BOGUSZ MODRZEWSKI*

IN SEARCH OF ARCHITECTURAL FORM PATTERNS

W POSZUKIWANIU WZORCÓW FORMY ARCHITEKTONICZNEJ

A b s t r a c t

The *form language* is part of the emerging idea of *adaptive architectural design* theory. The adaptive design combines the scientific basis of perception and definition of forms, with indicated possibilities of its creative application. This theory assumes certain *invariants* of form, or in other words – identified formal properties (which should not be taken for specific types, typologies, or styles) that may constitute features of *adaptive architecture*. They are independent of the time and context of particular architectural creations. So what are those specific *properties* of adaptive architecture? To what distinctive degree does the architectural object comply with the universal principles of design and this internal nature, expressed through the feelings of its users?

Keywords: Architecture, Pattern Theory, Form theory, Adaptability

S t r e s z c z e n i e

Język form to część rodzącej się koncepcji teorii architektonicznej, projektowania adaptywnego, łączącej naukowe podstawy percepcji i definiowania formy oraz wskazującej na możliwości jej twórczego zastosowania. Zakłada ona pewne niezmienniki formy, zidentyfikowane formalne właściwości (których nie należy utożsamiać z konkretnymi typami, typologiami czy stylami), które stanowić mogą cechy architektury adaptywnej. Są one niezależne od czasu i kontekstu powstania dzieła architektonicznego. Jakie są zatem owe właściwości architektury adaptywnej? Do jakiego określonego stopnia obiekt architektoniczny jest zgodny z uniwersalnymi zasadami projektowania i wewnętrzną naturą, odczuciami jego użytkowników?

Słowa kluczowe: architektura, teoria wzorców, teoria form, adaptywność

* Ph.D. Arch. Bogusz Modrzewski, Department of Spatial Plannign, Faculty of Geographical and Goelogical Sciences, Adam Mickiewicz University in Poznań; e-mail: b@modrzewski.amu.edu.pl.

1. Introduction

The progress in the field of mathematics has led to the expansion of knowledge about the world, including, inter alia, to formulation of the fractal geometry assumptions, helpful in describing and defining not only some properties of natural shapes, forms and transformations (far eluding the simple geometrical description) but also the properties of artificial, anthropogenic forms – architecture. These features are mainly represented in an environment built up by historical architectural heritage of architectural information composition methods.

Can the contemporary phenomenon of separation of architecture from these original existential foundations (to some degree) be explained due to the disappearance of the "mathematical" (polymatic) role of the master-builder? Vitruvius: *Those individuals who by nature has been endowed with such great abilities, talent and memory that they can master faithfully geometry, astronomy, music and other sciences, go beyond the skills of an architect and become mathematicians*[1]. Mathematicians (in the classical sense) are: *those who are studying everything*[2].

Salingaros defines mathematics as a science of patterns, and the "mathematical" perception of the world as a skill and internal need to search for and perceive real relations between elements of time and space, patterns and the resulting principles of self-organization, survival, and replication of information in the organized environment. Of course, this knowledge is not only limited to registration of this information. It rather means its conscious (repetitive) interpretation, not only scientific but also existential and finally – spiritual.

2. Vitruvian *first principles* – the adaptivity of architecture

The first principles formulated by Vitruvio are, as Wang notes[3], some of the basic logical building blocks of architectural theory. This means that it is difficult to add (or remove) any of its basic elements, without affecting their coherence and interdependence. These rules allow defining the quality of architectural objects also today. In the contemporary interpretation, they may sound as follows[4]:

Commodity – means consciously planned and interrelated features, elements, and sequences of space, serving not only for daily, defined tasks, but also satisfying the natural needs of users – people staying in it during its use;

Firmness – is both physical and visual, tectonic solidity, ensuring (subconsciously) the user that the building is a safe haven, it will last and guarantee its usefulness and identity for years or even generations;

Delight – is the use of natural elements and, at the same time, human "needs" (dawn, water, heat, cold) in a way that creates its sense of psychophysical comfort, sense of place and, as a result, many years of attachment as a guarantee of durability and vitality;

---

[1] Witruwiusz, *O architekturze ksiąg dziesięć*, Państwowe Wydawnictwo Naukowe, Warszawa 1956.

[2] In other words – those, who can see things from more than one (proffessional) point of view.

[3] L. Groat, D. Wang, *Architectural Research Methods*, Wiley, Hoboken 2013.

[4] A. Monestiroli, *Tryglif i metopa. Dziewięć wykładów o architekturze*, Politechnika Krakowska, Kraków 2009.

Three vitruvian axioms describe architecture as a permanent, comfortable form[5], worthy of care and maintenance. It is architecture, from a formal point of view, that is timeless, not subjected to temporary fads and expiration. What's more, it has a positive impact on the user.

Two features determine the essential aspect of such *formal design* (in contrast to strictly functional attitude), which defines the *adaptability* of architecture – the essence of Vitruvian theory. It means forms and universal features of the form, which enables, on the one hand, its easy adaptation to external ever-changing conditions (especially functional ones and not particularly predicted by an architect), and, on the other hand, to universal preferences of the human psyche and perception.

The concept of adaptability expresses the vitality of the architectural form – a form that personifies and implies *life*. In other words, architectural objects can be more or less *vivid*. Effective protection, generation and development of this life, the preservation of life by itself, and perhaps more, the transfer of its traits (surviviving beyond material limitations, in the existential and spiritual part of architecture) and regardless of the changing conditions, is truly the quintessence of *adaptation*.

3. THE SCIENTIFIC ASPECT OF ARCHITECTURE

Architectural objects that do not meet the above assumptions of Vitruvius do not prove the inadequacy or archaicity of Vitruvian theory in relation to contemporary theory and architectural practice. Conversely – they signal the problem of architectural adaptation to the physical, mental, emotional and spiritual needs of its users. This principle applies regardless of the "context" (temporal-spatial, social, cultural, etc.) of a specific creation[6]. Moreover, it assumes the possibility of comparing (compiling) various (independent) objects, enabling the identification and assumption of the degree of certain timeless features in the analysis of architectural form.

As a science[7], architecture can make certain generalizations (findings) based on existing evidence[8]. In this case, the science of architecture goes beyond the formalistic imitation of (unnaturally) enlarged intriguing biological forms, or bionic analogies to existing shapes, tissues, or systems observed in nature. The scientific approach in architecture, in this aspect, is rather an attempt to formulate the theory of the impact of specific shapes, phenomena and forms – considered as both: natural elements realized within architectural assumptions and

---

[5] In this case the concept of convenience or comfort of use does not refer to the standard equipment of the object, or even luxury resulting from the use of expensive or complex solutions, but derives rather from mental comfort – the impact of an architectural object on the observer and the user, the extent to which experiencing architecture is natural and stress-free.

[6] In other words, one can not justify (any) "context" of bad architecture, because (architecture) is supposed to last and function beyond the period of depreciation. Otherwise – it is not architecture.

[7] As Tobolczyk notes [13]: "Architectural activity is not only art (…) its scope is not limited, especially nowadays, to narrowly understood art and craft. Architecture is also a creative discipline today, but not in the sense of artistic creation and not only in relation to building material, but also in relation to the entire natural, cultural and social environment. And so it is also **science**" (emphasis B.M.).

[8] Not necessarily on the basis of scientifically unconfirmed opinions, fashions, ideologies and political views, the desire to attract attention, or domination of the environment – at any price. See the *evidence base design* assumptions.

TRADITIONAL COUNTRY HOUSES (OPEN-AIR MUSEUM, DZIEKANOWICE)

POINTS TOTAL: 25/30

ORDER IN THE SMALLEST SCALE 5/6

4. ALTERNATING REPETITION ✓
8. DEEP INTERLOCK AND AMBIGUITY ~
9. CONTRAST ✓

ORDER IN THE LARGE SCALE 6/6

7. LOCAL SYMMETRIES ✓
12. ECHOES ✓
15. NOT-SEPARATENESS ✓

LINKING SMALL TO LARGE SCALE 5/6

1. LEVELS OF SCALE ✓
3. THICK BOUNDARIES ~
13. THE VOID ✓

OTHER PROPERTIES 9/12

2. STRONG CENTERS ~
5. POSITIVE SPACE ✓
6. GOOD SHAPE ✓
10. GRADIENTS ✗
11. ROUGNESS ✓
14. SIMPLICYTY AND INNER CALM ✓

SAMPLE CITY VILLA, END OF XIXth CENTURY, POZNAŃ)

POINTS TOTAL: 20/30

ORDER IN THE SMALLEST SCALE 4/6

4. ALTERNATING REPETITION ✓
8. DEEP INTERLOCK AND AMBIGUITY ~
9. CONTRAST ~

ORDER IN THE LARGE SCALE 5/6

7. LOCAL SYMMETRIES ✓
12. ECHOES ✓
15. NOT-SEPARATENESS ~

LINKING SMALL TO LARGE SCALE 4/6

1. LEVELS OF SCALE ✓
3. THICK BOUNDARIES ✓
13. THE VOID ✗

OTHER PROPERTIES 7/12

2. STRONG CENTERS ✓
5. POSITIVE SPACE ✗
6. GOOD SHAPE ✓
10. GRADIENTS ~
11. ROUGNESS ~
14. SIMPLICYTY AND INNER CALM ~

HWS "ARENA", 1974, POZNAŃ)

POINTS TOTAL: 12/30

ORDER IN THE SMALLEST SCALE 2/6

4. ALTERNATING REPETITION ~
8. DEEP INTERLOCK AND AMBIGUITY ✗
9. CONTRAST ~

ORDER IN THE LARGE SCALE 2/6

7. LOCAL SYMMETRIES ✗
12. ECHOES ✗
15. NOT-SEPARATENESS ✓

LINKING SMALL TO LARGE SCALE 3/6

1. LEVELS OF SCALE ✓
3. THICK BOUNDARIES ✗
13. THE VOID ✓

OTHER PROPERTIES 5/12

2. STRONG CENTERS ✓
5. POSITIVE SPACE ✗
6. GOOD SHAPE ✓
10. GRADIENTS ✗
11. ROUGNESS ✗
14. SIMPLICYTY AND INNER CALM ~

architectural emulation and organization of form, reflecting certain properties of shapes and spaces – subconsciously perceived as natural by the user.

The user does not feel the difference between a natural or artificial pattern if both are built according to similar rules. Instead, he notices a gross deviation from the natural pattern or (in other words), its "mismatch" to the existing context[9]. In extremal, polar distant cases, this effect can manifest itself in a twofold character: as a so-called hospital alarm (anxiety caused by unnatural lack of information in and about space), and, on the other side, as spatial chaos, discomfort resulting from an excess of unorganized (and in fact worthless, from a cognitive point of view) information[10].

Assuming that architecture actively influences the user's subconscious and space-time experience, it is worth paying attention to the theoretical concept proposed by Clark and Chalmers: the so-called *extended mind*. In this concept, the human environment is a sort of prolonged medium for information and human memory organization, utilizing existing (and creating new) "cognitive aids" in its environment. In this context, the *language of architecture* acquires a special meaning – if it is clear, readable and, at the same time, cognitively rich, like spoken language, it becames the valuable basis of communication, in architectural space and with architectural space. Therefore, places not only accumulate meanings and emotions, or bring back memories, but also communicate their state and induce influence.

4. The creative aspect of architecture

The scientific aspect of architecture does not exclude, but inversely, implies creativity. However, a question arises about the meaning and scope of the "creativity" concept. In this case, it would not mean creating completely new, typologically alien artefacts, that distinguish themselves from everyday reality and the surrounding environment, but rather (similarly as in the case of natural evolution) rely on gradual iterations and variations of existing themes and motifs. The emergence of a new form would enhance existing systems on different scales.

Leitner[11] describes (generative) design as a process that takes into account 5 principles of an iterative, deductive approach to shaping a form: 1. *One step at the time performance* (as opposed to an immediate vision of a finished, completed work); 2. *Reversible*: the coherence and adaptability of an architectural form as a determinant of its quality (if this goal is not achieved, one should follow a different path); 3. *Preserving existing structures* (the project complements or enhances an already existing context); 4. *Each step strengthens coherence* (the weakest elements of the context are transformed); 5. *The emerging structure combines and reorganizes the existing elements into a new form*[12].

The above approach assumes a fundamental change in the perception of time and history in architecture. The radical division into traditional and modern architecture, made in the

---

[9] C. Alexander, *Notes on the Synthesis of Form*, Harvard University Press, Harvard 1964.

[10] N. Salingaros, *Twelve Lectures on Architecture. Notes from a series of 12 lectures applying cutting-edge mathematical techniques to architectural and urban design,* Umbau-Verlag, Solingen 2008.

[11] H. Leitner, *Pattern Theory. Introduction and Perspectives on the Tracks of Christopher Alexander*, HLS SOFTWARE 2015.

[12] *Ibidem.*

SAMPLE RESIDENTIAL BUILDINGS, XXIth CENTURY, OUTSKIRTS OF POZNAŃ)

POINTS TOTAL: 16/30

ORDER IN THE SMALLEST SCALE 3/6

4. ALTERNATING REPETITION ~
8. DEEP INTERLOCK AND AMBIGUITY ~
9. CONTRAST ~

ORDER IN THE LARGE SCALE 4/6

7. LOCAL SYMMETRIES ~
12. ECHOES ~
15. NOT-SEPARATENESS √

LINKING SMALL TO LARGE SCALE 4/6

1. LEVELS OF SCALE ~
3. THICK BOUNDARIES ~
13. THE VOID √

OTHER PROPERTIES 5/12

2. STRONG CENTERS ~
5. POSITIVE SPACE √
6. GOOD SHAPE ~
10. GRADIENTS ×
11. ROUGNESS ×
14. SIMPLICYTY AND INNER CALM ~

SAMPLE COMMERCIAL BUILDING, XXIth CENTURY, OUTSKIRTS OF POZNAŃ)

POINTS TOTAL: 12/30

ORDER IN THE SMALLEST SCALE 1/6

4. ALTERNATING REPETITION ×
8. DEEP INTERLOCK AND AMBIGUITY ×
9. CONTRAST ~

ORDER IN THE LARGE SCALE 3/6

7. LOCAL SYMMETRIES ~
12. ECHOES ~
15. NOT-SEPARATENESS ~

LINKING SMALL TO LARGE SCALE 3/6

1. LEVELS OF SCALE ~
3. THICK BOUNDARIES ×
13. THE VOID √

OTHER PROPERTIES 5/12

2. STRONG CENTERS ~
5. POSITIVE SPACE ×
6. GOOD SHAPE ×
10. GRADIENTS ~
11. ROUGNESS ~
14. SIMPLICYTY AND INNER CALM ~

MODERN MUSEUM BUILDING, XXIth CENTURY, HISTORICAL CITY CENTRE, POZNAŃ)

POINTS TOTAL: 5/30

ORDER IN THE SMALLEST SCALE 1/6

4. ALTERNATING REPETITION ×
8. DEEP INTERLOCK AND AMBIGUITY ×
9. CONTRAST ~

ORDER IN THE LARGE SCALE 0/6

7. LOCAL SYMMETRIES ×
12. ECHOES ×
15. NOT-SEPARATENESS ×

LINKING SMALL TO LARGE SCALE 3/6

1. LEVELS OF SCALE ~
3. THICK BOUNDARIES ×
13. THE VOID √

OTHER PROPERTIES 1/6

2. STRONG CENTERS ×
5. POSITIVE SPACE ×
6. GOOD SHAPE ×
10. GRADIENTS ×
11. ROUGNESS ×
14. SIMPLICYTY AND INNER CALM ~

Athens Charter (1933) meant, in the incoming perspective of 20th century, literally prohibition of the use of "traditional" forms. Only selected "specimens" should be kept untouched: "Slavish imitation of the past is condemning a lie, creating *falsehood* for the principle"[13]. The Athenian caesura, separating itself from the heritage and achievements derived from the advent of modernist architecture, established the linear perception of time. No return to traditional study and the reproduction of forms.

Imagine, however, a model in which the formulation of new architectural theories does not mean either: a radical (and mindless) negation of the past, or improper imitation of the old so-called "styles". Instead, it is based rather on the search for certain timeless *regularities* – a formal equivalent of *patterns* (see the *pattern language*). Repeated regularities (not necessarily visually similar or identical solutions) imply a *pattern*. The group of mutually complementary and strengthening patterns is defined by, the above-mentioned – language of architecture.

The still existing historic resource of architecture is, in this case, the scientific field of the active search for architectural patterns, not the storehouse of accidentally collected, dusty museum exhibits. In this context, the research field of architecture is no longer based on a linear, modernist concept of time (and history), but on a three-dimensional time-space that allows for seeking and discovering (creating?) new generalizations and regularities (patterns) and their application in modern practice.

5. Organized complexity and elements of field of centres *formal structure* – the spirit of architecture

Christopher Alexander's concept, philosophy and practice of the *pattern language* is best known in Poland from the translated collective work entitled "Pattern Language", although the translation unfortunately has neither been extended to the extensive theoretical and philosophical basis of this concept ("A timeless way of building"), nor to the second leading theme of Alexander's and his followers work – the theoretical foundations of the form language.

An example of one of the most contemporary references to the theory of the pattern language is (among others) the concept of a group of *biophilic* patterns, based on the analysis of about 300 scientific studies, referring to the real impact of various environmental aspects on stress reduction, cognitive performance and emotions, mood and preferences. Three of them (P7 – biomorphic forms and patterns, P8 – material connection with nature and P9 – complexity and order) directly concern the architectural form.

The last of these patterns (P9), referring to organized complexity[14], is best suited not so much to direct analogies to nature, but rather to the concept of universal principles shaping architectural forms. The P9 pattern of complexity and order corresponds to the concept of organized complexity (or, in other words, life in architecture). This pattern can be largely equated with the fractal properties of natural forms.

---

[13] Corbusier Le, *Karta Ateńska*, Fundacja Centrum Architektury, Warszawa 2017.

[14] In the Salingaros's theory defined as the product of information and the degree of its "ordering" – harmony, where "harmony" is the architectural equivalent of computer compression (packaging) of information, while maintaining its readability.

The fractal form, whose examples we find both in the tradition of Eastern and Western architecture, has a positive, harmonizing effect on the human experiencing it[15]. It allows interesting, cognitively valuable, recognizable hierarchical elements and spaces to be created – from the human scale to the scale of the entire building – through iterations, scalable self-similarity, multiple nesting of elements, etc.

We can find the aspect of form's fractal characteristics in relation to the concept of the form language (Chrstopher Alexander[16]). "Good form" follows the "diagram of force" (irregularity, tension), already existing in its context[17]. Forms are not immutable artefacts, separated works of art, but rather a temporal manifestation of flowing energy, varying resultants of forces (cf. Far East concept of form-making Li is rather a superior, innate principle, than a concrete shape).

A good form reflects (according to Alexander) the field of centres – in which each new creation, a centre, is divided into smaller centres, and at the same time strengthens the centre of a higher order enabling further energy flow – by opening the new co-existence possibilities for new, neighboring centres. Thus, centres co-create an image of organized complexity on many scales. This image is changeable in time and space, and there is never any final state of it, but such organized (organic) space retains a certain balance.

Alexander lists universal *properties of the field centre*, distinguishing 15 morphological features of living architecture, described in detail in his key monograph [2], also sketched synthetically in studies of Salingaros[18], or Leitner[19]. Salingaros [ibid] defines them as: *Morphological features that resonate with the human senses* (…) *Independent of culture, period, or region – something innate*. These are:

1. ***Levels of scale*** – Presence and coherence of self-similar components at appropriate scale intervals (optimally between 1: 2 and 1: 4); A special, cognitive role of the "human" scale: 1mm ~ 2m; The shapes (As such), are defined by the principle of Strong centres.
2. ***Strong centres*** – A multi-level structure of mutually reinforcing centres, organizing regions around them; The centres can be of two types:
   – A defined centre (contains a dominant element that concentrates attention);
   – Hidden centre (the outline of an empty centre implies its presence and destiny);
3. ***Thick boundaries*** – They occur on a scale comparable to the size of the centre, which they "define" (beeing equally important). They focus on its interior and strengthen the hidden centre; They should be permeable (perforated), curved (bend) and folded;
4. ***Alternative repetition*** – Translational symmetry, ornament (not as a trivial repetition of an element); The alternating occurrence of the pairwise elements reinforces the duplicated information;
5. ***Positive space*** – The convex shape defines not only an architectural object, but also space, perceived as an "interior" – urban or landscape; The interior (and not the object separated from the background) creates a deep sense of security;

---

[15] J. Joye, *Fractal Architecture Could be Good for You*, Nexus Network Journal, No. 2, 2007, p. 9.

[16] Let us note that, for example, Norberg-Schulz in his work "Existence, space and architecture" indicates that Alexander considered functional rather than geometric aspects of space in the theory of architecture.

[17] C. Alexander, *Notes on the Synthesis of Form*, *op.cit.*

[18] N. Salingaros, *Twelve Lectures on Architecture. Notes from a series of 12 lectures applying cutting-edge mathematical techniques to architectural and urban design,* Umbau-Verlag, Solingen 2008.

[19] H. Leitner, *Pattern Theory..., op.cit.*

6. ***Good shape*** – Symmetry (the simplest local regularity), understood as a method of reducing excess information; The clear silhouette (shape) facilitates the interpretation of the spatial solid; "Good" means in this case: "easily understood and absorbed cognitively";
7. ***Local symmetries*** – Symmetry, understood as the balance of various, mutually nested local symmetrical transformations, resulting from the gradual development and adaptation of the composition; Applied in all scales (except the largest scale);
8. ***Deep interlock and ambiguity*** – Connecting elements through mutual geometrical relationships, construction, joins, permeation; Lines, "fractally" and gradually (by accretion), fill the space of the Whole (*wholeness*);
9. ***Contrast*** – Defines connections of parts, the readability of internal and external spaces; The true contrast, the dualism of opposites, enables the emergence of a new living centre; Diversity (contrast) in the emptiness creates matter;
10. ***Gradients, transitions*** – Subtle, soft transitions and metabolism of matter, density, field influence; They reflect the variability of local conditions and the natural aging of matter;
11. ***Roughness*** – Apparent imperfection, locality, hand-made ornament or so-called "conscious error"; Small irregularities of lines or surface revives composition; Too much rigour (precision) of geometry "dehumidifies" the environment;
12. ***Echoes*** – Reflections and repetitions of more or less similar elements (attention centres):
    – Translational symmetries (same forms on different scales and distances);
    – Self-similarity: (similarity of parts to the Whole);
13. ***The void*** – Indispensable interval, silence and breathing in a complex whole (*hidden centre*); The inner empty space allows for concentration of energy and attention in a specific place.
14. ***Simplicity and inner calm –*** Order and lightness (but not minimalism):
    – Tranquility and cohesion (perfection of a complex system);
    – Insensitivity to passing fashions and fancies;
15. ***Not-separateness*** – The Whole as a relation (and not a mechanistic assembly) of equally important parts; Cooperation with the surroundings and resignation from visual glitches.

Salingaros assigns some of the 15 centre's properties referred above to his three categories of "architectural rights"[20]:

- **The first law** (ordering on smaller scales) – refers to pairing opposite, elementary "particles" of the form. The following *properties* relate to this law: ***Alternative repetition*** (4), ***Deep interlock and ambiguity*** (8), ***Contrast*** (9);
- **Second law** (large-scale ordering) – refers to relations of elements perceived at a certain distance; reduction of entropy, equalization, crystallization. The following *properties* relate to this law: ***Local symmetries*** (7), ***Echoes*** (12), ***Not-separateness*** (15);
- **Third law** (combining small and large scales) – assumes a constant scale factor, greater than 2 (optimally e = 2.7), or otherwise – allowing the architectural element to be divided into at least two comparable parts. The following *properties* relate to this law: ***Levels of scale*** (1), ***Thick boundaries*** (3) ***The void*** (13).

[20] N. Salingaros, *Twelve Lectures on Architecture. Notes from a series of 12 lectures applying cutting-edge mathematical techniques*, *op.cit.*

Other properties (six): ***Strong centres*** (2), ***Positive space*** (5), ***Good shape*** (6), ***Gradients, transitions*** (10), ***Roughness*** (11), ***Simplicity and inner calm*** (14) are of general character and have not been categorized.

Six examples of architectural objects, characterized by the *field of centre properties* proposed by Christopher Alexander, are listed on the illustrative material attached. The categorization of properties has been assessed below icons (on the right side of each illustration). The V sign indicates a clear, visible appearance of the *property* (2 points); The ~ sign indicates the partial occurrence of the *property* (1 point); The X sign indicates the lack of of the *property* (0 points). In total, the hypothetical maximum number of points (15x2) is 30.

The example method described above allows (any) objects and compositions (both architectural and urban) to be combined and compared, according to uniformly defined criteria (derived form properties). It shows not only a certain degree of formal complexity (organized complexity) but specific visuals of an object, these properties of field of centres, which Alexander calls (as already mentioned) – architectural life.

6. Conclusion

The examples of objects presented, arranged in the chronological order of their creation, show differences only in the juxtaposition of their characteristics (*properties*). It is not so much a simple consequence of time or style of an object, which in this case is of little importance, but its reflection of a degree of conscious (or unconscious) use of principles of organized complexity.

This principles show the differences between those objects whose origins resulted (to a greater or lesser extent) from the creative replication of certain local traditional patterns, or the use of templates, and objects that were created as completely autonomous, original creations and compositions, without much connection with the surroundings.

It should be noted that, also nowadays, some architectural objects recently created, are characterized by a high degree of organized complexity, both referring to direct analogies of old, tectonic and stylistic patterns and compositions, as well as to completely original, successful autor's creations. Still, they are rather the exception than the rule, remaining in opposition to the mainstream minimalist paradigm continuation.

The concept of life in architecture, the fields of centres and organized complexity has just been outlined in the above considerations. It may be considered as a starting point and it will, in the future, require integration of not only mathematical, geometric and humanistic knowledge, but also reach for those elements that have a special impact on human beings, becoming – perhaps – the foundation of a new (old?) theory of architecture.

References

[1] Alexander C., *Notes on the Synthesis of Form*, Harvard University Press, Harvard 1964.

[2] Alexander C., *The Nature of Order. An Essay on the Art of Building and The Nature of the Universe*, The Centre for Environmental Structure, Berkeley 2014.

[3] Jencks, C. i Kropf, K., *Teorie i manifesty architektury współczesnej*, Grupa Sztuka Architektury, Warszawa 2013.

[4] Corbusier Le, *Karta Ateńska*, Fundacja Centrum Architektury, Warszawa 2017.
[5] Groat L., Wang D., *Architectural Research Methods*, Wiley, Hoboken 2013.
[6] Joye J., *Fractal Architecture Could be Good for You*, Nexus Network Journal, 9, No. 2, 2007.
[7] Leitner H., *Pattern Theory. Introduction and Perspectives on the Tracks of Christopher Alexander*, HLS SOFTWARE 2015.
[8] Monestiroli A., *Tryglif i metopa. Dziewięć wykładów o architekturze*, Politechnika Krakowska, Kraków 2009.
[9] Mouzon S., *Traditional Construction Patterns,* McGraw Hill, New York 2004.
[10] Postle B., *An adaptive approach to domestic design*, JBU III 1&2, 2013.
[11] Salingaros N., *A Theory of Architecture*, Umbau-Verlag, Solingen 2008.
[12] Salingaros N., *Twelve Lectures on Architecture. Notes from a series of 12 lectures applying cutting-edge mathematical techniques to architectural and urban design,* Umbau-Verlag, Solingen 2008.
[13] Tobolczyk M., *Narodziny architektury*, Wydwnictwo Naukowe PWN, Warszawa 2000.
[14] Wilkinson P., *50 teorii architektury*, Wydawnictwo Naukowe PWN, Warszawa 2010.
[15] Witruwiusz, *O architekturze ksiąg dziesięć*, Państwowe Wydawnictwo Naukowe, Warszawa 1956.