

# Attractive elements of eco-design in the tourism industry

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**Abstract.** The article is devoted to the actual problem of determining the possibility of ecological design of elements of attractions with their aesthetic content in the tourism industry. Emphasized. that human perception is based on visual sensations, and especially the aesthetics of tourism objects, which also depends on their ecological condition. The conditions of active recreation and inclusive tourism are considered and the important role of the appearance of service personnel and the role of corporate style is emphasized. The problematic issue of the elements of attractions in the ecodesign of the tourism industry (including ecotourism, active tourism) was investigated and it was found that the basis of this issue is the generalization of the concept of attraction and related concepts, which regulate their essence. However, the aesthetic indicator in revealing the essence of these concepts and elements of attraction has only a tangential nature. The design of attraction objects, taking into account the criteria of aesthetics in the design approach, is proposed according to the laws of ecology and beauty - the use of eco-materials, the harmonization of colors, the use of the concept of the golden ratio. Criterion definition of the possibility of using a design approach in elements of attractions, taking into account ecology and principles of aesthetic reflection, is provided. It is proposed to use compositional factors in attraction objects, among which the category of balance occupies an important place, which can provide consumers with the conditions of perception of a recreational nature. As a result of the conducted research, examples of modern design technology with consideration of aesthetic indicators in elements of attractions were determined and provided.

## 1 Introduction

Psychologists' studies [1] state that 93% of human perception is based on visual sensations. Recently, social psychology has focused on their environmentalization, which is extremely important for excursion activities in terms of people's perception of the aesthetics of landscapes, as well as objects that are subject to exposition. Perception the aesthetics of the landscape complex, as well as the specified objects, depends on their ecological state. That

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is why the selection of aesthetically valuable objects is especially useful in determining the prospects for the development of cognitive-recreational nature use. These objects also include those characterized by certain attractions. They can include natural beauty, historical sites, cultural events, museums, amusement parks and many other elements that attract travelers.

There is also the concept of adequate tourism [2,3] (from the Latin *aequatis* – equated) – tourism based on the unique resources of the area, actively contributes to the preservation and rational use of its cultural, historical and natural heritage. In other words, we are also talking about ecological tourism.

In any case, attractions must be present in tourist facilities. Attractions form the main motivation of tourists and influence tourists' decisions about choosing a travel destination and shaping their tourist experience. Analysis and development of tourist attractions is important a component of the strategy and in the development of international tourism.

As indicated in [4], design in tourism is not just beautiful pictures and bright colors. This is a comprehensive approach to creating a unique and unforgettable image of a tourist product. as a cultural event, excursion, shopping and many other types of recreation. An important type of design is eco-design.

According to attractiveness in tourist activity, the following are distinguished: display objects or attractive objects that are included in the tourist product and used as elements of tour software; leisure objects, which can be both software and part of additional services provided in places of rest. Let's consider and analyze the main concepts. Attractiveness refers to the degree of attractiveness, exoticism, and uniqueness of excursion-tourist objects and recreational-tourist resources involved in the use in the tourism industry. The concepts of excursion and recreation should be emphasized here. However, there is also active tourism with its sports (physical) loads. At the same time, there is also the concept of active recreation [3] (English active recreation from the Latin *activus* - to act) - the process of using means, forms and methods of physical culture and sports, aimed at meeting the needs for active recreation, recovery of strength, entertainment and personal improvement in free and specially allocated time. The content of active recreation is specially organized motor activity of an aerobic nature in a complex with anaerobic, which is carried out with a relatively low intensity in the form physical exercises, changing types of activities, movement games and entertainment, sports and health tourism, etc. The attractive provision of the recreational system is understood as a set of properties of natural and cultural complexes, technical systems and service personnel, which determine the subject's choice of this recreational system [3].

Attractive resources are understood as certain tourist and recreational resources that are part of the tourist product and are subject to realization for the purpose of tourism. They are part of the tourist product are used as: objects of motivational orientation; objects of excursion display; elements of the excursion program [3].

Attraction refers to the process of attracting tourist and recreational resources for use in tourist and recreational activities [3]. The attractive properties of tourist and recreational resources consist in their ability, according to their aesthetic, meaningful characteristics and parameters, to meet the requirements of use in tourism under the conditions of its sustainable development. Also attraction (from Latin *attractio* – to attract) is interpreted as a set of activities and means of meeting the needs of tourists in meaningful leisure time using tourist resources of objects of natural or artificial origin in the specified territory. Here, the emphasis is on the geographical determination of the place of attraction. There is also the concept of an attractive park - (from the Latin *attractio* - to attract and the English park - fenced) - an entertainment center of the leisure and entertainment industry with a complex infrastructure designed for recreation, accommodation and food for tourists. That is, we are talking about a restaurant and catering complex. In addition, there is no justification for the

selection of criteria in the design of aesthetic indicators of attraction elements. Special attention should be paid to the concept of barrier-free tourism as a type of activity or business that provides a tourist product, information, individual tourist services taking into account the needs of access and organization of these services for groups of people with limited mobility. Inclusive tourism - accessibility of tourism for everyone, including people with disabilities. Inclusive tourism (fr. *inclusif* – includes in itself, lat. *include* – I conclude, include) is a type of tourism that ensures its accessibility for all categories of citizens, in the sense of adapting the infrastructure of tourist centers and tourist exhibition facilities to various needs people, including people with disabilities, the elderly, their guardians and family members, people with temporary disabilities, parents with baby carriages, families with small children. In the UN Convention on the Rights of Persons with Disabilities it is emphasized that accessibility is expressed in equal access to: - physical environment; - transport; - information and communication, including information and communication technologies and systems; - other facilities and services provided to the population, both in urban and rural areas [5]. However, attention is not paid to attractive elements here.

Until now, the possibilities of using a design approach in the elements of attractions, taking into account ecology, have not been determined. It should also be determined how the principles of aesthetic reflection can be applied in the elements of attractions and its criterion support.

Ecological design helps restore contact with living nature. Ecological design (green design) takes inspiration from nature and rethinks the human attitude towards it. Therefore, the task of the research is offer of appropriate products from ecological materials in tourist leisure. Also, an important aspect in tourism and its varieties, for example, active tourism, associated, in addition to aesthetic, with physical culture and sports features, are the quality indicators of tourist equipment, including clothing. These indicators primarily include environmental ones, which ensure the quality of life during a person's stay in travel conditions. These indicators should ensure physiological and hygienic requirements. Therefore, it is necessary to study the existing regulatory materials. Because tourism related to ordinary and special (sports) clothing, it is necessary to determine the conditions of its environmental certification.

As indicated in [6], tourist attractions play an important role in any tourist product. They can include natural beauty, historical sites, cultural events, museums, amusement parks and many other elements that attract travelers. Attractions form the main motivation of tourists and influence the decisions of tourists regarding the choice of destination travel and the formation of their tourist experience. Analysis and development of tourist attractions is an important component of the international tourism development strategy. Entertainment such as attractions, concerts, festivals and entertainment venues are becoming an integral part of the tourism universe. They add emotional value and unforgettable experiences to travelers and create opportunities for the development of new tourism products. However, until now, the definition of attractions exists as a generalized formulation without specifying the characteristics of aesthetic indicators and certain recommendations for their application

Ecological design, *ecodesign*, is a direction in design that pays key attention to environmental protection throughout the product's life cycle. All aspects of the creation, use and disposal of products are taken into account in the complex. As defined by Sim "Van der Ryn and Stewart Cowan, it is "any form of design that minimizes ecologically destructive impacts by integrating itself with the processes of living nature." *Ecodesign*, along with the obvious and usual requirements of beauty, price, pays special attention to the following factors. Consumption resources during design, manufacture, use and disposal. Origin of materials. Many aspects are taken into account, starting with the protection of the environment by the manufacturer (supplier) and ending with the observance of the rights of personnel at enterprises, the support of farming, etc. There is certification of various kinds,

similar to that carried out by the Forestry Supervisory Board. Safety in the use of products, absence of harm to the health of users, minimization of noise, emissions, radiation, vibration, etc. Simplicity and safety of use and disposal, possibilities reuse of materials with minimal environmental damage. If tourism features are systematically considered, social factors should be taken into account among the factors of successful tourism. This is especially important for less mobile population groups. It is for these groups that the behavior and appearance of service personnel are especially important. Particular emphasis should be placed on the appearance of the service personnel, because the main lever is the corporate style as a product of eco-design with the appropriate attraction. However, in general, attractions are not mentioned among the specified factors.

## **2 Material and Methods**

The research methods should include the methods of ecodesign and design planning. Emphasis in eco-design is on natural materials. Also, these are healthy materials with a minimal content of toxic substances: wood, paper wallpaper, decorative plaster, ceramics, natural stone, natural textiles. wooden inserts, wicker furniture and rattan accessories, jute mats, bamboo stems and cork covering . Emphasis is also placed on recycled materials. Color the palette should also be inspired by nature. Take a full-fledged landscape as a basis, for example: a sea coast with sand dunes, blue and sunny shades on the basis of white, or choose a "forest" scheme, where there are more deep green tones and trees. Rejection of excessive decorativeness, ergonomics and functional decor are also eco-design, which can be characteristic of the minimalism style. The main thing in eco-design is the principles of responsible consumption.

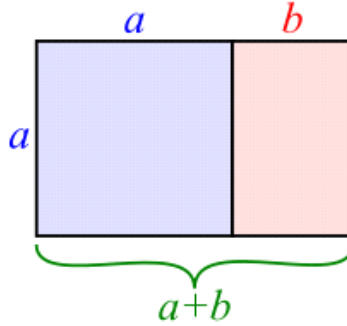
## **3 Results and discussions**

In naturally created tourist facilities, compositional factors can be determined, while recreational benefits are mostly provided by the sense of "balance" [7]. In artificial objects of ecodesign, this factor is laid down in the design process. Its essence is that, according to the principle of balance, the composition should have a well-thought-out balance of its elements. The requirement for balance in the composition is a consequence of the existence of the physical law of gravity, which determined the peculiarities of human perception of objects in space. Equilibrium (balance) of the composition is balanced.

The center of equilibrium of the composition is its optical center, which is visual masses of form elements relative to the conventional center or axis of the form. The center of equilibrium of the composition is its optical center, which is approximately one-eighth above the physical center of the composition. Thus, balance in the composition is the balance of elements to the left and right of the optical center, as well as above and below. This principle is actively used by designers in the objects of the hotel and restaurant business in designing interior layouts. A variety of finishes made from ecological construction mixtures can be used, for example, stucco, various panels, including mosaic, ornamental compositions, works of art - paintings, sculpture. Ecological woven products with a certain pattern, ornament, and prints are also an important element. In museums, this principle is used when placing expositions. In order to give aesthetic expressiveness to objects of attraction, it is important to use the laws of beauty, which include processes of harmonizing colors, and the use of compositional techniques related to human feelings. For example, static, dynamism, which can be perceived as speed and others. Optical illusions are also used. But the most valuable are objects built according to the rule of the golden section. Consider the golden section as a universal manifestation of structural aesthetic

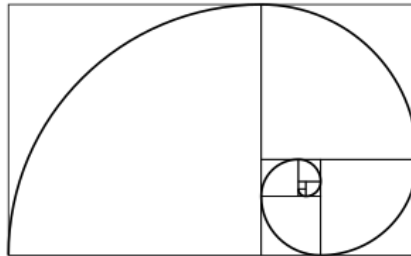
formation. In mathematics and art, two quantities form the golden section if the ratio of their sum ( $a + b$ ) to the larger quantity ( $a$ ) is equal to the ratio of the larger ( $a$ ) to the smaller ( $b$ ) (Fig. 1 shows a scheme for its definition). This ratio is denoted by the Greek letter  $\phi$ .

The golden ratio is considered the ratio that best corresponds to the aesthetic perception of the image. The golden section is the boundary of the ratio of two adjacent terms in the Fibonacci sequence. It is used in art and most often in form.



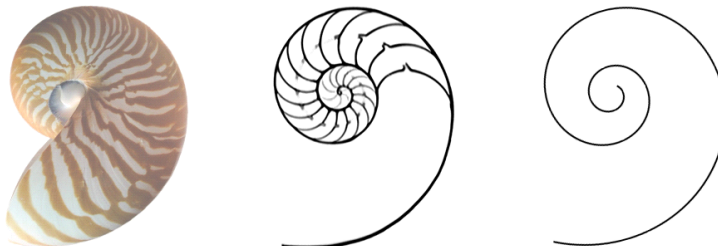
**Fig. 1.** Scheme for determining the golden ratio [9]

The Fibonacci spiral is an approximation of the golden spiral. Figure 2 shows the view of the golden spiral.



**Fig. 2.** Golden spiral [10]

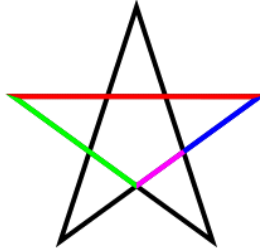
An example of a golden spiral in living nature is shown in Figure 3.



**Fig. 3.** Golden spiral in living nature (biodesign) [10]

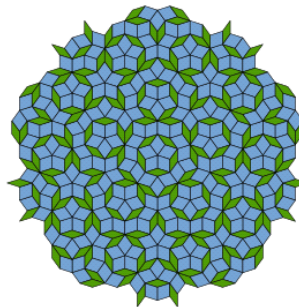
The golden ratio appears in the regular pentagram (Fig. 4), which was considered a magical symbol in many cultures. The point of intersection of the sides divides them in the golden ratio. Most of the side is also divided in golden ratio by another point of intersection. The pentagram contains five acute-angled and five obtuse-angled golden

triangles. In each of them, the ratio of the length of the longer and shorter sides forms the golden ratio.



**Fig. 4.** Golden pentagram [11]

Also an example of the use of the golden section is the Penrose mosaic, named after Roger Penrose, who was interested in the problem of "paving", that is, filling a plane with figures of the same shape without gaps and overlaps. The problem is solved by tiling with figures that form a periodically repeating pattern (Fig. 5), or Penrose tiles (tiling the plane with rhombuses of two types — with angles of  $72^\circ$  and  $108^\circ$  ("thick rhombuses") and  $36^\circ$  and  $144^\circ$  ("thin rhombuses") (formed from "golden triangles"), such that any two adjacent (i.e., those with a common side) rhombuses do not together form a parallelogram). The color can be different.



**Fig. 5.** Penrose mosaic [12]

An example is the use of Penrose mosaic as paving tiles on the floor (Fig. 6). It was believed that there are no such tiles, from which only non-periodic mosaics would be built. Penrose went through many tiles of different shapes, eventually finding only 2, based on the intersection, which is the basis of all harmonic relationships. These are diamond-shaped figures with angles of  $108^\circ$  and  $72^\circ$ . Later, the figures simplified to the shape of an ordinary rhombus ( $36^\circ$  and  $144^\circ$ ), formed from "golden triangles". The mosaic structure is related to Fibonacci.



**Fig.6.** Roger Penrose standing on the floor covered with the Penrose mosaic [12]

A geometric design or pattern can be represented as a mandala (Fig. 7) - represents the cosmos or deities in different heavenly worlds In the ancient Sanskrit language of Hinduism and Buddhism, mandala means "circle". This can be interpreted as defining a match in the symmetry of design and the universe.



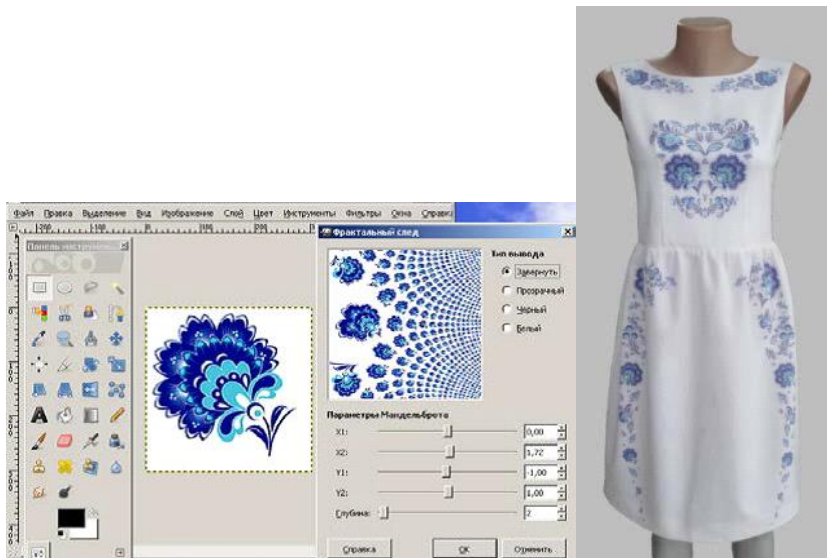
**Fig.7.** Mandala [13]

Humanity has noticed the presence of fractal regularities in nature in the form of repeated forms and their combination since ancient times - trees, mountains, snowflakes, lightning or hurricane.

A fractal is an infinitely self-similar geometric figure, each fragment of which is repeated when the scale is reduced. Fractal graphics are intended for automatic image generation by means of mathematical calculations. An example of a fractal image is shown in Figure 8. An example of a fractal print for a dress presented in Figure 9: a) step-by-step development in the GIMP graphic editor using a filter; b) photo of the author's dress model [7]. This is an important element of corporate style, which can be made on uniforms in this way.



**Fig.8.** An artistic version of a fractal [14]



**Fig. 9.** Author's dress [7]

Also an interesting development is the production of logos from wood, presented in Figure 10.





**Fig. 10.** Logo made of wood [15]

For the certification of tourist clothing, it is possible to recommend the use of the OEKO-TEX 100Plus standard - this is a product label that gives textile and clothing manufacturers the opportunity to demonstrate to the consumer that their products are optimized from the point of view of human ecology, and the production processes are environmentally friendly [8]. Products with this label have been tested for the presence of harmful substances in accordance with the OEKO-TEX 100 standard, and manufactured on exclusively environmentally friendly production sites in accordance with OEKO-TEX 1000

## 4 Conclusions

The problematic issue of the elements of attractions in the ecodesign of the tourism industry (including ecotourism, active tourism) was investigated and it was found that the basis of this issue is the generalization of the concept of attraction and related concepts, which regulate their essence. However, the aesthetic indicator in revealing the essence of these concepts and elements of attraction has only a tangential nature. The possibility of using a design approach in elements of attractions with consideration was not determined ecology and principles of aesthetic reflection. It is proposed to use compositional factors in attraction objects, among which the category of balance occupies an important place, which can provide consumers with the conditions of perception of a recreational nature. The design of attraction objects taking into account the criteria of aesthetics in the design approach is proposed according to the laws of ecology and beauty - the use of eco-materials, the harmonization of colors, the use of the concept of the golden ratio. Examples of this are provided design using modern technologies. To implement the certification of tourist clothing, standards are proposed that take into account the safety of materials and the conditions of their production.

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