

UDC 72.012

Skliarenko Nataliia¹, *Candidate in Art Sciences,
History and Theory of Arts, Associate Professor,
Lutsk National Technical University, Ukraine
E-mail: nata_skliarenko@ukr.net*

**BOUNDARY STATE OF THE DESIGN SYSTEMS:
THE DESIGNING ASPECTS**

***Abstract:** The essence and the role of the boundary states in the design systems projection are found out in the article. The designers' attention is transferred from the final result to the process of the new structure formation by the purposeful designing of the situations of the destructive or constructive nature. The boundary state is the uninterrupted construction process of the new emergent property of the opened design-system (on the visual and conceptual levels). The structural functional and synthetic transformations are appeared as the forms of the boundary states manifestation. Its hidden potency discloses different aspects of the complete system in the context of the natural and social environment. It is found out that the boundary states in design are the experimental basis for the creation and prognostication of the new integrated design systems and design directions.*

***Key words:** boundary state, crisis state, designing, design system, integration, constructive changes, destructive changes.*

Problem statement. The end of the twentieth and the beginning of the twenty first century is the transition period that is characterized by the tendency of the space transformation, the elemental interactivity that engages the viewer to communication, the focus of the design systems at the entertainment and the game. The increase of the process intensity in the modern society causes the need for the research of the multifaceted dynamics, the unpredictability and instability. A significant number of the design systems that are being created or destroyed in front of the audience change their form immediately, melt, explode and are perceived as the paradoxical constructive and destructive processes, became a sign of the postmodern era. We can argue that such design systems

¹©Skliarenko N.

are in the boundary state during the process of changing. They show the chaotic or probabilistic behavior with the aim to deliver to the consumer the maximum of the emotionally colored information that deeply fixed in the memory. They attract not by the static material form but by the dynamic existence and the processes of the state modification within the design system that seek to create new a phenomenon.

The consideration of “boundary state” phenomenon in design needs the analysis of the terminological apparatus, because the outlined question is presented in fragments in the research. The justification of the basic boundary phenomena aspects that are from the interdisciplinary positions will allow reconsidering the design scientific paradigm. These problems acquire the special actuality in the context of the designers thinking system formation.

Analysis of the recent researches. The interpretation of the term “boundary state” related with the understanding of the condition existence processes between the real and imaginary, conscious and unconscious and normality and abnormality, that approximate to the concept of “crisis state” and “crisis phenomenon” at medicine, psychology, philosophy, economy etc. In 1980 the term “boundary state” appeared in the research of V. M. Voloshko in the interpretation of the graphic symbolic images transition from one form into another [0], in the modern design – 2006 (festival “Art Digital 2006: Boarder state” [0]). O. Chepurova introduces the term “cross-border in design” for the designation of the innovative processes in design culture with the aim to form a single ethno-cultural space [0:65].

The concept “crisis state” is mostly considered in the context of synergy (E. Knjazeva [0]). The culturological aspects of synergetic paradigm are disclosed in the research of J. Kirbaba Kyraba. She generalizes the notion of crisis in a single unit that is connected with the alternating levels of the organization and ordering increase, and with the levels of distraction and chaos of the environment [0:22]. V. Artjuhov system theory is important thing for the categorical apparatus analysis [0]. According to V. Artjuhov the crisis of the system is the condition in which all or just a part of the “primary” elements and all/or the part of the relationships and all/or

the part of the composition system laws experienced the qualitative changes [0:196]. From the standpoint of the art synergy I. Evin analyzes such the phenomena as the instability, polymodality and ambiguity [0] which he directly connects with the crisis points in the history of the systems.

The boundary state in architecture and design are directed at changing of the existence atmosphere and of the way of thinking and are presented as the deconstruction – not only the stylistic direction but the research direction [0]. The analysis of such notions as the movement and dynamics (I. Kuznecova [0]), the dynamics and the system multi-component of the architecture space (E. Lapshina[0]) reveals the separate features of the boundary states in the objects of design and architecture. The lack of the complex research of the boundary state in the design its multi-vector interpreting outlines the actuality of the chosen topic.

Article purposes. The aims of the article are: 1) to characterize the forms of the boundary states and the peculiarities of their formation in design; 2) to define the role of the boundary states for the further development of the design.

The main part. The appearance of the design system boundary state is connected with its transition to another form of the existence (the processes of formation/disappearance, order/chaos). The positive (constructive) and negative (destructive) types of changing are equal at this period [0:197–198]. The design system introduction to the boundary state is consciously planned by the designers. Such processes represent “the situation of the game with the reality”, “physical experiment and mental or existential game” [0]. The designing of the boundary state is the definition of the new direction of the design system development by the experimental way. The possibility of the unpredictable changes in the structure and the appearance of the new content or behavior become the basis of the shaping concept revealing the hidden nature of the design system.

The perfect design objects which contain clearly ordered functions and forms are perceived nowadays as frozen and static. These objects lose their meaning of existence and stop to attract attention.

At the same time a human is attracted by constantly changeable natural objects (trees, clouds and etc.) and quick-change natural phenomena and processes (hurricanes, volcanoes, geysers, etc.) that are based on the harmony with the order and the chaos. The subconscious human desire to imitate natural processes leads to the designing of the opened design systems that are in boundary states.

The dominant form of the design system boundary states is the structural and functional transformation, the basis of which is the imitation of the natural processes dynamics (the emission of the plants seeds after maturation (Fig.1:1), the effect of volcanoes (Fig.1:3), geysers (Fig.1:4) and so on). These processes are connected with the transformation of the primary composition structural elements (Fig.1:1,3), or integrated system (Fig.1:2). The rethinking of the concept of “explosion” occurs through the involvement of the animation and multimedia technologies to the designing of the interaction between design system and the environment. The imitation of the natural explosions is spread in the formation of the real actions (Fig.1:4) and virtual projections (3D-mapping), which are integrated into the city objects (Fig.1:5). The changing of the way of interaction between the system elements on the principles of animation also introduces the system to the boundary states, which are defined as the paradox of interaction (by N. Skliarenko). For example, the consistent change of the billboards during the driving along the road contributes to the gradual reading of the information message (Fig.1:6). In addition, the environment becomes dynamic by creating a network of interactions.

The duration of the boundary states is regulated by the designer according to the concept. The visualization of the ideas (particularly the accentuation of the accuracy, taste, sound etc in the design) occurs not only by the “instant explosion”, but by the “gradual transformation”. The gradual destruction/creation can be considered as the model of the life cycle (eg. the knitted calendar that is constantly dissolved; the typography that is on the basis of the melting ice). The aesthetically attractive boundary states are formed on the basis of the chain reaction (“domino effect” by I. Evin) [0:95]. The loss of stability of one element involves the neighboring elements to the process of the destruction/creation. The important

thing in design is the prediction of the destruction process sequence that usually leads to the new structure or process.

In addition to the functional and structural changes as a form of the boundary states, the important role plays the synthetic (content) conversions. These boundary states present the change of the system of thought and the formation of the new way of the reality perception. The “explosion” at the conceptual level is embodied in the “structure process” (by E. Knjazeva [0]). It acts as the stark form of the destroyed object (deconstruction in the architecture (Fig.2:1), furniture design, clothing, art design (Fig.2:2), art (Fig.2:3)), which is defined as the “controlled chaos” [0]. The design systems in the boundary states are the symbol of breaking stereotypes, stable rules and formation and image in contemporary art and design culture.

The boundary states are characterized by the design system that goes beyond the initial nature and by the appearance of the new from the standpoint of the traditional system content. This is followed by the loss of the original utilitarian function and it determines the transition to another level of the design system existence with the presence of forms (eg. the appearance of the art objects outlines the formation of the art design direction (Fig. 2:2)). The important role is given to the viewer, who is looking for the way of reading the composition himself (the rethinking of the content or the corresponding point/way of contemplation), making the harmonization of the destructive and constructive aspects. The designer’s task is to provide the system self-organizing in the boundary condition, to push it to one of its favorable to the viewer ways of development. The structural and functional transformations of the system on the micro level (the increase of the elements randomness, change of the material) provide the appearance of the synthetic transformations on the macro level.

Nowadays the possibility of the instant fixation of the boundary state allows considering the processes of the destruction as the works of art. This tendency becomes dominant at the photography (Fig.2:3) and at the design of the advertisement (Fig.2:5). The fixation of the structural and functional destructive changes of the design system as the form of the boundary states

provides the appearance of another content in the created solid, granular and liquid substances-environments.

The boundary states of the different chemical composition liquids that are based on the integration of the science, art and innovative technologies have the constructive nature [0]. The images that are generated by the instant bursts of liquids reveal its hidden properties and become the basis of the graphic design concept (Fig.2:4,5). The time is an important factor in the designing of their boundary states. In a short time, the primary elements are not moving in the predictable trajectory. They combine in the unpredictable groups and acquire the unusual shapes. The observed effect is not static. It transforms and dilutes in contact with the others environments (such as colored smoke, the paints in the water serve as the concepts of the creation of the different animation areas). According to I. Evin, the ability to slow and to stabilize the unstable state is usually the main feature of the art [0:63]. The potential probability of the new image formation based on the experiments with the dynamic environments discloses the limitless possibilities of the system in the boundary state.

The anthropo-social design systems should be considered as the opened systems in the boundary state. The dominant method of its formation is the spontaneous introduction of the innovative events or situations (the explosions, the appearance of the wild animals in the populated areas, the untraditional location of the system in space etc.), that leads to the reconstruction of the relations that are characteristic for the system. The random people are involved as the part of the newly formed design system in the process of the formation of the boundary states that aim to increase the dynamics of the communication. As the symbol of the synthetic transformation should be considered the advertising “Door to Europe” as the communicative experiment between the people from different cities in Europe [0] (Fig.2:6). The difficulty for the designer is the lack of the initially given subject (the reaction of different people is different). So the designing of the synthetic transformations as the



*Fig.1. Structural and Functional design system transformation:
 1 – the candy explosion “When will the Fruit Burst”, New Zealand, 2008;
 2 – courier service advertisement, New Zealand, 2007;
 3 – Sony Braviafloral explosion, Costa Rica, 2013; 4 – “Paint” explosion,
 Sony Bravia, the UK, 2006; 5 – Samsung advertising, Amsterdam, 2010;
 6 – “Brace For Flavor” advertising, USA, 2011.*



*Fig.2. Synthetic transformation of the design system:
 1 – The Wines, Spain, 2008; 2 – art-furniyure “Breaking The Bottle”, Marc
 Reyhelman, USA, 2011; 3 – destruction photo moments, Alan Sayler, USA,
 2012; 4 – flowers of liquids, Jack Long, USA, 2012; 5 – calendar “BeLakt”,
 Belarus, 2015; 6 – “It’s Just Next Door”, Paris, 2016.*

form of the boundary state involves the organization of the communicative space by the network principle of the uncontrolled chaotic relationships. The deliberate modeling of the boundary states will provide the change of the social and communicative nature of the design system and it can be the basis of forming the new programming direction of the social relations.

Thus, the boundary states of the design systems can be characterized by several conceptual positions. Firstly, the boundary condition is considered by the science as the natural predictable stage of the design system development which is deliberately formed by the designer. This state is characterized by the short existence of the design-system. It shows the possible way of its development. Secondly, the boundary state acts as the area of two process synthesis: the destruction and the creation (with the dominance of one of them or their equivalent coexistence). Due to this, it occurs the destruction of the elements, functions, concepts of perceptions and as the result – the appearance of the others. Thirdly, the boundary state in the design should be considered as the complex of different aspects that are the basis of the synthesis of the design system elements with other systems, the human and the environment and outline the formation of the new integrated directions of the design.

Conclusions. The boundary states in the design are considered as the important multifaceted process of the design system development that combines both the destructive and the constructive qualities. It is found out that the boundary state takes the form of the structural and functional or synthetic transformation. The structural and the functional transformations of the design systems are connected with the transformation of the structure at the level of elements, relationships between these elements and the level of the interaction with the environment. The synthetic transformations touch the semantic transformations of the art and design area and the system of the thinking, the deep basis of the design system organizations and are aimed at the increasing the dynamics of communication. The concept of the dynamic perception acts as a basis of the boundary state designing.

The boundary states in the design are the experimental basis for the reorganization/designing of the new types of the design systems. The boundary state outlines the formation of the new areas of design, can predict the appearance of the integrated systems of the different structural and functional and conceptual directions.

Research perspectives. The opened design systems that are constantly in the boundary state (in a state of the continuous change and development) are planned to be considered in a further research. The integration of the design system with the natural environment acts as the perspective way of the modern design development.

References

1. *Артюхов В. В.* Общая теория систем: Самоорганизация, устойчивость, разнообразие, кризисы. Москва : Книжный дом “ЛИБРОКОМ”, 2009. 224 с.

2. *Волошко В. М.* Принципы решения знаковых изображений: Учебное пособие. Москва : МВХПУ, 1987.

3. Дверь в Европу. URL : <https://www.adme.ru/tvorchestvo-reklama/dver-v-evropu-583905/> (дата звернення: 30.01.2017)

4. Деконструктивизм: архитектура разрушения. URL : <http://www.cablook.com/design-art/dekonstruktivizm-arhitektura-razrusheniya/> (дата звернення: 30.01.2017)

5. *Евин И. А.* Искусство и синергетика. Москва : Едиториал УРСС, 2004. 164 с.

6. *Кирбаба Ю. В.* Генезис синергетической парадигмы: культурологические аспекты : дис. ... канд. культуролог. Саратов, 2004.

7. *Князева Е. Н.* Синергетический вызов культуре. URL : <http://spkurdyumov.ru/art/sinergeticheskij-vyzov-kulture/2/> (дата звернення: 30.01.2017)

8. *Кузнецова И. О.* До питання про визначення терміну “рух в дизайні”. *Актуальні наукові дослідження. Теорія, практика:* Сб. научн. докл. Познань, 2015. Ч. 1. С. 57–61.

9. *Лапшина Е. Г.* Архитектурное пространство как динамическая система : автореф. дис. ... докт. архит. Нижний Новгород, 2016. 56 с.

10. Фотограф *Джек Лонг* снимает всплески жидкости так, что получаются цв... URL : <http://meta.kz/interesnie-fakti/835116-fotograf-dzhek-long-snimaet-vspleski-zhidkosti-tak-chto-poluchayutsya-cv.html> (дата звернення: 30.01.2017)

11. *Ченурова О. Б.* Трансграничность в дизайне. *Вестник ОГУ*. 2011. №9 (128) /сентябрь. С. 58–66.

12. Art Digital 2006: Пограничное состояние. URL : <http://www.russiskusstvo.ru/exhibitions/moscow/a1643/>(дата звращения: 15.02.2017).

Transliteration

1. *Artjuhov V. V.* Obshhaja teoryja system: Samoorganizacyja, ustojchivost', raznoobraze, kryzisy. Moskva: Knyzhnyj dom "LYBROKOM", 2009. 224 s.

2. *Voloshko V. M.* Principy reshenija znakovyh izobrazhenij: Uchebnoe posobie. Moskva: MVHPU, 1987.

3. Dver' v Evropu [Elektronnij resurs]. URL : <https://www.adme.ru/tvorchestvo-reklama/dver-v-evropu-583905/> (data zvernennja: 30.01.2017)

4. Dekonstruktivizm: arhitektura razrushenija [Elektronnij resurs]. URL : <http://www.cablook.com/design-art/dekonstruktivizm-arhitektura-razrusheniya/> (data zvernennja: 30.01.2017)

5. *Evin I.A.* Iskusstvo i sinergetika. Moskva: Editorial URSS, 2004. 164 s.

6. *Kirbaba Ju. V.* Genezis sinergeticheskoy paradigmy: kul'turologicheskie aspekty : dis. ... kand. kul'turolog. Saratov, 2004.

7. *Knjazeva E. N.* Sinergeticheskij vyzov kul'ture [Elektronnij resurs]. URL : <http://spkurdyumov.ru/art/sinergeticheskij-vyzov-kulture/2/> (data zvernennja: 30.01.2017)

8. *Kuznecova I. O.* Do pitannja pro viznachennja terminu "ruh v dizajni". Aktual'nye nauchnye issledovanija. Teorija, praktika: Sb. nauchn. dokl. Poznan', 2015. Ch. 1. S. 57–61.

9. *Lapshina E. G.* Arhitekturnoe prostranstvo kak dinamicheskaja sistema : avtoref. dis. ... dokt. arhit. Nizhnij Novgorod, 2016. 56 s.

10. Fotograf *Dzhek Long* snimaet vspleski zhidkosti tak, chto poluchajutsja cv... [Elektronnij resurs]. URL: <http://meta.kz/interesnie-fakti/835116-fotograf-dzhek-long-snimaet-vspleski-zhidkosti-tak-chto-poluchayutsya-cv.html> (data zvernennja: 30.01.2017)

11. *Chepurova O. B.* Transgranichnost' v dizajne. *Vestnik OGU*. 2011. №9 (128) /sentjabr'. S. 58–66.

12. Art Digital 2006: Pogranichnoe sostojanie [Elektronnij resurs]. URL: <http://www.russiskusstvo.ru/exhibitions/moscow/a1643/> (data zvernennja: 15.02.2017).

Аннотация:

Скляренко Н. В. Пограничные состояния систем дизайна: аспекты проектирования. В статье отражена сущность и роль пограничных состояний в проектировании дизайн-систем. Внимание дизайнеров переносится с окончательного результата на процесс формирования новой структуры путем целеустремленного проектирования ситуаций деструктивного или конструктивного характера. Пограничное состояние – это непрерывный процесс построения нового эмерджентного свойства открытой системы (на визуальном и концептуальном уровнях) дизайна. В качестве форм проявления пограничных состояний выступают структурно-функциональные и синтетические превращения. Их скрытая потенция раскрывает разные аспекты целостности системы в контексте естественной и социальной среды. Выявлено, что пограничные состояния в дизайне являются экспериментальной основой для создания и прогнозирования новых интегрированных дизайн-систем и направлений проектирования.

Ключевые слова: пограничное состояние, кризисное состояние, проектирование, дизайн-система, интеграция, конструктивные изменения, деструктивные изменения.

Анотація:

Скляренко Н. В. Прикордонні стани дизайн-систем: аспекти проектування. У статті висвітлено сутність та роль прикордонних станів у проектуванні дизайн-систем. Увага дизайнерів переноситься з остаточного результату на процес формування нової структури шляхом цілеспрямованого проектування ситуацій деструктивного або конструктивного характеру. Прикордонний стан – це неперервний процес побудови нової емерджентної властивості відкритої дизайн-системи (на візуальному та концептуальному рівнях). Формами прояву прикордонних станів виступають структурно-функціональні та синтетичні перетворення. Їх прихована потенція розкриває різні аспекти цілісної системи у контексті природного і соціального середовища. Виявлено, що прикордонні стани в дизайні є експериментальною основою для створення та прогнозування нових інтегрованих дизайн-систем і напрямків проектування.

Ключові слова: прикордонний стан, кризовий стан, проектування, дизайн-система, інтеграція, конструктивні зміни, деструктивні зміни.

The article entered release in 30.01.2017