

Modern Challenges and the Outline of the Future of Architecture

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ABSTRACT

Space parameters of architecture (morphological level) have substantial impact on the life quality. The diagram on the architectural evolution that covers periods from the ancient times up to now, is offered for your consideration. As per the diagram there have been three subsequent architectural dominants: so called - Magic architecture (Pre-architecture), Artistic architecture (Golden period of architecture) and finally - Post-architecture (rational basis of architecture becomes absolute). The emerging of self-tuning morphological basis of architecture is suggested to take place in response to the existing and possible challenges. This self-organizing morphological basis of architecture might be typical reality for the so called Post-architecture and even for the global universal self-organizing comprehensive system of livelihood in the distant future.

Keywords: challenges, architecture of the future, morphological basis of architecture, substantive content of architecture, the Axis of architecture, the Parabola of life, self-organizing system

“How scaring & kind it is not to be aware of the future...”

Sergey Zhegalov

I. INTRODUCTION

Architecture is oriented to the future (it is its core), that is the main reason to scrutiny of its both history and theory as a whole.

We do value the artistic and symbolic components of architecture but we also point out that its space parameters have significant impact on the quality and level of living directly and indirectly.

It looks so apparent in terms of space-planning categories, e.g. the increase of avenues' width dramatically improves people's evacuation or the subway area can be also used as bombproof shelter. So, the principles of multipurpose arrangements of morphological basis of architecture for it to be able to meet diverse demands simultaneously should be the most applicable way of the development of the spatial domain with regards to its provision of basic social needs. The trends specified above are expected to take place in the future development of architecture, i.e. the increase of its usefulness component is predicted to enhance.

II. TRENDS – FROM “FALSE” RATIONALE UP TO “REAL” ONE

On the whole, the necessity to respond to emerging challenges and circumstances has been the impulse to change the directions¹ in form-development that has occurred due to “re-structuring” of its morphology. Later on it can be the leading managing way in the development of architectural domain. In the circumstances of environmental suppress, regardless how diverse and multilateral it is, appropriate and pragmatic responses to these challenges are caused to be developed (from gable roof up to self-organizing system). It can be global climate warming, demands in energy efficiency, extremism and pandemic spreading or aggressive effect of homogeneous surfaces on people's psychology etc., i.e. the aspects that are closely connected with safety and quality of life. Tackling of the specified problems can be the push to dramatic changes in spatial-morphological directions in

¹ Reverse side of the process of form-development is its directivity, i.e. there are cycles in the development of architecture, which has been identified by M. Y. Ginsburg, H. Wölfflin and others, which is affected by outside factors (OF) [1]. “Self-development” of the form is its inner logics of form-development (ILF) which suggests that the purpose of the composition is not to be perfect but to improve.

form-development in architecture. Later on, within these directions as soon as their rational bases become stronger, the accent on substantive content of architecture focuses on the architectural composition that develops into new aesthetics.

Such change of accents can significantly enhance, especially in case of the existing false rationality, as per some opinions, e.g. – magic architecture, or the lost tradition², as they are the most easily got rid of. On the contrary, rational functional or technological aspects, e.g. the global architecture of the 1960-s of the XX century (shells, shrouds, overlap constructions) whose architectural constructions have artistic forms (by the way, the same is with the architecture of Central Asia, especially of the period of the first centuries of Islam spreading), appear to be the most sustainable ones and in case of adding some architectural decorations they change utterly their stylistic content.

III. THE DIAGRAM OF THE EVOLUTION OF ARCHITECTURE

The exact architectural forms of the distant future are not considered by this paper as they are rather utopian than real. The author tries to point out methodological principles architecture is possible to develop in line with, at least at the level of its morphology. With regards to the specified above we present the diagram ("Fig. 1"), which covers the principles of the development of architecture in the past, present and future. It is based on identification of the direction of the development of substantive content of architecture from its beginning and up to the current times, which lets us hope the diagram is a correct extrapolation of the future. It has at least dual character: the first, development of the substantive content of architecture with the highest point of its artistic facet during the so called Golden period and the second, the process of more and more focus on the functional content of architecture at the level of its morphology. We are inclined to shift to the second aspect which is closely connected with the responds to challenges that grow along with the Parabola's rising curve (here - Parabola of life-history). Looking at the diagram we can determine that the character of architectural rationale starting from the past to

modernity and to suggest to the future, transforms from the magic stage (false from the present point of view) of rationale to the level of absolutely functional architecture embodying utter usefulness. So we have set up ternary division of the diagram on the evolution of architecture as per the correlation of its magic, artistic and rational components. The central part (as per modern opinions) is dedicated to the Golden period of architecture, its predecessor is the archaic stage (Pre-architecture) and the following period that is striving to the future³ is Post-architecture, which is attributed as the phase when the rational basis of architecture becomes absolute. Nevertheless, the borders between the specified periods are ambiguous and vague and in our opinion, it is possible to figure out them finally only afterwards.

The essence of the architecture of the Golden period is its artistic component and the accent on the composition. Artistic facet can also be a specific adaptation mechanism and so it might be somehow rational as well, but it is another point to pay attention to. By the beginning of the Golden period of architecture there were considerable achievements in the composition within the frames of sacred architecture of Ancient Egypt that overcame mythological facet of the archaic architecture. The culmination of this period was the architecture of Antic Greece with subsequent fluctuation of artistic accomplishments during the periods of early medieval, roman and gothic styles of European architecture, also antic and medieval architecture of the Orient; Renaissance, Baroque, Classicism, Eclecticism and Modern of the beginning of the XX century and also the other following styles that strived to achieve artistry of some kind. It is important to point out that there has not been any linear development in the history of architecture but certain mosaic waves of artistry improve have taken place in the forms of so called "aftershocks" that can be found out far later from the Golden period.

² Let's take the circle which is itself currently turning to a decreasing archetypal image, whose shape contemporary plates & dishes have, which is not dependent on the technology of their production now, is widely spread due to the inertia as per "not mandatory traditional component" (NTC), which can be easily substituted by other shapes. Modern monumental buildings embody the circle only in case of technological or pure functional necessity & seldom with profane symbols. On the contrary, the circle that had also cosmogonic meaning in the archaic period, was widely spread and applied to the settlements' layouts, monumental & almost all kinds of buildings as well. The circle existed conditionally as zodiacal symbolism during the Antiquity [2].

³ The period of Post-architecture is expected to be the central one for the future consumers, i.e. the starting point for them as per the diagram. Golden period as the expression of architectural artistry (central one from our point of view) together with Pre-architecture, which is full of magic & archaic mythology, will integrate into more or less homogeneous & "compressed" substance (similar to that of Post-architecture as we currently perceive it). Certainly, the most interesting component of this future "triad" is third one – the distant future, whose content is hardly possible to determine correctly without any misinterpretations & grave errors (might be "Post-post-architecture or Neo-architecture).

mutations on the Axis of the architectural evolution are predicted to be able to tackle the occurring problems during quite long periods of time, established on the Parabola. Taking into account the immanent potential of self-organizing system⁵, these small mutations on the Axis of architectural evolution should be able to respond not only to occurring challenges but also to subsequent potential ones. As we know, within the non-linear environment “the system develops with the help of the future” [4].

The above statement, which is incredible from ordinary point of view, we can adapt to more accustomed perception. The sample of cross-group sustainability & resistance, specified above informs about its so called “redundancy” and the ability to anticipate somehow the types of coming possible challenges. With regards to this, the so called “anticipation phase” of biological evolution is recommended to be interested in, i.e. the appearance of species possessing the feature that disappears when they get adult and far later emerging again as the attribute of adult species that reappeared during the further process of their evolution. Moreover, the fetuses & young species have some rudiment organs which are reduced when they get adult but later on these organs reappear in the bodies of other upper class creatures [5].

The phenomenon of “anticipation phase” can be treated in different ways: as the “anticipation”, which is reflected in its wording, as “the message” from the future (“the system develops with the help of the future”), or one might be aware of some timeless continuity and unity of the system, which is pointed out by the artistry researchers as the spatial-time-synthesis of diverse aspects [6], or “timeless” state established in myths [7]. As per primitive consciousness myths imagined the Time as the Space or the Object, and in “the form of the Sameness of Reasons and Consequences” [8]. The past, present and future integrate and fuse with each other at least within two spheres specified above (artistry and myths). Interpretation of architectural morphology not only as a linear process of form-development but as a musical score, whose harmony is identified only if we read it both diachronically and synchronically, i.e. entirely [9], holds constructive potential.

Moreover, as soon as the “out of date” artistry is fading another aesthetics is expected to appear.

⁵ The immune system of some insects is established in similar variant – if sub-lethal doses of insecticide are used, cross-group sustainability to quite great amount of chemicals of such type develops, though they haven’t been applied. But the most interesting aspect is that there can appear cross-group resistance to the chemicals of absolutely different types [3]. Enacting of principles of such adaptation mechanism promises extremely high dividends as related to the responses to absolutely new challenges.

We should underline that, considering the diagram, the morphology would rather be arranged in such a way that even the smallest changes in its multipurpose structure can produce adequate responses to the global updating of the way of living. The specified above is reflected on the diagram as such – the later new challenges occur the less segments are correlated on the Axis of architectural evolution. That is to say, due to self-organizing system of architecture, new chances to implement simultaneous responses to: first – diverse factors; second – preventive actions to tackle possible and anticipated challenges, appear.

Architecture is a “low functioning” activity – its styles often were born in other more “dynamic” spheres. Classicism - mostly “due to unreported performance of German scientists & writers” [10], the roots of architectural avant-garde in the 20ties of the XX century – in painting [11], out-of-architectural proto-design industrial items that were suddenly interpreted by architects in the other way, appeared to be “an important impulse...in architecture, first of all in constructivism” [12], etc. Currently innovations are widely spread in new technologies, building supplies and constructions and the methods of designing as well. It is quite possible that the ground-breaking bases of the coming “post-architectural” order ⁶ is somewhere around. Pierre Teilhard de Chardin has pointed out that we don’t pay any attention to “...if something really new has been emerging” [13]. It is necessary to arrange and persistently update the database on the latest discoveries, inventions and all the expressions of absolutely new types of activity (or re-analyzed ones) of the humankind. This database should be treated and applied as per its synergy potential [14]; e. g. Artificial Intelligence should be regarded as a trans-scientific phenomenon that can be supplemented by the ability to predict, which is a relic form of sub-consciousness [15].

Of course these aspects specified above are established separately & have to relate with each other; even in case of very successful functioning of such kind of morphology (structure) during the period of Post-architecture, it is hardly possible for it to avoid confrontation with the emerging challenges. Strangely enough, to exclude such state of things, it would be ideal if the principle of supplementation (researched by Niels Bohr) is overcome, i.e. if we regard the principle of supplementation as the characteristic of the reality which is expressed in *the unity and opposites* of two heterogeneous physical systems [16]. We mean exactly the overcoming of the second member (opposites) of the dyad. The upcoming morphology should be itself *as if* the outside factor that is fraught with challenges (i.e.

⁶ Constant adding of the prefix “post- (e.g. post-modernism, post-humanism etc.)”, i.e. the state of “post-being” might express the feeling of existing at the edge of “the past” and the emerging of something “new”.

as if including its transformation into challenges!), as it is necessary to manage the process *from inside*. Moreover, all the space that is full of wide range of diverse vectors of the moving matter, energy and information, should resonate, be adequate and be reflected in the morphology which is looked for, something similar to the body of an antelope existing in the body of a bushman and that is not a metaphor [17] but some kind of identification. (Probably the latter takes place on the basis of distant interactions, something similar to cytopathic effect [18]). Development & creation of absolutely new architectural forms in the situation of “dying” artistry is not so vital currently, though still some inconsiderable discoveries might appear. Returning to the ideal overcoming of the principle of supplementation, we would like to point out that the problem is not in another aesthetics, which is anticipated to appear in the near future, but aesthetics is going to turn into morphology and morphology – into aesthetics (something similar to this occurred during the archaic period), and it is expected to happen in new way, specified above, i.e. of isomorphic kind. Then there shouldn’t be any morphology or aesthetics, at least as per their ordinary understanding.

Scrutiny of the methodological principles of the Post-architecture as deep as possible, the period we are the edge of, will let us update beforehand the technologies of building supplies producing and develop new constructing materials that will have predefined properties, also re-arrange education of architects and update the system of designing as a process. All the specified above will make us be time efficient and avoid wasting huge amount of money. Exact and specific architectural solutions of some targets are not affordable for both the environment and people, even in case they are implemented from time to time, as Jakub Wujek has pointed out [19].

Regarding the development of architecture in the nearest future, we dare to admit cautiously that currently Digital Culture (DC) makes us demonstrate analytical behavior that is based on the development and learning of the information that is loaded in diverse soft programs, instructions and manuals, so DC appeals to our logical reflections⁷. All this suggests and

⁷ Something similar happened during Paleolithic age, i.e. along with learning of skills of stone processing – specific “expanding & allocating” of the obtained information took place. The process certainly occurred during considerable period of time but the development of stone cutting industry (starting from choppers & up to producing elegant lancet-shaped arrow heads) that was accompanied by stunning (for the scale of that times) sophistication of move experience & mental activity that people applied when they were busy with stone cutting, fostered the side-effect – improvements in the system of signs of human beings. The improvement of logic categories took place especially at the end of the Magdalenian period. Later on, abstract geometric content of the art got dominant & assumed the “relay of abstract ideas” that happened on the background of the decrease of Magdalenian realism culmination, then

instructs that people should act independently within the frames of DC (“every man for himself...” instead of “one for all & all...”), which is getting more challenging by the impact of outside factors (e.g. pandemic limits the possibilities to spread information directly between people).

It is expected that the “form” is to shift to simple quite big clear/laconic volumes (one of the main directions in the development of architecture of the near future⁸) that are caused by adapting of both reflection and subconscious recoding of the essence of this turn of rationality to architecture⁹. Taking into account the trend to be special (personal style), that is inherent to prominent architects, typological multiplicity of simple forms within this stream is expected to take place, might be as a kind of “tailing” [21] expressed by the Motherboard or QR code, whose exhausted space is typical for them. Later on, when this “interest” is changed by missing “curvilinear architecture” might be as per the Culture-2 (encouraged by again digital imagery), when the simple components (basic elements) are not dominant any more – the pendulum will swing to the opposite direction.

V. CONCLUSION

Thus on the whole, general trend in the development of the morphological component of architecture is established as obtaining increasing possibilities of responding asymmetrically to emerging challenges, that enables: 1) to mitigate the impact of the coming outside factors even without any changes in the existing state of the system, 2) to tackle simultaneously wide range of diverse challenges, or 3) even to anticipate them and take precautions accordingly. All the specified above is confirmed by the diagram where tiny segments set up on the Axis of architecture are correlated with considerably bigger segments of time

it was reflected by the creation of “non-figurative” Mesolithic lattices & geometric ornaments of the Neolithic age [20]

⁸ That actually occurs – the most prestigious awards were granted to the “modernists” last times, while social orientation of architecture is dominating currently. Disappointment of some architects/ practitioners that haven’t noticed the current core trend of architecture - the end of its Golden period, is understandable. It’s interesting if somebody would have criticized P. Schumacher if the concept of his supervisor had been in high demand as some years ago? But the Parametricism of Zaha Hadid who promoted the identity of Arabic calligraphy, is hardly in line with the newest reality which we still name as “architecture” so far.

⁹ Of course, we can’t justify entirely the change of stylistic preferences by the digital factor as such inversions constantly took place during all the history architectural evolution. But to some extent, it is able to be the accelerator of changes & also the factor that keeps new stylistic processes as well. On the whole, taking into account constant (& we can determine it is as logical) change of stylistic directions, there has developed the necessity to figure out the measure of the “stylistic filling”. Stylistic preferences directions get opposite as soon as the utter point is reached.

frames set up on the Parabola. Probably it will be a typical reality of Post-architecture already. It might also appear to be a global universal self-organizing system that includes all the spheres of livelihood.

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