AMATCIEMS: EXAMPLE OF THE CREATION OF A NEW KIND OF RURAL LANDSCAPE AND SETTLEMENT PATTERN IN LATVIA

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The development of new villages is bringing about changes in the appearance of the rural landscape across the world, and Latvia is no exception. These changes are connected with urbanisation and suburbanisation processes, and thus with changes in rural settlement structure. The present changes in the rural landscape are very rapid and dynamic, especially in the environs of cities and attractive natural sites.

Amatciems is one such newly-established village in Latvia. The study shows how, in creating a new rural settlement — Amatciems — an attempt has been made to give the impression of a seemingly natural, little-altered landscape, and in this regard it is unique in Latvia.

The main sources of information for the study are historical maps and plans, orthophotos and digital maps, as well as records of field studies and interviews with the creators of Amatciems. The possibilities offered by geographic information systems (GIS) have been utilised in spatial analysis, revealing more clearly the changes that have taken place in what was originally an undisturbed forest landscape.

Amatciems has developed completely anew next to historic settlements in the Vidzeme Highland, a development involving major relief transformation and creating a mosaic landscape with lakes, ponds and forested hills. Also forming part of the mosaic are hills with planted young trees and grassy areas, houses and yards, and a road network. The changes made by people to the relief, geological structure, distribution of soil parent material and vegetation cover are only the present results. The activation of slope processes observable in the area already points to changes in the natural balance. In the future development of the Amatciems landscape, it is necessary to take into account not only geological processes, but also local changes in soil cover and vegetation.

Introduction

The end of the 20th and the beginning of the 21st century in Europe, including Latvia, has brought changes in the national policy, economic conditions and social space, which have also significantly altered rural areas. These changes are associated with major urbanisation and suburbanisation processes, also altering rural settlement structure. In particular, it is the proximity and accessibility of

an area that lends it significance and attractiveness, because the criteria in the choice of a new place of residence include easy and fast access to the home, as well as attractiveness of the landscape. In the process of suburbanisation the urban fringe and countryside have merged, and the urban population has grown. In many country areas of Europe, as a result of the urbanisation process, new compact villages can be seen, which have developed during a short period. Starting from the second half of the 20th century, the wealthiest section of society in Europe has been seeking a home outside the city centre, in suburbs and rural areas close to the city. The decision to live in the country is determined by several considerations: both social (the countryside as a place to live and work, or the countryside as a place to live; also, the countryside as a source of traditional, ethnic values) and environmental (biological diversity, a natural setting, and wholesome, natural food) (Eetvelde *et al.*, 2009; Verburg *et al.*, 2006; Reger *et al.*, 2007; Krūzmētra, 2011; Ceccato *et al.*, 2002; Antrop, 2004; Paquette *et al.*, 2003; Banski *et al.*, 2010).

As in other countries, in Latvia, too, proximity to cities, major highways and public transport plays a major role in the development of settlement structure. The locational and landscape factor also has a growing role in the development of settlement: proximity to lakes and rivers, and the attractiveness of a mosaic landscape (Zariņa, 2010; Grīne, 2009; Grīne *et al.*, 2007). Individual new country homes and villages and compact villages of detached houses are appearing in the rural landscape.[1] Many of these villages have been created completely anew in the vicinity of forests, in meadows or near rivers and lakes, or else districts of detached houses have been created by extending pre-existing villages. In rural areas the new villages and compact villages have developed mainly in the vicinity of highways and economic centres, generally within a 30-km radius around Riga. Rapid development of such villages took place in the late 1990s and early 2000s, but in recent years, because of the downturn in the national economy, the development of new villages has come to a halt (Jauno ciematu pētījums, 2007; Koroļova, 2007; Vecgrāve, 2007; Bērziņš, 2011). On the one hand, building of such villages around the cities marks an extension of the urban area, but not all of these newly-developed villages reflect urbanisation processes in the classic sense, and Amatciems is one such example. This is because in the case of Amatciems, we see people moving close to nature, rather than to the urban environment.

Along with the development of the new villages, a new social stratum is entering the Latvian countryside: affluent residents with an income, values and lifestyle that differ from the way of life of the native residents (the rural population). For these residents, the residential setting differs from the work setting: they work or study in towns and cities, while the country home is their residence or a holiday location for weekends or summers. City-dwellers seek in the countryside the possibility to hide away in scenic locations from the bustle, noise, stress, pollution and neighbours in the city, i.e. away from the urbanised environment (Grīne, 2009; Liepiņa, 2001; Krūzmētra, 2011).

The most important factors in the development and structure of the landscape are: land use, geological structure and relief, soils and vegetation, and the hydrographic network. All of these factors affect the diversity and character of the landscape. Accordingly, in characterising landscape changes, studies focus on these components (Gaujas Nacionālā parka ainavu estētiskais vērtējums, 2005; Wascher, 2004; Eetvelde *et al*., 2009).

The urbanisation process, along with changes in settlement pattern and land use, transforms the traditional, natural rural landscape (Eetvelde *et al.*, 2009; Verburg *et al.*, 2006; Reger *et al.*, 2007; Krūzmētra, 2011;

Ceccato *et al.*, 2002). Landscape changes differ in intensity. Sometimes these changes can be destructive, and many landscapes may be irreversibly destroyed (Zariņa, 2010; Eetvelde *et al.*, 2009; Antrop, 2004).

From the above it is clear that both aspects — humans and nature — are closely connected, interact and are equally important in landscape studies (Paquette *et al*., 2003; Hunziker *et al.*, 2007; Ruiz *et al.*, 2004). It must also be borne in mind that a landscape is in itself dynamic and changing, i.e. it changes not only under the impact of human activities.

The aim of the study is to show how, as a result of major relief transformation in the course of the development of Amatciems as a new rural settlement in Latvia, an effort has been made to create the impression of a seemingly natural, little-altered landscape.

Materials and methods

Nowadays, across the world, and in Latvia as well, cartographic material — in the form of old, historic maps, orthophotos and digital maps — is being widely utilised in studies on changes in settlement pattern and landscape. The historical maps and plans provide a broad picture of the study area in various periods, showing the location of settlements, land use, topography and infrastructure. This is seen, for example, in studies on changes in the cultural landscape in Flanders (Belgium), Sweden and Norway, changes in vegetation cover in Europe, as well as landscape changes in Latvia, where certain case study areas have been analysed comprehensively (Eetvelde *et al.*, 2009; Reger *et al.*, 2007; Swensen *et al.*, 2008; Bell *et al.*, 2009).

In analysis of cartographic material and spatial analysis in the frame of studies on landscape and settlement patterns the possibilities of geographic information systems (GIS) are widely used, also in studies in Latvia. GIS is used not only to store data, but also for spatial analysis and data visualisation, in addition to which data analysis can be undertaken at various scales and in various temporal dimensions (examining temporal and spatial changes) (Eetvelde *et al.*, 2009; Ceccato *et al.*, 2003; Sevenant *et al.*, 2007; Aunap, 2007; Rogge *et al.*, 2008).

Analysis of the cartographic material, using the method of map overlay, is an aid in assessing, comparing and analysing changes over time, although it is necessary to take into account that these sources may differ in terms of the quality and volume of data, and in terms of scale and precision (Swensen *et al.*, 2008). Accordingly, other empirical data are used in addition to cartographic material: mainly statistical data, census data and published works.

In order to identify the changes to the rural landscape and settlement pattern in the case study area of Amatciems, several kinds of information sources have been used. One of the main sources is cartographic material (map servers of the Faculty of Geography and Earth Sciences of the University of Latvia and the Latvian Geospatial Information Agency). This includes topographic maps at scales 1 : 10 000 and 1 : 25 000, showing the situation in the mid-20th century, orthophotos showing the situation in 1998, 2005 and 2008, as well as a plan of the present situation in Amatciems (digital data from the Latvian Geospatial Information Agency) (Fig. 1). Geological mapping material at scales 1 : 200 000 and 1 : 500 000 has also been applied, including a geological map, a map of Quaternary deposits and a map of the thickness of Quaternary deposits and the pre-Quaternary surface.

Data from field research has also been applied in the study (July and August 2006; April–August 2010; April 2011). The fieldwork involved observations on the stratigraphy of the deposits forming the relief, and identification of genetic types of deposits and their lithological properties. Visual observation of the morphology of relief forms was

also carried out, along with measurement of slope angles. In addition, interviews with the managers of Amatciems (April 2009, August 2010) were used, also internet resources, including publications on Amatciems (Amatciems; Blūms, 2008; Benfelde, 2008; Dūmiņa *et al.*, 2010; Grīne *et al.*, 2010; Majore-Līne, 2007, 2009; etc.).

Analysis of spatial changes within the territory of Amatciems was undertaken using the *ArcView 10* GIS software with extensions *Spatial Analyst* and *3D Analyst*. In order to analyse the relief transformation that has taken place and more clearly visualise the existing situation: 1) using a topographic map at scale 1 : 10 000, the contour lines, spot heights, forest and wetland areas, waterbodies and road network were digitised, and a TIN model was created for characterising the situation in the mid-20th

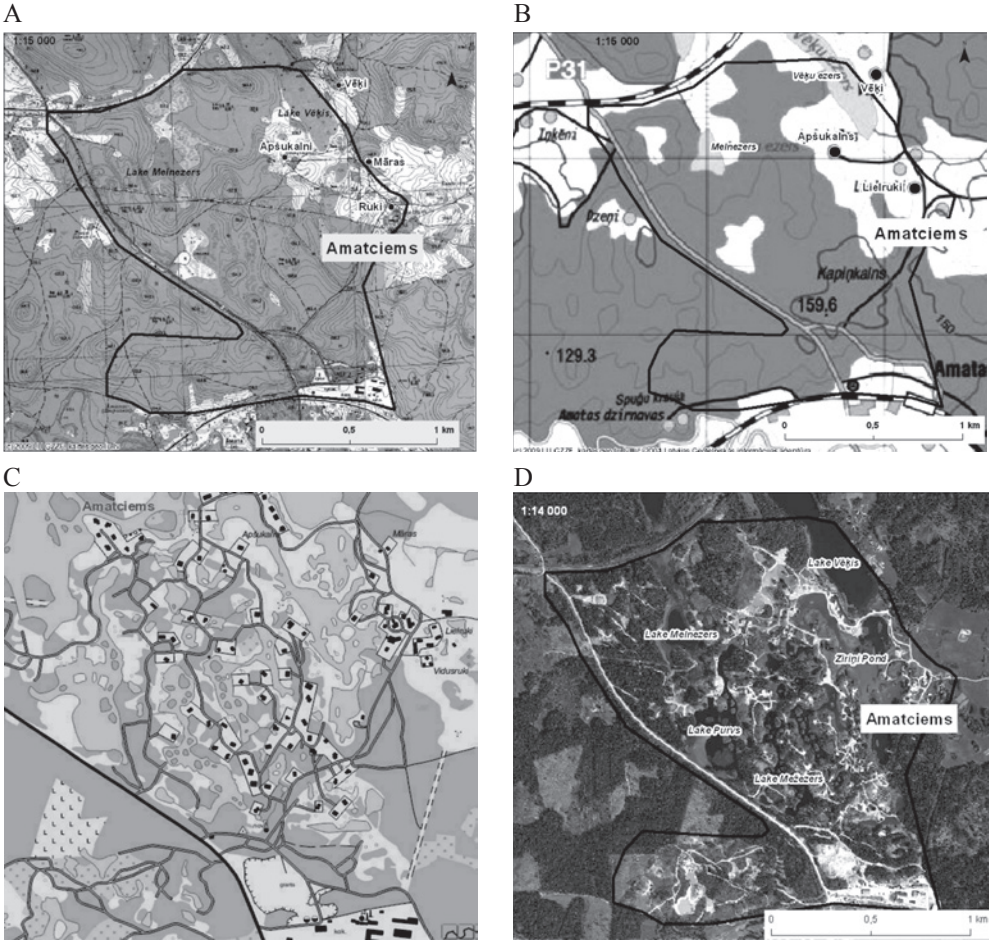

Fig. 1. The territory of Amatciems in maps: A — the area in the 1970s (1 : 10 000 scale topographic map); B — the area at the end of the 20th century (map of Cēsis District, scale 1 : 100 000); C — Amatciems, situation in 2008 (map server of the Latvian Geospatial Information Agency); D — the situation in 2008 (after orthophoto material from 2008; map server of the Faculty of Geography and Earth Sciences, University of Latvia)

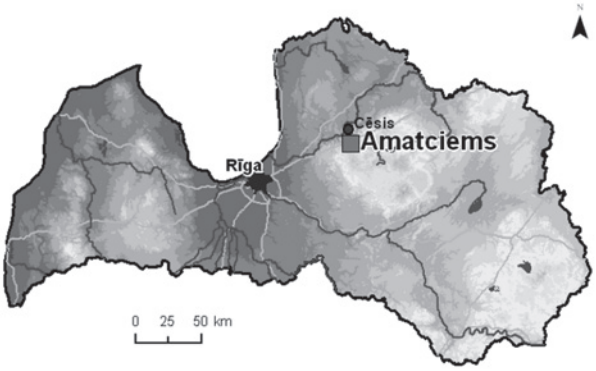

Fig. 2. Location of the case study area.

century; 2) using data from the Latvian Geospatial Information Agency (contours, spot heights, the hydrographic and road network), a TIN model was created characterising the present situation; 3) in order to characterise the extant buildings, they were digitised from the plan of Amatciems.

Main results

Characterisation of the location of Amatciems

Amatciems is located in a hilly area in the north-western part of the Vidzeme Highland. As regards the choice of location, the above-mentioned requirements regarding the proximity of cities, major thoroughfares and landscape attractiveness have been observed. Amatciems is located about 80 km from Riga about 12 km from Cēsis close to the Vidzeme Highway (2.5–3 km to the highway) and close to two railway lines: Riga–Lugaži and Ieriķi–Gulbene (the latter of which was closed in 1999). Passing next to Amatciems is the local-level road (P31), connecting Cēsis and Ērgļi.

Amatciems began to develop as a village in 2004, although the concept itself came earlier. It is the brainchild of one individual: A. Zvirbulis (Majore-Līne, 2007).

The total planned building area of Amatciems is 130–150 ha (Valdmane, 2008; Liepa, 2011). The development of Amatciems (Phases 1 and 2) commenced on the left-hand side of the Cēsis–Ērgļi road (P31). Major relief transformation and building work has taken place here, and is still underway, and during the past three to four years relief transformation and tree-felling has also begun on the right-hand side of the Cēsis–Ērgļi road along the railway line and the River Amata (Phase 3). However, during the last one to two years, development of the village has only been taking place in the built-up area, discontinuing the transformation work on the right-hand side of the Cēsis–Ērgļi road (Fig. 1: C, D).

It should be added that Amatciems has developed next to the village of Amata. However, in accordance with the planning documents, new development in Amata County is to be concentrated in the larger villages, including Amata itself. In 2009, the limits of the village of Amata were established, and in this scheme Amatciems is included as part of Amata village (i.e. the present Amata village consists of Amatciems and the historic Amata village), even though they differ radically in many respects (visually, functionally, philosophically etc.), and it is thought that these differences will persist (Majore-Līne, 2009; Amatas novada teritorijas plānojums…, 2006).

Description of the area before the development of Amatciems

The village has been developed in a new location next to historic settlements: *Vēķi,*

Ruki, Māras and *Apšukalns.* Not far from Amatciems is the historic population centre of Amata (with a population of 160 in 2001) (Latvijas ciemi, 2007) (Fig. 1: A, B).

Before relief transformation the area included two natural waterbodies: Lake Melnezers (Lake Asarājs) (~3.2 ha) and Lake Vēķis (~12 ha) (Ezeri.lv; Tidriķis, 1998). Lake Melnezers was surrounded by a boggy area (Fig. 1: A, B).

Before development of the village, most of the hilly area near Lake Melnezers and Lake Vēķis, as well as along the right-hand side of the Cēsis–Ērgļi road, along the bank of the River Amata, was covered in forest, with bogs in the smaller hollows between hills. There was agricultural land only around Lake Vēķis and around the historic farmsteads of *Ruki, Apšukalns* and *Māras.*

Description of the area after the development of Amatciems

In contrast to the development of other new villages in Latvia, in the case of Amatciems, the creation of building plots and landscaping has involved large-scale

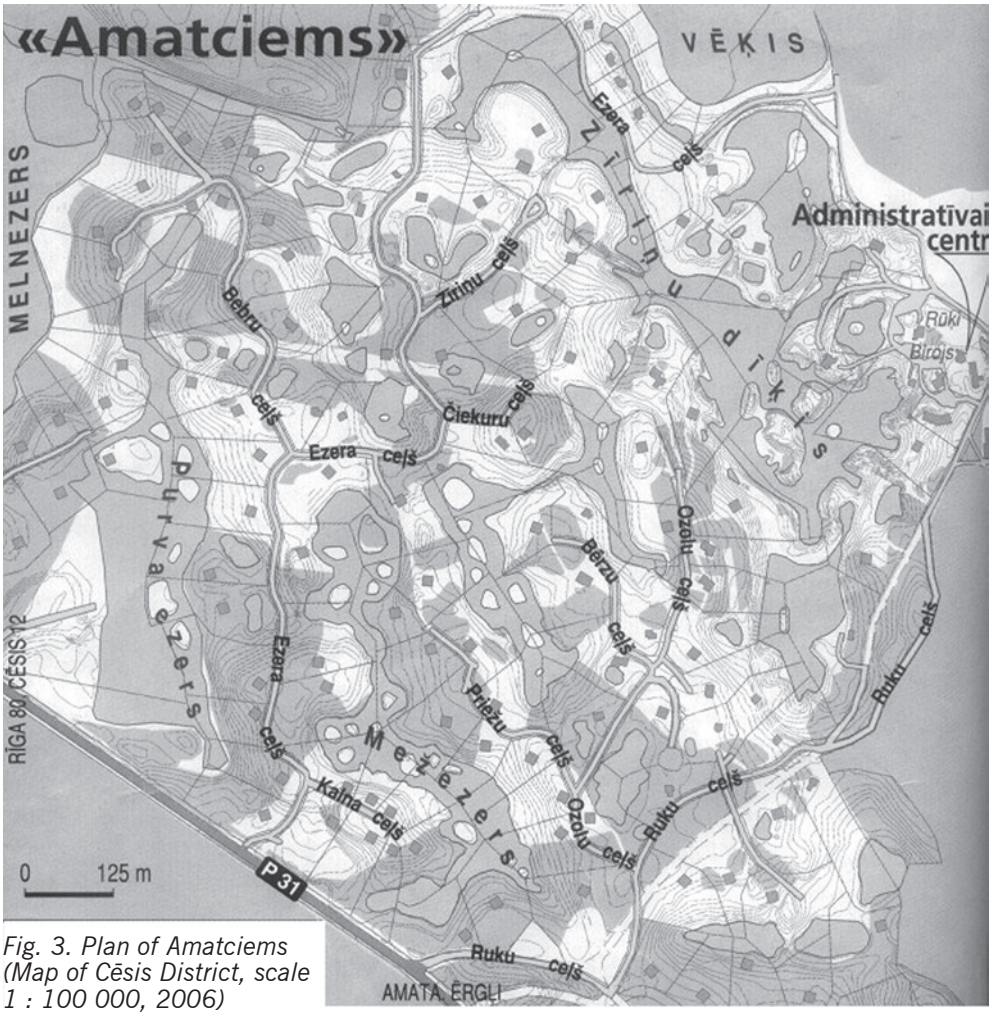

Fig. 3. Plan of Amatciems (Map of Cēsis District, scale 1 : 100 000, 2006)

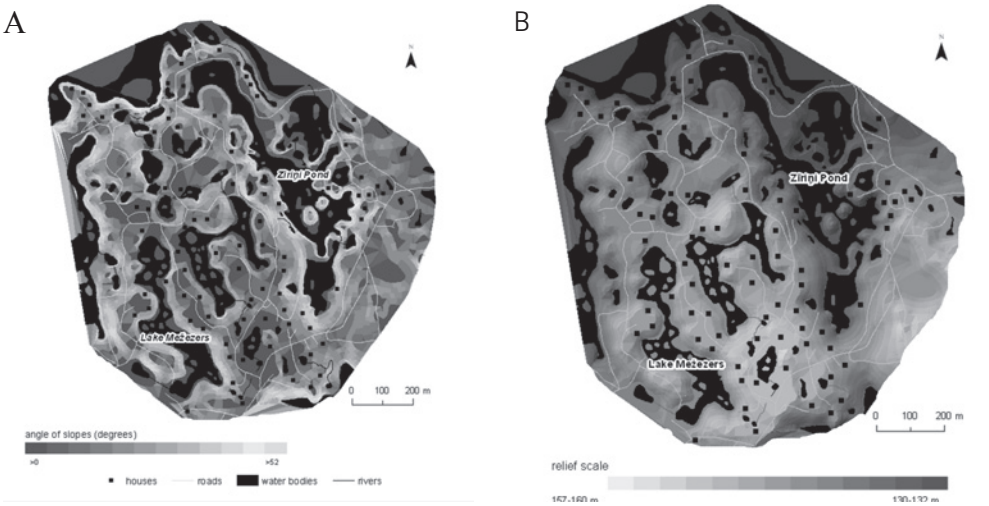

Fig. 4. Fragments of the territory of Amatciems. Relief model (2008) (after vector data of the Latvian Geospatial Information Agency): A — TIN model; B — slope analysis

transformation of the hilly relief, which is still underway.

Nowadays, the Amatciems landscape consists of clumps of forest with open spaces and artificial waterbodies, both large (up to ~5–6 ha) and small (~0.1 ha). Several chains of artificial waterbodies with small, wooded islands and peninsulas have been created in areas that were formerly bog, and in boggy hollows in the relief. The new waterbodies have a sinuous shoreline, winding around the hills, and so some of them are visually reminiscent of the natural waterbodies as they would have been before overgrowing (Fig. 5: B). The total number of waterbodies of various sizes now exceeds 30. The waterbodies with the largest area, occupying natural, partly overgrown hollows, number less than 10, and some have been named as lakes, for example Lake Purvs (Purva ezers) (~6 ha, length ~680 m) and Mežezers (~3.4 ha). Zīriņi Pond (Zīriņu dīķis) has an area of about 5.8 ha (length ~700 m), while the waterbody between Zīriņi Pond and Mežezers covers about 2.5 ha. After relief transformation the area of Melnezers is about 15 ha (with islands). The waterbodies occupy up to 30% of Amatciems (Fig. 3).

Since the original overgrown, boggy hollows were located at various elevations, the new waterbodies are also at different hypsometric levels, forming cascades. This is clearly visible in the landscape, for example, between Lake Vēķis and Zīriņi Pond, which differ in height from 132 to 136 m a.s.l. (Fig. 3, Fig. 5: C).

The changes have also affected the two natural waterbodies. As a result of transformation, Lake Vēķis has a partially altered shoreline, whereas the shoreline of Melnezers has been significantly altered, with an increase in the extent of the lake (Fig. 1).

As a result of relief transformation the dissected relief characteristic of this part of the Vidzeme Highland has been emphasised even more. In the course of creating the waterbodies the height difference between the hollows and the hilltops has been increased by several metres. A general idea of the hypsometric position and height differences can be obtained by considering the differences in height a.s.l. within the area: from 130–132

m a.s.l. right up to 150–154 m a.s.l. The tops of the highest hills reach 156–159.6 m a.s.l. (Fig. 4: A).

In transforming the hills and hollows, the angle and length of slopes has been altered: before relief transformation the slopes generally had an angle of 5–10^0, whereas after transformation the slope of the hills varies from 5–10^0 up to 10–15^0. The angle of certain hill-slopes reaches 20–30^o, and even 40^o in places (Fig. 4: B).

Overall, we can say that the landscape of Amatciems has become more diverse: the mosaic landscape consists of lakes and ponds with small islands and peninsulas in the hollows, wooded hills, as well as hills with planted trees and sown grasses, open areas, houses and yards, and a road network.

The houses are located relatively close together. Each house has a view of an attractive mosaic landscape (Fig. 1: C, D).

With the exception of some major roads, the road network has been created anew, and the roads wind along the ridge-tops. The roads are gravelled, retaining a characteristic feature of the rural landscape; only the main road to the centre of Amatciems is being asphalted (Fig. 1: A, C; Fig. 4: A).

All of the houses have been built on the left-hand side of the Cēsis–Ērgļi road. The first houses were built in 2005, a time of intensive construction of detached houses. By 2009, about 80 building plots (varying from 0.4 to 1.5 ha) had been created and sold in Amatciems (interviews, 2009). A proportion of the plots have been sold without houses, while on others house-building has commenced. The land has been purchased mainly by people living in Riga (32 out of 42 families in Latvia), and during the last year mainly by people from Russia. By 2010, in Amatciems there were 70 houses, of them 28 had been completed and were inhabited (Amatciems; interviews, 2010).

In August 2010, Amatciems had a total population of 72, or 27 families, out of which 12 live permanently in the village, the other 15 spending their summers or weekends here (interviews, 2010).

The permanent residents of Amatciems come from Riga, Sigulda and Cēsis. The families that spend the weekends or summer holidays here have permanent homes elsewhere in Latvia, mainly in Riga or Jūrmala, or abroad: in Russia, Britain, Belgium, Venezuela, Italy or Saudi Arabia (interviews, 2010).

Discussion

Creation of a new settlement will always involve visual changes to the landscape, with addition of houses and outbuildings, roads, courtyards and other elements of the cultural landscape. On any building site the topsoil is removed, replaced with a material corresponding to the demands of construction (mineral soil), and the surface layer is levelled out. After construction, the infertile layer around the structures is covered with an organic-rich soil layer. In most cases such activities are not subject to any special consideration, since in a flat area significant changes to the relief are not conspicuous, and most commonly do not involve any discussion of impacts on green areas. In hilly areas the preparation of building sites requires transformation of the relief, reduction in the extent of sloping surfaces, and increase in the extent of horizontal surfaces.

Of course, no settlement will be alike others, and the differences will be more than just visual. Amatciems differs from many other new villages built in Latvia after 1990. As architects have noted, Amatciems represents a significant innovation in spatial planning, innovative not only on the Latvian scale. It is based on an untraditional approach to the creation of a space for living within a landscape setting, combined with a high level of comfort (Blūms, 2008; Valdmane, 2008). In certain publications about ecovillages (Liepa, 2011; Polis, 2010) Amatciems has been listed among landscape ecovillages.

Although the creator of Amatciems, A. Zvirbulis, does not regard it as an ecovillage, the project does reflect certain ecovillage ideas: small properties that can be delimited by hedges, natural building materials (eco-building), an unpolluted environment, nature, a way of life in harmony with nature, and internal rules of conduct (Liepa, 2011).

The creator of the village, A. Zvirbulis, sees Amatciems as a small town in the future, similar to Mežaparks, with summer-houses. "Amatciems will be Riga's Mežaparks", where people live in harmony with nature (Dūmiņa *et al*., 2010; Majore-Linē, 2007; Amatciems).

What is it that sets Amatciems apart from other villages (compact villages) developed in Latvia?

In the first place, Amatciems is being created mainly as a holiday village. As the creators of the village themselves point out, it is to be a village where people can rest from the hustle and bustle of the city, enjoying quiet, beautiful nature and peace. The interviews also indicate that the main pre-condition for choosing Amatciems as a place of residence or holiday location for families was not only the geographical location, but also the attractiveness of nature and the landscape. Accordingly, in order to retain the functionality of the landscape and the village in accordance with the original plan, the creators of the village have drawn up "Rules on construction, conduct and use". The most important aspect of these rules is that all building plots are intended solely for the construction and utilisation of housing (house, bath-house and garage). Keeping domestic animals or fowl is not permitted in the village, so outbuildings for this purpose are not built, marking a significant difference from traditional farmsteads of rural Latvia. Apart from this, construction of sites for entertainment or services is forbidden, as is the building of commercial or production facilities (Amatciems). The people living in Amatciems have evidently accepted these rules, as laid down in the "Rules on construction, conduct and use".

The exception is the Amatciems guesthouse, and an inn and hotel planned in the future to attract tourists. At the moment Amatciems has no kindergarten, school, post office, shop or other services. Accordingly, the proximity of the town of Cēsis and the good road network are factors giving the residents convenient access to cultural events, educational establishments and various services.

At the same time, the creators of Amatciems have provided the residents with comforts in their homes, because Amatciems has a unified economic infrastructure (water supply, sewerage, telecommunications and energy supply) (Amatciems).

At present Amatciems retains its function as a holiday village. However, as noted by architect A. Blūms (2008), it is hard to say whether it will succeed in fully retaining this character in the future (Blūms, 2008).

Secondly, the development of Amatciems reflects the main idea of the developers: to bring the residents as close as possible to relatively untouched nature, and so the setting has not been "pedantically" maintained (tended). The creators of Amatciems strive to give the impression of a natural, little-altered landscape. The proximity of forest and waterbodies to the house allows the residents to have closer contact with nature: to observe how the landscape, trees and flora change with the seasons, and to see birds and animals in their natural setting. This is because the creators of Amatciems have also considered the need to provide space and shelter for insects, animals and birds, retaining ponds for waterfowl and amphibians, as well as unmanaged stands of young trees, islands in ponds overgrown with bushes and trees, and natural meadows and woods. The closeness of nature provides the residents with opportunities for many outdoor recreational activities: people can simply go walking at any season, as well as berry-picking or fishing in summer,

mushroom-picking in autumn and skiing in winter.

Thirdly, the creators of Amatciems strive to retain the typical Latvian settlement model. The houses are placed separately, like single farmsteads, thus avoiding the impression of being located in a village. Each house is named after an animal or plant, for example, *Irbītes* (The Partridges), *Vijolītes* (The Violets), *Stirnas* (The Roe Deer), *Kadiķi* (The Junipers), etc., which is a traditional practice in naming farms in Latvia. The traditional elements of historic Latvian architecture have been applied in house design: a timber frame or log house with a reed or shingle roof, or with a cover of turves. Boulder stone has been utilised in the structures. Nevertheless, the houses differ from one another, so that each retains its individuality (Fig. 5: D). The houses of Amatciems are not separated by fences. The "Rules on construction, conduct and use" do not permit high fences in Amatciems, only low wooden fences, as is traditional around the old farmsteads in the rural landscape of Latvia (Amatciems).

Being placed among trees, bushes and hills, the houses appear to be isolated from one another. The sense of isolation can vary seasonally. For example, in winter and spring, and likewise in summer and autumn, the houses along Zīriņi Pond, an unwooded area, have an extensive view towards Lake Vēķis and the old farms across the lake, towards the hills beyond Zīriņi Pond and to the neighbours' houses close by (Fig. 5: C). By contrast, the yards of the houses around Mežezers have a more "restricted" view in summer and autumn towards wooded hills and the lake with its islands, the silhouette of the neighbours' house being just visible through the trees. The view is relatively more open in winder and spring, when the trees are not in leaf. This relates to topography and visibility: in more forested areas the view is restricted, and in there is limited visibility in the hollows, while the hills provide panoramic views (Paquette *et al.*, 2001). There is no doubt that the creators of Amatciems have taken this into consideration.

In planning the development, it has been recognised that "Latvians are by nature broad-space dwellers. They dislike living cramped together, and whenever possibly they try to obtain a separate plot of land and build a single-family home", and that clusters of houses are characteristic of the Vidzeme region (Liepiņa, 2001). The road system, too, has been created in such a way that, in the first place, each resident can access their own house along their own road. The major roads, like streets in villages and towns, have been given names, for example, *Priežu ceļš* (Pine Road), *Ezera ceļš* (Lake Road), *Čiekuru ceļš* (Pine-Cone Road) etc.

Fourthly, the development of a mosaic landscape in Amatciems involves relief transformation on a scale unseen in the development of such villages in Latvia, making it unique in this country. As a result, the landscape has become even more attractive. It is not just the availability of the necessary financial means that makes it possible to undertake relief transformation and create a mosaic landscape. An important factor is the location of Amatciems within the hilly area of the Vidzeme Highland, where there is a significant thickness of Quaternary cover. It would be impossible in flat areas with a thin cover of Quaternary deposits (a few metres thick).

People have various opinions about Amatciems and the relief transformation undertaken here. Some accept the changes and approve of the landscape that has been created, regarding it as a unique village not only in Latvia, but at a Baltic scale at least. Others object to the human alterations to the landscape, and to the appearance of the village. Those in favour of the relief transformation that has taken place consider that, apart form nature reserves, there is no such thing as a landscape entirely untouched by people

Fig. 5. The effect of relief transformation in the Amatciems landscape: summer 2010, spring 2011. Photos: I. Strautnieks and I. Grīne. A — after several years, it may be difficult to distinguish which of the hills are natural and which are artificial; B — following transformation of the relief and soils, atypical plant associations are to be seen; C — waterbodies at different hypsometric levels; D — new building in the landscape.

(Benfelde; 2008; Blūms, 2008). However, thanks to relief transformation, the landscape in Amatciems is more diverse.

Relief transformation in Amatciems takes the form of the creation of waterbodies and hills. In the creation of waterbodies the height difference between the hollows and the hilltops has increased by several metres. In the many hollows, where the maximum thickness of the peat reached five metres or even more, the peat has been partially removed. In places the hollows have been deepened, excavating the sandy clay or clayey sand till. The material excavated from the hollows has been dumped and spread out on the hilltops and slopes. This means that the hollows between the hills have become deeper and the hills relatively higher. In certain places, completely new hills have been formed: hills of technogenic origin, consisting of clayey sand or sand and gravel, with a surface layer of spread out peat, gyttja or soil. One of the highest hills, and one of the largest in terms of volume, is located in the western part of Amatciems (by Lake Purvs). It is made up of sawdust, with a thin surface layer of sand and gravel, along with peat (Fig. 5 : A).

As a result of the transformation of hills and hollows, the angle and length of slopes has been altered. On the steep slopes, under the influence gravity the unstable surface layer of fill is subject to changes resulting from natural slope processes. On slopes consisting of more plastic deposits, such as sandy clay or clayey sand till, the formation of tension cracks and slumps can be observed. This is promoted not only by the plasticity of the deposits, but also by the as yet inadequate friction between the surface layer of fill and the underlying terrain, and the lower degree of compaction and higher porosity of the surface layer. With the infiltration of precipitation, the contact surface between these layers turns into a slip surface. Often, gully formation can be observed on the sandy clay till slopes along waterbodies. In many places it can be seen how the peat and gyttja removed from its natural setting, namely the wet hollows, is losing moisture unevenly, changing in volume, cracking and also causing additional surface instability. Apart from this, with the reduction in moisture and improved aeration, the organogenic material is beginning to decompose.

Essentially, as a result of relief transformation, the original fertile surface layer across a large part of the territory has been degraded, and in many locations the soil parent material has changed. Many hilltops and slopes have anthropogenic soils consisting of a spread of peat. In locations with a thicker peat layer, it can be regarded as the soil parent material, but only in a restricted sense, since its thickness will gradually decrease through decomposition and mineralisation.

Grasses have been sown on the hillslopes, and new trees planted. Tree-planting and sowing of grass has been undertaken not only in order to consolidate the slopes, but also to create, as rapidly and extensively as possible, the impression of a natural landscape, which gives Amatciems its unique character. Accordingly, the planted trees include small, young trees, as well as larger trees of such size as can be transported without damage. The trees being planted are the characteristic species of the natural landscape: birch (*Betula pendula, Betula pubescens*), pine (*Pinus sylvestris*), spruce (*Picea abies*) and rowan (*Sorbus aucuparia*). The sown grasses include white clover (*Trifolium repens*). It is important to note that, along with the transfer of the surface layer of deposits from the hollows to the slopes and hilltops, the roots of various plants have also been moved from their original locations, as a result of which damp-loving plants can be seen growing in uncharacteristic locations. Thus, for example, we can see major concentrations of such damp-loving plants as rushes *(Juncus L.)* on well-drained slopes and hilltops, although in natural conditions they are characteristic of wet hollows with water on the ground surface (Fig. 5: B). Such indicator species, along with the sown grasses, very clearly show differences between an anthropogenic and a natural landscape.

However, when planting trees and shrubs, it is necessary to consider what the landscape will be like in 5–10 years, when the trees and shrubs have grown. Such changes in the landscape can already be seen on hills that were planted with young trees during the initial phase of the village development.

After relief transformation, chains of artificial waterbodies have been created in the hollows and small bogs, and these are subject to change. The waterbodies created earlier are gradually starting to overgrow. Thus, for example, in Lake Purvs peat is floating to the surface, and so the managers of Amatciems have undertaken cleaning work (removing the peat). Similar measures have been taken at other waterbodies. As described in publications (Kristensen *et al.*, 2004; Eetvelde *et al.*, 2004), ponds and artificial lakes represent one of the most important visual elements of landscapes elsewhere in the world, too, but the possibility of creating them depends not

only on the geological structure and relief, but also on the motivation to undertake it.

Conclusions

Private villages represent a new trend in settlement development in rural Latvia. It is a trend reflecting the opportunity for people to choose the kind of house they prefer and is characteristic of the arrival of new social groups in the countryside, groups for which agriculture is not the main occupation. This marks a change of perspective regarding the countryside and its role. The countryside is increasingly becoming a living space for city dwellers who work in the city and live or spend their holidays in the country. Thus, the private villages have both permanent and part-time residents.

Amatciems is a private village, that is created in accordance with a concept developed by A. Zvirbulis, differing radically from all other villages built in Latvia so far.

The development of Amatciems reflects in full the ideas expressed by A. Zvirbulis of creating an anthropogenic, but seemingly natural mosaic landscape.

Amatciems is not just a new rural settlement, with characteristic, significant features, namely individual homesteads and waterbodies. It is also an unusual area where we can witness rapid change in the artificially transformed green areas. The intensity of these changes, for example gully-formation and slumping, will gradually decline as the natural balance disturbed by humans renews itself, but the course of natural changes and the foreseeable results of the changes need to be taken into account by the residents and developers of Amatciems.

Changes will gradually take place in the vegetation in areas where atypical plant associations have appeared following the transformation of relief and soil. In many areas a new soil profile will develop, corresponding to the soil parent material, the position in the relief, the vegetation and the climatic conditions.

The extent of open areas with a clear view will be reduced with the increase in tree height, and the proportion of forest will increase. The mosaic landscape will change, with an increase in built-up areas at the expense of grassy areas. Likewise, changes will take place in the waterbodies, unless they are periodically cleaned out.

Over time, it will come clear what changes are affecting the artificially created hill with a core consisting of timber waste (sawdust), covered by a layer of peat, on which a pine stand has been planted.

With time, it will perhaps be difficult to distinguish which parts of this hilly landscape are natural, and which are artificial.

Presumably, the development of private villages in rural Latvia will continue, and a variety of approaches will be taken. Time and experience will show which approaches are the best: whether such ambitious landscape creation and relief transformation as has been undertaken at Amatciems will be justified in the long-run and whether it will be possible to take it as an example when establishing villages elsewhere.

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Notes

[1] *Village* — a settlement with a concentration of buildings and permanent residents. The term is mainly used to refer to rural settlements, but in many cases the residential districts of the urban fringe and within towns or cities are also included in this category (applying the term *ciemats* — "compact village").