

Emotional and rational aspects of the morphogenesis of multimedia presentation - 'user model' and 'viewer model'

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Abstract An approach to the creation of multimedia presentation is described in which presentation is considered as a rational/emotive, logical/imaginative and informatics/compositional formation. Primary attention is given to an artistic structure of the multimedia presentation, the prospects offered by its interactive potential, the interrelation of spatial and temporal organization with the logical organization of an interactive hypertext message, and the relationship between artistic and logical means of expression. Logical construction of multimedia is considered in a five-level system based on a synthesis of the research in the field of information architecture. The system levels are compared with the levels of compositional organization derived from the analysis of empirical material.

Keywords *Multimedia, Hypertext, Composition, Means of expression, Perception*

Introduction

Multimedia presentation

Presentation is a delivery of essential information about a person, organization, service, or idea in a logical and a visual form simultaneously. Multimedia presentation is a specific delivery, which is structured in an electronic hypertext multidimensional space and interactively developing in time on the two-dimensional screen. This definition is equally applied to the local and network editions (e.g. websites). As opposed to changeable web-based multimedia (such as a blog), multimedia presentation is a complete art form.

Multimedia presentation is a framework for storage, transmission, and delivery of information. Due to the integration of logical and imaginative expressive means, this form of message is likely to be the most effective. The present study of morphogenesis of multimedia presentation is an attempt to understand the laws that control the multilevel organization of an electronic publication turning it into an effective message.

Two aspects of perception: rational side and emotional side

Presentation is a kind of multimedia electronic publication, which is a document existing in a virtual environment. As a document, presentation bears informative, communicative, and cumulative functions (Bulatova, 2008). Each of these functions has both discursive and imaginative aspects. From the discursive point of view, the text of the presentation should be constructed logically, conceptually, intelligibly, uniquely, and consistently. This kind of

information is transmitted sequentially and is perceived by the person (i.e., the recipient, the addressee) from a rational standpoint. Shaped as artistic meaning the message of the presentation is constructed integrally and pictorially; it should be created as a completed picture of a 'model of reality' (and this model should be generated by the addressee) (Lotman, 2005). Artistic meaning of the message is transmitted throughout the structural modelling as a whole. Message takes the form of a sign, a symbol, 'an image that ... [is] perceived concurrently, simultaneously in all its parts' (Meshchaninov, 2008). This kind of information is transmitted instantly and perceived by the person (the recipient) from an emotional standpoint.

Thus, the logical side of information delivery is perceived rationally and the imaginative side is grasped emotionally. Cumulative implementation (synthesis) of discursive and imaginative communication determines the set of rational and emotional perception of the message. This creates a high degree of approximation of interpretation by the addressee of the information that has been sent him by the sender. Two pieces interwoven and shaped as artistic design creations produce one masterful end result.

Two communicating aspects operate on the principle of complementarity, holistically delivering the content in the form of a presentation. The holistic form of presentation is created in the synthesis of discursive and imaginative expression. We believe that in the case of directly integrated multimedia communication, the holistic form is realized as a result of synthesis of an informational/programmatic organization and

corresponding compositional organization.

Two aspects of forming messages in interactive multimedia: the informational/programmable side and the compositional side

On the side of informational/programmable organization, a logical structuring of the message data in hypertext is performed. On the side of compositional organization, an artistic structuring of messages in the virtual space-time environment is performed.

On the one hand, a scientific approach is applied to information structuring, but on the other hand, the artistic approach takes the lead.

Science and art are called 'the two ways to explore the world' (Lotman, 2005). One could compare them with 'two eyes of human culture, the difference (and equality) of which create the bulk of our vision'. Let's examine both points of view. We, scientists, examine the natural processes, and then organize congenital processes and repeatable phenomena. We, artists, explore the untravelled road and create an experience of both what had happened and what may or may not happen. A scientific way for the development of a multimedia presentation is to organize the data and the algorithms of interaction with the data by means of hypertext. An artistic way is to create a certain mythological-symbolic context in a multimedia virtual environment. An experience at any point in the study of this art is exactly the moment of understanding.

A virtual space-time environment allows one to use expressive means of spatial, temporal, and spatio-temporal, as well as synthetic forms, of art. However, it should be mentioned that the Russian researchers of multimedia (Demidova, 2006; Filippov, 2003; Jatsuk, 2009; Pakhomova, 1988; Shchitova, 2004), who recognize the audio-visual artistic nature of multimedia, place the visual aspect in first place. Moreover, as a matter of common knowledge, the American scientists have shown the following: a perceptual speed of information coming from reading or hearing, is only 100 bits / sec, while in the case of visual information this parameter reaches 200 million bits / sec (Light Feather & Aznar, 2011, p. 36).

Thus, visual communication can be assessed as the most effective, and this fact informs the direction of our work, mainly in terms of visual means of expression.

Whereas the term 'New media art', which includes such genres as 'Computer graphics' and 'Digital art', etc., has already entered the dictionary, it was not until 2012 that multimedia presentation was considered as an art form developed according to its own canons. The author of the present work 'generated awareness about a multimedia presentation as a new type of art' (Adobe Design Achievement Awards Gallery, 2012), and described the principles of its aesthetic organization (Zyrianova, 2011a), where the rational and emotional constituents combine.



Figure 1. Informational/programmable organization suggested by J. J. Garrett.

For understanding the rational elements of user experience in web design and software development, Garrett's model ('Elements of User Experience') has become a reference for web and interaction designers (Garrett, 2002). Surprisingly, this succinct diagram has proved to be useful for projecting decorative, performative, and media arts, and with certain modifications has been extended to the artistic means of expression and artistic patterns of organization, representing the 'Elements of Viewer Experience' (Modular Design Biennale, 2013; Zyrianova, 2011b, 2014). Merged together, the rational 'User model' of J. J. Garrett, and the emotional 'Viewer model' developed by the author revealed both general and specific laws of composition of multimedia presentation.

Results and discussion

Informational/programmable organization

The information technology, abstract-logical, aspect of designing multimedia has been explored by Garrett (2002), Goto and Cotler (2004), Nielsen (2003), Rosenfeld and Morville (2002), and Phyo (2003). The authors demonstrate the rules of constructing a hypertext information space of the electronic publication and interactive user interface on the screen — in terms of science.

J. J. Garrett describes the process of website creation from the standpoint of the software interface and structuring the information space (hypertext system). Methodology largely affects the scientific side of design rather than the artistic. Garrett considers the process from idea to implementation of the project and highlights five levels of 'user experience' on it. The levels are mutually specified, wherein they are arranged in a certain sequence. The first level (1) is 'strategy', which sets the design goals and targets. The second (2) is 'scope' (both content and functional specifications), which selects the information units and the options for combining them. The third (3) is 'structure', which defines the information architecture and the interaction scenarios with the user. At 'skeleton' (4), the navigation (interaction logic) is developed, the interface (methods of interaction) is refined, and information design (structure) of the page is advanced. The upper (5) 'surface' compiles the information treated at the early levels and establishes sensory communication between the final product and the user. Schematically, the process of product formation is shown in Figure 1.



Figure 2. Informational/programmatic organization in our edition.

We consider this scheme as a basis for the abstract-logical aspect of designing a presentation. The particularity of the artistic organization forms of multimedia presentation led to particular modifications in the scheme of informational and programmatic (informatics) organization. The scheme has been modified in co-ordination with the works of Rosenfeld and of Phyo, as well as with the results of the experimental work of the author.

Considering the model of information and multimedia presentation software organization, we also distinguish five levels: (1) 'strategy', (2) 'scope', (3) 'hypertext structure', (4) 'navigation and interface', and (5) 'layout'. Unlike Garrett's model, this model separates the design logic and interaction methods (4) of the design structure of the page, moving the latter to a separate (5) level of organization (Figure 2).

The fifth level of Garrett's scheme, the level of visual organization, in our work is brought beyond the information and software schemes and is fixed in the scheme of composite organization, as shown below. The other parts of the two models essentially coincide.

Our proposed model takes into account two aspects of hypertext interactive communication structuring: the hypertext system and the software interface (informational and programmatic). Figure 3 shows that the 'scope', on the information side, includes the content, whereas on the program side it incorporates the options for the program content links. The 'hypertext structure' deals with information architecture and interaction design. At the next level, the navigation within the information space and the software interface interaction take place. The information and software components are linked at all levels in the layout and are presented to the user in the publication.

Compositional organization

In order to explore the artistic side of the organization, we turned to the fundamental works of Lotman (2005) and Kagan (1972). Lotman claims that art is essentially a simulation activity. Art creates an analogue of reality — an artwork. An artwork is created in a certain system, in its characteristic form of expression, and using a characteristic artistic language. This means that an artwork is realized as a certain material substance. Kagan states that an artwork arises, appears, and presents itself to the

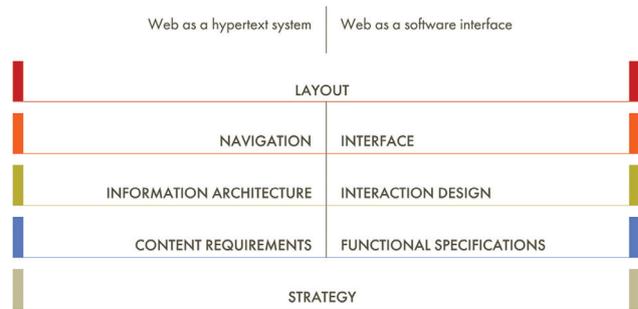


Figure 3. Two aspects of informational/programmatic organization.

viewer as a material design: as a conjugation of the colour patches, volumes, sounds, words, and movements.

Based on the form of expression, Kagan classified art into three groups: plastic (or space), spatio-temporal, and temporal art. He especially highlights a fourth group: synthetic skills combining the features of the three major groups. Web design technology allows one to use a variety of information media: text, graphics, photos, 3D graphics, video, animation, sound, and telecommunications. Information can be submitted in the form of appropriate arts: literary works, planar images, three-dimensional graphics, video narration or animation narration, music and voice tracking. Thus, the electronic form of expressive means can handle a wide range of arts and can work as a synthetic form of art.

An electronic form as an art form was first discussed in 1993 when, after a visit to Silicon Valley in California, the artists John Heemskerck and Dirk Paesmans created the website *jodi.org*. The site was positioned as 'the website-as-an-art-work' (Tribe & Jana, 2006). The artists followed the example of the Dadaists who were manufacturing collages from magazine clippings. For the collages a variety of electronic images and html-codes, sliced and mixed, were used. Widget messages in this symbiosis acquired a new meaning and artistic expression, which, in this case of preventing the perception of the initial information, carried new artistic information: about the irrationality of Dada philosophy.

The authors of the site *jodi.org* have mainly aimed at graphic means of expression. Aside from the graphic language, artistic information in multimedia can be transmitted by means of the literary language, the language of exposition design, and cinematography.

An electronic presentation, or site, can be regarded as spatial art when we pay attention to the graphical design of the page, and to the way in which the information is structured in the virtual space (information architecture), as a durable and spatial-durable one when we observe a step-by-step variation of audio and video content of the screen. It is, however, a special novel form which offers a variation of plot lines and screen contents owing to a special novel technique: interactivity.

Web as a space system	Web as a temporal system
GRAPHICS	MONTAGE
TYPOGRAPHY	SCREEN DYNAMICS
VIRTUAL SPACE	HYPertext PLOTS
ART MATERIAL	INTERACTION
CONCEPT	

Figure 4. Spatial and temporal aspects of compositional organization.

How can one compose all these tools in one system? We do this by correlating, in other words, by drawing parallels between the spectrum of artistic means of expression, and the means of informational/programmatically organization of multimedia presentation.

Drawing parallels

Multimedia presentation provides the possibility of combining various types of art form into a single form. A multimedia product creates an analogue of reality in several systems simultaneously. Its complex structure is formed by the combining and subordination of partial structures from various arts.

Drawing parallels, superposition and projection of the expressive means belonging to various art forms on the software aspect of organization allows one to organize the expressive means of a multimedia presentation.

In this paper, a comparison is made of the informational/programmatically, and compositional sides of the formation of multimedia presentations. Levels of the composite organization of presentation are determined during the transfer of expressive means of formally similar arts to the levels of logical organization.

The shaping in the logical organization of multimedia presentations is decomposed into two aspects: hypertext system and software interface (Figure 3). An abstract logical organization of data is accompanied by their organization in a definite shape. At the same time there is a correlation between the abstract information and a definite spatial construction, as well as a correlation of abstract programs and a definite temporary construction. Strategy is developed in parallel with the concept. Whereas the content and the functionality are the material from which a work of art is created. The information architecture and the hypertext plots form both a virtual space and the subjects of its examination in time, correspondingly. The navigation and the interface are developed mainly by means of typography and dynamic means of plastic arts. The page layout is visualized mainly by means of graphic design, whereas a set of pages is harmonized in the montage (Figure 4).

The foundation for the design of any message is its thought. Thought is formulated at the strategic level in

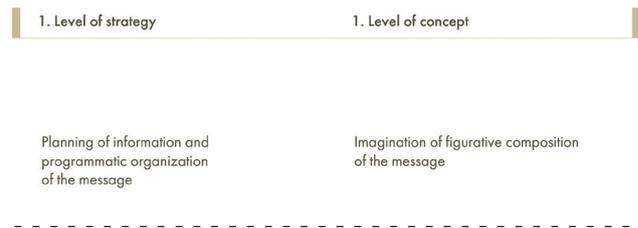


Figure 5. Drawing parallels between the level of strategy and the level of concept.

the informational/programmatically organization. In parallel with the level of strategy, we are positioning the level of concept for the compositional organization of multimedia presentations. Design concept formulated as 'the central artistic project idea' is accompanied by the strategies, which are able to empower a technical development of the project (Figure 5).

Textual and visual documental materials serve as building blocks for the construction of an artistic space. Software features are the building blocks for the construction of an interactive time frame through the elemental content of the composition. Multimedia presentation is constructed from the variously assorted sources of information. The information comes as text, images, sounds, and software features. If one draws a parallel between the level of scope and the level of the elemental content of the composition, one can see the following: data on the informational/programmatically side are only a speculative list of illustrations and references to the relevant sections, whereas on the composite side these data are transformed into a tangible stack of images that the viewer can sort interactively, for example, through pushing one from the other (Figure 6).

Information architecture is visualized in the virtual space. The interaction scenarios are visualized in the multivariate hypertext storylines. Creating a virtual space and the options for interaction with it can be compared with the development of a story and a plot, say for a film or a novel. A story is a set of information units systematically placed in the space-time continuum, whereas a plot is the rigid sequence in which the user (reader, viewer, spectator) gets these units. Organization of the virtual space is comparable to the organization of the exhibition where the network of the node pages is an accomplished module, each page being a separate collection of 'artefacts' associated with the whole system of organization, naming, and navigation.

Unlike the masterpieces of an exhibition existing in a real environment, the information of multimedia presentation is distributed in the virtual space. We consider the system of information blocks associated by harmonic relationships as a virtual three-dimensional composition level of an edition. This level of composition is characterized by the fact that it cannot be seen instantly, but instead it can be presented through the interactive sorting of its parts, and its echoes on the surface of the screen. This level can be seen instantly only with the means of

2. Level of scope

2. Level of compositional elements

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//var imagePath1 = '/UploadedImages/sqg_SCU_Schaffner_PRO-09_1.JPG';  
  
var imagePath1 = '/UploadedImages/sqg_logo_pixel_rca_026.jpg';  
var imagePath2 = '/UploadedImages/sqg_SCU_Schaffner_PRO-09_1.JPG';  
var imagePath3 = '/UploadedImages/sqg_GSM_Schaffner_PRO-09_1.jpg';  
var imagePath4 = '/UploadedImages/sqg_IRabbitpunch.flv.jpg';  
var imagePath5 = '/UploadedImages/sqg_TEX_PRO-09_1.jpg';  
var imagePath6 = '/UploadedImages/sqg_COLL_ofili.jpg';  
var imagePath7 = '/UploadedImages/sqg_WOM_Schaffner_PRO-09_1.JPG';  
var imagePath8 = '/UploadedImages/sqg_apple-iphone-in-hand-thumb.jpg';  
var imagePath9 = '/UploadedImages/sqg_MEN_Schaffner_PRO-09_1.JPG';  
var imagePath10 = '/UploadedImages/sqg_HIS_PRO-09_2.jpg';  
var imagePath11 = '/UploadedImages/sqg_TongueSucker.jpg';  
var imagePath12 = '/UploadedImages/sqg_sustain_logo.jpg';  
var imagePath13 = '/UploadedImages/sqg_animation2.jpg';  
var imagePath14 = '/UploadedImages/sqg_FSS_alys.tomlinson_02.jpg';  
var imagePath15 = '/UploadedImages/sqg_dl_silhouettes1.jpg';  
var imagePath16 = '/UploadedImages/sqg_EXH_ShowRCA_01.jpg';  
var imagePath17 = '/UploadedImages/sqg_COM_Schaffner_PRO-09_1.jpg';  
var imagePath18 = '/UploadedImages/sqg_CarbonHero2.JPG';  
var imagePath19 = '/UploadedImages/sqg_tony_pic_5.jpg';  
var imagePath20 = '/UploadedImages/sqg_Dominic_2.jpg';  
var imagePath21 = '/UploadedImages/sqg_Tord-Portrait.jpg';  
var imagePath22 = '/UploadedImages/sqg_STORY_Schaffner_PRO-09_Ekua_McMorris.JPG';  
var imagePath23 = '/UploadedImages/sqg_GSM_ALUMNI_Karola.jpg';  
var imagePath24 = '/UploadedImages/sqg_ABOUT_Pro-09_Soraya.jpg';  
var imagePath25 = '/UploadedImages/sqg_ABOUT_Environment.jpg';  
var imagePath26 = '/UploadedImages/sqg_PAN_Schaffner_PRO-09_1.JPG';  
var imagePath27 = '/UploadedImages/sqg_Inside Outside Inside_3.jpg';  
var imagePath28 = '/UploadedImages/sqg_PRO_Schaffner_PRO-09_1.jpg';  
var imagePath29 = '/UploadedImages/sqg_ALUMNI_Dyson_seatruck.jpg';  
var imagePath30 = '/UploadedImages/sqg_night_show.jpg';  
var imagePath31 = '/UploadedImages/sqg_ABOUT_tomlinson_PRO-09_8.jpg';  
var imagePath32 = '/UploadedImages/sqg_BAT_corner main view2.jpg';  
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var imagePath14 = '/UploadedImages/sqg_FSS_alys.tomlinson_02.jpg';  
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var imagePath17 = '/UploadedImages/sqg_COM_Schaffner_PRO-09_1.jpg';
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Ceramics & Glass

Figure 6. Drawing parallels between the level of scope and the level of compositional elements.

3. Level of structure

3. Level of three-dimensional organization

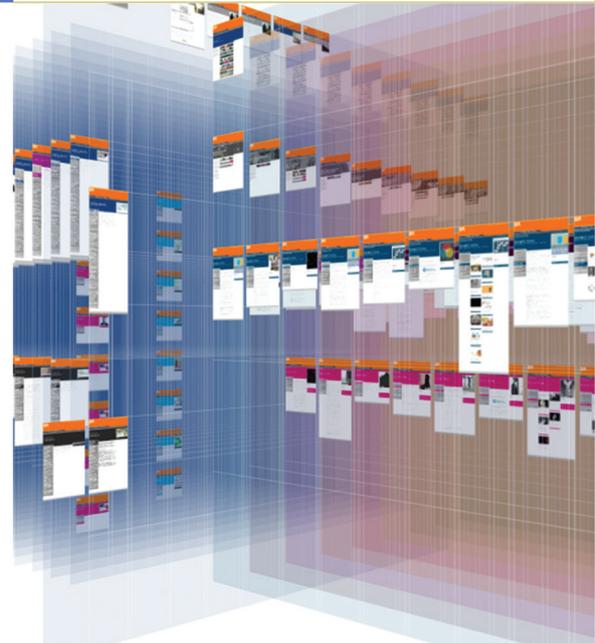
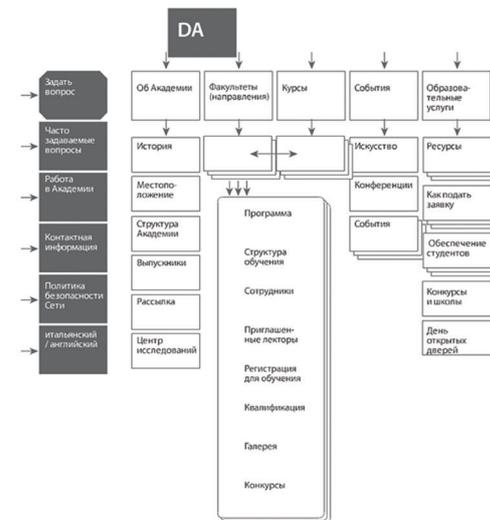


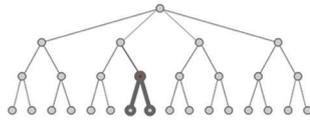
Figure 7. Drawing parallels between the level of structure and the level of three-dimensional organization.

simulation. As an example, a colour-graphical model of the three-dimensional level of the website of Domus Academy (2011), in comparison with its hypertext structure, is shown in Figure 7.

Navigation systems provide orientation in the virtual space. They are most often expressed visually in the colour palette coding and labelling pages or the typography. Movement through the virtual space is provided by the interface. Interface elements are

expressed by the typographical release, e.g., by an explicit graphical isolation of the areas from the content, or by the form changes, which are dictated by an event. The interface shows the navigation through the formatting: links are encoded with the appropriate colour section; some complex elements (e.g., the drop-down lists) display the structure in a minimized form. Modification of an interface creates different types of intra-movement: moving, panning, dragging, zooming, etc. Visual organization of the navigation and

4. Level of navigation and interface



MASTER PROGRAMS

- Accessories Design
- Business Design
- Car Design
- Design
- Fashion Design
- Fashion Management
- Interaction Design
- Interior and Living Design
- Service and Experience Design
- Urban Vision and Architectural Design

4. Level of spatio-temporal organization

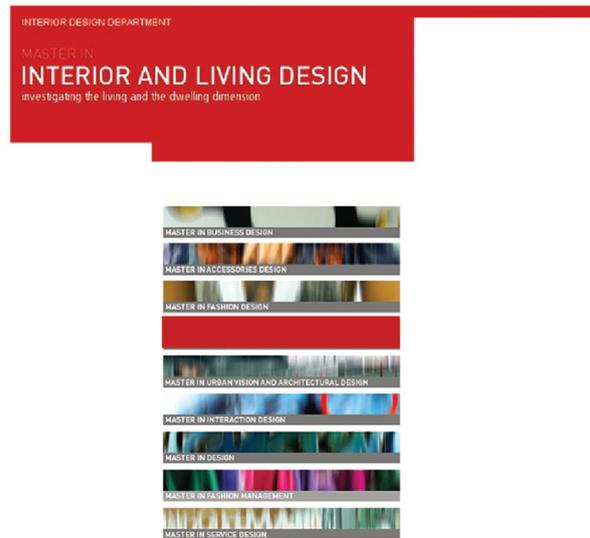
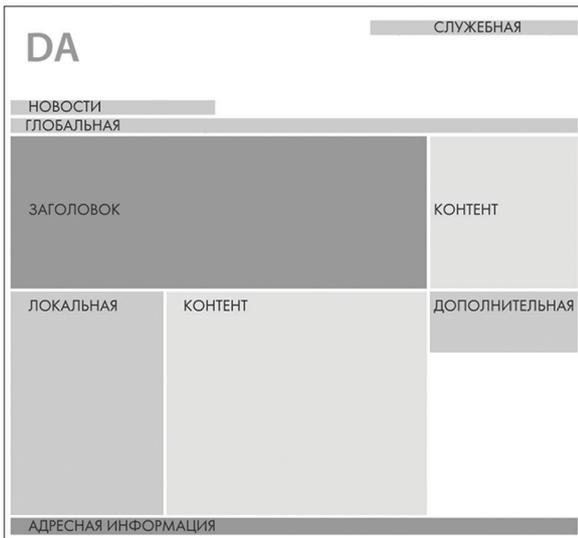


Figure 8. Drawing parallels between the level of navigation and interface and the level of spatio-temporal organization.

5. Level of layout



5. Level of flat organization



Figure 9. Drawing parallels between the level of layout and the level of flat organization.

the interface forms a spatio-temporal composition level of the multimedia presentation (Figure 8).

Visualized by means of graphic design, pages are mapped to the time by means of cinematography (through montage). Apart from a presentation, any page is a whole composition. Usually the identification zone acts as a dominant, as opposed to the content zone. Graphically accented interface elements serve as the echoes of it. Grouping the items, as well as the textual and illustrative areas, rhythmically organizes the movement at a glance of the page. The movement is supported by the dynamics of a disclosure of interface elements.

On the surface of the screen it is crucial to identify the information in relation to the virtual organization (three-dimensional or volume-spatial composition level) of the multimedia presentations, because its holistic interpretation is possible only in the space-time mapping of the parts handled on the plane. In each page, on each plane, the representation of virtual forms of presentation is combined with the forms of interaction with virtuality itself, as well as with the forms of meaningful information. The plane of the screen harmonizes the elements of the organization at all levels, creating a flat composition level (Figure 9).

We have found that the two-dimensionality of the multidimensional expressions of the virtual space on

the planar screen causes mutual interdependence of the elements and the means of three-dimensional and two-dimensional composition. It thus suggests their connection through the elements and through the spatio-temporal composition that occur when deploying an interactive presentation in spatio-temporal space.

Thus, the projection of artistic means of expression at the informational/programmatic organization of the site allowed us to identify the levels of organization of the composite multimedia presentation: (1) the level of concept, (2) the level of the compositional elements, (3) the three-dimensional compositional level, (4) the spatio-temporal level of composition, and (5) the flat compositional level. The scheme of compositional organization is shown in Figure 10.

Conclusions

A multimedia presentation is a form of social communication, which has both an information and a communication function. A message is perceived by the person both rationally and emotionally, necessitating both logical and imaginative formation. Combining the logical and the imaginative structures is implemented in the synthesis of informational/programmatic and compositional organization of multimedia presentations.

Logical organization of the forms of multimedia presentation includes information and software aspects. A scheme of informational/programmatic organization includes (1) the level of strategy, (2) the level of scope, (3) the level of hypertext structure, (4) the level of navigation and interface, and (5) the layout level.

A visual, or shaped, organization of the form of multimedia presentation is carried out both in space and in time. The elements of this form are structured in a virtual environment, forming a three-dimensional composition. Space unfolds on the pages of the edition in the spatio-temporal composition, whereas each page is organized as a planar composition.

A compositional organization of the forms of multimedia presentation comprises (1) the level of concept, (2) the level of compositional elements, (3) the three-dimensional compositional level, (4) the spatio-temporal compositional level, and (5) the flat compositional level. An artistic form of a multimedia presentation is created as a holistic integration of a three-dimensional, spatio-temporal and in-plane composition.

To conclude, we adjusted the Garrett web design model to apply it to the case of multimedia presentation by adding an emotional component on each level. Thus, we supplemented the 'Elements of User Experience' by the 'Elements of Viewer Experience'. Today we are faced with the fact that the user experience has become a central focus for the usability of technology (McCarthy & Wright, 2004). Consequently, users of interactive technologies are now considered as complex, emotional experiencers (Mattelmäki, 2006). Based on our own experience, we



Figure 10. Compositional organization.

analysed the human expectations both from the user and viewer standpoints, and created the ways that help deliver better design solutions.

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