



Adaptation of Dolomite Quarry for Entertainment

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Due to the expansion of land resources use, the sites of non-re-cultivated resources extraction - quarries and other wasting lands are increasing in the landscape. Adaptation of such areas for re-use is becoming a problem of relevant economy: social, economic, environmental. Solution of this problem lies far beyond the current quarry re-cultivation tasks by its scope of issues and aspects of interest. This article deals with the topicalities of re-use of non-renewable environmental resources, analyzes the possibilities of adaptation of non-ore materials extraction sites for recreation. Further on it estimates theoretical and practical possibilities of creating the entertainment landscape in Lithuanian extraction sites of non-ore materials and formulates the land management paradigm of dolomite mines areas adaptation for creating entertainment landscapes theme park.

The article is illustrated by examples of Lithuanian and international experience in creation and use of the theme park entertainment landscape. Graphical illustrations of identified wasting land re-use for entertainment are presented, issues of supply and services market for entertainment use are conceptually analyzed, social and economic importance of hedonistic experiences in entertainment society is discussed.

The article considers a potential use of a dolomite quarry in a specific territory - Petrašiūnai (Pakruojis district) for entertainment; the land management conception of excavations application to creation of the entertainment landscape theme park is presented in a graphical plan form.

Key words: non-renewable resources of landscape, quarry, wasting lands, re-use, entertainment society, experience market, entertainment landscapes, theme parks.

1. Introduction

Nowadays, in our country the landscape areas, which we would like to see as cultural landscape in the future, are currently defaced by a fast growth of excavations. Under the circumstances of great social changes the topicalities of socio-cultural use of wasting lands have arisen. Actually due to self-re-naturalization some of the abandoned resources quarries are becoming new biodiversity habitats (Lowenthal 1985). However the landscape damage done by excavations can be hardly offset. With reference to the ecological economy aims this article discusses the possibilities of wasting land re-use satisfying today's public challenges without prejudicing the future generations' expectations.

A modern "motorized" and mobile society eager for emotional experiences, extreme experiences, averse to traditional entertainment wants to travel, to

have fun and to experience new things stronger and faster.

All over the world massive land areas defaced by excavations, abandoned industrial and other landscape areas no longer in use known as the areas of drosscapes (Berger 2005), are transformed into hedonistic experience areas: active entertainment areas of recreation, entertainment landscapes and theme parks providing socio-cultural services to visitors and bringing the economic benefits to local residents, land users, the region and the state. In the book "Europos paveldas<...>" (2008), the analysts of European heritage Gregory Ashworth and Peter Howard state that modern society no longer believes that the heritage use for the purpose of education morally takes precedence over the heritage use for entertainment (Ashworth et al. 2008).

After many centuries due to a very intensive use of the environment large parts of Europe almost no longer have the natural environment which has turned into variably cultivated landscapes of various values. According to David Lowenthal, (1985), in Europe there are many more landscapes than nature. On the other hand, many areas of the landscape are defaced by constructions and resources extractions. Today's entertainment society tends to see the landscape as an aesthetic object and tries to use its beauty as a visual commodity in a hedonistic experience market (Berger 2005, Bučas 2001).

2. Impact of natural resources mining on the landscape

Anthropogenic influence on the environment is increasing in proportion to the development of constructions. In our country a particularly serious threat to environmental quality and beauty of the landscape comes from mining and processing industries of non-ore materials (sand, gravel, limestone, chalk, dolomite) which leave not only industrial complexes in the environment, but also the landscapes defaced by excavations. Dolomite

industrial complex structures give a sense of dolomite mining landscape identity and witness the consequences of industrial activities in devastated landscape (Figs 1, 2).

Natural resources extraction is almost always related to destructive changes in the environment, starting with the prospect of resources, their finding, mining, use of mined raw materials, and the restoration of the frustrated area of landscape. Preparing the area for mining, the soil surface is flooded or dug out, permanent and trail roads are built, green spaces are destroyed and engineering networks are laid. At the beginning of excavations the mineral coating is removed and temporarily stored in an adjacent area. When the deposit is exhausted, the mining place is re-cultivated.

In the process of extraction of non-ore materials resources, the nature of the landscape is being changed three times, while: 1) preparing the land for use; 2) extracting natural resources; 3) re-cultivating the area. Landscape changes are deep, superficial, local, regional and even global. Extraction of natural resources takes place in a large area, whereas their processing occupies even in a larger area than other types of industries.



Fig. 1. The bird's eye view of Dolomitas Ltd. factory (Dolomitas AB 2010)

In Lithuania non-ore raw materials are widespread in the layers of varying thickness in large territories of different hilliness. For these reasons, exhausted areas are left bumpy, hilly and swampy, the vegetation and a mode of hydrological network of water are changed in the territories of excavation, the field roads and various engineering equipment are abandoned in the excavation places. According to the Law of the Natural Resources, re-cultivation of exhausted lands in the mining area and creation of a proper landscape for use must be carried out. By current re-cultivation practice, exhausted lands are

prepared for: 1) agricultural purposes; 2) forests growth; 3) fisheries; 4) installation of water basins; 5) recreation; 6) new industrial and civil construction.

The quarry area, however is usually planted with low value plants, filled in with water and left for self-naturalization. Adapting excavation places for entertainment and obtaining secondary economic benefits are rare cases in our country.



Fig. 2. Changes in the landscape of natural resources in re-cultivation. Quarry view in 1990-1994-2001 (Re-cultivated ... 2010)

3. Degraded and devastated landscapes

The country has a number of instances when the landscapes disfigured by excavations are left non-recultivated and become unused drosscapes. Land Management science calls such landscapes degraded and even devastated (Berger 2005). In the case of landscape degradation, a gradual decline in physical and visual values of the natural landscape occurs and in the process of devastation – a substantial decline in its quality takes place.

Landscape is not homogeneous. In various parts of the territory it is differently cultivated and performs different functions. It is of a different structure, form, expression, cultural and social significance. The term 'devastate' has risen from the English language and means ravage, desolate, destroy (verb), devastation (noun) means ravage, desolation, and devastating (adjective) means causing a lot of harm or damage (Berger 2005)

Wasteland devastation differs in the consequences of influence on the environment. Some places are damaged, others – abandoned and devastated. Some natural resources are infinite, while the others are self-recovered and some of them are created by a human. Usage and intergenerational transfer of resources become an inherited property for future generations. The main difference in cultural and natural heritage is that the natural heritage can be created from scratch if the species have not completely vanished, while restoration of cultural heritage without sacrificing authenticity is not always successful, according to Ashworth G. and Howard P., the authors of the above mentioned book 'Europos paveldas', 2008.

Lithuania is not rich in mineral strata. Non-ore raw materials are non-renewable. That is non-renewable state property. Despite a negative impact on the landscape caused by industry of non-ore materials, the country's economic conditions are forcing these materials to be excavated and processed. Non-ore materials form the basis for production of all other mineral building materials. Non-renewable resources of building materials are decreasing, because unrecoverable losses of these materials are rapidly growing, as Yann Arthus – Bertrand state in the book 'Earth from the Bird's Eye View' (2003). Therefore, it is necessary to find such re-use of wasteland, which would not undermine the ecological quality of the landscape and would not reduce

opportunities for future generations to use the landscape wealth.

In some quarries a few ways of re-use may be adapted for: construction and recreation, motocross or rally traces, water body equipment, agricultural lands property, territory infrastructure facilities and maintenance, and formation of entertainment landscape. The quarries of non-ore building materials provide favourable possibilities of re-use, adapting it for creation the means of new economic and socio-cultural benefit. Smart usage of re-use possibilities can not only reduce devastated, abandoned and unused areas, but also improve supply and demand for visual landscape resource as a commodity (Figs 1- 4). Foreign examples demonstrate various opportunities of re-use of the exhausted resources areas, whereas entertainment landscaping techniques are economically cost-effective and in demand. It is the worst thing what can be done - to leave the abandoned, disused, inordinate lands for self-re-naturalization.

4. Entertainment society and experience market

Entertainment society can not imagine the life without entertainment. Man is no longer satisfied just with visiting attractions. He/she wants a theme park where the hedonistic environment would be established, all the five human senses would be excited for experience accumulation (Bakanauskas 2006). The more senses, the more effective and more memorable experience, then the more attractive place of visiting, the greater part of visitors is satisfied, and the area providing entertainment yields bigger profit.

Modern society wants fantastic, more powerful experience, newer and stronger events and the organizers of entertainment create various economic and visual marketing programs of the area usage. New economic trend- 'The Experience Economy' is rapidly expanding as a separate business sector. The experience products are the products used for pleasure. Orientation to the customer requires the provision of application that business activity has to be reasoned by the detection of wishes and demands of consumers, then passing to the organization and performance of production, as well presentation of goods and services to the market, which are necessary to the supply and demands of these wishes in order to meet to the best the consumers' needs (Urbanskiene

et. al. 2000). Entertainment use of the wasting land is becoming a saleable product in the market. The future of entertainment market depends on whether

experience value and means will be created to clients. It is a determinant factor which exerts an influence on its success in entertainment business.



Fig. 3. Application of a quarry to entertainment sport (*Re-cultivated... 2010*)



Fig. 4. Application of a quarry to social entertainment needs (*Ukmergės...2010*)

5. Theme park landscapes as an object of interest to the entertainment society

In Lithuania theme park landscapes originated in the Lithuanian Grand Duchy period, encouraged by hedonistic whims of nobility. Manor parks of the 16th – 19th centuries became an incentive of modern theme parks. This is evidenced by the former manor parks with special podiums or grounds, where visitors were entertained by travelling troupes of actors or even manor hosts offering various entertainment services. The conclusion is to be drawn that the 19th century brought the development of a modern concept concerning the fun and entertainment, and recreation and entertainment elite parks were transformed into public entertainment parks (Ashworth et al. 2008). In the middle of the 20th century new social and economic changes led to the spread of theme parks. However, the boom of modern theme parks has to be attributed to the park created by W. Disney in 1955. It

has caused recognition of a theme park idea and its development beyond the USA borders. Disney concept's parks are peculiar fantasy worlds.

The post-industrial period became an accumulation of experiences in the entertainment society. In the book 'The Experience Economy' (1999), the authors J. Gilmore and J. Pine said that hedonistic experiences were a fourth type of economic supply after raw materials, products and services, and that tourist industry experts attributed theme parks to the strongest field of experience economy (Ashworth et al. 2008, Gilmore et al. 1999). Thus, experience economy as a separate sector in the entertainment business began in W. Disney's time. Instead of creating a common entertainment park, W. Disney created the first theme park in the world. At the end of the 20th century a theme park concept created by W. Disney spread around the world.

Having met the 21st century the elite parks of leisure and traditional functions of amusement have

been transformed into theme park landscapes. According to the thematic purposes, the public area parks are assigned to:

1. leisure parks;
2. entertainment parks;
3. commercial parks;
4. Disney-lands (children's dream parks);
5. modern hedonistic parks of pleasure and admiration;
6. violence, horror and parks of other themes.

Global development of theme parks testifies to the commercial success of their idea. These parks are assigned to the 'attractive places for visitors', where visitors, especially tourists, are not only welcomed, but they are the main focus of the park. It is very important that the theme park idea would be clearly and visually presented to visitors of these parks (Figs 5 - 6). Success of theme park activities is determined by the number of visitors and received profits. Entertainments there are more important than education.



Fig.5. Michigan's Adventure Amusement Park. (Michigan 2010)



Fig.6. Cedar Point Amusement Park (Cedar 2010)

The success and demand for theme parks show that one theme is insufficient to people, they need a multi-theme entertainment park equipped with the latest technology, which would justify all the expectations of all the five sensory senses, regardless of the seasons (Bigne et al.2005).

6. Entertainment landscapes as territorial complexes of wasting land for entertaining use

Entertainment landscape is a multi - theme park which provides a possibility to accumulate various entertainment experiences through all the five senses. Entertainment landscape can be defined as an

attractive multi-entertainment area for visiting, satisfying the maximum human needs for hedonistic experiences.

While adapting the areas of exhausted natural resources or abandoned and disused ones, as well as non-renewable devastated landscape or other industrial territories for entertaining use, it is necessary to carry out the detailed study on all the essential aspects concerning the use of such applications. During this research it is useful to combine the history of the area with the present and the future.

Besides adapting a landscape for entertainment it is necessary to take into account the requirements of the 'experience economy' for forming a landscape which would satisfy environmental, aesthetic, cultural, recreational and economically beneficial conditions of a landscape, because only such landscape would meet the hedonistic need of people for qualitative environment and sought experiences. Such landscape should be a product of high visual

quality and a result of systematic planning and holistic concept (Fig.7).

While forming the entertainment landscape it is important not only to fill in the area with facilities and buildings, but also to create such a landscape of entertainment which would satisfy the human's sight, hearing, smell, touching and taste senses and wanted experiences through them.

In a general case, entertainment and amusement parks are designed and built considering the necessity of the following basic characteristics (Bigne et al.2005):

1. Great investment resources and substantial area;
2. A plan of thematic area division and segmental localization of experience places;
3. A plan of consistent implementation of the park project without undermining resources extraction and entertainment park creation and its activities;
4. Reconciled marketing programs of demand and supply.

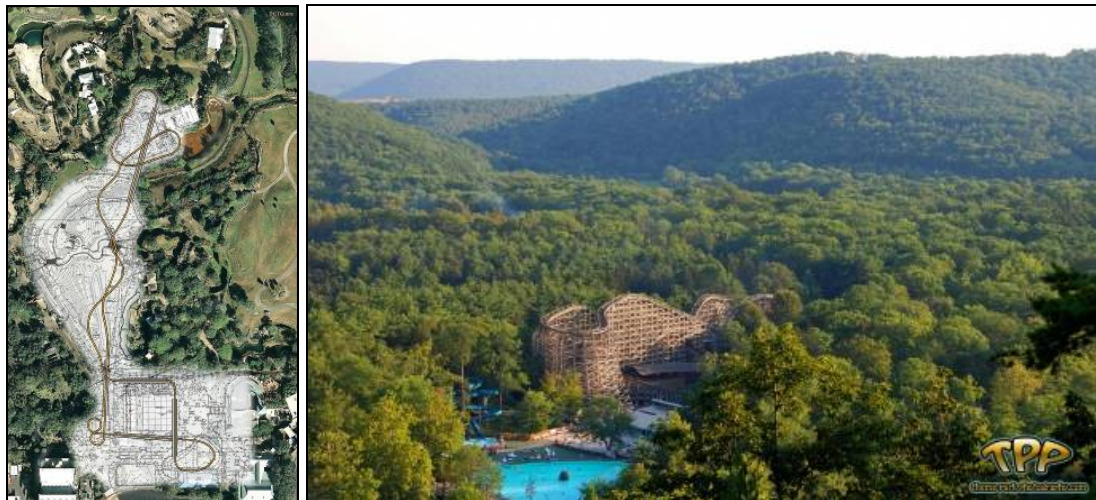


Fig.7. Interface between entertaining landscape plan and natural environment (Thematic... 2010)

7. Entertainment landscape park in Lithuania

On September 28, 2009, Dolomitas joint-stock company commissioned the KTU Landscape Management Centre to do research which resulted in the work: "Landscaping study of usage opportunities of a dolomite mining deposit in Petrašiūnai (Pakruojis district) with a special drawn landscaping plan of recreational use of the territory" (Fig. 8).

Entertainment landscape, what is it? This term is not approbated in any legal documents of the Republic of Lithuania. Up to the middle of the 20th century the concepts of entertainment landscape were not found in the classification of landscape functional types. This landscape concept is not defined in the Landscape Policies Description of the Republic of Lithuania confirmed by the Resolution No 1526 adopted by the Government of the Republic of Lithuania on December 1, 2004 (LR Kraštovaizdžio...2004). This concept does not exist in

the rules of special landscaping plans confirmed by the Minister of the Environment under the Order No D1-246 on May 5, 2004 (Kraštovaizdžio... 2004). Theme parks, including entertainment landscapes, were more widely discussed only in 1999 in the book "European Heritage" translated into Lithuanian in 2008. Therefore we can agree with the authors of the book (Ashworth et al. 2008) that the law is lagging behind the life.

Having started drawing up the plan of the opportunities of re-use of the "Dolomitas" Ltd. mining areas to recreate there, comprehensive study on theoretical and practical experiences of foreign countries in the possibilities of re-use of wasting lands was carried out. Its results have shown that in creating the modern entertainment landscape a physical function of the area is of less importance than the themes of entertainment provided in a different locality or place, as well the quality of received experiences. In the entertainment landscape the

beneficial landscape conditions. Such a landscape, as previously mentioned, must be a product of high visual quality.

The aim of a landscaping special plan for dolomite deposit 'Petrašiūnai II' is to adapt consistently the exhausted, being used and planned to be used areas of a dolomite deposit for (entertainment) re-use, i.e. to create the entertainment theme park complex in the territory of a former deposit that would satisfy today's needs of the entertainment landscape. According to the plan, in the exhausted and even now used parts of the deposit, without including the visitors and service staff sectors, 10 entertainment theme parks are proposed. Each park provides for the establishment of one, two and even three sectors, offering different experiences. In pursuit of one idea of landscaping of the dolomite deposit, all the area is planned as an entire formation (Fig.8).

In the perspective, in the dolomite extraction territory it is proposed to create additional three parks with their sectors (Fig. 8).

The entire entertainment landscape park when the dolomite deposit is exhausted should be composed of 13 theme parks, entertainment and administrative centers and accommodation sectors.

In the complex plan a connective component of the entertainment theme parks of Petrašiūnai dolomite mines is a water body. Its separate parts are used for various recreational - entertaining functions: deepest places for diving, underwater spelunking and rowing, the shallower ones - for swimming and beaches. Entertainment parks and their sectors for different experiences are built on water-peninsulas.

The planned entertainment landscape area is surrounded by a circular road with a few cross-links.

For creation of this entertainment landscape park it is planned to use the whole area of the exhausted dolomite deposit of 1,175 hectares. Outside the entertainment landscape park, the recommended environment management impact zone is planned, which includes adjacent protected cultural and natural heritage objects and a hydrological network around the park.

8. Conclusions

Adaptation of exhausted deposit areas for re-use is becoming a topical social, economic and environmental problem. It is necessary to find such a re-use of exhausted land which would not undermine ecological quality of the landscape and would not reduce opportunities for future generations to use the landscape wealth. Smart usage of the re-use possibilities of entertainment can improve supply and demand for visual landscape resource as a commodity. In the areas of exhausted non-ore material deposits it is possible to create Entertainment theme park complex which would satisfy modern society's needs for the entertainment landscape.

1. In the process of non-ore resources extraction, the nature of landscape is being changed even

three times, while: 1) preparing the territory for use; 2) extracting natural resources; 3) re-cultivating the area. The quarries of non-ore materials are becoming new biodiversity habitats due to self-regeneration of the nature, but it is almost impossible without special human efforts to remove the changes of landscape's visual quality caused by excavations.

2. The entertainment experiences in sale and purchase - experience marketing occupy a particular role in the entertainment industry in modern agile society. The aim of a special landscaping plan of the dolomite deposit in Petrašiūnai (Pakruojis district) is to consistently adapt the exhausted, being used and intended to use the dolomite reservoir areas for (entertainment) re-use, i.e. to create the Entertainment theme park complex in the territory of a former deposit that would satisfy human needs for hedonistic experiences and give the possibility of accumulating maximum experiences through all the five sensory senses.
3. Having met the 21st century, the traditional functions of the elite parks of leisure and amusement have been transformed into theme park landscapes. Global development of theme parks testifies to the commercial success of their idea. These parks concern 'attractive places for Visitors', where visitors, especially tourists, are not only welcomed, but they are the main focus of the park and a source of income.
4. It is proposed to establish 13 entertainment theme parks in exhausted, being used and in long term planned to be used parts of the dolomite quarry in Petrašiūnai (Pakruojis district). Each park provides for establishment of one, two and even three sectors, providing different experiences. In pursuit of one idea of the landscaping dolomite deposit, the whole area of the entertainment landscape is planned to become an entire entertainment theme park complex of 1,175 hectares.

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Dolomito kasviečių panauda pramogoms

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Plečiantis žemės išteklių naudojimui, nere kultivuo tų išteklių gavybos vietų – kasviečių ir kitų apleistų vietovių – kraštovaizdyje daugėja. Tokių vietovių pritaikymas pakartotinei panaudai tampa aktuali ūkine, socialine, ekonomine ir aplinkosaugos problema. Šios problemos sprendimas klausimų apimtimi ir interesų aspektais toli peržengia karjerų dabartinės rekultivacijos uždavinius.

Straipsnyje nagrinėjamos neatsinaujinančių aplinkos išteklių antrinės panaudos aktualijos, analizuojamos nerūdyninių medžiagų gavybos teritorijų pritaikymo rekreacinei panaudai galimybės, įvertinama pramoginio kraštovaizdžio kūrimo teorinė ir praktinė galimybė Lietuvos nerūdyninių medžiagų gavybos kasiniuose, suformuluojama dolomito kasinių teritorijų pritaikymo pramoginiams kraštovaizdžio teminiams parkams kurti kraštovarkinė paradigma.

Straipsnyje pateikiami Lietuvos ir tarptautinės patirties pramoginio kraštovaizdžio teminių parkų kūrimo ir panaudojimo pavyzdžiai. Taip pat pateikiamos identifikuotos išnaudotos žemės antrinės panaudos pramogoms grafinės iliustracijos, konceptualiai nagrinėjama pramoginės panaudos pasiūlų ir paslaugų rinka, hedoninių potyrių socialinė ir ekonominė reikšmė pramogų visuomenėje.

Straipsnyje aptariamas konkrečios teritorijos – Petrašiūnų (Pakruojo raj.) dolomito kasvietės pramoginės panaudos potencialas, pateikiama kasinių teritorijos pritaikymo pramoginio kraštovaizdžio teminiams parkams kurti kraštovarkinė koncepcija grafiniu planu.