşti and Porumbeşti have only one or two of them. The inhabitants of Băţanii Mici are provided by temporary medical service once weekly from other settlements. The people of the other selected villages have no available medical opportunities in their near environment.

The majority of the inhabitants work in agriculture in each area. They live in close relationship with natural sources including mostly plants, which are commonly used in human and veterinary medicine.

Figure 1. Study sites in Transylvania and Partium, Romania

Study area	Latitude	Longitude	County	Informants / Inhabitants	Medical service	Veterinary practice	Pharmacy
Bățanii Mari (Nagybacon)	46° 05′ 22″	25° 41′ 29″	Covasna	15/1936	+	+	–
Bățanii Mici (Kisbacon)	46° 06′ 13″	25° 41′ 42″	Covasna	8/558	–*	–	–
Cinod (Csinód)	46°18′14″	26° 03′ 52″	Harghita	45/200	–	–	–
Crăciunel (H.karácsonyfalva)	46° 11′ 00″	25° 25′ 51″	Harghita	23/450	–	–	–
Egershec (Egerszék)	46° 18′ 13″	26° 03′ 55″	Harghita	25/200	–	–	–
Lueta (Lövéte)	46° 16′ 27″	25° 29′ 15″	Harghita	85/2900	–	+	+
Lunca de Sus (Gyimesfelsőlok)	46° 31′ 44″	25° 57′ 33″	Harghita	17/809	+	+	+
Martiniş (H.szentmárton)	46° 14′00″	25° 23′ 00″	Harghita	21/570	+	+	+
Mereşti (H.almás)	46° 13′ 59″	25° 27′ 21″	Harghita	42/1600	+	–	+
Ozunca-Băi (Uzonkafürdő)	46° 06′ 20″	25° 47′ 20″	Covasna	3/54	–	–	–
Petreni (H.szentpéter)	46° 10′ 37″	25° 22′ 36″	Harghita	12/120	–	–	–
Porumbeşti (Kökényesd)	47° 58′ 45″	22° 58′ 52″	Satu Mare	3/1420	+	–	+
Sânpaul (H.szentpál)	46° 11′ 29″	25° 22′ 56″	Harghita	15/494	–	–	–
Turulung (Túrterebes)	47° 55′ 00″	23° 05′00″	Satu Mare	60/3500	+	+	+

*Temporary medical service is available once weekly from neighbouring villages.

Fieldwork

Collections were carried out by free talks and semi-structured interviews lasting 50–100 minutes recorded with dictaphone, notes and photos about living and dried plants. Data were collected from 374 villagers aged between 50 and 97 (median: 73.5). The ratio of sexes were 2:1 women to men. Local plant name, used part, preparation and treated gastrointestinal disease (stomach ache, inflammation and bleeding, digestive problems, loss of appetite, gastric ulcer, and diarrhoea, excluding liver and gall problems because of their large scope), and the source of data were documented in a field diary, where traditional elements were treated separately from those originating from books or other means of media. According to local terminology, original plant names and recipes for home remedies are described in *italics* between inverted commas. Interviews and talks in the field were completed with plant collection for documentation in a herbarium. Voucher specimens were identified (Király 2009) and deposited at the Institute of Pharmacognosy, University of Pécs.

RESULTS AND DISCUSSION

The documented data are transmitted both vertically (from parents to children) and horizontally (between two individuals of the same generation) in the studied regions. These ways include mostly one-to-many directions led by elder folk healers and herbalists. In general, men have experience rather in veterinary medicine, while women in the treatments of human diseases in each village.

The mentioned 78 plants (53 wild and 25 cultivated taxa) are documented with 181 (148 Hungarian and 33 Romanian) local names including 1–19 names per species in the studied areas (Figure 2). In addition to wild and locally cultivated taxa, exotic species were also listed which are available from shops like *Aloe* sp., *Citrus limon* (L.) Burm., *Oryza sativa* L., and *Piper nigrum* L.

Figure 2. Wild and cultivated plants applied for gastrointestinal diseases in Transylvania and Partium, Romania

Scientific name	Local name	Status	Used part	Preparation	Traditional use
Achillea millefolium L. (s. str.)	*féregfarkúfű*[Ci], *pulyakfű*[Ci], *cickafarka*[Ci], *cicufarok*[T], *cickafarok*[T], *egérfarok*[T], *egérfarkúfű*[L,Ma,Pe,S], *egérfarkúvirág*[L], *egerfarkúfű*[Ma,Pe,S], *cickafarkúfű*[Ma]	W	herb	tea	diarrhoea (veterinary medicine)[Ci], gastric ulcer[Ci], stomach ache[L,Ma,S,T], bloating[Pe]
Acorus calamus L.	*obligeana*[T]	W	root	tea	loss of appetite[T], bloating[T]
Agrimonia eupatoria L.	*pulmon*[Me], *pulman*[Me], *pulmán*[Me], *tüdőfű*[L,Me], *turita mare*[T]	W	herb	tea	stomach disorders[L,Me], bowel irritation[T]
Allium cepa L.	*piroshagyma*[LS], *vereshagyma*[BMa,BMi,Ci,E, LS,O,S]	C	bulb	fresh form	digestive problems[BMa,BMi,Ci ,E, LS,O,S
Allium sativum L.	fokhagyma[Ma]	C	bulb	fresh form	loss of appetite[Ma]
Aloe sp.	*házi doktor*[Me]	C	leaf sap	fresh form	bleeding stomach[Me]
Anethum graveolens L.	kapor[Ma], *mararul*[T]	C	fruit	spice	digestive problems[T], bloating[T]
Arctium lappa L.	*ragodály*[L], *Jézus párnája*[L], *keserűlapi*[L], *keserűgyükér*[L]	W	seed	tea	carminative[L], reflux[L]
Arctium sp.	bojtorján[Ci,E]	W	leaf	tea	diarrhoea (poultry)[Ci,E]
Betula pendula Roth.	nyír[L]	W	virics	fresh form	stomach disorders[L]
Calendula officinalis L.	körömvirág[LS], *galbenelele*[T], *sárga kalapácsvirág*[T], *sárgavirág*[T]	C	flower	tea	bowel disorders[LS], to increase the production of gastric juice[T], bowel and stomach inflammation[T]
Carum carvi L.	*keménymag*[LS], kömény[BMa,BMi,Ci,Cr,E,L,Ma,Me,O,Pe,S], *kümény*[Cr,Me], *chimenul*[T], *chimion*[T]	W	fruit	tea	digestive problems[LS,T], stomach ache[BMa,BMi,Ci,E,O,S], carminative[Ci,Cr,E,L,Ma,Me,Pe,T]
Centaurium erythraea Raf.	*tintaura*[T], *cintória*[L,T], *cintórium*[T], *ezerjófű*[S]	W	herb	tea	bloating[T], digestive problems[L,Ma,T], diarrhoea[S], gastric ulcer[L]
Cerasus avium (L.) Moench	cseresznye[L,Me]	C	peduncle	tea	stomach ache[L,Me]
Cerasus vulgaris Mill.	meggy[Me]	C	peduncle	tea	stomach ache[Me]

Chelidonium majus L.	*vérehulló fecskevirág*[LS]	W	herb	tea	diarrhoea[L,S]
Cichorium intybus L.	*ketángkóró*[Me], *ketánkóró*[Me], *katáng*[Me], *kék katáng*[L]	W	herb	tea	stomach ache[L,Me]
Citrus limon (L.) Burm.	citrom[L]	C	fruit sap	fresh form	gastric ulcer[L]
Convolvulus arvensis L.	szulák[L]	W	herb	tea	laxative[L]
Cornus mas L.	som[L], *cornul*[T]	W	leaf, fruit	tea, jam	gastrointestinal disorders[T], diarrhoea as jam[Cr] or in brandy[L]
Crataegus monogyna Jacq.	*Isten gyümölcse*[Cr], *istenkenyér*[Cr], *tövisalma*[Cr]	W	fruit	tea	diarrhoea[Cr]
Cydonia oblonga Mill.	*gutuiul*[T]	C	leaf	tea	gastrointestinal disorders[T], diarrhoea[T]
Daucus carota L.	*murok*[BMa,BMi], *murokvirág*[L], *szégyönvirág*[L]	C	root	sap	stomach ache (children)[BMa,BMi,L], diarrhoea[BMa,BMi]
Echium vulgare L.	*kék tátogtató*[BMa,BMi], *pulykafű*[BMa,BMi], kígyószisz[BMa,BMi,S]	W	herb	tea	bowel inflammation[BMa,BMi], diarrhoea[BMa,BMi,S]
Epilobium hirsutum L.	füzike[Ci]	W	leaf	tea	stomach ache[Ci]
Epilobium parviflorum Schreb.	kisvirágú füzike[Ci]	W	leaf	tea	stomach ache[Ci]
Equisetum arvense L.	*súrlófű*[L], *zsúrlófű*[L], *surlófű*[L], *bábaguzsaly*[L], *csikófarok*[L]	W	aerial part	tea	diarrhoea[L]
Eryngium planum L.	*szamárcsipke*[BMa,BMi], *kék tilinkó*[BMa,BMi]	W	flower	tea	stomach disorders[BMa,BMi,O]
Euphorbia helioscopia L.	*árió*[LS]	W	herb	tea	diarrhoea[L,S]
Fagus silvatica L.	*bükkfa*[L,LS]	W	bark	tea	diarrhoea (veterinary medicine)[L,LS]
Foeniculum vulgare Mill.	*keménymag*[P]o	C	fruit	tea	laxative[Po], carminative[Po]
Fragaria vesca L.	*erdei eper*[L], *vadeper*[L], szamóca[L]	W	leaf	tea	diarrhoea[L]
Gentiana asclepiadea L.	*májgyökér*[Me]	W	root	tea	diarrhoea[Me]
Hordeum vulgare L.	*orzul*[T]	C	seed	tea	loss of appetite[T]

Hypericum perforatum L.	*vérburján*[Ci,LS], *vérfű*[BMa,BMi,Cr,LS,Pe], *vérejárófű*[Me], *ezerjófű*[BMa,BMi,Ci,Me,LS], *Jézusvére*[BMa,BMi], *Jézusvére fű*[L], *Jézsuvére füje*[L,Ma], *Jézusvére hullófű*[L], *Jézusvére lapi*[L], *pozsárnyica*[Ci,LS], *ábelvére*[BMa,BMi,Ci], *ótvarburján*[Ci], *jódombfű*[Ci], *sárgavirág*[Ci], *sunatoarea*[T], *pojarnita*[T], *májfű*[Me], *májtea*[Me], orbáncfű[L,Ma,Me,S]	W	herb	tea	diarrhoea[Ci,Cr, L,LS, Ma,Pe,S], gastric ulcer[Ci,L,T], stomach ache[Me], stomach inflammation[BMa,BMi], stomach bleeding[Me], bloating[Ma]
Juglans regia L.	dió[L], *nucul*[T]	C	leaf, green epicarp	tea	gastrointestinal disinfectant[T], gastric ulcer[L]
Juniperus communis L.	*borsika*[Cr,L]	W	pseudofruit	tea	carminative[Cr,L]
Lysimachia nummularia L.	*fillérfű*[L], *piculavirág*[L], *íneresztőfű*[L]	W	herb	tea	stomach disorders[L]
Malus domestica Borkh.	alma[Pe,S]	C	fruit	fresh form	grounded for diarrhoea[Pe,S]
Malus silvestris (L.) Mill.	vadalma[L,Me]	W	fruit	vinegar	stomach ache[L,Me] (veterinary medicine)
Malva neglecta Wallr.	papsajt[L], papsajtmályva[L], *papsajtja*[L], *taknyozófű*[L]	W	herb	tea	stomach disorders[L], diarrhoea[L]
Matricaria recutita L.	*almabüzü*[LS], kamilla[Ci,L,LS,S], székfű [BMa,BMi,P,O], *szikfű*[BMa,BMi], *musetel*[T]	W	flower	tea	diarrhoea[Ci,LS], digestive problems (human and veterinary medicine) [BMa,BMi,L,P,T], bloating[T], stomach inflammation[S]
Melissa officinalis L.	*roinita*[T], *iarba stupului*[T]	C	leaf	tea	stomach ache[T], loss of appetite[T]
Mentha longifolia (L.) Nath.	*mezei menta*[Ma,Me], *vadmenta*[Ma]	W	herb	tea	diarrhoea[Ma,Me]
Mentha spicata L. convar. *crispa* (Benth.) Mansf.	*fodorminta*[Cr,LS], fodormenta[S], *házi menta*[LS], *rendes menta*[LS], *izma creta*[T]	C	leaf, herb	tea	diarrhoea[LS], stomach ache[Cr,LS,S], carminative[T], bloating[Cr,S,T], digestive problems[T]
Mentha x *piperita* L.	*szöszörmenta*[Cr], borsmenta[Cr, L,Ma], *kerti menta*[Ma], *izma buna*[T], *vadmenta*[L], *vad fodorminta*[L], *mezei menta*[L]	C	leaf	tea	carminative[T], bloating[Cr,T], digestive problems[Cr, L,Ma,T], gastric ulcer[L]

Ononis arvensis L.	élőhalál[S], *élőhalófű*[S], *élőhaló*[Cr, Ma]	W	herb	tea	diarrhoea[Cr, Ma,S], stomach disorders[Ma]
Origanum vulgare L.	*ezerjófű*[L,LS,Me], *ezörjófű*[L,Me], *májfű*[Me], *szúfű*[Me], *ezerédes*[Me], *vérfű*[Me]	W	herb	tea	gastric ulcer[LS], loss of appetite[L]
Oryza sativa L.	rizs[BMa,BMi]	C	fruit	boiled form	stomach ache (children)[BMa,BMi], diarrhoea[BMa,BMi]
Pimpinella anisum L.	ánizs[BMa,BMi,Ci,Cr,L,Me,O], *anason*[T]	C	fruit	tea	carminative[BMa,BMi,Ci,Cr, L ,Me, O,T]
Piper nigrum L.	*szemesbors*[Me,Pe], *boss*[Me,L,Pe], bors[Cr]	C	fruit	dried form	stomach ache[L,Pe] or diarrhoea[Cr,Me] in brandy
Plantago lanceolata L.	*patlagina*[T], *útifű*[T], *útilapú*[T], *útilapi*[L], *keskenylevelű útilapi*[L]	W	leaf, flower	tea	gastric ulcer[T], diarrhoea[L,T]
Plantago major L.	*útilapu*[Ma], *útilapi*[Ma]	W	leaf	tea	to reduce the production of gastric acid[Ma]
Polygonum bistorta (L.) Samp.	*kellegica*[Ci,E], *kárálica*[Ci,E], *ökörnyelv*[Ci]	W	herb	tea	diarrhoea (veterinary medicine)[Ci,E]
Potentilla anserina L.	libapimpó[Ci,Cr,E, L,LS, Ma,Pe,S], *pipefű*[BMa,BMi,Ci,E], *coada racului*[T], *iarba gastii*[T], *lúdlábfű*[BMa,BMi], *lúdlábúfű*[BMa,BMi], *lúdláb*[Cr], *repecse*[S]	W	herb	tea	diarrhoea[BMa,BMi,Ci,Cr,E, L,LS, Ma,Pe,S,T], stomach inflammation[T]
Primula veris Huds.	*kásavirág*[L], kankalin[L]	W	flower	tea	stomach ache[L], diarrhoea[L]
Prunus domestica L.	szilva[L,S]	C	fruit	jam, dried form	loss of appetite[S], stomach disorders[S], laxative[L]
Quercus sp.	*cserefa*[BMa,BMi,Ci, Cr,L,Ma, Me,O]	W	bark, leaf, young shoot	tea	diarrhoea[BMa,BMi,Ci,Cr,L,MaMe,O] (veterinary medicine)
Raphanus sativus L. ssp. *niger*	fekete retek[S]	C	tuber	tea	loss of appetite[S]
Rhinanthus minor L.	*csengőkóró*[LS]	W	herb	tea	diarrhoea (veterinary medicine)[LS]
Robinia pseudoacacia L.	*salcamul*[T]	W	flower	tea	stomach ache[T]
Rosa canina L.	*rózsabogyó*[L,Me], *hecselli*[L,Me], *szaragógya*[L,Me]	W	pseudofruit	tea, jam	diarrhoea[L,Me]

Rubus caesius L.	szeder[L]	W	fruit	leaf	diarrhoea[L]
Rumex sp.	*lósósdi* [BMa,BMi,Ci,Cr,E, L, LS, Ma,Me,O, Pe,S], *lósózli*[LS], *kabalasósdi*[L], lósóska[L], *dracila*[T], *lemn galben*[T], *lúsóska*[P,T]	W	seed	tea	diarrhoea [BMa,BMi,Ci,Cr,E, L, LS, Ma,Me,O,Pe,S,T] (human and veterinary medicine)
Salvia officinalis L.	*salvia*[T], *jales*[T]	C	leaf	tea	stomach ache[T]
Scrophularia nodosa L.	*feketecsihán*[Ci], *reszfugburján*[Ci], *reszfug*[Ci]	W	herb	tea	bloating (veterinary medicine)[Ci]
Taraxacum officinale W. et K.	*cikória*[L,LS], *lánclapi*[LS], *láncfű*[LS], *láncvirág*[L], *tejeslapi*[LS]	W	leaf	tea	stomach disorders[L], bowel diseases[LS]
Thymus serpyllum L.	*vadcsombor*[L,S]	W	herb	tea	stomach disorders[L,S]
Thymus vulgaris L.	*cimbrul de cultura*[T], *iarba cucului*[T]	C	herb	tea	gastrointestinal disinfectant[T]
Tilia cordata Mill.	*záldokfa*[Ma], hárs[Ma]	W	flower	tea	stomach ache[Ma]
Triticum aestivum L.	búza(korpa)[Pe]	C	fruit	decoction	with water for rumination [Pe]
Trollius europaeus L.	*pünkösdi rózsa*[L,Me]	W	flower	tea	diarrhoea[L,Me]
Urtica dioica L.	*csihán*[Ci,E,LS], *csípős csihán*[LS], *csonár*[Po], *urzica*[T], *csolán*[T], *csonál*[T], *csilán*[T]	W	herb	tea	diarrhoea[Ci], digestive problems[LS], loss of appetite[Po,T]
Vaccinium myrtillus L.	*kukujza*[Ci,E,LS,S], *fekete kokojza*[Cr,LS], *afin*[T], *kokojza*[Pe,T], *kakojza*[Cr, L], *kék kakojza*[L], áfonya [BMa,BMi,O]	W	leaf, fruit	tea or in brandy, or jam	loss of appetite[LS], stomach disorders[Ci,E,LS,Pe], diarrhoea [BMa,BMi,Ci,Cr,E, L,LS,O, Pe,S,T]
Vaccinium vitis-idaea L.	*menisora*[LS], *ménisóra*[LS], *havasi meggy* [BMa,BMi,O], piros áfonya[Ma]	W	leaf	tea	stomach disorders[LS, Ma], diarrhoea [BMa,BMi,LS,O]
Valeriana officinalis L.	*odoleanul*[T], *valeriana*[T]	W	root	tea	to reduce the production of gastric juice[T]
Verbascum phlomoides L.	*ökörfarka*[LS]	W	flower	tea	diarrhoea (veterinary medicine)[LS]
Veronica officinalis L.	*ventrilica*[T]	W	flower	tea	gastrointestinal disorders[T]

***Collection places (in superscripts): BMa**: Băţanii Mari, **BMi**: Băţanii Mici, **Ci**: Cinod, **Cr**: Crăciunel, **E**. Egershec, **L**: Lueta, **LS**: Lunca de Sus, **Ma**: Martiniş, **Me**: Mereşti, **O**: Ozunca-Băi, **Pe**: Petreni, **Po**: Porumbeşti, **S**: Sânpaul, **T**: Turulung.*
***Status**: **W**: wild, **C**: cultivated.*

Figure 3. Eryngium planum L., Martiniş, Romania, 2014. (Photo by Nóra Papp)

Figure 4. Trollius europaeus L., Cinod, Romania, 2009. (Photo by Nóra Papp)

Figure 5. Root of *Gentiana asclepiadea* L., Lunca de Sus, Romania, 2008. (Photo by Nóra Papp)

Figure 6. Vinegar made of *Malus silvestris* (L.) Mill., Lueta, Romania, 2014. (Photo by Nóra Papp)

Plants are used mostly as a tea (Figures 3–5), some of them as jam or vinegar (Figure 6), or soaked in brandy. In some cases informants mentioned detailed recipes e.g. in the case of *Thymus vulgaris* L.: tea made of the herb can be used for the course of one week (two cups a day) against stomach and bowel infection (Lueta).

The majority of the species were mentioned for digestive problems, stomach ache, and diarrhoea. The most frequently used plants in several villages were the following: *Allium cepa* L., *Carum carvi* L., *Hypericum perforatum* L., *Matricaria recutita* L., *Pimpinella anisum* L., *Potentilla anserina* L., *Quercus* sp. (involving *Q. robur* L. and *Q. petraea* L.), *Rumex* sp. (mostly *R. obtusifolius* L. and *R. acetosa* L.), and *Vaccinium myrtillus* L. Among them, *Rumex* species and *Matricaria recutita* are known both in human and veterinary medicine, while eight taxa only in veterinary practice.

Uniquely documented records e.g. the use of *Acorus calamus* L., *Hordeum vulgare* L., and *Veronica officinalis* L./Turulung; *Convolvulus arvensis* L. and *Rubus caesius* L./Lueta; *Epilobium* sp./Cinod; *Euphorbia helioscopia* L., *Rhinanthus minor* L., and *Verbascum phlomoides* L./Lunca de Sus; *Gentiana asclepiadea* L./Meresti; as well as *Triticum aestivum* L./Petreni can be highlighted as peculiar herbal practices in the region. For children the following taxa were mentioned as carminative drugs and remedies for digestive problems: *Allium cepa*, *Carum carvi*, *Foeniculum vulgare* Mill., *Matricaria recutita*, and *Primula veris* Huds.

The species are applied mostly by themselves but some of them were explained to be used as part of multicomponent preparations. Some examples: for digestive problems the tea of the fruit of *Carum carvi* and *Pimpinella anisum* (cure for 2–3 days; Turulung), or completed with *Allium cepa* (Băţanii Mari, Băţanii Mici, Ozunca-Băi), or with the pseudofruit of *Juniperus communis* L. (Lueta); *C. carvi* can be applied with *Allium sativum* L. (Lueta), *Daucus carota* L. with *Oryza sativa* L. (Băţanii Mari, Băţanii Mici), lemon with nut of *Juglans regia* L., honey (*folytméz*) and 'holy water' (*szenteltvíz*) for gastric ulcer (Lueta), as well as the fruit of *Cornus mas* L., *Vaccinium myrtillus* L. and *Rubus caesius* L. soaked in brandy for diarrhoea (Lueta). Rumex species can be used with the leaf of *Plantago lanceolata* L. (Lueta), with the bark of *Quercus* sp. (Mereşti) and the herb of *Achillea millefolium* L. (Cinod) for diarrhoea in veterinary medicine.

Some methods which live only in the memory of the informants are no longer used nowadays, like the tea made of the leaf of *Nicotiana tabacum* L. for stomach ache (Băţanii Mari, Băţanii Mici), bulb of *Allium sativum* with milk for stomach ache of pig (Mereşti). Children had to collect the leaves of *Rubus idaeus* L. for the government in Lueta for 30–40 years because of their antidiarrhoeal effect. These data are 3.84% of the collected records of the mentioned 78 species.

In comparison of our records and official data of the Romanian (F.Ro.X. 1993) and Hungarian (Ph.Hg.VIII. 2004) pharmacopoeias, the following herbs can be found in both sources: *Aloe* sp., *Calendula officinalis* L., *Crataegus monogyna* Jacq., *Juniperus communis*, *Primula veris*, *Thymus vulgaris*, and *Verbascum* sp. In addition, the *Ph.Hg. VIII.* includes further 21 plants (but only nine species for gastrointestinal problems), while the *F.Ro.X.* only one more species (*Vaccinium vitis-idaea* L.). These official data also prove the relevance of the plants used in ethnomedicine, especially in Transylvania where the flora is rich and diverse all over the country. According to this comparison, we are currently performing and plan further phytochemical analyses e.g. with *Lysimachia*

nummularia L., *Ononis arvensis* L., *Potentilla anserina* L., and *Scrophularia nodosa* L. to reveal active compounds that can be responsible for their beneficial effects.

Because of the absence of medical and pharmaceutical services in the studied regions, home remedies and local treatments using plant materials play a significant role in the everyday life of people, which are disappearing based on the diminishing interest of young people for archaic home methods and the increasing affinity for books and other sources. However, traditional practices are still preferred to learnt elements; the archaic records should be collected and documented urgently to provide possible new drugs for the recent phytotherapy.

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Description Methods of Kalotaszeg's Landscape Character

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Abstract: The article introduces ethnographically relevant aspects of landscape character and historic land use patterns for a better understanding of vernacular descriptions of landscape characteristics through the case study of Kalotaszeg (Cluj County, Transylvania, Romania). Eight topics are discussed based on hand-drawn site analysis maps and historic records: geomorphology and landform types of the Kalotaszeg terrain; water tributary system with mills; a drawn aerial model of zones; description of forest types and borderlands; history, typology and aesthetic issues of the lynchet system; landscape patterns like wooded pastures, orchards and vineyards; the results of analytical land use statistics and retrogressive analyses of landscape historical events and relicts; and finally a summary of the uniformity and diversity of Kalotaszeg and its zones.
Keywords: Kalotaszeg, landscape character, landscape pattern and land use, landscape aesthetics, retrogressive landscape history

Kalotaszeg, a region of the Transylvanian basin has gained emblematic fame as a treasure-trove of traditional folk motives since the second part of the 19th century during the time of national awakening and romantic discovery of folk art. Scholarly interest has been conducted with non-declining fervor ever since and Kalotaszeg has become by now one of the best documented regions of the Hungarian folk art.

I have visited the villages of the Kalotaszeg region one by one to collect data on the history and aesthetics of the landscape beginning with the 'Stana Workshop' in 2001 (when I was a member of group of students doing voluntary work) and later in the capacity as the student of the Doctoral School of Landscape Architecture and Landscape Ecology of the Saint Stephen University. During these years I made myself familiar not only with the 40 settlements populated mainly by ethnic Hungarians and accounted for as the *Kalotaszeg* region, but visited in the surrounding (mainly Romanian) areas to have an overview of this region in a broader context (116 villages, 1200 km^2 area North and South by road E60: Poieni – Bánffyhunyad – Cluj Napoca – Cuzeplak –

Calata).[1] The character shifts observed in the scenery directed my attention to the strong characteristic traits, unique spatial formation and delicate inner fragmentation of the Kalotaszeg landscape. During these field observations and surveys I put my skills in folk art and ethnic and ethnographic knowledge aside, and focused primarily to the land-use and landscape character issues. They together have drawn up the picture which was the aim of this study, i.e. to assess Kalotaszeg and its wider surrounding from the perspective of the 'character' of its landscape. The question was: if there are characteristic traits of Kalotaszeg culture (in music, dance, costume, embroidery, architecture, etc.) whether – in parallel with these – does a Kalotaszeg landscape, scenery, character exist just as well?

There is a common saying "Kalotaszeg extends as far as the 'muszuj (=special long skirt)' reaches" – but how far the Kalotaszeg landscape stretches, are there any actual boundaries, transition lines, in other words *'Can the ethnographic entity, Kalotaszeg be justified from the perspective of landscape architecture as a Region with its Landscape character? What is the correlation between the ethnographic region (its internal uniformity, fragmentation, boundaries) and the region analysed with the toolbox of landscape architecture and the landscape characters presented?'*

It can be known from the delineation attempts of former ethnographic research projects that the *Kalotaszeg* region – which is a unit holding distinctive character of traditional Hungarian folk art expressions, as compared to the Romanian countryside surrounding it in general –, consists in fact of 4–5 minor sub-regions ('szeg's), separated from each other geomorphologically but also in terms of social connections and cultural cohesion: Felszeg (Upper End), Alszeg (Lower End), Nádas / Nadăş valley, Kapusi / Căpuş valley and Gyalu / Gilău – Tordaszentlászló / Săvădisla transient area (Balogh – Fülemile 2004). This – for me clearly deciphered – division fine-tuned my research aim further: *'What special geomorphological forms, spatial arrangements, landscape character-patterns and historical (mainly from the 19th and 20th centuries) and current processes influencing the character of the landscape, distinguish and justify certain areas in Kalotaszeg as a typical landscape? Can we prove whether these minor differences in the landscape character of the sub-regions go along the same lines as the boundaries of ethnographic spatial meshes; how these areas can be defined and characterised from the landscape aesthetic / scenery perspective?'* This range of questions lead us basically to the definition and description '*Kalotaszeg's Landscape Character'*.

APPROACHES IN LANDSCAPE CHARACTER RESEARCH

The problematic of analysing landscape characters emerged with Teleki in domestic geographic landscape concepts (Teleki 1917:192): "The entire task of geographic description is crystallised around the typical character of landscapes … highlighting the individuality of the landscape, comparative assessment of various landscapes, typical differences and typical similarities." In the holistic approach to human geography it was

[1] I have published so far 15 articles and have written my PhD dissertation in the topic: *Kalotaszeg tájkarakter-elemzése* [The Landscape Character Analysis of Kalotaszeg Region], Unpublished PhD dissertation, Corvinus University Budapest, Doctoral School of Landscape Architecture and Landscape Ecology. 2013. (http://phd.lib.uni-corvinus.hu/676/1/Eplenyi_Anna.pdf)

emphasised that as many phenomena and factors need to be attached to the '*Life of the landscape'* as possible. Dékány (Dékány 1918:9–13) looks for the *'singularity'* as the general aim of geographic attitudes, the '*geographic individual'* unique on the Earth, which defines the region as a *'complexity of local differences'*. Albeit Teleki discards the task of classification (looking at the symbiosis of the constituent components of a landscape), still he stresses that 'the smaller an area, the stronger its individuality; the larger, the less it will be'. His disciple, Fodor also supports this *'landscape biographic'* approach, in which the importance of characteristics is underlined:

> "The individuality of a landscape is born, when the connections of the geographic factors co-existing in it develop to such an extent which separates the landscape from the adjacent areas with a force of unification. (…) Another significant property of the landscape is when man recognises the distinct, special characters of the given piece of the Earth he lives in. Thus, a landscape is born twice. First by the hand of the Creator, and second, by the reason of man, when its inhabitants recognise the distinct, special characters of their living that separates them from others, and give a name for this individuality." (Fodor 1938:142–143)

This epoch before WWII reflected a clearly complex ethnographic and geographic view of landscapes, but it did not want to classify all landscapes, it merely highlighted the characteristic features of certain regions deviating from the average (such as the Jászság in the case of Fodor).

A novel holistic approach to the historical aspects, traditional husbandry and scenery identity of landscapes, regions has been put in the foreground again in the past twenty years only as an effect of the institutionalised concepts of *Historical Landscapes – European Nostra – Landscape Convention – World Heritage Cultural Landscapes – or Landscape Treaties*, which were prepared by research into landscape archaeology, human geographic, and environmental psychology in the English speaking world. From the nature protection side – even though species-level and spatial conservation did exist – the complexity of the perceptive investigation of the scenery and spatial experience of landscapes was lacking. Landscape character studies intended to make up just with this deficiency.

In the field of landscape architecture and spatial planning the most general definition comes from the school founder author, Swanwick: "Landscape character, which is the pattern that arises from particular combinations of the different components, can provide a sense of place to our surroundings. Landscape Character Assessment is a characterization process, involving identifying, mapping, classifying and describing landscape character, and a process of making judgements based on landscape character to inform a range of different decisions" (Swanwick 2002:2–4). This character might be derived from the native vegetation cover, geomorphological shapes, historical methods of land cultivation and farming, ownership relations, special raw materials or economic exploitation.

Hungary signed the European Landscape Convention in 2005 the Landscape definition of which includes characteristics: "Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors." Government Decree No 218/2009 defines the landscape-character as follows: "A pattern or system developed from the interaction of the natural and anthropogenic factors constituting a landscape which renders a landscape distinct from other details of

the land". Propagating landscape character studies were triggered by the introduction of spatial planning, which sees them as a background study substantiating the decisions to be made, which makes the historical development, cultivation forms of the landscape understood properly, but the role of which is not to conserve the 'as it is' situation, much rather provides the options for proper development decisions by keeping these characteristics in mind. The methodology of the landscape character research projects is far from being uniform, what is more, the attitude taken is prone to vary according to the purpose of the order, or the professional background of the maker. The size and complexity of the area to be categorised raise further issues even for practitioners of the trade: *Can any area be covered by a single landscape character or are there regions with a strong individuality, as opposed to undistinctive landscapes? What is the natural unit/ size where – determining the landscape character in a relevant manner – an individual, coherent zone can be set up?*

Two somewhat contradictory tendencies dominate cutting-edge literature of landscape character analysis. One of them *Historic Landscape Characterisation* (Rippon – Fairclogh 2002; Rippon 2004) focuses on the historical dimensions and ages of historical development of landscapes, created basically on the various layers of archaeological excavations. It points out the historical elements of the contemporary functional landscape which are subject to transformation but are used up to date (for instance: game preserves, boundaries of plots, old roads), or are preserved as relics on the ground having lost their original role or function. This trend stresses the complexity of the time-phases and it intends to define its landscape historical 'age'. Therefore it is critical with evaluating *only* on natural values or visual beauty. The retrogressive historic analysis of the last section in this article follows this approach.

The other school approaches the current image of landscapes from the perspective of the landscape planner (conserving but developing): *Landscape Character Assessment* (Konkoly – Gyúró et. al 2010; Swanwick 2002). The purpose here is not to resist the changes influencing the landscape, much rather to provide a tool for decision makers by describing how does the landscape look like now, how this phase developed in the past and how it is expected to change in the future. The first part of the methodology is a landscape character description process, free of judgements. This looks at the region in its objective complexity based on regional, mapping and historical research (geology, climate, forest cover, etc.). It is followed by a subjective field visit based on visual, perceptual and sensory experiences, which are based on the description of the revealing points of view in photographic and drawing representations: balance and ratio; scale; density; texture; colour effects; diversity; uniformity and variety of forms (scored from a scale or selected from a list of adjectives, giving room to the personal interpretation of the analyst). This was amplified lately to 'Visual Character Indicators' such as: complexity, coherence, disturbance, stewardship, imageability, visual scale, naturalness, historicity and ephemera (Ode – Tveit – Fry 2008:110). The second part of the method is an evaluative/recommendation process preparing the actual intervention: guidelines for designers to translate these into the language of practical action, defining for instance, how in a given detail of the landscape a certain type of investment or conversion of land use patterns can be accomplished whilst adverse impacts are minimised to the extent possible, pointing out by exploiting the benefits that the character of the landscape in question is possible to conserve, enrich or reclaim (Kabai 2010:101).

The background of this study is provided by my doctoral dissertation: 'Landscape Character Analysis of Kalotaszeg' (Eplényi 2013), except that in the present paper the methodological steps and units of the thesis will be highlighted by attaching shorter clarifying examples and illustrations thereto. In the current research the investigation of the correlation between the ethnographic aspects and the landscape fragmentation raises special claims with respect to the method applied, therefore only some elements could be adapted from foreign methods. A critical aspect of all character analysis is the age, type and resolution of the databases available: here it was the end of 19th century.

GEOMORPHOLOGY AND SPATIAL EXPERIENCES OF KALOTASZEG

In the landscape character assessment, the spatial structure of the relief is given special attention as a formation of terrain-plasticity. To get the diversity of views and vistas site-based surveys and field-walks are indispensable. The geomorphological structure observed was match with the basic geological condition-map (geological ages, formations, movement-processes), but since maps (Koch – Hofmann 1889) in themselves are unable to reconstruct a spatial experience, the geological and spatial type borderlines do not overlap exactly. The morphological and aesthetic description of the spatial forms was guided by questions as follows: *To which extent the sight of high range mountains is decisive in the landscape? Are they close or remote, flat topped or rugged? Their spatial position is open/spacious or closed like a gorge? How the rolling hills stand out beside the chain of mountains? Are there horizontal plateaus or rhythmically repetitive faults inclined in the same direction? What kind of movement dynamics can be used to express the surface forms? Do unique colours characterise these formations? How the spatial emptiness of valleys distribute the landscape?*

A conclusion of the geomorphological analysis (Figure 1) is that the Tertiary hilly region of Kalotaszeg surrounded by a mountain range is far from being *one single uniform* terrain; what is more, this landscape which reacts to the various base rocks and movements in such a versatile manner just lends itself to be broken up into zones ('*szeg*') possessing dominant differences (in correlation with its ethnographic segregated structure). Thirteen (A-M) spatial types were distinguished in the entire research area which provide the foundations for later called *'landscape character Zones'*. Zones are coherent area-units with distinctive character and name, based on geomorphological and spatial experiences, marked with borderline containing 7–10 villages (Eplényi 2013:28). On Figure 1. the terrain morphology (relief and valley) are illustrated with small essential sketch-icons.

A = Flat, open valleys of Almás/Almaș, B = Oligocene gentle hills of transitional zone, C = Strong rolling limestone hills of Alszeg's wine zone, D = Leaning limestone hillslopes of Nádas-mente (valley of Nadăș), E= Steep side of Gyalui/ Gilău Mt. around Tordaszentlászló / Săvădisla, F = Unique horizontal plateau meza-hills of Felszeg upland, G + J = High robust mounts and deep valleys, H = Softly rolling slope-dynamic of Tömöldök / Bogdanului submountain zone, I = Relaxed, extroverted sinuous, sediment down zone around Bánffyhunyad / Huedin, K = Crack limestone drifting upon mountain foot around Kelecel / Călățele, L = Eruptive landmark of Köves – hegy vulcano in Kapus / Căpuș Valley, M = Peneplain of Gyalui / Gilău -Mt.

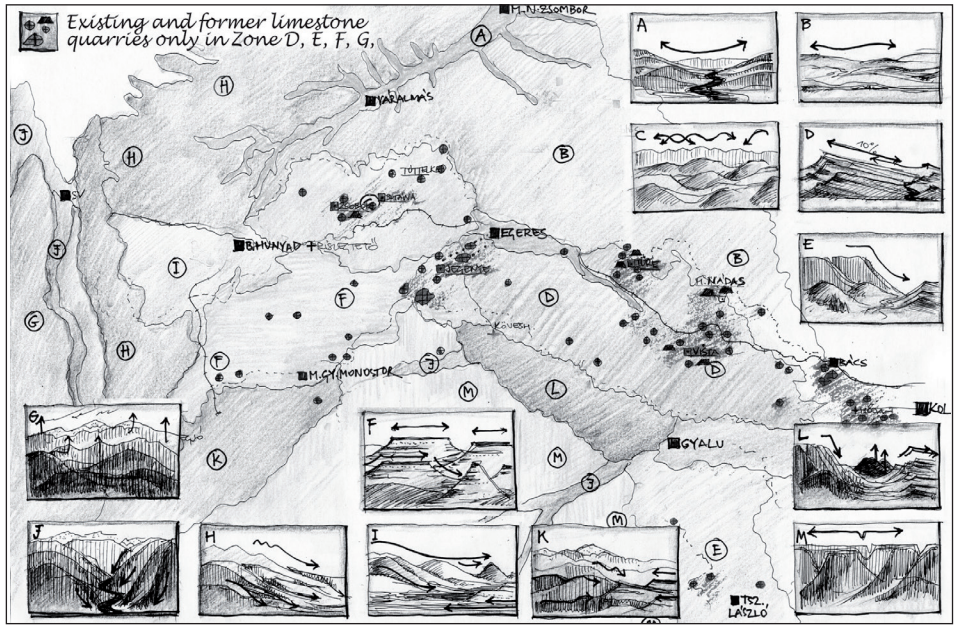

Figure 1. The geomorphological characters of the Zones with essential sketch-icons (A–M) and the limestone quarries within Kalotaszeg. (Drawing by Anna Eplényi, 2013)

All in all, it can be concluded with relevance to the region as a whole that animated ground surfaces vary in a rapid sequence of very diverse forms in a small area (high complexity), and the repeated occurrence of the landscape forms create an experience of interdependence (high coherence). These two aspects are recorded as strong human preferences, explaining the beloved beauty also of this scenery (Kaplan – Kaplan 1989).

A few example to the ethnographic aspects thereof are as follows:

The higher ranging mountain chains (Gyalui / Gilău Alps, Vlegyásza / Vlădeasa – Tömöldök / Bogdanului submountain region, G, H, J, M) provide a marked demarcation in terms of landscape scenery to the inner hillside region from the South and West. At the same time, on the North, East and South-East no such dominant silhouette contour exists, therefore the transition here towards the Borsa / Borşa valley- Mezőség (Transylvanian Heath), Torda / Turda county is more gradual. This is seen similarly by the social ethnographic researchers, since there are no strict ethnic or folk artistic demarcation lines towards the two latter areas, either. However, the robust landscape block of the Vlegyásza / Vlădeasa silhouette has a strong influence only on the Felszeg and a few higher points of the Alszeg region (C), but it has not effect on the landscape experience and scenery along the Nádas-mente (D) at all!

The geomorphological structure of the Nádas-mente (D) and its hydrological arrangement is completely uniform: they are organised around a main valley and consist of repeated tributary valleys. The same ‘strong inner cohesion’ can be detected in the ethnographic properties of this zone: very similar dress code, music and dance-heritage.

Felszeg is considered as a homogene ethnographic and social structural unit in itself, even though in terms of spatial experiences of the landscape scenery it is a lot more diverse

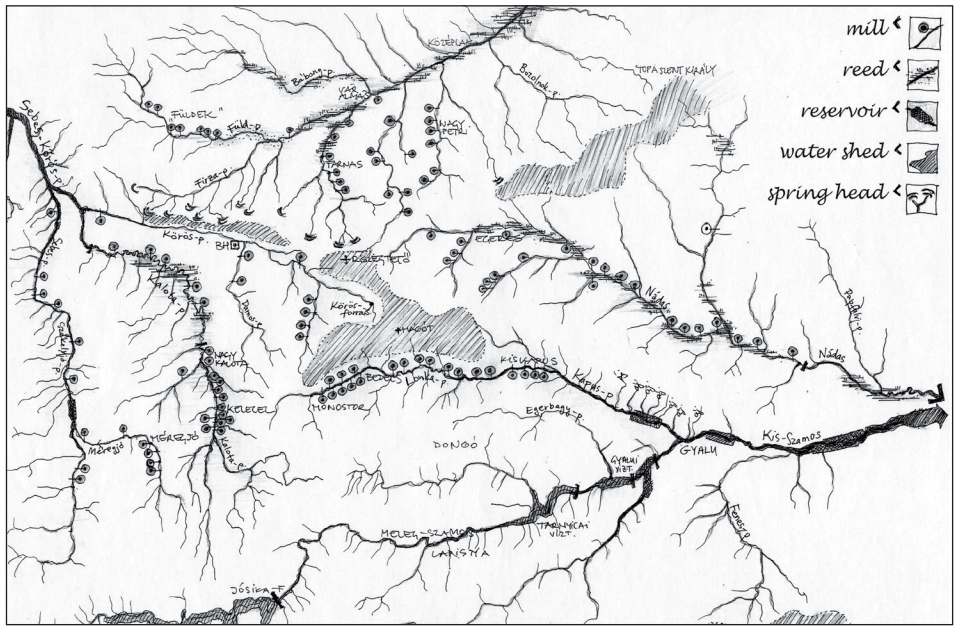

Figure 2. Water-tributary system of Sebes, Kalota / Călata, Kőrös / Crişul, Kapus-Lonka / Căpuş, Szamos / Someşul Mic, Almás / Almaş and Nádas / Nadăş streams with their mills. (Drawing by Anna Eplényi, 2013)

and be divided into several zones (I,F,H,K). Thus, in Felszeg itself, a number of different landscape character zones meet. Its compound spatial structure and complex landscape conditions might justify why this area was the ancient 'Kalataszeg', a landscape complex standing on multiple legs.

A similarly strong switch of spatial experience can be drawn up between the animated mountain and valley shapes of the grapevine villages of the Alszeg (C) and the spatial types of the less resistant, bluntly eroded, undistinctive Oligocene sediments, dominating the landscape around in the tributaries of the Almás / Almaş streamlet (A-B), thus the animated nature of Kalotaszeg loses its characteristics on this landscape flattening out in the wide expansive valley.

LANDSCAPE ASPECTS OF WATERCOURSES AND DISTRIBUTION OF MILLS

According to some assumptions the word *'calata'* – meaning sharp cold water – is the name given of this landscape (Téglási Ercsei 1842:52). Going beyond the processing of the documents on mills (Sebestyén 2001) which has been accomplished earlier on, a more precise distribution of the small watercourses and mill-sites in the landscape was analysed based on various maps to have an insight into the network of regional water utilisation. Namely, maintenance of the mills required systematic controlled regulation leading to a closer connection in-between the catchment area (Figure 2).

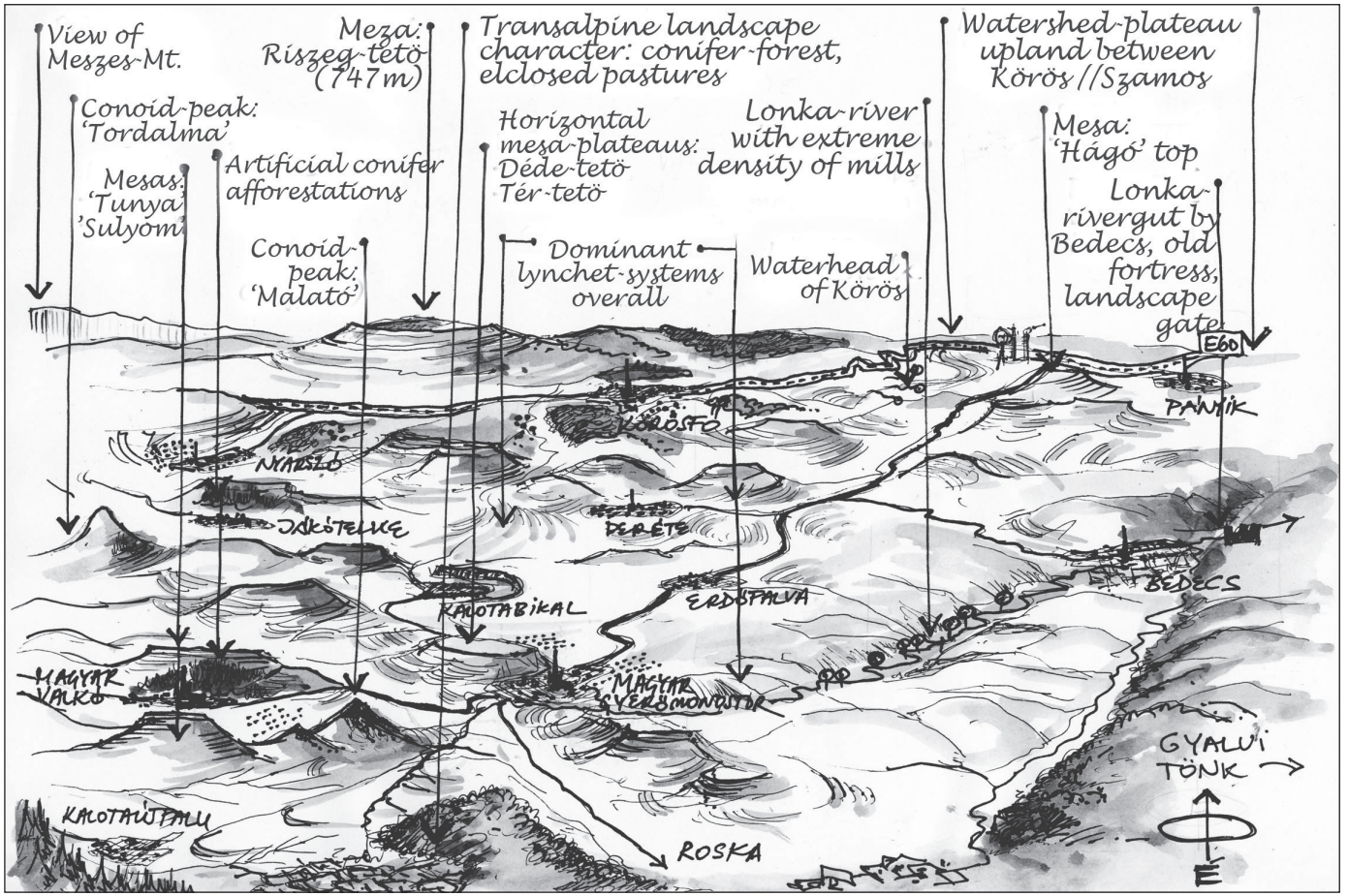

Figure 3. Geomorphological model drawing of 'Felszeg-highland' Zone, A. (Drawing by Anna Eplényi, 2013)

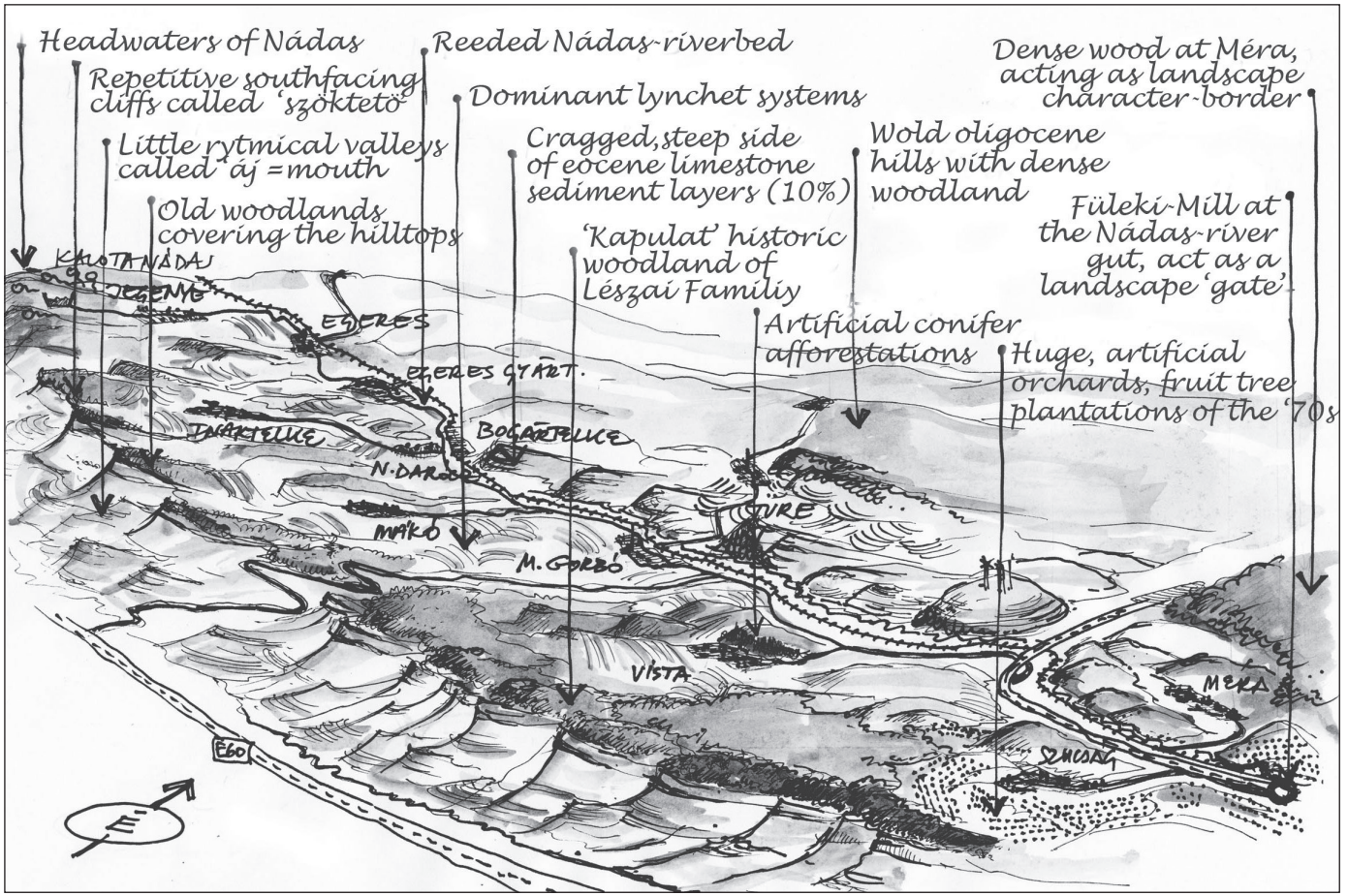

Figure 4. Geomorphological model drawing of 'Nádas-mente' Zone, A. (Drawing by Anna Eplényi, 2013)

Industrial energy demand of the landscape up to the beginning of the 20th century at Felszeg was met by the steep falling streamlets running down from the high mountain ranges and fed by a stable water flow throughout the year. Ten to fifteen mills (saw-, paper-, felt – and flour mills) on the Kalota / Călata and the Kapus-Lonka / Căpuş streamlets, respectively, processed raw materials from the alps, providing a special industrial potential to the regional economy as early as in the Medieval, reflected by the awe-inspiring church constructions of the Felszeg. Old mills, mill-wheels and mill-courses were identified at Magyarkiskapus / Căpuşu Mic in terms of landscape history on my visits. The rapid flash floods of Felszeg have washed away several mills here, as opposed to the water management mill system at the Nádas-mente, where lesser water flows and gradients solicited longer mill-courses and the mill sites can still be seen in a more stable manner.

The backbone of the Nádas-mente shown in the spatial analysis above as a coherent entity is the valley, covered by reeds in many places which was even impounded in the Mediaeval to form a lake (Szabó T. 1942:232), and was avoided by the old postal service one series of hills further to the north due to its impenetrability. It has become an important thoroughfare of the landscape structure by now with the drainage and stabilisation works for the railway (1880) and the construction of the public road. Several mill sites were identified here as well. Ground surface forms called *'~áj'* – meaning notch, cut, or mouth – also belong to the hydromorphology of the angular hilltops (Árvay 1943). These are rhythmically repeated short but steep parallel valleys cut into the edge of the limestone terrace in NE-SW direction with periodical watercourses and provide a distinct character to the south facing slope of the Kapus-valley (nearly 25 *'áj'*-s can be seen by the E60 road: 'Mátéság, Kenderáj, Kiskenderáj, Harcsáj, Murkosáj, Szőlőáj')

GEOMORPHOLOGICAL MODEL DRAWINGS OF LANDSCAPE CHARACTER ZONES

In the earlier periods of landscape characterisation only the land-use maps and photographs showed the character of a landscape, but Swanwick incorporated freehand drawing as a significant contribution to his method, which was developed by myself to a 2.5 dimensions model drawing in the spirit of sand tables. This approach depicts the landscape character zones from an imaginative high-elevation point, thus giving a slight emphasis to the key morphological features and spatial characteristic traits of the landscape.

Morphological differences are clearly illustrated by the two respective model drawings made of the landscape character zones of 'Felszeg-highlands' and 'Nádas-mente' (Figure 3–4). A seemingly uniform upper variegated clay and coarse limestone from the Tertiary Eocene provide the backbone of both regions on the geology map (Koch – Hoffman 1889) but striking geomorphological characteristics can be distinguished on the spot:

High protruding from the ground, animated, concave shaped flat topped characters erosion mesas with a powerful relief (that is, a table mountain with rock plateau or conical roof like a witness butte) are typical features on the strongly accentuated surface of Felszeg. Their edge is steep on all sides, in many places it is almost vertical, with light stony-barren pinching out of the cliffs; while the softer cavity under the limestone bank always appears with a concave slope chequered with bigger or lesser slumps

(Miháltz 1926: 144–150). Due to the low level of forestation the fifteen recurrent mesa tops show up distinctly (for instance in Magyarvalkó / Valeňi: Sulyom, Tunya, Déde, Tér-tető, M.Gy.Monostor / Mănăstireni: Várhegy and Bedecs / Bedeciu: Hágó-tető) and even the well-known topographic divide, the 'Riszeg-tető' carries unusually elegant landscape sculpture artistic associations radiating calmness. The attention of German geologists was captured by this variety of forms back in the 18th century, who described the surroundings of Magyarvalkó / Valeňi as a particularly beautiful land:

> "East of the road, and not very distant from each other, are high and pointed mountains, which are free-standing in themselves, and are so regularly, alternately and nicely constructed in a conical shape, that they, when their height and size are not inconsistent for mountains, seem as if an artist would have gathered and adapted them." (Fichtel 1780: 52–55; Benigni 1837:27)

Due to the upwards striving volcanic activity of the Köves-mountain (Gyerővásárhely / Dumbrava Pass) the sequence of the layers at Felszeg formed a NE direction faulting, thus the limestone cliffs in Nádas-mente reflect a regular 10° inclination in the entire zone (Tulogdy 1944:118). This asymmetric momentum in the relief strings a series of strained spatial experiences from Jegenye / Leghia to Szucság / Suceagu side-valleys. The individuality in shapes is accompanied by the typical appearance of deciduous forest patches on the top of the gently sloping plateaus and the artificial conifer plantations on the steep overhangs. Administrative boundaries of the villages in this region fit well the organic borderlines of the landscape (topographic divides, shifts in landscape structure), therefore the land use statistics derived from the agricultural data correlate strongly with the spatial forms. Cultivated terraces dominate the landscape of the entire region: the breath-taking extension of the lynchets (*'barázdák')* covering entire hillsides.

It is interesting to observe that the extension of the easy to carve, valuable white Eocene limestone formations, typical for both zones, overlap the boundaries of the 'ethnic Kalotaszeg' in nearly 90% (!) (Figure 1. – quarries). The spots seen as erosion marks from a distance are nothing else but the remains of former local quarries, stone pits, limeworks (I identified nearly two dozens of them) (Schafarzik 1904). This landscape component solicited the high standard cultivation of stone carving and its appearance in the traditional views of the communities (Hála 1995). This unique diversity of Eocene forms disappears entirely towards the Oligocene areas of the Almási-valley and the northern borderland, indicating a different landscape character.

LOOKING FOR THE RIM OF A CHARACTERISTIC LANDSCAPE: THE FOREST EDGE

It was established in my dissertation that in terms of the order of priority of the components determining the character of the landscape, forest cover is the second substantial trait providing the character after the spatial experience of hilly regions. Based on the historical maps it can be concluded that the area of Kalotaszeg has not been covered for a period of nearly 500 years by extensive forests, and its forest cover adapted to the spectacular reliefs of the various zones with diverse and special situation patterns in different percentages (Figure 5). Their extent was hardly reduced over the

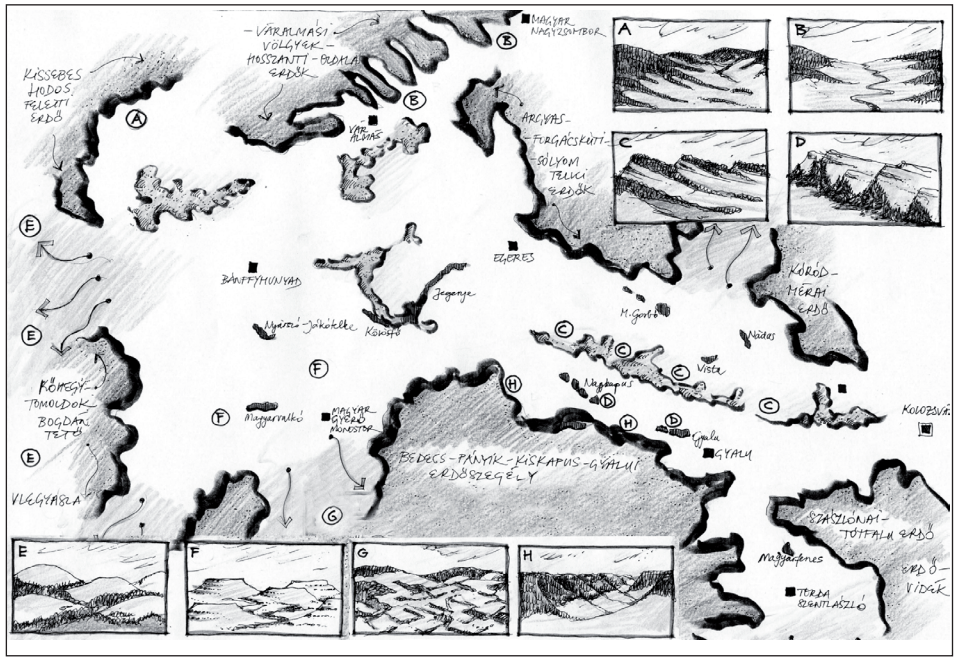

Figure 5. The forest rim around Kalotaszeg and it's morphology-types with the landforms (A-H). (Drawing by Anna Eplényi, 2013)

past 150 years, and were hardly modified. Most Felszeg communities had their 'big' forest in a separate plot at the foot of the alps, which however did not appear on the barren, treeless landscape in the surroundings of Bánffyhunyad / Huedin. The 'closing forest edge' provides a marked shift in the character of the landscape silhouettes around the barren, open woodlots: in other words, wherever closed, dense forest stands appear, it can be stated that a different landscape character zone beings.

Since the turn of the century, recurrent coniferous artificial reforestations appearing in smaller spots belong to the scenery of the contemporary landscape (Pinus, Picea, Abies-species). Correlating with the geology, they appear almost invariably on the steep southern outcrops of the limestone formations, highlighting this asymmetric feature mentioned above (D: Jegenye / Leghia, Nagykapus – Gyalu / Căpusu Mare - Gilău, Vista / Vişţea). The following forest+terrain morphology types could be distinguished:

A = Small articulated woodlots running down from the Meszes / Meseş showing similar forms as the alpine pastures of the Felszeg: Felsőfüld / Fildu de Sus, B = The homogeneous forests close down in the environs of Váralmás/ Almaş and its lateral valleys, dominantly changing the view of morphologically widening valleys, eliminating the mosaic pattern of the Alszeg vine zone nearby, the 'Kalotaszeg-landscape character' disappears here, C = Forest stands left over from the Mediaeval on the southern plateau of the tipped limestone cliffs of the Nádas-mente, recurrently repeated around Inaktelke / Inucu, Mákó / Macău, Vista / Vişţea (Kapulat: Papperdeje) D = Artificial conifer plantations on the steep southern slopes of the limestone formations against erosion, E = Around Sebesvár/ Bologa an 'oppositional' forest cover

appears, distinct from that of Kalotaszeg: agricultural terraces were set up on the more flat hilltops and in turn, the steep slopes of the valleys were left forested, F = Only lesser, narrower, stream-bank rows of shrubs and grooves can be found only among the plateaus of Felszeg, G = Quadrangular mosaic pattern of enclosed mountain pastures, bordered by alpine tree hedges, providing a distinctly different character on the foot of the alps at Felszeg, H = The huge deep forest ('Renget') of the Gyalui / Gilău-Alps around Kapus / Capuşu.

THE CRINKLES OF THE LANDSCAPE PATTERNS: AGRICULTURAL LYNCHETS IN DETAIL

The third major group in the sequence of landscape characteristics is the group of varying landscape patterns. *'Kalotaszeg goes as long as the "muszuj" reaches'* – A symbolic correlation can be established between the ethnographic boundary of 'wearing muszuj skirt' and the extension of lynchets (ploughed terraces) in the landscape (Figure 6.). These terraces do not only bear significance in terms of land use, but they formulate the strongest pattern of the Kalotaszeg landscape character through its unique interface with the special local geomorphology. The rolling system of terraces created by the lynchets covering hillsides in shroud-spots provide a clustered-lined-striped landscape pattern. This distinguishes Kalotaszeg from the adjacent neighbouring landscape units, thus it is also a suitable means to define the it's boundaries. It is a carrier of special landscape aesthetic qualities due to its morphological diversity, ever more intensive farming and naturalness. Their visual dominance strikes the eyes of visitors, but systematic assessment reveals further details about their role and land-use functions (Eplényi – Frohmann 2011).

It was noticed during the field walks that the population here 'co-exists' with these spatial forms to such extent that they do not have specific denominations. The terms 'ploughing step' or 'farmed terrace' are not used at all, assumingly that the terraced landscape for these people is an entirely *original, natural* formation, an integral part of the landscape, the native state of the landscape, therefore it was never really given any distinguished name in earlier urbaria. "Had the man of Kalotaszeg not had the turnwrest plough – an implement well known and widely used in the rolling hilly regions of Transylvania –, the sloping plots eked out from the forest farther from the village would have remained pastures. Sloping plots would not have been tilled using the single sided wooden swing plough because the 'good earth' had been readily washed away from the inclined places by snow melt and rainfall. Terraced cultivation of the hillsides and mountainsides became possible with the help of the wooden turnwrest plough (side or turning plough), by which the humus layer enriched and improved by sheep manure dispersion could not flow from the upper plots to the lower ones". (Kós 1999:43)

The data on the development of the terraces are uncertain. Unfortunately, the first cadastral survey does not contain any detailed indications on the land-use. However, in the Cziráky-register from 1820 (Takács 2006) the fields are referred to repeatedly as *'out on the lynchets'*. The second military survey completed in 1865 indicates scattered parallel terrace line systems which cross contour lines by Mákó / Macău. It can be concluded with certainty that the greed for land arising from the famine was the main reason why forests were felled, the ground broken up and ever higher hillsides terraced. Given the amount of earth moved by manual labour annually and the height of the lynchets which

were frequently five to eight metres high, it can be concluded that they were of Medieval origin. Property boundaries on the cadastral maps generated in the 19th century perfectly coincide with the shape of the farmed terraces, confirming that the edge of lynchets served as property boundaries. The survival of them was facilitated by the skimping of the Kalotaszeg people, who accurately ploughed the borderline of their properties into the landscape by the track of their mouldboard. Wherever no furrow edge existed, the rim of the plots was marked by *'dug stones'*. The terraces can be divided into four different types morphologically: (1) gently sloping and wide terraces which can even be tilled by tractors, (2) terrace systems which can be cultivated evenly, (3) narrow belt type terraces with wide banks running up to steep hilltops which can only be tilled by draught power, (4) plicate, boggy, erosion prone, disarranged, wooded terraces (Eplényi 2012b).

Unfortunately, early ethnographic photo documentation rarely captured merely the sceneries, thus only the background of the events features a detail or two. Yet, some pictures taken in the beginning of the 1900s (by Zsigmond Bátky, Mihály Erdődi) show clearly that the entire area of the fields was terraced, not even once in a while could shrubs or woody vegetation be found among them. This monotonous succession of ploughland plots showed a maintained agricultural view was controlled artificially. Higher lying sloping plots in a distance from the village might have been abandoned in the first decades of the century, were only cut for hay from that time on, and grazed from the second half of the century. Comparing the pictures of A. Szabó back in the 1980s with the current state of affairs it can be seen that Romanians (for instance in Bedecs/ Bedeciu, Monostor / Manaștireni) maintain and clear out the terrace systems, thus in those communities the landscape scenery has hardly changed. Since a well established, stabilised protective vegetation cover was set up on the furrows at the grass level consisting of permanent *Arrhenatherum* and Pannonian *Brachypodietalia* grasslands, *Festuca rupicola* grasses, the disappearance of these features of the terrain can not be expected. The reason why weedy species appear is the micro-climatic diversity of the exposed furrows: several species settled in the inner bend setting up ever more varied habitats and increasing its biodiversity. Shrubbery overgrowth taking on an ever growing extent lately is most intensive where neither grazing, nor hay cutting take place. Mostly blackthorn, rose hip, common field maple, wild fruit associations encroach the area. Their overgrowth at the cost of hay grasses is a sign of neglect (Péntek – Szabó, 1986:106). The current conditions are a lot more natural and more biodiverse than the earlier, cultivated stage. The new look provides a mellower, nicer scenery, highlighting the contours of the steps. Lately lease-holders who graze hundreds of sheep commenced to clear out the abandoned terraces in order to obtain agricultural subsidies from the EU. The landscape-transformation was documented by the repeated geo-referenced photographing of several archive photos (Bátky, Erdődy) at Magyarvalkó / Valeni and the Nádas-mente in the year of 2010 (unpublished).

The landscape aesthetic essay (Eplényi – Kardeván – Lapis 2010) highlighted that this dynamic relief plastic intervention created by an 'astonishing' amount of time and energy dedicated to the cause (chrono-topos) was a unique, locally specific landscape components, which can not be reproduced elsewhere, obtaining aesthetic values from the varied and rhythmically recurring interplay of light-shade, snowbreak on one hand and from the artistic effect of its natural strength which does not want to create beauty deliberately. Therefore, it is recommended for conservation not only due to its traditional cultivation throughout the history of the landscape and the decisive landscape character,

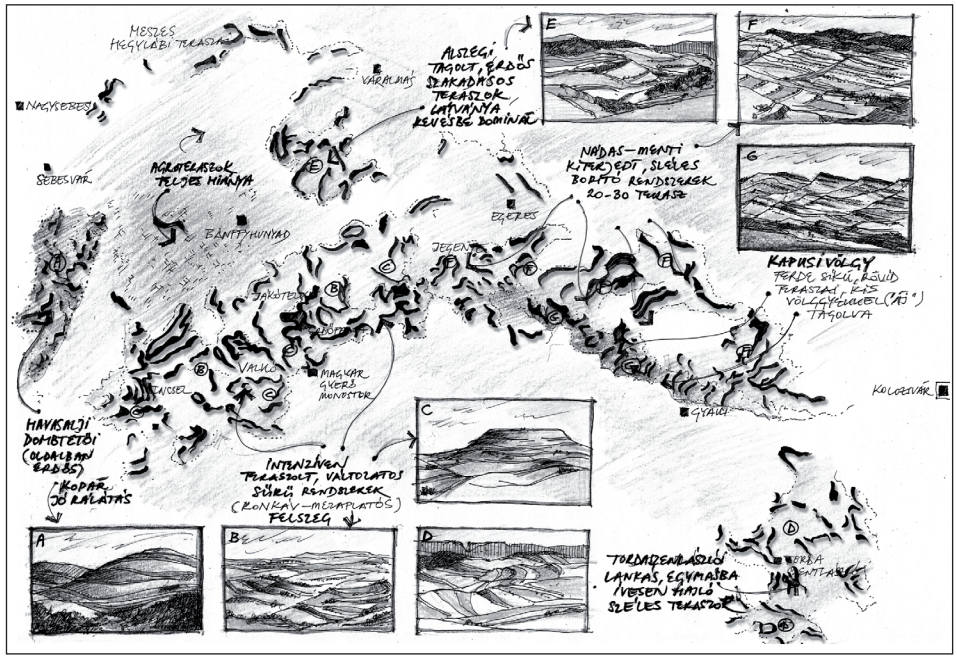

Figure 6. Visual analysis of lynchet morphology (A–G), as the most dominant landscape pattern of Kalotaszeg. (Drawing by Anna Eplényi, 2013)

but also because of its aesthetic beauty.

This type of farming was used by Romanians in the alpine areas as well, with a definite difference: while terracing in Kalotaszeg appears on the sloping hill sides below the wooded hilltops, the opposite is the case in the latter form: terraces are put on the high elevated hilltops on top of the steep, forested hillsides. The thickest expanse of lynchets can be observed on the Felszeg-highlands and the Nádas-mente, where it's borderline overlaps the zones (for instance they even disappear when you leave the region in direction NE Papfalva/ Popeşti, Berend/ Berindu; no terraces appear in the environs of Bánffyhunyad/ Huedin since the gentle hill sides need no terracing). The following terrace morphology types combined with ground forms could be distinguished in the area:

A = Lynchet system farmed by Romanians on the Tömöldök-Bogdán/ Bogdanului hilltops, which can be clearly overlooked due to their high exposition, B = Intensively and variedly lynchets of Felszeg highlands, where rolling intertwined large scale terrace systems were developed among the articulated valleys (Jákótelke / Horlacea, Damos / Domoşu), C = The part of the Felszeg highlands where the sharp contours of the ever steeper lynchet edges are climbing gradually on the concave mesa plateaus, D = Rolling hills with lynchets around Tordaszentlászló/ Săvădisla verify similarities with Kalotaszeg, but banks are lower, E = Infrequently folded terraces of the articulated, boggy, landslide-prone countryside of Alszeg, which are not so prominent beside the vineyards and forest spots, F = Characteristically wide and long terrace systems covering all of the inclined longitudinal lateral valleys along the Nádas-mente, G = Southern facing terrace system interrupted by 'áj' on the obliquely projecting cliffs along the Kapus / Capuş.

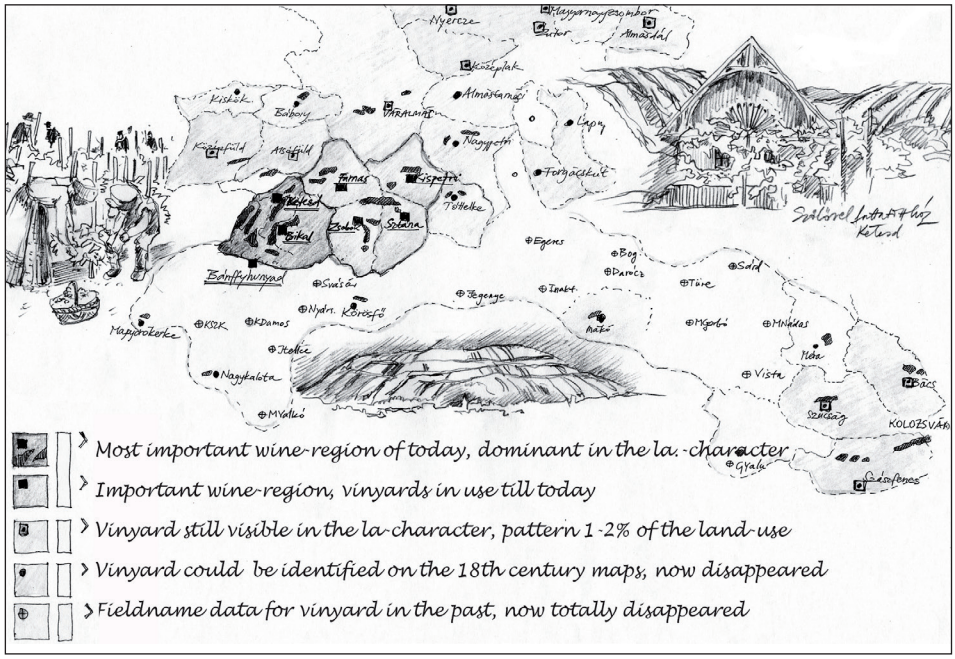

Figure 7. Classifying the importance of viticulture landscape character. (Drawing by A. Eplényi, 2013)

SMALL-SIZE LANDSCAPE PATTERNS (VINEYARDS, ORCHARDS, WOODED PASTURES)

Statistical and cartographic illustration of the studies in cultivation types revealed that geographic statistical figures of some land use types (such as orchards, forests) reflect their significance in the scenery of the villages relatively well. Due to the lack of morphological patterns, some land use types such as *empty* meadow and grazing land (pastures) can be identified with more difficulties in this landscape, as opposed for instance to the English landscape-patterns, where the enclosing stone walls or to the Great Plain where the wind-breaking shelter-belts provide a distinct pattern structure. The only pattern structure separating clearly from that of Kalotaszeg was the Romanian enclosed-pasture settlement-form one appearing on the alps of Gyalu – Vlegyásza/ Gilău – Vladeașa, where dense shrubberies and forests strips touching each other's in a rectangular mosaic distribution pattern cover the landscape (Eplényi 2015b:39).

However, very small-size landscape patterns can also be observed: the loosely 'spotted' natural, friendly grooves of the 5–20 hectares wooded pastures, which require urgent conservation efforts because of the nearly hundred years old tree specimen in them and the scenery resembling the English landscape gardens (Zsobok / Jebucu , Kőrösfő / Izvoru Crișului, Egeres / Aghireșu, Inaktelke / Inucu, the most beautiful of them being the Lészai wooded pasture of Magyargorbó). The extensive geometric grid spots of orchards and plantations of the Socialist period are dominant patterns even

though ageing by now (Szucság / Suceagu, Türe / Turea, Ketesd / Tetişu) as well as the dark pattern of conifers mentioned above.

The complex landscape historical study of viticulture is an excellent example to the observation that areas which are represented in the statistics of the cultivation types with relatively small areas and low income (0.5–2%) may in fact possess a lot greater visual significance it the character of the landscape as it could have been presumed beforehand, because the mosaic image of the wattle fenced vineyards running downhill in a shape of a fan result in a more striking visual impact due to the steep exposure in the first hand. Data series of viticulture from various periods (area-size, land use ratio, income ratio, etc.) were analysed, weighed and an insight thus obtained as to the role of the 'vine-dominated landscape pattern' playing in the individual settlement. This landscape character dominates in the Alszeg vine-zone both in the vernacular urban design (eagle poles with vine tendrils, grape-shaped front ornaments, grape trellises) and in landscape-scenery. Field-names alluding to viticulture indicate that one time all villages in Kalotaszeg had grapevines (!) (even Magyarvalkó / Valeňi, lying at 750m), which disappeared as the climate cooled down; but the Romanian villages did not grow grapes at all here. Searching for landscape historical relicts the first military cadastral survey indicated quite a number of vineyards; the pictures taken in Szucság/ Suceava (by Györffy 1908, Hungarian National Museum MNM F_9316) show clearly these abandoned vineyard allotments; the shrubbery pattern can still be easily distinguished in the Alszeg on googlemaps while the fieldnames for derelict *'puszta vineyards'* can not be identified even in cropmarks.

LANDSCAPE EVALUATION OF AGRICULTURAL STATISTICS

The doctoral dissertation processed data series on agriculture from 116 settlements of the 13 landscape characteristic zones from two distinct times (area, income, methods of cultivation: forest, ploughed land, grazing land, meadow, reeds, garden, vineyard, fallow land, fruit tree types-number of pieces, water-buffalos, etc.; 116 x 2 x 75 raw data) (MKSH 1897; MKSH 1914). Indicators, weighting factors and total numbers of scores were generated using the six aspects which show the extent of *Kalotaszeg land-use character* best (= the greater the lack of forests and lack of pastures, the higher the presence of vineyards, orchards, ploughed land, water buffalos). Without going into the methodological details (Eplényi 2013:appendix) a few key results are described below:

Wherever the administrative boundaries of settlements matched local landscape characteristics well, and similar land use patterns created a more uniform landscape character in the scenery as well, the statistical landscape evaluation of the characteristic landscape zones provided a very consistent picture: for instance, in the Alps Alpine-valley zone very similar *non-Kalotaszegian* properties appeared, showing that altitude, topographical and climatic conditions above an elevation of approximately 800 metres require very different agricultural arrangements which in turn modify the entire character of this mountainous landscape (Figure 8). As opposed to this, three zones provided quite uniform characteristics which were *very Kalotaszegian*: the Nádas-mente, the Alszeg vine-zone and in the Bánffyhunyad / Huedin basin. Their borderlines match the landscape boundaries well and they also have similar spatial structures. Finally, some

				Landscape	Character	Factors		
Zone	Name of village	Pasture (invers)	Woods (invers)	Plow land	Water Buffalo	Orchards	vineyards	Sum of "Kalotaszegian" landscape factors
Mt	Szamosfő/ Măguri	4	0	5	4	6	6	4,1
Mt	Tarányos/ Tranișu	3	3	7	4	6	6	4,9
Mt	Havasnagyfalu/ Mărișel	2	1	9	4	8	6	5,1
Mt	Havasrogoz/ Rogojel	13	0	5	4	6	6	5,4
Mt	Viság/ Vișagu	18	2	6	6	6	6	7,1
Mt	Gyerőfidongó/ Dângău Mic	5	12	13	5	7	6	8,2
Mt	Felsőszamos/ Lăpuștești	20	8	9	4	6	6	8,5
Sm	Melegszamos/ Someșu Cald	4	0	6	5	6	6	4,5
Sm	Havasrekettye/ Răchițele	9	0	5	4	6	6	4,8
Sm	Hidegszamos/ Someșu Rece	9	2	7	5	10	6	6,3
Sm	Kissebes/ Poieni	4	14	9	5	6	6	7,5
Sm	Székelyjó/ Săcuieu	11	7	8	8	7	6	7,8
Sm	Nagysebes/ Valea Drăganului	15	8	10	5	6	6	8,2
Sm	Sebesvár/ Bologa	6	13	11	11	6	6	9,2

Abbreviations of Landscape character zones: Mt – Mountainous zone, Sm – Sub-mountainous zone
Figure 8. Consistently low, 'non-kalotaszegian' land-use evaluation of alpine areas

Romanian communities must be noted which, albeit their landscape characteristics fit well the Kalotaszeg landscape, were not in the focus of ethnographic research so far: such as Tóttelke / Gălășeni, Dank / Dăncu, Alsófüld / Fildu de Jos, Nagykalota / Călata, Malomszeg / Brăișoru, Magyarnádas / Nădășelu.

KALOTASZEG LANDSCAPE SUMMARY: UNIFORMITY OR DIVERSITY?

The ethnographic traits substantiating the uniformity of these three/four regions within Kalotaszeg (costume, embroidering, decorative wood carving, dancing etc.) are well known facts, including in parallel the marked distinctions across these regions (the method of pleating skirts, differences in shoulder plates and headdress position, dances with inward and outward spins, modest and crowded pearl embroidery, differences in front decorations, etc.). Similar aspects of landscape characteristics and analysis were arranged the same way below:

				Landscape	**Character**	**Factors**		
Zone	Name of village	Pasture (invers)	Woods (invers)	Plow land	Water Buffalo	Orchards	vineyards	Sum of "Kalotaszegian" landscape factors
Nm	Bogártelke/ Băgara	6	16	15	16	9	6	11,8
Nm	Magyarvista/ Vişţea	9	9	14	19	13	6	12,0
Nm	Nádasdaróc/ Dorolţu	8	14	14	16	11	6	12
Nm	Jegenye/ Leghia	7	16	13	13	18	6	12,1
Nm	Méra/ Mera	21	5	13	15	14	6	12,2
Nm	Egeres/ Aghireşu	8	13	16	14	17	6	12,4
Nm	Szucság/ Suceagu	7	13	13	13	21	9	12,5
Nm	Magyargorbó/ Gârbău	12	13	14	16	17	6	13,0
Nm	Magyarnádas/ Nădăşelu	8	18	14	17	14	6	13,1
Nm	Inaktelke/ Inucu	12	18	12	17	18	6	13,8
Nm	Mákófalva/ Macău	12	14	15	16	19	7	13,8
Nm	Türe/ Turea	18	13	15	18	15	6	14,2

Abbreviations of Landscape character zones: Nm – Nádas-mente river valley
Figure 9. Uniform high land-use results of villages of Nádas-mente valley demonstrating a 'very-kalotaszegien' character and strong cohesion

Landscape characteristic traits demonstrating UNIFORMITY	**Landscape characteristic traits demonstrating DIVERSITY**
Articulated, animated, complex and coherent terrain with high relief forms consisting diverse valley structures. Wide open alluvial type of river valleys is not a typical feature.	The only exception from the rolling topography is the zone of the Bánffyhunyad / Huedi basin, which is gently sloping in character, yet the mountain regions appears as visual backdrop.
Tertiary sediment formations such as the overall geological belt of the Eocene formations and the marked whitish outcrops thereof connect Felszeg, Alszeg and the Nádas-mente. All this stone-use disappears on the Oligocene Váralmás / Almaşu valleys and the Neogene layers found towards the Mezőség (Transylvanian Heath).	The silhouette sight of the high ranging mountains of the Vlegyásza / Vlădeasa show up well only from the waterline – from the open Bánffyhunyad/ Huedin basin, the Felszeg highlands – and from some villages of the Alszeg, but it hardly has any impact on the Nádas / Nadăş Kapus/ Căpuş riversides.

Stone pits and quarries situated on the lower and upper coarse limestone of the Eocene (including the landscape injuries they cause): they reflect industrial landscape historical activities over all.	The morphological and spatial diversity of the Eocene formations: horizontal mesa plateaus of Felszeg differs strikingly from the askew, slant plane angular hilltops along Kapus / Căpuș and Nádas-mente.
Medium level forest coverage and edge effect: the loosely scattered woodlots converge and created a sharp borderline. This deep forested boundary nearly encloses Kalotaszeg.	Inner differences in proportions of the forests show significant variations across zones and regions (Felszeg: rather low, Nádas-mente: medium, Alszeg: high).
The expansion of the landscape lynchet characteristic pattern. This is common feature in further regions of Transylvania, but disappears here in the adjacent areas around Kalotaszeg.	Lynchets appear in individual zones in a different geographic distribution and varying pattern density (for instance less in Alszeg and Bánffyhunyad / Huedin zone).
The extent of buffalo husbandry in the 19–20th century and its highly evaluated landscape value can be deemed to be a common trait typical for all parts.	No artificial erosion-control pine plantations are typical for the Alszeg, as opposed to the Nádas-mente, where they are more frequent.
The range of traditional orchards and gardens and their relatively highly scored landscape value can be defined as an important unifying character.	Large expanses of grid type orchards planted in the 20th century dominate only in the Nádas-mente zone and certain parts of the Alszeg.
The presence of vineyard was typical for Kalotaszeg as a whole but it has disappeared from a number of communities ~19th century.	A wider historical significance providing a strong landscape character of grape vine shows up only in six village of Alszeg today.
A common mark featured by the Czikáry-survey was the poor quality, ruptured, stony soil, erosion wounds and slides (but it was much better in the Almás (Almaş valley and NE).	Wood pastures hold a strong landscape character pattern along the Nádas-mente but are missing from the Felszeg (only one by Kőrösfő / Izvorul Crișului).
A more extensive, agricultural land use pattern prevails; spontaneous shrubbery growth in the fields reinforced the perceived naturalness.	Intensive industrialisation, suburban sprawl characterises the area around Bánffyhunyad / Huedin, Egeres / Aghireș, Szucság / Suceagu and the Kapus / Capuș-zone.
A common urban character is the closed façade order, where buildings with rich wood-ornaments constituted a strong street front.	The strong visual scene of the high rising shingled Medieval church is only significant in the Felszeg and the Hunyadi / Huedin basin.

The question was to which area these changes had a major or lesser impact and how they influenced the scenery and character of the individual basins and valleys.

RETROGRESSIVE LANDSCAPE HISTORICAL CHANGES OF KALOTASZEG

In my doctoral dissertation only a superficial assessment could be dedicated to the spatial and temporal changes of the point-like unique landscape relict-elements, so a separate paper and presentation (Eplényi 2012a) was used to analyse the changes of a given period. Beside the conversion of the land use types of the mostly farmed spotty plots (which had the largest impact on the variations in the landscape), in many cases just individual elements or single interventions are in the position to lend a new identity and quality to the region. During landscape-archaeological field walks based on historical maps, resources, cart road research, field-names (Szabó T. 1944) studies and oral history dozens of neglected, relict land use components were found and recorded. Many of them can only be encountered in features of the terrain almost unidentifiable by now, and few still as a garden-fragment (Eplényi 2015a).

Rippon in his work suggests an analytical method of going backwards in chronological sequence, that is a 'retrogressive mapping' of landscape historical assessment. According to his opinion, the landscape image of ancient ages can be seen more clearly when the event layers of the near past are peeled off, thus the superposition layers of the landscape patterns ranging from the Bronze Age up to date can also be distinguished better (Rippon 2004). The method looks for an answer not only the processes which took place in a given era, but how a given landscape detail looked like before the events of the subsequent ages would have settled on it. According to my personal experiences this method is useful because when the better known and better documented – sometimes over-represented – events of the near past are 'scratched off' layer by layer, the spatial distribution and dynamics of the landscape changes can be mapped more in depth.

The method used the following steps. (1) Assessment of resources, research of the professional literature, map analysis and field inspections on site were used to identify the chronological sequence of the events which have been learnt, and they were classified in 20 to 50 years long periods along the history. 15 to 20 'landscape events' were gathered for each period. A lot more recorded, documented change can be identified from the past 150 years and they can be indicated with a lot more accuracy, too. (2) Having collected 'landscape events and objects' they were projected onto contemporary maps masked out in black (mill, powder-magazine, village inn), or, if their visual impact range was larger (highway junction, open mining pit), a paler circle was drawn around the object in question. Archive and contemporary pictures or maps were attached to the events as an illustration to present the visual impact of the object or event. (3) After the event list of each period and map analysis the nature of the '*not yet encountered and/or already emerging'* events can be defined. (4) Finally the masked out events of all periods were projected on each other so that the earlier a period the paler it showed and the contemporary events appeared in a darker tone (Figure 10). In the course of this summary the spatial and chronological dynamics and relationships of the landscape changes could be identified. Below, two eras are presented as examples:

Example (1): *Landscape changes in the Socialist era (1950–89)*

The organised public administration and state governance of the period resulted in several large scale changes leaving permanent imprints in the landscape, the most dramatic and

at the same time irreversible being the transformation of villages and urban street views. The inhabitants of the still densely populated rural areas 'modernised' their habitats using cheaply 'acquired' raw materials but resulting in poor quality constructions, demolishing the traditional buildings. Albeit industrial buildings and factories had a wide visual range, yet their surrounding was usually properly designed, controlled and in many cases planted with trees in a demanding way. Artificial, grid-planted orchards and black pine plantations resulted in serious transformation of the landscape in the fields of the communities; tractor cultivation on hilly regions had a lesser impact on agricultural terraces. Many traditional husbandry and farming methods were abandoned at this time (hemp, harvesting with the reaper hook, mills, locations for basket willow, clay pits, fish ponds, stone pits), the former earth work of which can hardly be identified today. River regulations and road constructions, afforestation of roadsides provided a new touristic quality to mountain landscapes: the surrounding of the Apuseni-Mountain range develops to an important destination for excursions. The most dramatic intervention related water management took place in the Kapus / Căpuş and Kis-Szamos / Someşul Mic valley, where barrages and river bed regulations transformed the view of the valley.

Example (2): *Landscape changes triggered by railway construction works (1870-1920)*
After the development of the railway a deeper possibility opened up to become more familiar with the so far unknown landscape units of Kalotaszeg and to exploit their raw materials, therefore after the construction of the railroad large stone pits, quarries, plants and limeworks open one after the other to serve county level or even national markets; export opportunities of handicrafts call away people from the plough. However a growing number of population still earns a livelihood by intensive farming, which is proven by the entire fields being under the plough, thus participation in agricultural training programmes is not so high as anticipated. The image of the fields was determined by the maintained system of plots, without any spontaneous vegetation cover. Castles, manor houses are important focal points of economy, but not of the same significance as they were along the rivers of Szamos / Someş and Maros / Mureş. The city and village view is simple, modest and rural in nature, only a few buildings of Jewish merchants, houses of lawyers and magistrates, eventually the headquarters of economic operators stand out from it. Wattle fences, thatched roofs and sweep-pole wells dominate the scattered, less neatly arranged settlements. During the period from 1900 up to 1920 an area with the size (approximately: 14 800 acres) has been transferred from Hungarians into Romanian proprietorship, mainly due to the high level of taxes. The first discovery of the alps by the tourists connects Kalotaszeg with the landscape experience of the "Havasalja" (subalpine), and simultaneously the Keleceli / Călăţele narrow-gauge railway is built. A coordinated management system of water-courses, mills, and mill courses is operated. Vineyards and viticulture declined during the vine-pest infestations (phylloxera), grape vine survived only in the Hungarian villages of the Alszeg.

Conclusions from the retrogressive landscape historical analysis:
A key driver of landscape changes is the service and supply to meet the growth demands of the 'big-city', thus new tendencies, objects to serve material, food and energy requirements appeared always around them (Serving Kolozsvár / Cluj: the Roman quarry at Bácstorok / Bačiu, contracted vineyards at Szászfenes / Floreşti, village inns, electricity

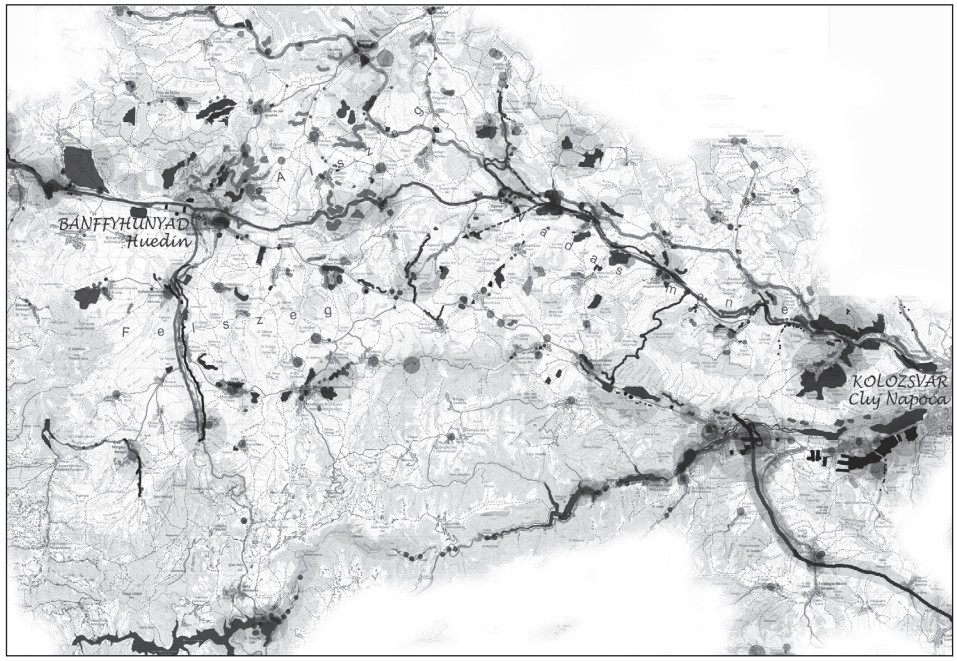

Figure 10. The retrogressive landscape analysis of Kalotaszeg: all time-periods are masked on top of each other (darker closer to the present). (Drawing by Anna Eplényi, 2013)

station of Gyalu / Gilău, suburban industry, urban sprawl), and thus the changes started to become gradually larger in areas and more intensive in extent.

Landscape changes have always followed international tendencies prevailing in the era of their respective periods and the global impacts were felt: logistics centres, urban sprawl, fuel stations, water dams and reservoirs, railroad constructions, postal inns.

Before the railroad construction works and emancipation of the serfs landscapes were exploited on the basis of their inner potentials, adapted to the local strengths and opportunities, in a flexible but dependent relationship. After the 1870s industrialisation located sites in a more rigid way, where a very strong dynamics of changes occurred, causing ever growing and ever more complex changes in the landscape one layer after the other, like a avalanche-sequence, for example:

> *"Railway tunnel by Sztána-hill > a four rail tracks shunting place needed for hauling locomotives > it develop into an important railway station > the Varjúvár residence by Kós is built here > due to this decision the Sztána summer resort is erected > today it has a touristic role;" or: "The main building of the Kramer-gypsum factory in Egeres > small quarry pits are born > a railway shunting station is constructed > brown coal mining is launched > industrial infrastructure is expanded > a new settlement is set up (Ferencbánya/ Ticu) > the wooden church is relocated > need for a large electricity- transformer > transformation of the Jegenye/ Leghia mining district > long wire cables in the landscape > Egeres / Aghireş factory estate is set up > new Orthodox Basilica and large block-housing developments.*

These increased and violently created ‘changes’, however, settled on the landscape in a very stiff, rigid way. It lost its flexibility and any further needs for change could only be accommodated by building secondary structures, thus objects, having lost their original function, are stiffened become an eyesore, causing severe injuries to the landscape.

The most important single landmark elements of the 18th century were churches, mills, manor houses and country seats and village inns, serving as points of orientation in the mesh of cart roads, and preserved their significance up to 1950, when due to motorisation a lot stronger hierarchy of roads was gradually formed and the main body of traffic was shifted to main roads, by which the points beside farm roads lost their function. Only former postal inns survived. In a parallel way, the perception and living of the landscape only from the main roads became dominant: sights and views were permanently perceived from the direction of the motorways and most contemporary changes are also associated with international roadside.

The linear earthworks of railroad construction at the time have been embedded into the landscape by today; but the effects were wide branching and induced a lost more important, radical economic process still prevailing today: new materials, colours and style of rural scenery (Nádas-mente).

Less changes can be identified in predominantly agricultural and forestry areas (they are diffuse processes, perceptible slowly only). Thus the scenery of an agricultural land could be more permanent and stable, so the ‘oldest’. However, the rate by which nature re-conquered the land (because of abandonment of the rural settings in the past 50 years) was never been so rapid in the past.

In terms of geomorphology the most significant changes could be associated with mining and stone quarries, the abandoned pits of which have been overgrown by grass quite readily appear today relicts; yet, landscape injuries caused by expanded mining today can only be healed by conscious landscape design.

The conscious, planned changes in the landscape caused by the Communist regime were implemented on a large scale and created long term three dimensional, volume effects, able even to transform the entire aspect of the country. These investment projects: barrages and reservoirs instead of lake surfaces; the goal was to create plantations and pine woods covering the hill sides, and the massive blocks of factories protruding above the villages appeared as new, arrogant focal points in the landscape.

CONCLUSION

Unfortunately because the lack of spatial planning, land-use regulations and landscape master plans the above tendency is likely to go on in the future, unless the field of landscape architecture and the toolbox of landscape character assessment is not used. We hope, that this PhD research can establish a future step toward the protection of Kalotaszeg’s unique landscape character and historic heritage, as the the Preamble of Council of Europe’s *Landscape Convention* (CETS 176. Florence, 2000.) claims: *“Believing that the landscape is a key element of individual and social well-being and that its protection, management and planning entail rights and responsibilities for everyone.”*

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Reviews

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The authors of this book argue, joining forces with foreign authors, that in many cases 'there is a need for closer cooperation' between natural and social sciences (Babai et al., 'Ahogy gondozza…', 142) in order to solve conservation issues. It particularly applies to species-rich grasslands, as these habitats owe their subsistence and high biodiversity to human intervention (that is the traditional, local methods of farming), and their long-term existence presumably depends on these methods.

Almost uniquely in Europe, grasslands rich in species can still be found at the beginning of the 21st century, in the *Gyimes* of the East Carpathian Mountains. In their work, the authors aim to systematically learn and process the knowledge gathered by the members of the local society on their close environment and on their wider natural environment.

The key concept of the book is that of the *traditional ecological knowledge,* based on the definition of Fikret Berkes (*Sacred Ecology. Traditional Ecological Knowledge and Resource Management.* Philadelphia: Taylor & Francis, 1999), one of the most renowned applied ecologists of our time. Here, the highly disputed term of 'traditional' does not refer to the commonly associated meaning of immutability and being static, but it works as an adjective of the ecological knowledge which 'in fact is adapted dynamically according to the constant changes of the environment' (Babai et al., 'Ahogy gondozza…', 15).

The book takes a matured position within the Hungarian scholarly scene in support of the appropriateness, or even necessity, of establishing cooperation between natural and social sciences (i.e. interdisciplinarity) already at the early stage of researching the afore-mentioned traditional ecological knowledge. During their research, the authors applied methods of both botanical-ecological (e.g. mapping habitats and taking chronological records), and of cultural anthropological (e.g. participatory observation and interviews) nature.

The book can be divided into two major parts. The first one provides a detailed introduction of the traditional habitats and production sites, with high-density coloured images on every page, and with the comprehensive description of one or two plants as well (local names, known locations of their habitats, known curative uses). The second part discusses the particulars of extensive farming in the forests and fields of *Gyimes* as a function of the seasons. As for the meadows, the reader is made familiar with the springtime works in the inner and outer hay meadows or the consequences of abandoning

the meadows, as well as the landscaping practices of the people of *Gyimes* (adjusted to the seasonal cycles), which they have applied on the pastures, in the forests and the arable land parcels. Such descriptions are enlivened by the consistent use of images from the lives of the locals, parts of interviews and folk taxa[1] which, in concert with the aims of the book, vividly illustrate how local traditional ecological knowledge, owned by the (mainly farming) people of *Gyimes*, operates here. Local names and designations used throughout the text are summarised in the Appendix, with one table consisting of all the plants' names in Latin and in the local *Gyimes* dialect, while the other consists of all the local names and descriptions of the habitats.

Traditional ecological knowledge is considered of key importance by the authors in making responsible decisions regarding the use of natural resources: the meadows, pastures or the forest types. They aim to highlight how the people of *Gyimes* not only perceive the changes of nature, but are also aware of the underlying causes triggering them, and how are they capable of effectively adapting to such changes within a short period time, or can correct faulty adaptation mechanisms on a community level.

However, it is formulated firmly in the book, that extensive land use practiced by the people of *Gyimes* is not the same as conscious conservationists behave, because biodiversity in itself has no special value for locals. Local farmers strive to ensure the proper functioning of their farms by producing hay of sufficient quantity and quality, and while trying to achieve this aim they become indirectly interested in maintaining the diversity of pastures and meadows. The authors believe that the main purpose of agricultural support programs which endorse conservationist aspects as well, should be to maintain this indirect interest. Thus they argue for the set-up of such a funding policy that – on one hand – assists in strengthening extensive local farming systems, while it also encourages family farms to adapt to the changing situations on the other.

One has to agree with the authors wholeheartedly that in shaping conservationist directives and agricultural support systems, the people living in the affected region have to be understood, in concert with the perspective of interdisciplinarity, within the complex context of their sociocultural determination and natural environment. This exemplary work of the "closer cooperation" of natural and social sciences can honestly be recommended to, beside ecologists and ecological economists, ethnographers, cultural anthropologists, agricultural professionals and experts in the fields of rural policies. Due to the brief English summaries, even foreign experts can find this book of use.

[1] In biological taxonomy, the category used for the classification of living creatures is called *taxon*. The *folk taxon* is, in other words, a category used for the classification of living creatures by the locals, that, in case of the wild plants of the *Gyimes*, includes the local, traditional name of a plant, as well as 'the related biological content (of one or more plant species associated to the name)' (Babai et al. 2014: 33). In 31% of the plant names in *Gyimes*, one name or designation refers to more than one botanical species.

Molnár, Zsolt: *A Hortobágy pásztorszemmel. A puszta növényvilága* [Traditional Ecological Knowledge of Herders on the Flora and Vegetation of the Hortobágy]. 2012, Debrecen: Hortobágy Természetvédelmi Közalapítvány. 160. ISBN 978-963-08-3301-1

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György Jeney published a book in 1791 entitled *The World of Nature. The shepherd of Hortobágy and the natural scientist* which intended to educate its rural audience to the correct attitude towards nature and to raise their morals. The book is woven around the 'meeting of two made up personalities', the location is the Hortobágy, where a scientist polished in higher education and a former schoolmate who squandered his talents and became a shepherd are having a conversation. The dispute ends with a total victory of the natural scientist and the shepherd is abhorred from his own insensitive and stupid world view.

The book written by Zsolt Molnár is about the recent repeated encounter of the natural scientist and the Hortobágy shepherd. Roles are swapped, the position of the conversationalists is different and the transfer of knowledge goes the opposite direction: the scientist, instead of lecturing, collects local wisdom, systematises the information, providing enough room for the experiences and the personality of the shepherd. The purpose of the educational paper laid on proper scientific foundations is to disclose local information on the Pusta and its vegetation, to describe the role of pastoralism in maintaining the status quo of the landscape, to embrace and strengthen our 'ecological knowledge of the country'.

Several attempts have been made in this country to collect vernacular terms for plants, but a lot less was endeavoured in the field of research into a shepherd's vocabulary, the use of grasslands by the people and – due to its interdisciplinarity – the assessment of the traditional ecological knowledge or TEK. As a research fellow on the Ecological Research Centre of the Hungarian Academy of Sciences, Zsolt Molnár approaches the scope of issues from the field of botany, with the knowledge of plants and traditional ecological knowledge in the focus of his scrutiny.

The book is meticulously built, based on data collected from 2008 up to 2012, showing 162 vernacular (plant) taxa on the basis of 5149 data, which can be corresponded to 243 scientifically determined plant species. Additionally, about 40 types of plant communities and habitats are drawn up from the collection work.

The book is written for a general audience, in colour print, hardback, designed as an album. Practically, it is bilingual, even though the English counterparts of the descriptions are condensed. The illustration material is extremely particular and reading is made more enjoyable by photographs of artistic quality. The pictures apparently make an attempt to introduce the plants from a view how shepherds can see these species. There are only a few technical terms and scientific interpretations. In many cases phrases from the local language or dialect are used, integrating not only specific expressions into the text but local knowledge constitute sometimes an integral and striking part of the accompanying

text in the form of 'illustrative examples'. At the same time, impressive data collection, the level of evaluation, the very thorough-going knowledge of the terrain, furthermore the remarks on methodology and collection technique leave no doubt that the author put the educational genre on the foundations of solid science.

Let's see now the construction of the book in a somewhat more detailed look. Following the dedication, introduction and acknowledgement parts, the volume introduces the history of Hortobágy as a landscape through the thoughts of the shepherds formulated in possession of several decades of experiences gained by grazing, and it substantiates the most up to date scientific view, the ancient origin of the 'szíkes puszta' (a way of spelling consistently adhered to by the author) or alkaline desert with its data. The most important lesson from this chapter is that the view of the landscape keeps on changing under the existing natural boundary conditions, in other words both variability and diversity are its constant features.

The backbone of the next chapter is provided by the presentation of the plant species well known by shepherds, specifying the habitat, synonyms (their occurrence), eventual reasons for naming, and various modes of its utilisation. Summaries on the various plants are very pleasant and enjoyable, showing local experiences in every bits and pieces. The chapter also contains a number of 'ethnographic delicacies'. The healing power of the plant called *sóslórium* (*Rumex xx*) is illustrated for instance by the compendium with the story of one of the informants, who actually drank its juice when he was a prisoner of war in Russia, helping him to survive. The case of *spiny restharrow* (*Ononis spinosa*) presents a surprising way of taking advantage of it and local knowledge: wherever it grows, it is worth a try to dig wells, and it was also stated that it has such a strong root, even a cow tied up to its stem could not pull it out of the ground.

A further level of systematisation of the vegetation in Hortobágy relates to habitats, plant communities and landscape mosaics. It tells about the habitats providing the diverse surface of Hortobágy, their origin and the impact factors influencing them – or, to put it more accurately, about how shepherds talk about these features. You can learn about the development of typical topographic details, such as the wetland habitats constituting of the droppings of tussock worms, that of tussocks: '*the worm would go there to empty their bellies'*. A good point in this chapter is that the complexity of the landscape and the diversity of the adjacent habitat types are transformed into an easily overseen, transparent pattern.

The chapter on the science of grazing deals with the process of pasturing, how shepherds through considerate management of their livestock are able to influence the appearance of the landscape consciously, including the state of the vegetation. Grassland management methods are also discussed in this chapter, such as burning, manuring, and the seasonal time schedule of grazing patterns. The author points out that 'pásztorítás' (shepherding) is a work requiring serious amount of practical experiences, it is more like science of shepherding.

The book is far from lamenting on the doom of the shepherds' world, it is more a guidance to those who want to do something in order to maintain and preserve the land and its dwellers, their prosperity. In the education of shepherds, intended to be relaunched in the future, this book may be useful as a textbook.

The book *Hortobágy through the eyes of herders* is the best example to show that experiences and procedures related to the natural environment constitute such a coherent

wealth of knowledge transposable into practice, which are indispensable for both nature conservation and sustainability of local husbandry.

KÓCZIÁN, Géza: *A hagyományos parasztgazdálkodás termesztett, a gyűjtögető gazdálkodás vad növényfajainak etnobotanikai* értékelése [Ethnobotanical Assessment of Traditionally Farmed Crop and Wild Plant Species of Traditional Peasant Economy and Gatherers, Respectively]. First unabridged edition. Ed. by Kóczián, Zoltán Gergely. 2014, Nagyatád: Nagyatádi Kulturális és Sport Központ. 545., 22+60 photographs, (incl. appendix). ISBN 978-963-87468-4-9

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The oeuvre of Dr. Géza Kóczián, who lived only 45 years, is of fundamental importance for the knowledge of the wealth of ethnobotanical and ethnomedicinal information in the Carpathian Basin, pointing however far beyond the region in its significance. His doctoral dissertation, completed in 1985 and published in its entire length in this edition, contains a major part of this oeuvre. The appendix complementing the body of the dissertation lists the key writings of the learned pharmacologist, references made to them, articles written about them, the foundation charter of the 'Kóczián Géza' Table Society, and some sixty photographs related to his life-work in bibliographical details. The dissertation is introduced by biographic writings from Péter Babulka, István Gara, Zoltán Gergely Kóczián, József Lipták, István Szabó and László Gyula Szabó and the foreword of the Table Society that acts like an excerpt for the contents of the image disc (DVD) compiled by Zoltán Gergely Kóczián for the volume, which also contains a number of additional documents beside the dissertation itself, including some commemorations about the author, but also the findings of family history research. Géza Kóczián (1942, Zalaegerszeg –1987, Nagyatád) received his diploma in pharmacology at the Semmelweis University of Medical Sciences in 1965. His human and professional capacities made him apt to work as a university research scientist, but his family obligation called him home. He operated as the head of a pharmacy in Nagyatád. His wife was Judit Papp and their son, Zoltán Gergely was born in 1983 – an exemplary administrator of the intellectual heritage of his father. Géza Kóczián toured the neighbouring countries as early as in his years at the university. Due to his extraordinary language skills he spoke seven languages – mainly those of the surrounding peoples. He was attracted to folk botany and vernacular traditional medicine by his enthusiasm towards linguistics. He was busy collecting various dialectic versions of plant names, the different ways of their use, he identified the plants botanically and prepared a herbarium of them. He analysed the date in a quite modern approach compared to the era. He was the first internationally to classify medicinal herbs in terms of their efficacy, and he handled rational and irrational therapies separately, but not independently from each other, thus facilitating their critical evaluation. He got acquainted with one of his fellow researchers, one of his best friends, László Gyula Szabó during his years at the university, who

published his formerly unpublished articles after his death. Later on further colleagues joined the society of collectors, such as István Szabó, István Pintér and Miklós Gál. He collected data for a period of 20 years in his closer homeland, Somogy county; he did field research in Transylvania from 1973 (Kászon, Kalotaszeg, Gyimes, Máramaros, Erdővidék) as well, but his collections from the Hungarian mountain ranges and the Highlands are also of significance. Published works contain mainly the findings and the output from the Transylvanian collection works, which account for a lesser part of his oeuvre. However, the numerous works submitted to the voluntary tender announced by the Museum of Ethnography in the beginning of the 1950s and the 1045 pages strong doctoral dissertation published herein are such a wealth of information and data processing achievements, which represent irreplaceable value for both contemporary generations and further generations to come. The last sentence of Géza Kóczián's thesis goes like this: 'My work is not complete, yet it might serve as the basis for a more comprehensive summary of ethnobotany.' We believe, if he looks down from Heaven, which is even higher than the mountains of Gyimes, his hopes are seen to have been reinforced by the contemporary ethnobotanist generation of these days. A smaller group of them represented Hungarian (and partly of the Carpathian Basin) ethnobotany in Summer 2014 at the 14th conference of the International Society of Ethnobotany (ISE) among the majestic high ranging mountains of the ancient Kingdom of Bhutan.

HALÁSZ, Péter: *Növények a moldvai magyarok hagyományában és mindennapjaiban* [Plants in the Tradition and Everyday Life of the Hungarians in Moldova]. 2010, Budapest: General Press Kiadó. 516. ISBN 978-963-643-220-1

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The professional literature of Hungarian ethnobotany has been enriched with a high value monograph. The author of the paper with an extent of 516 pages – by the way, an agroeconomic scientist as well – is a renowned research individual both in domestic ethnography and in the knowledge of our country, who has already searched the habits of the Csángó in Moldova when it was still a life-threatening activity. The diligence and fondness for the people of Péter Halász is characterised not only by his being the 'eternal' chief editor of the journal entitled *Honismeret* (knowledge of our land) (lately he handed it over to his successor), but the busy activity by which he expresses his attachment to the Csángó Magyar. (In this year, leaving Budapest behind, he moved to Gyimesközéplok, to be even closer to the clear source of the Tatros.) His animated, value rescuing work is heralded by the two books published by General Press recently on the belief systems and on the traditional animal husbandry of the Csángó Magyar of Moldova. This time – using the results of a nearly 40 years long collection work – he compiled a gap filling monograph on the vernacular knowledge of nearly 200 plant species. Publication of this kind is a current issue because it sets the role model and represents the foundations to the recently emerging and renewing research and evaluating analysis in ethnobotany.

It consists of two main parts. The first part is a description of the general aspects how traditional knowledge of plants can be presented, forms of plant knowledge, habitats of plants, their collection, the role of wildly grown plants and farmed crops in their own nutrition, medication and beliefs, as well as husbandry. The second part deals with the full knowledge base of 183 plants. The compendium contains the key findings of the relevant references and the description of the habits including a number of original citations. Many interesting folk songs, lyrics or ditties are included just as well. Beautiful coloured photographs provide an impression on the informants, the working process and the plants themselves. The plants discussed in alphabetic order of their respective Hungarian names are as follows: great burdock, honey-locust, apple tree, (woody) aloe, greater dodder, plume thistles and thistles, barley, blind nettle, beans, goat's beard, basil, peony, stinking night-shade, sorb apple tree, horse-weed, maid's tresses (algae), quince tree, elderberry tree, elderberry bush (bloodwort), burweed, peas, potatoes, wheat, beech tree, vetch or wild pea, yarrow, broomcorn, sugar beet, nettle, cherry tree, Jerusalem artichoke, savory, sow-thistle, nightshade, walnut tree, pigweed, tobacco plant, mulberry tree, centaury, beech-fern, alder, mistletoe, fir and pine trees, garlic, willow tree, thornapple, water melon, figwort, hedge-rose, hornbeam, bulrush, motherwort, lily-of-the-valley, toad flax, onion, dewberry, bluebell, lime tree, common sea buckthorn, snow-drop, hawkweed, helleboraster (purple hellebore), violet, eryngium, traveller's joy, maple tree, rattlepot, thyme, primrose, dill, chicory, club-rush, cabbage, fumitory, hemp, knotweed, viper's bugloss, hop, corn cockle, arum, blackthorn, millet, fennel, pear, stonecrop, ash tree, corn/maize, euphorbia, orache, oleander, peavine, lovage, lily, yellow pimpernel, bottle-gourd, clover, catnip, oxe-yes daisy, horseshoe, thorn-apple (datura), poppy, raspberry, mallow, sour cherry tree, mint (several species and varieties), hazelnut tree, geranium, common comfrey, deadly nightshade/belladonna, sunflower, reed, touch-me-not, poplar tree, birch tree, St. John's wort, mullein, scabious, eggplant, pepper, tomato, fern, agrimony, shepherd's purse, parsley, inula (and fleawort), potentille, dandelion, buckwheat, leek, radish, mignonette, beetroot, greengage, rye, rose, lettuce, lesser celandine, honeydew melon, carrot, Star of Bethlehem (and/or wild garlic?), sedge, cornel-tree, melilot, garden sorrel (dock), immortelle/everlasting, globe-thistle, wild strawberry, soapwort, common larkspur, blackberry, chamomile (wild chamomile and scentless matricaria), elm tree, plum tree, grape-vine, morning glory, wild marjoram, stubble-field clover, horseradish, pumpkin, oak, cucumber, plantain, artemisia, crab apple, wild cherry, horse-chestnut, wild pear, wild carrot, tansy, common vervain, speedwell, great celandine/swallowwort, oat, hellebore, celery, sage, winter cherry, horsetail.

The book is concluded with a list of references, and a glossary including the plant names in dialects and colloquial Hungarian. Botany was reviewed by the academician János Péntek. He is a renowned authority on not only linguistics but – as 'disciple' of the biologist professor Attila T. Szabó – on biology. We are very grateful to the editor, József Hála for the exact and beautiful execution of the work. The book is an important standard in cultural botany as well, since it urges plant improvers searching local varieties to recognise that the Carpathian-European gene bank can still be and is worth to be enriched with a variety of different cultured fruit and vegetable plants even today. Relatively isolated areas where the Csángó Magyars of Gyimes and Moldova still embrace and take care of their knowledge and traditions on plants and crops together with their Romanian counterparts even today cherish as a keepsake very valuable additions to this endeavour.

Szilágyi, Miklós: *Zsákmányolók* és *zsákmányaik. Történeti-néprajzi dolgozatok a vadászatról-vadfogásról* és *a természetes hasznosítás egyéb formáiról* [Predators and Preys. Historical Ethnographic Studies on Hunting, Capturing Game and Other Forms of Natural Utilisation]. 2014, Budapest: MTA BTK Néprajztudományi Intézet. 248. ISBN: 978-963-567-056-7

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Ancient Hungarian aquatic life inspired the imagination of a number of landscape historians and ethnographers. Yet, exciting details of everyday life conducted by long and irretrievably vanished figures of the past (for instance marsh-dwellers, meadow people) seem to be lost in the mists of time. Available data are insufficient for the purposes of drawing up an accurate picture, and stereotyping narrative elements, recalling of fading memories not without exaggerations dominate the stories revoking this submerged world.

Miklós Szilágyi in his writings, however, makes concerted efforts to render the information related to the fishing, hunting and other modes of utilisation of the natural resources prevailing in this ancient water world more accurate, to allow the creation of a more realistic picture of the life of those living in the once vast expansion of the marshlands and swamps, by having a look behind the walls erected by stereotypes and vanishing memory.

An evidence of this effort is the volume edited by Anikó Báti, which collects a bunch of the lectures and minor publications by Miklós Szilágyi on predators and their preys, compiling historical-ethnographic presentations and papers delivered and written in the topics of fishing, hunting and other kinds of uses from the aquatic world, such as gathering eggs.

The Hungarian ethnographic studies of the 19th century laying a great emphasis on fishing have never been continued by the research on hunting or gathering. The research of 'ancient occupations' gained momentum afresh in the 1930s to get out of the focus of ethnographic research again just in a couple of decades later. The oeuvre of Miklós Szilágyi however is a splendid evidence that may put issues related to the exploitation of the former water world and the use of its natural resources – once assumed to have been reassuringly arranged and systematised – into a new light by collecting and (re) interpreting both historical and current data.

In addition to issues well known to those interested in preying (for instance, the gathering of eggs from wild birds' nests, fishing or laying snares) he also introduces seldom studied topics like the eating of bullfrogs and pond tortoises or issues related to the consumption of small mammals and the various fish species. These papers partly mitigate the soaring lack of species level data in the literature dealing with the lifestyles of fishers and marsh-dwellers (which kind of plant and animal species they gathered and ate, or used for medicinal purposes, etc.). Unfortunately, due to the insufficiency of the amount and depth of the sources, the deficiencies in the data associated with the traditional ecological knowledge and the traditional extensive husbandry methods exploiting the natural resources of former marsh-dwellers and fishermen can not be completed by these

studies, either. We have good reasons to believe that this part of gathering husbandry which requires an expressly strong biological background will never be possible to be explored entirely, there will be no more opportunity to learn about it more in details, at the species level and in the practical terms. Quite a number of descriptions have survived on the life of the ancient water world, which however are rather schematic in terms of information on collecting herbal plants and bird eggs, grazing on the islands, haymaking, without exciting details which could be taken advantage of in conservation practices. Unfortunately, they do not set forth the species and habitats involved in such gathering practices at all.

The express aim of Miklós Szilágyi – as emphasised and stated several times – was to refine the stereotypes related to the 'ancient occupations', which have been subjected to thorough changes after the dramatic transformation of the conditions of natural geography (river regulations). The aggressive rate of changes to the landscape which indeed substantially transformed local lifestyles, evoked accounts written in the mood of 'looking back in history, everything was better before in the past'. Their correct interpretation and critical analysis enrich this much researched area of Hungarian folk culture with a number of valuable new findings. Collected in a single volume, these studies provide a lot of benefits indeed to both scientists and the interested reader.

A special feature of the book is the compendium of references, offering a number of lesser known, excellent resources to the reader and scientist who want to get absorbed in the topic.

Reading the great results presented in the volume they force us to reconsider the existing concepts related to the water world in many aspects. The sophisticated, sometimes historising style of the author helps you to get absorbed in the ancient world, while his message points out just the opposite, trying to avoid the romantic presentation of the ancient water world, putting existing knowledge into a new light.

Miklós Szilágyi mentions several times that it was necessary to process this theme in a monograph with synthetic scrutiny. Writing of this kind of a work would be a worthy continuation of its author, we hope his health and spirit will allow to execute the great endeavour!

Borsos, Béla: *Az új Gyűrűfű. Az ökofalu koncepciója és helye a fenntartható település- és vidékfejlesztésben* [The new Gyűrűfű. The concept and place of the eco-village in sustainable settlement and rural development]. 2016, Budapest: L'Harmattan. 248. ISBN: 978-963-414-087-0

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The subject of the work by Béla Borsos is made especially timely by the fact that Gyűrűfű eco-village was 25 years old in the year of its publication, in 2016. You can't imagine any more appropriate celebration than a book telling the story of the eco-village by one of its founders.

The author introduces and explains Gyűrűfű from the perspective of sustainable settlement development, looking for an answer on 'how and how organically an eco-village in the capacity of a non-governmental civic initiative can be integrated into the Hungarian network of settlements under the current conditions and to which extent it meets the requirements of sustainable settlement and rural development.' (10).

The work starts with an introduction to the theoretical background which is indispensable for a reader unfamiliar with these concepts and the underlying theoretical framework, and is useful for those who are, because it summarises the key points for them. The author positions the eco-village in the scope and theory of sustainable development, defining its place in the settlement types and the concept of bioregionalism. The eco-village concept, fundamental ideas and objectives are presented together with a number of Hungarian and foreign examples and the international organisation of eco-villages (GEN). In the same chapter, the social and community implications of existing eco-villages are covered as well.

In the chapter entitled *How to make an eco-village?* the author provides a summary on the fundamental principles to be considered when an ecologically sound settlement is to be designed. One of the most exciting part of the work is the actual design, that is the set up and implementation of Gyűrűfű eco-village. When the location was selected, the founders had to keep in mind that they endeavoured to test not yet established methods, which was of paramount importance and required thorough, considerate judgement even when selecting the appropriate site.

The chapter entitled *And how will it look on the ground?* describes the organisational framework and proprietary relations, the operation of the first entity, the foundation, administrative difficulties around the foundation and land use, etc. The families currently living in the village are introduced according to their respective occupations, education, professions and livelihoods. While the former chapter outlines the plans, in this section a detailed picture is given on the implemented technical solutions, energy supply, building technology, water supply, water management, waste water treatment, waste management, traffic and transportation, farming methods. This chapter (and the book as a whole, for that matter) can even be read as a kind of manual for those who think in terms of sustainable settlement development and foster similar plans.

Having read the background and history, the part on *How did it manage*? might be of real interest. An assessment is made on the enforcement of the ecological principles in the initial, experimental stage of the project, during the design phase and finally at the level of practical implementation. The results – both mistakes and successful aspects – are thoroughly evaluated. In the view of Béla Borsos the strength of the project is the well-established concept and thoroughness of the physical design. Additionally, the implementation of technical and technological design concepts are also seen as a success. However, a serious mistake is identified as well: 'the concept and actual design plans failed to deal with community and ownership conditions, human relationships, division of roles and responsibilities, which was the source of serious difficulties in later stages' (171.).

At the end of his book, the author places Gyűrűfű into a national and even wider context; he evaluates the project from the perspective of settlement development and rural development strategies and reviews the outcomes produced by the village in terms of sustainability metrics designed to measure ecological, economic, political and social

aspects. Then – in response to the problems analysed above and based on the experiences gained during the past 25 years – he summarises what has to be done next.

The survival of any human community depends on the adaptation capabilities it can demonstrate, that is how as a community can adapt to changing circumstances. Gyűrűfű still exists, demonstrating that however weak and fragile such an initiative seems, this village is able to adapt and survive. Beside the demonstrated adaptability, such a settlement bears a number of lessons for human sciences: even though the study of everyday life, subsistence strategies, community organisation, the setup of kinship and family, the traditions reveal a non-ordinary, specific settlement type, yet you must not forget that eco-villages exist embedded in wider social environment. On one hand, this type of living is a critical approach to society in itself and those living here are usually characterised by a strong inclination to reflect: to reflect to the things of the outside world, expression of one's opinion on current social issues (consumer society, globalisation, centralisation, environmental – economic − ethical crises, alienation, etc.). This view and attitude, however, is not their exclusive approach, you can see them in other worlds radically different from eco-villages. On the other hand, they also struggle with a number of problems which affect the outside world just as well. Due to what was said above, I think this alternative lifestyle is also an imprint of the wider society at the same time, which places the eco-village discourse into a broader context. Studying them may concern not only the people living here, but the Hungarian society as a whole.

Gyűrűfű is most probably a tiny, but multi-faceted player not only in the history of Hungarian eco-villages but also of the wider Hungarian history with a number of different meanings, therefore the book tells a variety of 'tales'. The basic idea was conceived in the mind of the founders back in the 1980s, and the settlement itself was started at the beginning of the 1990s. In other words, its story coincides that of the era of political transitions, and this is why it also tells a little tale of the change of the political regimes: Gyűrűfű in this interpretation is the reflection of a specific epoch and the thinking and world view of the players of the political changes, in particular that of the believers of the Third Way. Closely in connection with this, the Gyűrűfű-story is also a narration of extinction and resurrection: the story tells us that in the place of a tiny village, condemned to death deliberately by the former political regime, a new and viable settlement was set up by the settlers which intend to meet the ecological, social and economic challenges of the era. It also tells us the history of the Hungarian civil sphere, introducing the reader to the world of those who think differently from the mainstream, yet, to some extent it is also an imprint of contemporary Hungarian society. Readers are encouraged to discover further stories in the book for themselves.

DÉNES, Andrea (ed.) *Ehető vadnövények a Kárpát-medencében / Edible Wild Plants in the Carpathian Basin.* Dunántúli Dolgozatok (A) Természettudományi Sorozat 13. [Studia Pannonica (A) Series Historico-Naturalis 13]. 2013, Pécs: Janus Pannonius Múzeum. 102.

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Familiarity with and utilisation of the natural vegetation constitutes an integral part of the specific knowledge accumulated by a community. In spite of the fact, that there are former records and works known about the role of *wild* growing and *collectible* plants played in the culture (of nutrition) as important edible or supplementary sources, the 13th thematic issue of the *Transdanubian Studies Natural Sciences Series* is a gap filling material.

As a result of the careful editorial work by Andrea Dénes the 102 pages long volume provides access to seven papers. The published articles are of paramount importance both in term of ecology, economy, nutritional biology and cultural history. The authors – Dániel Babai, Bálint Czúcz, Andrea Dénes, Dávid Horváth, Géza Kóczián†, Attila V. Molnár, Zsolt Molnár, Nóra Papp, Anna Varga, Zsuzsa Váróczi† – encompass multiple generations of research scientists. The writings provide information on the knowledge accumulated about and the use of edible wild growing plants once and now, covering several regions in the Carpathian Basin, based on the reviewed, systematised and/or used sources (historical data, botanical, ethnographic and ethnobotanical works, recent collections). The opening essay by Attila V. Molnár, who already processed the life and heritage of Pál Kitaibel in a monograph earlier on, assesses the scope of plant species and their ways of use in practice two centuries earlier, based on the travel journals of the outstanding scientist of the age, which were published in print at the time as well. The author, who undertakes the task to identify and describe 14 different applications of 55 sprouting plant species in 35 families, also calls the attention of the reader to a couple of data which can be regarded as 'Hungarian specialties' (such as the rhizomes of bulrush species eaten in the form of 'bengyele'). The final conclusion – 'the native flora played a much more significant role in the life of people two centuries ago than today' (9.) – concurs with the tendency related to the traditional knowledge seen elsewhere, that is its almost complete disappearance.

The post-humus published excerpt of the 123 pages long work entitled *Nutrition of the Székely in Bukovina* written by Zsuzsa F. Váróczi who collected between 1958 and 1961 mainly among the Székely of Bukovina resettled in Tolna and Baranya counties (*Wild growing plants in the nutrition of the Székely of Bukovina*) is supplemented with the introduction and summary prepared by the editor of the volume, Andrea Dénes. According to the reports and evidences of the informants originating from the communities called Istensegíts, Fogadjisten, Józseffalva, Hadikfalva and Andrásfalva 'the highest significance of gathered food was attached to mushrooms' (17.). The material, which was recorded mainly by handwriting and to a lesser part by tape recorder, has both linguistic and ethnobotanical values (such as the dialectical denomination of plants collected and consumed as a supplement to nutrition, just as a *wish*: *csuszkor* /

blackberry/, *seggvakaró* /rose-hips/, *istengyümölcse* /thornapple/, or the preparation of *csügör*). Beside differentiating the three changes occurring in the nutrition of the Székely of Bukovina (Bukovina, Bácska, Hungary), in the passage on the gathering and use of 16 edible wild growing plants and 7 mushroom species as food, spices or drinks the late author also pointed out that 'economic factors triggered changes in the nutrition of not only in individual periods, but within each social class' (19).

Just like the former paper, the writing by Géza Kóczián is also a posthumous publication. The passage on wild growing food plants (*Ethnobotanical evaluation of wild growing food plants in gathering husbandry*) of the 1054 pages long treatise from the former pharmacist of Nagyatád, ethnobotanist and ethno medicine researcher completed in 1985 contains ethnobotanical data from several regions of historical Hungary (for instance from Abaúj-Torna, Borsod, Hargita, Máramaros, Somogy counties). A summary statement of the text which also emphasises the interethnic – Hungarian, Slovak, Slovenian (Wendic), Ukrainian, Romanian and Gypsy – aspects of the plants grouped according to their methods of use is that 'the way of preparation for a large part of the dishes made of plant raw materials is identical with the way of preparation found in the cook books used for the purposes of comparison [...]' (24.).

As a result of the joint efforts of five researchers (Andrea Dénes, Nóra Papp, Dániel Babai, Bálint Czúcz and Zsolt Molnár) of scientific and research historical significance, the paper entitled *Edible wild growing plants and their use among the Hungarians living in the Carpathian-basin based on ethnographic and ethnobotanical research* processes data of 73 ethnographic and ethnobotanical sources. The overview of the consumption patterns of 235 wild growing plant species from 67 plant families in the area under investigation (Transdanubian hills, Small Plain, Southern-Great Plant, Transdanubian and Northern Mountains, Gömör, Kárpátalja, Vajdaság, Transylvania and Bukovina) is supplemented by data series arranged in tables. The richly illustrated summary type study postulates the use of wild growing species as a function of 'the natural conditions of the region, the economic situation of the community or family, and their capability to preserve traditions' alike, that is a variable according to regions and ages. An eye catching feature of the *Introduction* – assuming the task of comparison with the Mediterranean and with countries from further North, as if putting an emphasis on the gap-filling nature of the volume – is the statement that 'wide ranging research was conducted in several countries of Europe in the past 20 years to learn more about the use of wildly growing plants' (35.). The same can be said of the itemised emphatic formulation of the syncretic approach in the *Conclusions*: 1. traditional ecological knowledge is a part of our cultural heritage; 2. thorough learning of the relations between man and nature is justified for the purposes of future energy resources just as well; 3. the revoked knowledge has a powerful potential for new business enterprises (72.). An undisputable credit goes to the authors – who are well acquainted with both historical and current data – for the creative deployment of the interdisciplinary approach.

The next article included in the volume (*Contributions to the knowledge of edible wild growing plants and some other types of interesting plant uses in Hortobágy*) describes the part of the sophisticated natural knowledge of the Hortobágy herders which concerns the 77 used plant species of the 288 identified ones. In the course of the field work carried out since 2008, 92 herders were approached and interviewed by the botanist from Vácrátót, Zsolt Molnár, who found 10 species used for games and plays, some for

certain working activities (such as tying, spinning, lime wash or heating) and 12 taken advantage of as decorations, in addition to the 18 edible plants and the 18 herbs used for healing. Compact presentation of the data are accompanied by the highlights of the words of the author's conversation partners.

Nóra Papp and Dávid Horváth conducted an ethnobotanical survey among the inhabitants of Homoródkarácsonyfalva, Transylvania during 2011–2012 and published their findings in the paper entitled *Wild growing edible plants in Homoródkarácsonyfalva – Transylvania* presenting 59 wild growing and 5 exotic plant species. Collection work was extended to gather information on the vernacular names, methods of preparation and ways of use of the plants playing a role in everyday nutrition and healing. The two authors – based on the knowledge of 25 informants – stress the 'research potential for further unrevealed data' in the region (90.).

The paper closing the issue written by Anna Varga and Zsolt Molnár entitled *Edible wild fruits and mushrooms collected on a wood pasture in the Bakony* puts wood pastures as agroforestry systems in the forefront of interest. The writing, stressing the benefits of traditional land use patterns, calls the attention to both the suppression of this habitat type and its economic use and utility. In the course of the collecting work, recording – among others – the knowledge of the farmers and herders/shepherds living in Olaszfalu, Veszprém county on the collection of wild fruits and mushrooms including their potential uses, the two authors concluded that 'traditional pastoralist animal husbandry and the gathering of wild fruits can be regarded as separated, yet organically connected activities' (98.).

The professional and scientific value of the published papers is further enhanced by the tables facilitating the reviewing of the data on the plants discussed in the volume and by the black-and-white and colour picture annexes illustrating the land, plant and man. The latter can be interpreted both as the recording of a traditional folk lifestyle and a document on the process of transformation. The reader rummaging the collection of studies might easily be reminded: just as gathering of plants might represent a given economic and social state, the enlivened research activities might also indicate the state of the current era. Modern man, who has long forgotten about food eaten in times of want, not knowing how to use berries, roots and bulbs, ignorant about water chestnuts and other delicacies, not eating wild fruits and beholding bark pots only in the museum, not tasting the sweetness of 'virics' can still read about the tasty, sometimes even lifesaving provisions in this volume of essays. Not necessarily as a relic.