

Slovak agricultural landscape – transition responses

Katarína KRISTIÁNOVÁ, Jana ADAMKOVÁ

Slovak University of Technology, Faculty of Architecture, Institute of Garden and Landscape Architecture, Bratislava, SLOVAKIA

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Abstract:

Cultural landscapes - manmade and man dependent landscapes, those that usually do not enjoy specific protection, they are subject to most dynamic landscape changes, reflecting the changes in culture, society, economy and nature. In Slovakia, where agricultural land covers around 50 percent of the total area, traditional small-block mosaic agricultural landscape reflected the collectivization after 1948, resulting in large blocks of arable land. After 1989 again the new political and socio-economic situation of transition from centrally planned to market economy has affected the changes of agricultural landscape.

The paper aims to examine the transition responses of current Slovak agricultural landscape, using examples of cadastral areas from Nitra region, where rural agricultural landscape is a typical representative of cultural landscape, although not protected as a cultural heritage, still having inseparable aesthetic, historic and ecological values. This case area of different landscape types including arable land, meadow pastures, vineyards, orchards, etc., within the poles of urban growth and outside as well, is giving various examples of current trends of cultural landscape change. To identify the change connected with socio – economical transition two main methods were used: a comparison of current aerial photographs with available information from cadastral maps and identification of planned changes in spatial plans. These methods were complemented by observation on sites.

The research shows, that still disarranged ownership rights towards agricultural land, unformed relations between owners and farmers, most of them which are still co-operatives, and agricultural policies not addressing these problems, influence distortions in land use and land markets, resulting in physical changes of landscape structures. The still expected transition of agricultural sector in Slovakia, rearrangement of property rights and expected emergence of market with agricultural land will most probably mean new impulses towards landscape change.

Keywords: *Cultural landscape, Slovak agricultural landscape, transition responses, landscape change, landscape values, drivers of landscape change.*

Introduction

In Slovakia cultural landscapes are represented mostly by agricultural landscapes of different types, for example arable land, grassland, pastures,

meadows, and permanent crops, vineyards or orchards. Agricultural landscapes, during history shaped by natural, cultural, social and economical determinants, have become often valuable for their aesthetic, cultural and historical qualities, as an addition to their primary production and environmental functions.

Agricultural landscapes are typical representatives of cultural landscapes - manmade and man dependent landscapes, those, which usually do not enjoy specific protection, and which are subject to dynamic landscape changes, reflecting the changes in culture, society, economy and nature.

Cultural landscapes in Slovakia are given special broad attention since 2005, when Slovakia ratified the European Landscape Convention adopted on 20 October 2000, in Florence. European Landscape Convention has put on agenda not only outstanding, but also ordinary or everyday landscapes, which deserve protection and management as well. Landscape according the Convention means an area, as perceived by people, whose character is the result of the action and interaction of natural and human factors (Council of Europe, 2000). According Antrop (2005, 22):

"Cultural landscapes are the result of consecutive reorganizations of the land in order to adapt its use and spatial structure better to changing societal demands."

Human or societal demands transforming cultural landscapes can be examined and explained in the context of basic economics theories. Landscape economics as a science discipline (Price 1978, 2008), studies and enlightens transformation processes of cultural landscapes from economics point of view and significantly helps to understand the driving forces behind landscape change.

Cultural landscapes can serve as a model for understanding of ecological and economical mutual symbiotic relations between man and nature, where key environmental factors determine economic decisions and the converse (Farina 2000).

Human action in landscape is economically motivated and determined. One aspect of this economic relation between man and landscape is expressed by property rights and land ownership. Cultural landscape in Middle European context is not only collective concept and shared resource; it is a mosaic of pieces of land owned by different owners with their individual interests (Antrop, 2005). And while one cannot own a landscape as a whole, yet a desire to own at least a piece of land accompanies man attitudes towards land and landscape through history, as an ancient instinct, reflecting the ability of land to ensure survival, related to its primary food production function and agricultural use.

In Slovakia, where agricultural land covers around 50 percent of the total area, traditional small-block mosaic agricultural landscape of private owners after collectivization in 1948, resulted in large blocks of arable land. After 1989 again the new political and socio-economic situation of transition from centrally planned to market economy has affected the changes of agricultural landscape. During period of socialism, the relation between the owners and land was interrupted and property rights towards agricultural land were neglected. Transition reintroduced again property rights towards

agricultural land and ownership of land has gained new meaning. The research aims to examine whether these socio-economical changes effected physical changes of spatial landscape structures.

Slovak cultural and agricultural landscape

Slovak landscape of Carpathian Arc and Danubian Lowland is a cultural landscape, for centuries cultivated by man. Most of the area of Slovakia was formerly covered by forests and man during his historical existence in this area focused on deforestation and change towards agricultural land and pastures. Even forests were multiply used and changed, with the aim to produce more timber, so only few inaccessible areas remained untouched.

Today in Slovakia cultural landscapes are represented mostly by agricultural landscapes of different types, for example arable land, grassland, pastures, meadows, and permanent crops, vineyards or orchards.

Agricultural land in Slovakia in 2008 covered 2 423 478 hectares (Table 1), which represented 49.42 percent of Slovak area, forest land covered 40.95 percent (Klinda, Lieskovska et al, 2008).

Table 1. Land use in Slovakia (Source: Klinda, Lieskovska et al, 2008).

Land category	Area (ha)	% Of total area
Agricultural land	2 423 478	49.42
Forest land	2 008 257	40.95
Water areas	94 575	1.93
Build-up land	229 059	4.67
Other land	148 335	3.03
Total area	4 903 704	100.00

Anthropogenic pressures cause gradual decrease and losses of agricultural land towards other land use, mainly for housing, industrial and commercial purposes. Losses of agricultural land during the years 2000 – 2008 are depicted in Figure 1.

While in many cases landscape change is a natural process, human land use change is the most important factor-influencing environment. These changes in general are largely the result of the urbanization and its attendant residential, commercial, transportation and industrial development. The driving forces of landscape change are widely studied, for example Antrop (2005) mentions three main driving forces: accessibility, urbanization, globalization and additional unpredictable factor - calamity.

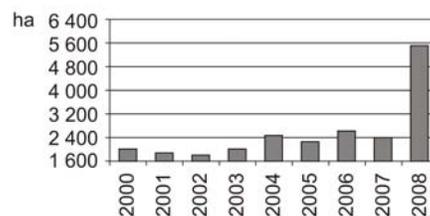


Figure 1. Losses of agricultural land in hectares in years 2000 – 2008. Source: ÚGKK SR and State of the Environment Report of the Slovak Republic 2008.

In Slovakia a specific point of agricultural landscape change is connected with changes of landownership.

State of the Environment Report of the Slovak Republic 2008 (Klinda, Lieskovska et al, 2008) relates the changes of landscape cover to 1)

restitutions and changes of land ownership after 1989, 2) natural catastrophes – wind storms, fires, etc., 3) infrastructural and industrial projects and 4) flood protection and energy production activities.

CORINE land cover change detection case study in Slovakia (Feranec, Hazeu, Christensen, Jaffrain, 2007), which identifies land cover changes in landscape inventory in Slovakia for the years 1970–2000, estimates as most extensive changes those, which are results of collectivization from 1950s until 1970s.

After collectivization the structure of small-size plots of fields and meadows was replaced by large fields of arable land, the proportion of meadows and natural vegetation on the meadows and balks dropped, (Feranec, Hazeu, Christensen, Jaffrain, 2007). Heterogeneous landscape structures ensuring ecological diversity and stability were replaced by homogeneous agricultural areas, less diverse and more vulnerable.

It was expected that changes after 1989, restitutions and reintroduction of property rights towards agricultural land, will lead to opposite processes, to diversification of homogeneous agricultural landscapes and to desirable fragmentation of agricultural land, increasing not only ecological diversity and stability, but in the same time restoring visual and aesthetic values of former historical cultural landscapes. In the same time it was assumed that private ownership of land will lead to wiser and more efficient use of land resources and to more sustainable farming.

Goals and objectives of study

The research aims to examine the transition responses of current Slovak agricultural landscapes, and to identify the main results of significant socio-economical changes introduced in 1989, which are imprinted in landscape. Assumption is that after 20 years of transition from socialist to market economy they have become more clearly identifiable and physically visible in landscape spatial structures. Previous socialist period lasted only 40 years, but its impact on the structures of agricultural landscapes was significant.

One of the objectives of the study is to discover whether the main socio-economical changes, reintroduction of market forces and property rights of private landowners, resulted in desirable expectations and positive trends in agricultural landscape change and in the same time the other objective of the study is identify the possible problems determined by new socio-economical conditions leading to deterioration of landscapes.

For these purposes the case area of Nitra agricultural region was used.

Case study – Nitra region

The case area of Nitra region is used because it represents a typical agricultural region in Slovakia, with different landscape types and subtypes of agricultural land including arable land, meadow pastures, orchards, vineyards and forests varying from hilly parts of the Tribeč Mountains to flat parts of Danubian Lowland.

The rural agricultural landscape of this region (Figure 2) is in the same time a typical representative of historical cultural landscape, with significant parts

having important aesthetic and historical values, although not protected as a cultural heritage or nature reserve.

Main urban centre of this region is city of Nitra, located in the Nitra river valley at the foothill of the Zobor Mountain (587 m). With a population around 85,000, this city is the fourth largest city in Slovakia. Nitra is regarded one

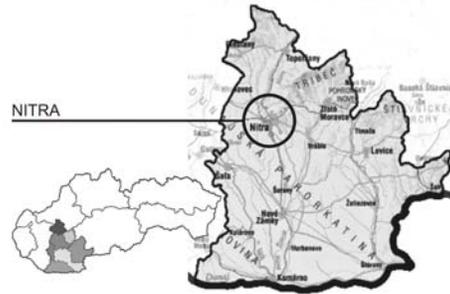


Figure 2. Area of Nitra region in Slovakia

of the oldest cities in Slovakia, a city of extraordinary historic importance connected with Great Moravia. Area around Nitra was inhabited since the 4th century BC, when a large Celtic settlement was founded in the Martinský vrch. Nitra became the capital of the Principality of Nitra, the oldest known independent state of Slavs in the territory of today Slovakia, with the first known Christian church consecrated in 828 AD, at the seat of the ruling prince Pribina. Svätopluk I. was the prince of Nitra from the 850s to 871 AD and then the king of Great Moravia until 894 AD. The first known Christian bishopric in Slovakia was established in Nitra in 880 AD, with Wiching as the bishop, and the first monastery in Slovakia was built in Nitra on the Zobor Mountain during 880–881 AD. Several Great Moravian settlements are located around Nitra, for example Lupka, Branč and others. In 1248 Nitra was given the privileges of a free royal town by Béla IV.

This historical heritage is mirrored in rural agricultural landscape of Nitra and surrounding villages, with dominants created by churches, built on natural heights, medieval castles on the tops of the hills, together creating cultural landscape of unique identity and strong genius loci.

Ownership of agricultural land and transition

The history of development of cultural landscapes is in the same time the history of formation of property and ownership rights towards land. Formation of ownership of land and property rights toward land during history was accompanied by development of property mapping methods, mainly for the needs of taxation. Early historical land registers in Slovak territory were created since 11th century as ground books, urbans and town books. Cadastral mappings in Slovakia, that time a part of Austrian Habsburg territory are connected with development of cadastral mapping in Austrian Habsburg Monarchy, from early estate mappings by the nobility, through Theresian, Josephine to Stabile cadaster. Cadastral mapping in Austro-Hungary as a whole was instituted only in the nineteenth century with the Stabile cadaster (Kain, Baigent, 1992). Stabile cadaster served as a basis for future cadastral mappings, after the First World War, during Czechoslovak republic.

As observed for example from historical maps, or historical landscape images, engravings or from preserved remnants of historical landscape structures, traditional agricultural landscape of the past reflected close relationship between man and his piece of land Division of land into parcels followed natural conditions of landscape, properties respected natural boundaries, and vice versa, boundaries of division, ownership of land

expressed in landscape spatial forms created valuable historical structures of cultural landscape (Figure 3).

However, historical rules applied in Hungarian inheritance legislature, applied during previous centuries, especially after 1840 in Slovakia led to extreme fragmentation of land property to very small pieces. Small parcels were divided between many



Figure 3. Traditional landscape before collectivization. Drawing Miriam Turancova (Turancova, 2010)

owners, because each sibling had to receive a portion of inherited land. The second source of fragmentation were the land reforms after First and immediately after Second World War, which had distributed agricultural land to small and medium sized agricultural farmers.

After the Second World War, after the February 1948, political changes again affected land ownership. Agricultural land was just merged and used collectively without any compensation to owner (Bandlerová et al., 2004). Land was collectively farmed by cooperatives, however officially 65% of agricultural land was in private ownership during the whole period of socialism. Collective use of agricultural land separated use from ownership and legal conscience of owner about his ownership was attenuated. The systems of land registry had not been led properly; registration of ownership changes was not obligatory with the aim to decrease property rights towards land (Bada, 2005). These changes effected landscape, original land parcels were changed by new parcel structure introduced under collective large-scale production methods, and original borders disappeared in landscape (Buček, 1999).

This historical background significantly stigmatized agricultural land ownership characteristics in Slovakia.

Methods

For the purposes of examination of transition responses of agricultural landscape in the case study area, two main methods are used:

- To identify the landscape change connected with reintroduction of property rights towards agricultural land a comparison of current aerial photographs and available information from renewed cadastral maps, showing current ownership of land have been used.
- To identify the changes not yet visible in current landscape, but planned, spatial planning documents, Spatial Plan for Nitra Region, Nitra Master Plan and spatial plans of village cadastral areas have been examined, with objective to distinguish to what extent the planned changes of agricultural land use are driven by socio-economical transition.

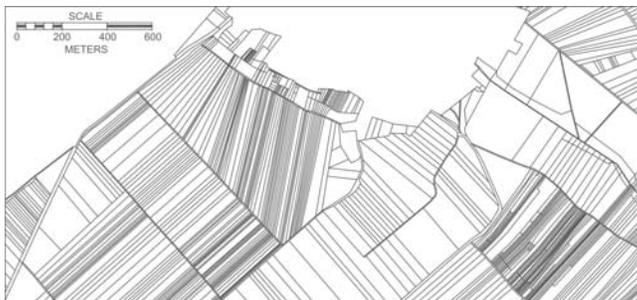
Observation on sites complements these two main methods used.

As vectorized cadastral maps of renewed evidence of land property are still not elaborated for the whole area of Slovak republic and for the whole Nitra region, cadastral areas, where vectorized cadastral maps are available has been examined: Aerial photographs are available for the whole area from different sources, for the purposes of study Google Earth source has been used.

Management of landscapes begins with land use planning (Antrop 2005). Land use changes are controlled and guided by this process. Spatial or urban planning anticipates future use of area, future landscape change. In Slovakia cities and villages over 2 000 inhabitants are obliged to have a spatial master plan. Cases of planned changes of land use in spatial master plans were examined at municipalities and by asking method, the cause-effect relation between proposed development and ownership, initiation of proposed changes and underlying relationship with the ownership has been explored.

Results

Comparison of current cadastral maps, depicting division of land between different owners and giving the picture of former use of parcels in traditional farming in small-block mosaic agricultural landscape, with today use of agricultural land in several parts of Nitra region area, according current aerial photographs and according visual observation on sites, documents that formal reintroduction of property rights towards land has not resulted in physical landscape change of diversification of agricultural land.



Restitutions and renewal of property rights have not resulted into small field structure from period before collectivization. Homogeneous large fields of arable land have not been replaced by mosaic structure reflecting properties and fields are not interrupted by vegetation of former balks, increasing ecological diversity and stability. Example of comparison is given in Figure 4.



Land is still farmed in large blocks of arable land with accompanying negative effects, as wind and water erosion of soil, absence of vegetation is causing diminishing of habitats, monoculture crops are more vulnerable and require utilization of chemicals (Figure 5).

Figure 4. Agricultural land of cadastral area of Cabaj according cadastral map depicting mosaic structure of parcels reflecting ownership of land and below photograph showing farming still in large blocks of arable land, without vegetation accompanying balks or field roads. Source: GKÚ Bratislava, Google Earth.

In the case study area just few examples can be found when small private owners of agricultural land start to farm. In these cases division between owners and patterns of field roads are readable in landscape structure (Figure 6).

There are several reasons why only a small number of new private farmers emerged as the result of the processes of restitution.

One is extreme fragmentation of property. Owners own usually very small pieces of land, which can be hardly considered as a sufficient land base for effective market oriented agricultural production. Only small group of restituted were large landowners, descendants of former kulaks and only few of them with experience in agriculture have begun their own agro-businesses on own land (Bucek, 1999). Slovak society underwent substantial industrialization and urbanization during forty years since land was expropriated or forcibly collectivized (Bucek, 1999).

Interruption of relationship between owners – farmers and their land, which lasted over 40 years caused a generation gap, owners lost their links towards land, land was not inherited for a long time. Owners of land, who worked for years in different sectors of economy, had no experience with agriculture.

Dispersed and inexperienced owners of small pieces of land today are usually not able to use their land for farming and have no market opportunities to sell or rent the land, except the choice to rent it to transformed agricultural enterprises - co-operatives. Experienced agro-entrepreneurs, co-operatives, use their advantage of monopolies, paying very low or no rent for land. Absence of market with agricultural land, unformed relations between owners and farmers, and agricultural policies not addressing these problems influence distortions in land use and land markets, resulting in physical changes of landscape structures.

Some owners of land unable to profit from agricultural land use tend to initiate the change of land use in master plans towards other land use for example for housing, industrial or commercial use to meet the real estate markets demand. These cases occur mainly in agricultural areas of villages near urban poles of growth, near Nitra, and in locations easily connected to



Figure 5. Visual observation on sites. Large block structures of agricultural land farmed by co-operatives, homogeneous agricultural areas, less diverse and more vulnerable.



Figure 6. Examples of cases when private owners farm - visible in land patterns of small fields structure.



Figure 7. Agricultural land planned for development of housing in proposal of spatial plan for a village Cabaj Čapor near Nitra. Source: Development localities Mizia, P., Maková, L., Privalincová, J., 2009.



Figure 8. Industrial park replacing agricultural land (light grey) destroying valuable historical landscape of Dražovce near Nitra with the Romanesque church from 12th century. Source: Spatial plan of Nitra,

infrastructure. Example of proposal of land use change from agricultural land towards built up areas in spatial plan for village Cabaj – Čapor near Nitra is given in Figure 7.

New building development in spatial plans is planned usually without environmental and visual impacts assessment, however spatial plans in Slovakia as strategic documents should be assessed according the Act on EIA in strategic environmental assessment process, as a tool ensuring that cumulative and synergic effects of separate projects are taken into account (Belčáková, 2004). However, often-new development is planned as an amendment to spatial plan, where assessment is not obligatory, so the cumulative effects and impacts are not taken into account.

In Nitra area for example, the localization of industrial park replacing agricultural land, has not taken in account visual impacts on very valuable historical landscape with the Romanesque church from 12th century (Figure 8). This case proves the idea that traditional landscape assessment methods and standardized landscape assessment techniques which focus on discipline-specific value typologies may fall short of revealing the richness and diversity of cultural values in landscapes (Stephenson, 2008).

Discussion and conclusion

Results of the study show that Slovak agricultural landscapes have not responded to transition by positive diversification of homogeneous agricultural land, on the contrary, the transition responses to introduction of market forces, the pressure through economic competition makes the land homogenizing and in the competition with urban functions rural function often decline (Jongman, 2002), which leads to fragmentation of landscapes.

Fragmentation and homogenization is observed in the case study area, as it is observed in globalizing rural landscapes all over Europe (Jongman, 2002).

It means not only decreasing of habitats, but also vanishing of traditional cultural landscapes. It seems that reintroduction of property rights towards land in Slovakia has not reversed this common trend and in the same time another trend observed in Europe, the process of alienation and weakening of functional and mental ties to landscape (Vos, Meekes, 1999).

Regional differences of European landscapes, which are disappearing due to the dominating equalizing impact of the worldwide market, have to be maintained through conscious environmental and ecological policies (Jongman, 2002), but common European agricultural policies, which affect Slovak agricultural landscapes, have often controversial impact, for example grants for vineyard conversions lead to vanishing of traditional vinicultural landscapes, so typical for Nitra region case area.

The case study shows, that economical motivations which determine the decisions of landowners are significant driving forces in changes of land use, significantly effecting cultural landscapes. When landowners are unable to grasp the usufruct of their property through agricultural use, their motivation to initiate the change of land use in spatial plans towards building use increases, which is a factor which influences urban sprawl and increases a possible threat of ad hoc building development dispersed in countryside.

Land related ownership rights are important determinants influencing the changes of physical structures of cultural landscapes. Examination of different aspects of their influence, can be an interesting source of knowledge for landscape planning and landscape management. Cultural landscapes constantly respond and adapt themselves to changing societal demands and current land ownership and its economic dimension is reflected in current landscape metamorphoses. Economic distortions, for example in land related rights, are reflected in deformations of landscape structures.

Decision-making, legal framework of landscape protection and tools of agricultural land protection are confronted with market forces of globalized economies and with often-controversial policies, using economic incentives. Landscape, ecological and spatial planning, and even environmental impact assessment tools often represent the interests of building development. Understanding of broader context of driving forces of landscape change could help to adopt more effective strategies to preserve cultural values of traditional agricultural landscape. According Antrop (2006, 195).

"Sustainable landscapes are no fiction if the landscape qualities are well defined and the context of change and future functioning is set right and fixed."

Cultural landscapes, which arose by meaningful human activity and successful transformation of natural landscape, express synergy of man and environment (Supuka, Štěpánková, 2004). Traditional rural landscapes of Slovakia represented this synergy, however as observed by Antrop (2005, 32):

"Landscapes of the past cannot be brought back, but ways how valuable elements and areas can be preserved and become embedded functionally in the modern urbanized and globalized society must be studied."

The still expected further transition of agricultural sector in Slovakia, expected rearrangements of property rights, advancement in formation of relations between owners and farmers and expected emergence of market with agricultural land will most probably mean new impulses towards Slovak agricultural landscape change in near future.

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