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Role of Design in the Consumer Culture Development: Ecological Context

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ABSTRACT

The relevance of the researched problem stems from ecological issues that are a reflection of the contemporary culture crisis covering the whole range of people's interactions with each other, with society and with nature. In many respects, an ecological crisis is an ideological crisis and global environmental problems are impossible to solve without development of ecological culture, without the joint efforts of experts in various fields of science, industry, art and education. This article aims to substantiate the special role of design in solving the challenges of sustainable development, in particular, in the development of consumer culture, as it is an integrated and interdisciplinary activity involved in the social, political, economic and technical processes. The leading methods of investigating this problem are the ones of cultural and historical analysis that allow to comprehensively trace trends in design taking into account adequate cultural context, ideology and system of social values. The article deals with the socio-cultural role and involvement of design in the process of consumption and control of consumers' minds in the context of environmental issues; substantiates the necessity to change the design determinants, values and worldview orientation of design that will affect the consumer culture in accordance with the objectives of sustainable development and will promote the development of society's ecological culture.

KEYWORDS Consumer culture, design, ecological design, ecological culture, ethics of design ARTICLE HISTORY Received 19 April 2016 Revised 27 May 2016 Accepted 17 June 2016

Introduction

Speaking about the problems of sustainable development and ecological issues, researchers are more often coming to the conclusion that worldview attitude towards nature needs to be changed and the society's ecological culture should be developed (Vinokurova, Nikolina & Efimova, 2016). However, environment related issues continue to be addressed by regulatory, administrative, legal and technological measures (Matveev et al., 2016). What mechanisms can change the public consciousness, direct people to preservation

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of the nature and culture values, to humane treatment of nature, to search for compromise in situations where economic or political interests of certain groups of people and even states are in conflict with environmental interests of society and the laws of nature?

The purpose of this article is to consider the socio-cultural nature and capabilities of design in changing the consumer culture that is directly related to the ecological culture. It is necessary to substantiate the special role of design in solving the challenges of sustainable development since it is an integrated and interdisciplinary activity that affects social, political, economic and technical processes.

Being involved in the processes of consumption, design has always solved the problem of stimulating demand, competition for markets and consumers, but economic issues overshadowed the ethical and environmental ones, which became one of the reasons for the crisis of human and nature relations (Pankina & Zakharova, 2014; Zeleeva & Asafova, 2016). It is necessary to analyze how the consumer model changed in the history of design, what impact design has on the economic and social processes. Currently, the interdisciplinary approach to the problem is relevant, and the integration of science and art can shift the focus of tackling ecological problems towards ideological grounds.

Ecology as well as design have now become global phenomena. Design along with architecture and engineering is a way to develop and adapt the nature by the humans for their needs, as well as a means of harmonizing coexistence of human and environment (Kagan, 1996). But it is a huge amount of fast becoming obsolete design objects and substances released during their production that aggressively pollute the environment, while the works of architecture and engineering are used for centuries. Besides, it is important that design is an innovative platform for the search of new forms, for active introduction of modern technologies and scientific achievements.

Based on the visual language of sculptural forms, design actually serves as an international language of communication. By its development, we estimate the success of the society, it is a hallmark of a country, of a corporation, of a company, of a firm, it has a huge impact on technological progress, commercial success. Design is not just some construction of industrially manufactured objects, but also a sphere of consumption and impact on the life of society (Press & Cooper, 2008). As a cultural phenomenon, it has, above all, social and cultural nature, which manifests itself in response to the material and spiritual demands of the society, in the influence of object-spatial environment on the product market, needs and social behavior of a human (Verbitskaya & Semenov, 2016; Revyakina, 2015; Nesgovorova et al., 2016). By creating an artificial living environment, designers predict human activities in it, open up new forms, constructions and technology to society, arrange living space, form social processes, communications and lifestyle of consumers, their aesthetic preferences, foster an appreciation and often provoke a new round of consumption, not always necessary and justified. Design acts in this case as "a specific project mechanism functioning in the socio-economic system", provides an opportunity to manipulate the public consciousness (Koskov, 2004). Styling, advertising, fashion respond to market production and consumption mechanisms. They are means of product promotion on the market and stimulate sales.



Methodological Framework

The leading methods of investigating this problem are the ones of cultural and historical analysis that allow to comprehensively trace trends in design taking into account relevant cultural context, worldview and system of social values, to define humanitarian problematization of design engineering issues. This enables us to analyze the evolution of the design principles, style and paradigmatic ideas about form making in design, their philosophical and cultural dependence.

The experimental background of the research is the following: objects by foreign and Russian designers, project assignments and theses papers on environmental issues by design students. The theoretical background of the research is publications on design problems and trends in the field of art, culturology, philosophy, history and theory of design. The research has been carried out at Russian State Vocational Pedagogical University.

The cultural approach as a methodological basis for studying the research problems involves the analysis of design activity as a logical product of the development of human culture that is innovative by its nature but also recreates and interprets traditional ethnic and regional values. This approach allows us to consider the phenomenon comprehensively in the context of socio-cultural importance when defining the paradigms of constructing design objects and developing the design culture of the future experts in the system of design education.

The phenomenological approach is needed when studying the ecological aspect in design as a cultural phenomenon from the point of view of cultural and axiological backgrounds, of social and formal manifestations. The system approach allows us to analyze design as a system, its individual components and the nature of their relations with each other and with other cultural phenomena. Axiological approach – when analyzing the value-conscious, social and cultural potential of the design, hierarchy of volatile and subjective values and design objectives – allows us to select and capture the main determinants of goalsetting and meaning-making in modern design.

The semiotic method, the method of art analysis allows us to identify the socio-cultural role of design, quality and factors in objective-spatial environment that affect a worldview, consumer culture and ecological culture. The axiomatization method allows us to identify the principles of design engineering with ecological paradigm. When selecting, studying and systematizing the theoretical and project materials, the following empirical methods were used: observation, description, comparison.

Results

Design and consumption processes

It is not the product engineering but advertising and marketing that became the problem of design. The idea of cultural consumption is being promoted as opposed to the technocratic functionalism and philistine materialism. In post-industrial society we have the redundancy of products, information and signs. Transience and the cult of consumption, impetuous emotional purchases, desire for constant renewal formed by the influence of mass media – all this causes demand for disposable things, including even paper



clothes and cardboard furniture. Modern design, the objects of which are intended for one time or a season, is actually design of waste, i.e. the designer creates simultaneously an item and an anti-item. There is even a trend in art design – design FROM waste. As a result of consumer's pursuit of quality and quantity with the desire to "have, to use, to present themselves, to stand out", we have overproduction. Aesthetics found itself at the market's service.

The object environment (objects of industrial and environmental design) in culture becomes more and more non-durable, fashion (image and style design, costume design) determines the need for continuous replacement of one items by others. Advertising (graphic, communicative, web design) helps maintain a steady demand and promotes moral obsolescence of things, non-durable use of things. Informational influence with a huge number of its carriers causes people to feel again the frustration and even inferiority, to seek new forms, patterns, image. The design that should bring harmony and order into people's lives becomes a factor and a means of creating imbalance of production and consumption processes, disharmony of consumer psychology, unjustified inconsistency of actual and market value of the goods. A huge flow of elaborate visual and audial information, signals, images, promotional offers, continuous updates of the objective world and replacement of the old with the new strikes a person causing consumer dependency diseases.

In this situation, the socio-cultural and ecological responsibility of designers, the importance and vectors of professional ethics are increasing. The search for principles of ecologically responsible designing has been conducted since the very first years of existence of design as a project activity type. The principles of ecological design, highlighted by the author based on the analysis of different design theories (Pankina, 2014), accumulate the features of functionalism, system and environmental approach, ideas of different natural and humanitarian sciences; stem from the laws and principles of ecology and nature, from the relevance of reasonable consumption; refer to "the laws of ecology" by B. Commoner (1971):

- "Everything is connected to everything else": consistency; versatility, multi-functionality, interchangeability; modularity, transformability, mobility.

- "Everything must go somewhere": durability, fashion-free; object's "new life"; hygiene, ecological cleanliness of products' materials as well as of production, consumption and disposal processes.

- "Nature knows best": use of nature's patterns in the constructions, functions, image, naturalness of forms and materials; rationality, simplicity and functionality of forms; connection with the aesthetics of the region, use of regional, ethnic patterns.

- "There is no such thing as a free lunch": efficient energy planning, use of biological resources instead of fossil ones; rationality of materials; miniaturization of products; reasonable economy; responsible and active ecocentric position.

Compared with the functionalism era design, ecological design has more engineering determinants. "Function" includes: multi-functionality, rationality, energy efficiency, versatility; "structure" – nature relatedness, transformability, modularity, variability; "form" – minimization, simplicity, harmonious naturerelated image, naturalness, aesthetics of the region. The ecological approach in



design creates a new culture of consumption, purposefully changes the value system of society, contributes to the spread of ecological design ideas, to the development of people's ecological culture.

Capabilities of design in the development of consumer culture

Despite all the listed mechanisms of postmodern society contributing to overconsumption and development of consumption cult, it is during this period that the global ecological problems and design's involvement in these negative processes become evident. Understanding that the design objects on which material, energy and labor resources have been spent, turn into mountains of waste, leads to the recognition of social and ecological responsibility, to the search for opportunities to change the situation with the help of professionals. In their works and concepts, world's leading designers since the late XX century have been presenting ecologically sound solutions and ideas. D.A. Norman (1988), R. Lovegrove (2015), J. Maeda (2006), K. Rashid (2015), Ya. Soge (2003), etc. in their interviews, publications and lectures talk about a need for a new design philosophy, about design's role and mission.

With the help of design, objects of the world around us gain functionality, form and packaging, the method of their presentation is determined, which defines their preferred reading, cultural meanings. The consumption of this reading is interpreted according to the context of the culture and the needs of certain groups of people. As a result of such a complexly interrelated and organized mechanism's work, the meaning of the design object is established for an individual. In the process of design, product and its advertising takes on a symbolic value that controls the perception of the consumer (Press & Cooper, 2008). Design is included in the market mechanisms and occupies a certain place in the system of culture, production and consumption. Therefore, the sociocultural component and the mission of design are the most important. The object environment should make a person happier, more perfect, more inspired. It is impossible to design abstractly, for impersonal uncertain audience without real ecological and economic conditions. Taking into account the objectives of sustainable development, when developing an artificial living environment, designers can set the fashion for rational style of consumption, multifunctional, transformable objects can create durable, fashion-free objects that will educate consumers and promote economical, sustainable consumption, including the development of ecological culture. The following capabilities of design objects can be defined when developing the ecological and consumer culture of the society:

— to psychologically interact with the audience, to evoke emotional responses with the help of visual forms of design objects;

— to actualize the problem, to bring people's attention to it, to make them think;

— to show aesthetic guidelines, to form the taste of the consumer;

— to develop the fashion for the consumer culture, for long-term use of things, for things "with history", for timeless things;

— to organize, to direct actions of people (including collection and separation of waste, protection of natural objects);

- "to soften", to harmonize, to decorate man-made depressive forms;

— to teach people to treat carefully each other and the world around;



— to make ponder over life on earth not ending with our generation and over the need to think about the existence of our children on it.

Social responsibility of the environment designer means that with the help of design means we can influence and even control state, mood, social behavior of both an individual and social groups in the spatial architectural environment.

To alter the design paradigm, the changes in design education are required. But till now it has traditionally focused on morphology, ergonomics, functionality, figurativeness of the object, rather than on the solution of socioeconomic and ecological problems.

Discussions and Conclusion

In the design theory, it was the Ulm School of Design professionals in cooperation with the Braun company who studied consumer's social model for the first time at the beginning of the XX century. It was intended to design bearing in mind a generalized image of an average modest consumer. The main focus in the design process was shifted from production to consumer's identity, consumption qualities of the goods. Products should have been invisible tools, assistants, it were functions and not things that were created (Glazychev, 2011). The design of these companies was anthropocentric, its social orientation predominated. Bauhaus founder W. Gropius (1971) saw the goals of creating a design institute in the development of non-national democratic architecture that can alleviate social contradictions in society. He believed the psychological correlation for the consumer of time, social situation with shape, space and color to be the fundamental design problems (Gropius, 1971).

Modesty and puritanism of Functionalism was opposed to the American design of 1930-50s with its commercial orientation, with external extravagance aimed at increasing sales. Design of impressions, emotional effect has become designers' tasks. The main method of shape-making was styling (external change of shape), focus on the mass market and understanding of the role of design in the formation of the "American way of living" can be witnessed in the authors' concepts. Designers of the Italian group Memphis (1980s) tried right away to establish a link between a design object and a consumer, used modern sociological and marketing researches, did not just provide the market but focused on particular social groups. This led, from the aesthetic and conceptual points of view, to a new understanding of design.

Scandinavian design – which gravitated towards crafts and natural forms in contrast with Rationalism and Functionalism – focused on consumer's social model, on the needs of poorer classes of society. Design has become an integral part of everyday life, and even a means of social transformation. The slogan of Ellen Key, Swedish writer and public figure, who took care of the poor and socially disadvantaged citizens, at the beginning of the XX century – "Beauty is a right for all" – is aligned with the requirement of the Swedish Society of Crafts and Industrial Design to improve the usual mass-produced goods. Design of objects should cause a feeling of joy, happiness, tenderness and charm (Timofeev, 2006). Hygge (from Danish: convenience, comfort, warmth) was s special aesthetic quality. These principles of shape-making are called humanistic essentialism (from Latin essential – essence).

Design is inseparable from the demographic component, from improving people's living standards. In the structure of consumption, a thing has two



aspects: on the one hand, it is wanted to be used, on the other – to be possessed, says V.O. Pigulevskiy (2014). As an instrument, the thing expresses working function, meets the needs and material requirements of the people, but as an object of possession – it gains additional meanings and essence. For a consumer, economic (cost), legal (ownership), technical (means), communicative (sign, information, reputation), status (significance, positioning, belonging to the classes of society) and other aspects of possessing the thing are equally important (Ovrutsky, 2010).

Among many goods with the same functions and operational characteristics a consumer chooses those that will demonstrate the reputation of the owner, meet his/her dream of a better life, not typical and cheap ones, said T. Veblen (1899), American economist and sociologist, in the late XIX century. In the analysis of economic activity of economic entities, he distinguished the importance of the subjective intentions of individuals, proved that in a market economy the consumers are influenced psychologically by public in different ways in order to force them to accept the company's (organization's) predetermined decision. T. Veblen (1899) introduced the concept of "conspicuous consumption" which is also called "Veblen effect (paradox)" in the economic theory. Cheap goods avert people, even if they are functional as "consumption or even the appearance of such products can not be separated from the hated indication of the lower levels of human existence, and after seeing them one feels a profound sense of misery, which is extremely nasty and depressing for a sensitive person" (Veblen, 1899).

E. Fromm (1976), German philosopher, sociologist and psychoanalyst, exploring the spiritual realm of person, noted that the modern society had become materialistic and preferred "to have" rather than "to be". At the dawn of the industrial era, people hoped that "unlimited production will lead to unlimited consumption", expected endless joy and freedom, material abundance in the near future. It gave rise to the thought of domination over nature (Fromm, 1976). Rationalistic world order and extensive development has led mankind to global problems of social as well as economic, technological and ecological nature.

The rapid development of design began in the postmodern era characterized by fetishizing consumables, aesthetic eclecticism and syncretism, intertextuality, the dominance of video-communication which separates a person from the true reality, and other distinctive features of post-industrial society. Objects are designed not from the point of view of function and structure, but from the point of artistic imagery and appeal. Design widely uses metaphor, anthropomorphic, zoomorphic, floral images, which gives new meanings, symbolism, "spirituality" to things (Zherdev, 2010). Communicative function rather than the utilitarian one becomes important in design.

In the consumer society people appreciate novelty, style, aesthetics and imagery of things more than reliability, functionality, durability and economy. Items "for the soul" and not for "needs", things which can change and demonstrate the image and style of life are in demand. Modernism focused on the production, standardization and unification, functionality, good shape, more and more products were produced. Postmodernism is focused on the consumer and consumption, shapes should be meaningful, evoke emotion, redundant quantity of goods are being produced.



As a consequence of the postmodern paradigm, we see gravitation towards kitsch. Imitation of unique art pieces, making fakes for poor customers initially had commercial objectives. Wide spread of kitsch occurred in the second half of the XIX century, which coincides with the industrial revolution and the emergence of design, the start of production of machine-made and massproduced goods. J. Baudrillard (2006) among the causes of kitsch popularization calls using things like signs of luxury and high style. The function of kitsch is "connection to culture, forms, manners and signs of upper class".

The relevance of kitsch becomes undisputable in a consumer society – it targets both the taste and the commercial possibilities of lots of people (Varakina, 2014). Since the middle of the XX century it is the United States that are the leader of kitsch, and later European and Asian countries start to fall under its influence. On the one hand, in this phenomenon we see borrowing of ready-made samples, eclecticism of images, imitation, vulgarity, excessive sensitivity, disturbance of the classical laws of beauty, and on the other hand – massive involvement, availability to the general public, practicality, comfort, satisfaction of tastes and opportunity to make the dream come true, i.e. the problems that the designers faced. The democratization of culture and its degeneration into a culture of consumption is accompanied by expansion of kitsch, aided by low aesthetic culture of the masses. This imposes a special ethical responsibility on designers who are at the center of design, production, distribution and consumption processes.

In the context of the consumer society and social inequality, overproduction, abundance and affordability of goods, a thing is selected and purchased not only in terms of its use, but also to a greater extent as an indicator of status hierarchy in the society and belonging to a particular social group. The consumer market of everyday products is divided by demographic and geographic indicators, by age, by gender, by financial opportunities. Social groups are divided as well by such a practical criterion as a lifestyle which may not coincide with the classes and strata of society, and shows particular personal preferences (Ionin, 2004).

Thus, the thing is not so much designed to meet the need as "hopes, aspirations and desires of the human to bear a social characteristic" and maintain the status of the owner (Pigulevskiy, 2014). The thing serves as the sign of image, success, lifestyle, and social characteristics of the owner. Identification of the consumer, ensuring the recognition in the society, the denotation of cultural meanings become more important functions of things rather than their direct functional purpose. Owning things allows a person to position themselves, to stand out from the masses, but it is impossible to achieve satisfaction and happiness, since new products (more fashionable, stylish, prestigious, etc.) are constantly offered, accompanied by massive obtrusive advertising (also produced by the designers). Advertising accompanies the sale of things, fills them with meaning, creates the myth of happiness, replaces the object of consumption by the image of successful and happy consumer. Advertising represents the redundancy of things as "an image of gift, of neverending and colorful holiday", advertising hides economic calculation under the guise of gratuitous charity and care, social service (Baudrillard, 2006).

In the consumption race there is no finish line – overuse of resources, energy and thousands of tons of waste that used to be fashionable design objects



exacerbate common ecological problems. The design research should focus on the social needs and the impact that design objects have on the culture and worldview of the people as well on the environment. Design is intended to solve multiple tasks, to respond to the economic and socio-cultural changes in society, but above all, to contribute to the development of cultural and ideological values, among which the most important one is the ecological culture of society. To solve the challenges of sustainable development and to make public consciousness more ecology-oriented, change to the design-engineering and design-education strategies is relevant and effective (Valehov, 2016). The ultimate goal of design should be the reasonable satisfaction of human needs and ensuring the harmonious coexistence of nature and society, development of ecological and consumer culture of the society.

Recommendations

The results of this study may be useful for scientists who investigate the socio-cultural issues of design to determine the direction of further scientific inquiry and research of design ecologization processes. The proposed approaches can serve as a methodological basis for educational and real design, including complex projects involving architecture, design, arts and crafts, to develop lectures for humanitarian, social and economic disciplines, special design disciplines in higher education institutes training specialists for the design field. The study results allow to build a cultural background for developing value concepts in the professional designers' thinking, to understand current design trends, concepts of modern design, further research in design theory, to determine the problems of design-education and its harmonization in accordance with the design trends.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

Baudrillard, J. (1998). The Consumer Society: Myths and Structures. London: Sage, 208 p.

- Commoner, B. (1971). The Closing Circle: Nature, Man, and Technology. New York: Alfred A. Knopf, 326 p.
- Fromm, E. (1976). To Have or to Be? Direct access: http://lib.ru/PSIHO/FROMM/haveorbe.txt_with-big-pictures.html
- Glazychev, V. (2011). Design as it is. Moscow: Evropa, 320 p.

Gropius, W. (1971). The boundaries of architecture. Moscow: Iskusstvo Publ, 288 p.



- Ionin, L. G. (2004) Sociology of Culture. Moscow: State University Higher School of Economics Publishing House, 427 p.
- Kagan, M. S. (1996). Philosophy of Culture. St. Petersburg: TK Petropolis, 415 p.
- Koskov, M. A. (2004). The object world of culture. St. Petersburg: Saint-Petersburg State University. 344p.
- Lovegrove, R. (2015). Rosslovegrove official website. Direct access: http://www.rosslovegrove.com.
- Maeda, J. (2006). The Laws of Simplicity (Simplicity: Design, Technology, Business, Life). Cambridge, MA: Publisher: The MIT Press. 140p.
- Matveev, Y. V., Valieva, E. N., Trubetskaya, O. V. & Kislov, A. G. (2016). Globalization and Regionalization: Institution Aspect. *IEJME-Mathematics Education*, 11(8), 3114-3126.
- Nesgovorova, N.P., Savelyev, V.G., Bogdanova, E.P. & Ivantsova, a.G.V. (2016). Integrated Ecological and Educational Activities: One of the Ways to Improve the Regions' Environmental Security. *IEJME-Mathematics Education*, 11(5), 1419-1432.
- Norman, D. A. (1988) Design of Everyday Things. New York: Doubleday, 247 p.
- Ovrutsky, A. V. (2010). Social philosophy of consumption: methodological and theoretical aspects. Rostov-on-Don: Pedagogical Institute of Southern Federal University, 216 p.
- Pankina, M. V. & Zakharova, S. V. (2014) The principles of ecological design. Modern problems of science and education. Direct access: http://www.science-education.ru/115-12128
- Pankina, M. V. (2014) The phenomenon of ecological design: the ontological analysis. Moscow: Science: Inform Publ, 156 p.
- Pigulevskiy, V.O. (2014) Design and Culture. Kharkov: Humanitarian Center Publ, 316 p.
- Press, M. & Cooper, R. (2008). Design Power. The key to the heart of the consumer. Minsk: Grevtsov Publisher Publ, 352 p.
- Rashid, K. (2015). Karim Rashid official website. Direct access: http://www.karimrashid.com.
- Revyakina, V. I. (2015). Axiology problems of the culture and education of youth nowadays. The Education and science journal, 5, 15-26. DOI: 10.17853/1994-5639-2015-5-15-26
- Soge, Y. (2003). Design of products with an environmental component. Architecture. Design. Arts: Design: Proceedings of the international conference on the design issues. Tyumen: Tyumen Art College, 160 p.
- Timofeev, M. A. (2006). Design in Sweden. The history of concepts and the evolution of forms. Moscow: Russian State University for the Humanities, 304 p.
- Valehov, J. (2016). The role of education in the formation of knowledge society. The Education and science journal, 5, 41-54. DOI:10.17853/1994-5639-2016-5-41-54
- Varakina, G. V. (2014). Kitsch as a norm of modern culture. Culture and Civilization, 5, 10-19.
- Veblen, T. (1899). The Theory of Leisure Class, An Economic Study of Institutions. Direct access: http://www.gutenberg.org/ebooks/833
- Verbitskaya, G. Y. & Semenov, S. N. (2016). The resolution of the irresolvable: the art and philosophy of the "eternal" contradictions. *The Education and science journal*, 2, 94-110. DOI:10.17853/1994-5639-2016-2-94-110
- Vinokurova, N. F., Nikolina, V. V. & Efimova, O. E. (2016). Methodological bases of ecological culture formation of pupils on the basis of eco-development ideas. *The Education and science journal*, 5, 25-40. DOI:10.17853/1994-5639-2016-5-25-40
- Zeleeva, V.P. & Asafova, E.V. (2016). Transcommunicative Model of Development of Ecological Culture of the Participants of the Educational Process. *IE-JME-Mathematics Education*, 11(4), 549-558.
- Zherdev, E. V. (2010). Metaphor in the design. Moscow: Arkhitektura-S Publ, 462 p.

