



The Visual Context of Architectural and Urban Design Processes

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Introduction

When designing, an architect in his imagination generates images, topics and drafts in various combinations. He is supported by his imagination, experience, know - how and ideological creative intentions. He is driven by the need to externally transmit, illustrate or explain his visualizations. The basis of the external communication is on one side the figurative interpretation of spatial manifestation of the conceptual suggestion and on the other hand the vision, perception or experience of the given solution projection by eyes of participants to the visual presentation.

The above-mentioned process of verification or consensual examination is a principal requirement for creative progressing in finding solutions to an architectural problem. In the process of architectural education this phenomenon in studio conditions becomes a platform for students to gather professional experience in practical application of theoretical knowledge and in iterative verification of predication value quality of architectural or urbanistic proposal itself.

The sensual content of the art of architecture or art of urban designing

The German philosopher Immanuel Kant calls art as „a way of vision that is self-purposeful and however it is without purpose, it still supports culture of mental powers for sake of social communication”.

The fact that the art announces and expresses something leads to the following distinction:

- the art focuses on what it announces or expresses, it means it is focused on the spiritual content,
- the art realises the basic functions of spirituality in the medium of sensuality,
- the art is the medium, the material in which this announcement or expression is performed. In the artistic work both sides are coupled in a perfect unity of content and material (form).

The material of the art may be called a sensual component (for example tones, colours, forms, in architecture especially proportions, contrast, expression, idea, etc.). In the art “the spiritual” is expressed in “the



Figure 1: G.B. Tiepolo: *Bellerophon on Pegasus*, Fresco, 1747-47, Palazzo Labia, Venice

sensual”. An artwork is beautiful as a perfect unity of content and material manifestation. An artwork is beautiful with universal relevance and so it is elevated over the arbitrariness of taste. The artistic experience evokes in the subject a synergy of spiritual and sensual sides of human being [Figure 1].

The aesthetic shaping and evaluation always featured an important role. Nowadays, when we live in a so-called post-industrial, information and media-communication age, the image and form aspect of forming the environment acquires a specific dimension and influence, its substance and function are changing.

Modelled or shaped urban environment activates in users certain sensorial and emotional reactions. Based on experience the image-dimensional properties of its visible spatial components created by generations get certain specific individual meanings and are memorised as signs or as a certain identity of the environment. People usually designate and thereby also evaluate these properties by attributes like: enclosed – open, narrow – wide, monotonous – bright, colourless – manifold, shadowy – sunny and so on. There are aesthetic evaluating categories allowing exact determination of the values during statistical evaluation.

Differentiation and recording of expressional attributes of urban environment is the basis for analyses and evaluations of the quality and complexity of structures that are designed by students in the framework of our seminary program on urban composition.

Creativity supported by model representation

Imaging ability of every media and its imagery potential significantly influence the content as well as the volume of communication of the ideological intent. Media serving the architectural and urban design ensure not only the iconical interpretation of conception but they may apply this influence also on the form and quality of the proposal itself. F. L. Wright once said that architecture became lost from the moment when architects started to draw. Nowadays, in the period of popularisation of electronics and

its advantages in depicting, Richard Gheri acknowledges that “computers for architects are a gift from heaven”. Sir Norman Foster recognizes the computer as a tool helping the vision of an architect and a future user to become clearer. New media of digital technologies give the architecture new tools for displaying ideas of spatial and environmental formation and also for calculation of temporal and spatial dimensions. They allow simulating or anticipating the spatial perception of urban-architectural structure that is in principle the union of continual dynamic sequence of perceptions, experiences and emotional quality of the presented environmental atmosphere. The development of global IT explicitly creates inspiring conditions for architects to develop their creative imagination and to develop the culture of media representation [Figure 2]. Rationality and emotionality in the representation of creative information however are and will always be in a specific contradiction.



Figure 2: *Urbanistic model elaboration using CAD technology*

Many times we have already clarified the importance of traditional conventional physical modelling of spatial structure in conditions of the so-called generative designing. Model is an abstract or in a „sculptural” form styled reproduction of spatial manifestations of material components of the architectural and/or urban design. A model documents the creative-compositional principle of spatial structure. Its uniqueness resides mainly in creating the environment for mental interaction of basic senses of human creativity: sight and touch. Modelling offers an author an active and three-dimensional perception by visual sensual receptors in a real time and space, i.e. under the control of experiences from rules of composition and optics. Its next spontaneous reaction depends on the author’s creative reactions and impulses - art to see. Perception is sensuously interactive in the entire extent.

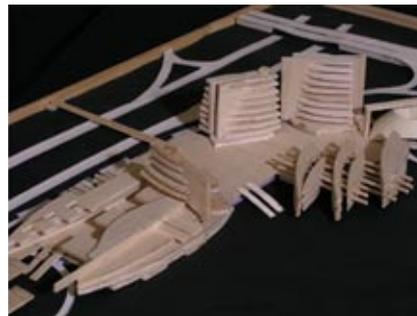


Figure 3: *Design alternatives by physical modelling*



Figure 4: *Nodal and linear structures designs*

The physical modelling is imaginative and creative; it encourages alternation and application of other individual and collective creative visualizations [Figure 3].

It is directly dependent on a creative common compromise. It evokes a continual creative rational and irrational thinking; it requires some activity of the subject. Model is the main medium of spatial search and verification. Artificial / working models themselves represent a stylisation and simulation of reality. Their aesthetic quality is determined by skilfulness of the author, by craftsman erudition as well as by the level of material availability. The model's aesthetical quality becomes important in the period of comprehensive evaluation of the architectural / urban proposal.

As the general conclusion we may then state that creative interactivity in model presentation unambiguously supports the creativity in architectural and urban design.

Laboratory analysis and evaluation of urban spatial studies

The method of laboratory analysis and evaluation of urban studies on models is applied when educating students in generative design of urban structures. By creative application of theoretic rules of urban composition aesthetics students create the designs of structures [Figure 4] by a stylised model presentation. The models are then according to directions subject to subjective analyses by personal imagination and the research is further specified also in the laboratory conditions of the model simulation.

The verification and evaluation of the studies of the proposed fragments of an urban structure is performed in two levels:

First the overall proposal is assessed. Evaluation of the environmental atmosphere of the inner structure is performed by visual assessment of scenic experience of the so-called dynamic spatial continuum [Figure 5]. Continual sequence [Figure 6] is recorded according to a prepared scenario. This continual sequence is the background for creating a table of semantical differential according to suitable aesthetic evaluation categories [Tab. 1].

These categories reflect a broader scope of visible significations in the assessed environment.

They record:

- a) the characteristics of spatial manifestations
- b) the characteristics of sensorial manifestations
- c) the characteristics of social manifestations

The subsequent analysis and evaluation of differentiated situations of composition of selected structure is oriented according to interactive panoramic QTVR records [Figure 7]

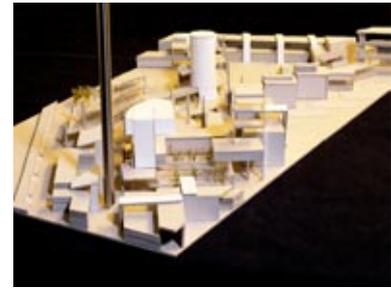


Figure 5: Visual model evaluation using endoscope



Figure 6: Recording of continual sequence in model

Table of semantic differential on the path

	←	4	3	2	1	0	1	2	3	4	→	
narrow												broad
closed												open
gloomy												free
compact												loosened
invariable												flexible
static												dynamic
flat												plastic
unpleasant												pleasant
common												interesting
ugly												good - looking
monotonous												live
colourless												manifold
shadowy												sunny
uncomfortable												comfortable
familiar												public
inhospitable												homely

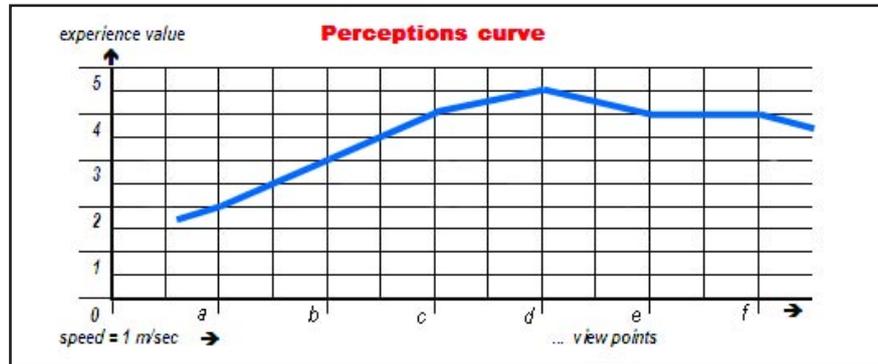
Legend: 1 medium 3 quite
 2 partially 4 total

Tab.1: The table of semantical differential of evaluated path



Figure 7: Interactive panoramic QTVR record in the visual point

in the visual points of the path on the working model. The architectural expression with spatial references is analysed according to aesthetically compositional categories. The evaluation is numerically presented in a chart according to relevant criteria [Tab. 2]. Its resultant is a so-called perceptions curve or a value curve of visual experiences in space.



Tab 2: The chart of visual experiences on the path

The scale of numerical values of experience for creating the chart is mainly focused on the following categories:

- 1 - spatial discontinuity (no interconnections), spatial monotony, weak architectural expression
- 2 - elements of spatial continuity (marks of spatial interconnections), elements of expressive scenery richness
- 3 - spatial differentiation, interconnections, urban and architectural significance of components, absence of local dominant features, expressive scenery richness
- 4 - spatial variety with interconnections, spatial and identification importance of its components, presence of dominant features, progressive urban atmosphere
- 5 - dominance of characteristic components and ensembles in spatial structure, in the image and silhouette of the city, high urban and architectural value of the scenery as a whole, characteristic urban atmosphere

From the obtained video material the students prepare graphic drawings of particular situations in the scale of M 1:500 and they draw the path of analysis [Figure 8]. Students then elaborate post-productionally and archive on media storage the recorded video-clips of spatial sceneries on paths as well as the still images for 360° QTVR. A suitable form for archiving the static spatial information of model presentation are the so-called binocular stereogrammes that are also possible to record by an endoscope [Figure 9] and review by looking at a printed stereogramme or at a stereogramme displayed on a PC monitor using a simple glued viewer [Figure 10].

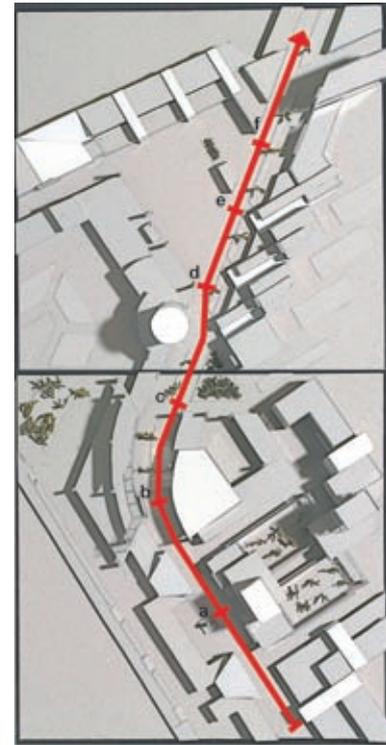
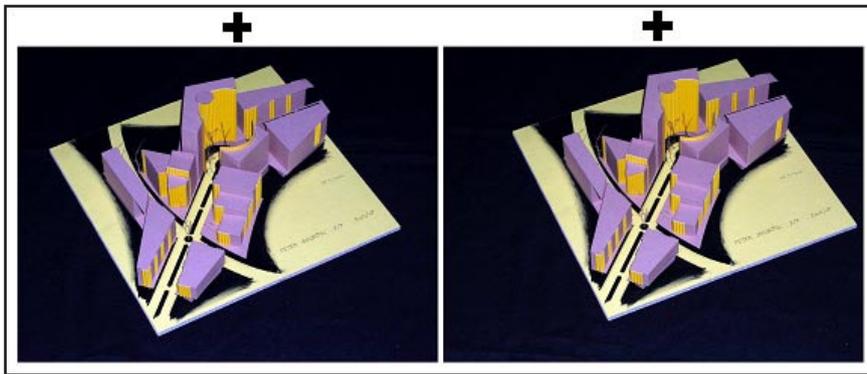


Figure 9: *The binocular stereogramme of model*

Conclusion

The presented works and methodological demonstrations were created at our work place and were determined by innovation conditions of the original laboratory technologies. We are also convinced that the subjective innovative imagination in creating artificial model presentations can significantly move the area of developing culture of architectural presentation with a new creativity . Therefore our effort is to motivate and provoke the candidates of design because the anticipated visual context itself is able to be the impulse for a new search and a contribution in the neglected humanisation of our urban environment.



Figure 10: *Looking at a stereogramme displayed on a PC monitor using a simple viewer*

The variety of contemporary media tools supporting the work of architects is from the above-mentioned aspects an instructive and equally effective tool of a higher creative imagination. A broad variety of tools for media experimentation is available for the art of architecture and urban design, for collecting objectified information for processes oriented towards valorisation of urban environment in the sense of requested qualitative change. They are a good tool for the evaluation especially with the exact processing of backgrounds for predicting and evaluating the creative reactions of users of the urban-architectural environment

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