Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE, Pietro ELISEI, Clemens BEYER (Eds.)

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From Vision to Reality for Vibrant Cities and Regions

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Beiträge zur

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Edited by

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reviewed paper

A New Tool for Assessment of Contextuality of Architecture

Milena Vukmirovic, Eva Vanista Lazarevic, Jelena Maric

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1 ABSTRACT

The purpose of this paper is in presenting a proposal for set of methods in evaluation of contextuality in architecture as a quality assessment of new buildings in particular urban areas as well as a guiding framework in urban design and urban transformation processes. Research has been done at the University of Belgrade – Faculty of Architecture with the students at the Master and PhD course „Contextual Architecture" at the polygon of the Quarter of Vracar in Belgrade, Serbia. We propose the approach that consisted of two parts that were taking place consecutively. The first part was conducted with PhD students. The result was a product of the content analysis of existing contextuality of architecture theories and evaluation apparatuses. The second part of the research was realised with students of master studies who had the task to define indicators grounded on the results of the case studies of individual object in the environment, by following the criteria-based structure of the research. Comparing and overlapping the obtained results the new tool - proposal for the assessment of contextuality of architecture is made and it could be used as a base in generating recommendations and guidelines for future interventions for the same or similar urban environments.

2 THEORETICAL BACKGROUND - INTRODUCTION

Contextualism as a philosophical term flourished especially at the end of the 20-century. We could distinguish a broader aspect of term Contextualism as a choice of separate paradigms in philosophy – supported in architecture by postmodern philosophy and movement and its theoretical approaches. Postmodern movement allows and even promotes broader view on any problem or constatation under the pretext of contextualism.

Although under the scope of architecture we have to reflect on philosophy and relativism of any utterance. Situational ethics promoted by Jean Paul Sartre and Simone de Bouvoir and their followers takes into account a whole range of context elements when and while judging or evaluating. There is not a universal law that is to be followed but law of love, sometimes even unconditional love – they say. Their literature but also their huge and continuing influence deal with moral doubts of existentialism's movement - which gave impact and made references to today's theoretical thinking. On the other side, moral relativism characterize the fact that nobody is objectively right or wrong and that especially context like place, different people from different culture perceive their entourage totally different. Rootless and left on their own to judge and estimate, it seems that people from the end of the Century lost their steadfast, their „Bible". The loos of family values more contributed a sense of uncertainty and benchmarks for evaluating.

2.1 Context in Architecture

The research is focused on quality assessment guidelines for infill development in specific urban areas that often have historic, as well as architectural and cultural value. In order to establish a new method for evaluating contextuality of architecture of new buildings it is necessary to consider them within the context they belong to. The importance of design in context is widely recognized as a key objective in retaining identity and character of a city. In the XIX Congress of the International Union of Architects (1996), Ignasi de Solá-Morales spoke about the importance of context and relations between city and architecture. He argued that „cities are undergoing genuine mutations, in which the principal line of development proceeds from within the process itself rather than from any demands or restrictions imposed by the existing environment". To support this statement we need a better insight in theories of context. Academics and practitioners use numerous definitions, but there is a joint agreement that the notion of context determines the style, texture, material selection, orientation and proportion of a building as well as site layout, which are very important in creating an effective design. All these promote continuity between the development and

local circumstances. Separate building elements are "incomplete expressions", we can only speak of them from the point of view of a complete building and its surroundings (Taurens, 2008). The term "context" in architecture has wide range of meanings. It could be addressed from different approaches or considered in different situations. According to an expert from Analysing Architecture, Simon Unwin, „architecture is neither a cursory attention nor a radical innovation, but a strong and eloquent visual relationship to the surrounding". There is no design without detailed analysis of site, landscape and built structures (McHard, 1969), an individual building is always seen first as a part of the whole. Roger Trancik in his book: "Finding Lost Space: Theories of Urban Design" (1986) considers context as one of three major elements that will dominate postmodern city design. In this research the analytical procedure was applied to an evaluation based on key principles of design in context.

2.2 Principles of design in context

Contextual design – the concept that new projects should fit into their context of old settings has been and is a major planning principle in contemporary architecture. U.S. planning departments are evaluating new buildings using a general criterion on how well the building would fit into its context. There are many different studies that are focused on determining the principles of building in context. These principles or guidelines, in forms of recommendations, resolutions, declarations or statements, were drafted and adopted firstly by international organisations, such as UNESCO and ICOMOS. The variety of these design guidelines are showing us that there are not simple rules for achieving quality of design, although a clear and coherent relationship between all parts of the new building to the hole, as well as to their surroundings is essential (Sotoudeh &Abdullah, 2013). These principles are mainly about compatibility of new buildings with old structures through evaluating features, size, scale, proportions and massing in order to protect the integrity of the property and its environment (Penn, 2007).

Here is an overview of 6 key design criteria/principles for building in context, which are used as guidelines in creating specific set of criteria for this research. According to NSW Heritage Office and Royal Institute of Architects to achieve a successful infill design new development must be appropriate under the following design criteria: 1) Character, 2) Scale, 3) Form, 4) Setting, 5) Materials and 6) Detailing. Each of these criteria has specific and measurable set of indicators used to closely and accurately evaluate new building design. Character is defined by the combination of the particular characteristics and qualities of urban areas and is an important criterion for preserving the identity of place, harmony and unity. Indicators for these particular criteria are: topography of site and its surroundings; distinctive landscape elements; date and style of built form; views, vistas and skylines; local cultures and traditions; uses etc. Scale and form of infill buildings, its overall shape and volume are defined by predominant height, bulk, density, proportions, rhythm and grain of existing setting, as well as the ratio of solid and void surfaces in a building. Sitting as a criterion determines position, location and orientation of a new building. Retention of views and vistas, significant natural features and characteristics of landscape are required in infill design. Finally, good infill buildings should recognize characteristic materials, colour and detailing used in existing buildings.

3 METHODOLOGY AND MATERIAL

Concerning methodological framework used in this research, almost for two decades Prof. Dr Eva Vanista Lazarevic is researching a topic of contextual architecture at the University of Belgrade - Faculty of Architecture at the academic courses titled „Contextual Architecture" on Bachelor, Master and PhD studies.

Also, her PhD Thesis (Vanista Lazarevic 1997) has been relied on the hypothesis that reflecting on architecture can be indeed based through the prism of architecture as an art conclusion, relied on knowledge of golden section, Gestalt theory and facing to an obvious subjectivity. In the scope of urban regeneration we focused to an infill process as the most active one of all urban renewal methods usually used. Contextuality in architecture seemed to be elected and stemmed out as the most logical and important table for general approach on complexity and diversity.

Based on long experience (Vanista Lazarevic 2014) we can conclude that we could not enter this diverse multileveled scientific area without the few bottom-top elements: general good knowledge and a broader view position as a foundation, style upon it and finally on the top: refinement, taste and finesse – difficult to obtain! It is difficult to educate after these guidelines because we as educators have to initiate a sense for evaluation and rafinity refinement even in case if future architects have no enough initial talent. To be more

precise, in analyzing and dealing with the meaning of contextual architecture there is a need to handle a whole network of contextual types, aspects and parameters, intertwined between in different layers. The precise analyze of a whole set of indicators could help to develop a final evaluation decisions of students and PhD students, in a way to become one day good analysts and critics by recognizing values as well as through enabling them to acquire knowledge and understanding for further creative professional work.

At the beginning, we can easily distinguish a physical context, which consists of architectural and urban one, new in old settlements segment and urban recycling method. On the other hand we have diverse aspects throughout we build the process: historical, economical, political, ecological, sustainable, in the scope of art, social, philosophical, global, integrative and so on approach to the Context - as a term.

Furthermore, we can observe the Context through several prisms and through the aspects of identity, comfort, safety and security, public health, new technologies, sociological and anthropological aspects, etc. By intersection of elected parameters we could make a general initiative for searching a red line which could approach us near any indication of final result of evaluation or conclusion. Subjectivity is the most burdensome element in this process and we could be hardly rid of it – it represents the real nature of human complexity in evaluation process of art. As we consider the architecture as an art, it is easy to conclude that we could hardly be precise in a measurable way. And maybe we have to count on this fact as on constant threat for sharp definition, but also to consider it as a creative impulse.

However, the parameters to measure the quality of any physical infill method through elected, above mentioned, aspects could help to rely on some trustful imputes. We could decide to elect the adjustment as our choice. We could also confront as the authors – architects against our physical context. Wishing to elaborate something new, completely unique. We can use the charm more and less successful. We can copy other materials just to be polite and to respect the context, but maybe it is not always the right path to call. In the same time, we have to be economically afforded as a „new in old settlement“ expensive project, but never stop to believe we are seeking for even higher levels: something surprisingly fresh, unusual/never seen before, unique, one of a kind or exquisite.

How to measure the „harmony level“ in the process? How to evaluate the quality of infill that lay in all these mix of parameters, grades, inputs etc?

Basically, we have some usually known parameters – Aesthetics elements used as indices in History and theory of art (Kjellman-Chapin 2013, Mako 2009) which consist of measuring the level of: (1) order, (2) unity, (3) relationship, (4) proportion, (5) ratio, (6) hierarchy, (7) symmetry, (8) rhythm, (9) detail, (10) texture, (11) harmony and (12) beauty order. By using them randomly or sometimes in priority way we can measure the level of success of any case study elaborated and analysed numerously, as far as it is possible under the circumstances.

Finally measured or evaluated, the case study could staidly being put in some order and frame, but we have to face another possible obstacle, a Kitsch product and how to measure it and evaluate it. „Kitsch is, unlike art, a utilitarian object lacking all critical distance between object and observer; offers instantaneous emotional gratification without intellectual effort, without the requirement of distance, without sublimation“ (Kjellman-Chapin 2013).

Only through over viewing of immense number of examples and cases we could maybe obtain a power comparison of the evaluators based upon „a posterior“ knowledge. Bad cases could be sometimes more educative and practically useful then some rare high-level quality forms. Although, nice entourage statistically proves upgrading of mental and physical sense of aesthetic of each human individual. So why we should avoid the best possible solutions and do not seek for excellence?

In order to test the defined criteria the research has been done at the University of Belgrade – Faculty of Architecture with the students at the Master and PhD course „Contextual Architecture“ at the research territory of the Vracar Municipality in Belgrade, Serbia. We propose the approach that consisted of two parts that were taking place consecutively.

The first part was conducted with PhD students. The result was a product of the content analysis of existing contextuality of architecture theories and evaluation apparatuses. This part of the research is presented in section titled theoretical background. The second part of the research was realised with students of master studies who had the task to define indicators grounded on the results of the case studies of individual object

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in the environment, by following the criteria-based structure of the research. For those purpose twenty nine buildings constructed after the 2000th were identified. Case studies have been done on the basis of made catalogue sheets. Accordingly for each of 29 objects is made a mini catalogue where is presented textual and graphical part of the evaluation (see Fig. 1).

Fig. 1: Examples of filled catalogue sheets (Maksic 2015)

Comparing and overlapping the results of those consecutively conducted analysis the new tool for the assessment of contextuality of architecture is produced.

4 RESULTS

Proposal for a tool for assessment a contextuality in architecture, which is elaborated as a set of chosen elements, monitored and checked over years of educational work in „Contextual Architecture“ class, covers following criteria: (1) Order, (2) Unity, (3) Ratio, (4) Proportion, (5) Scale, (6) Hierarchy, (7) Symmetry, (8) Rhythm, (9) Detail, (10) Texture, (11) Harmony and (12) Beauty. Based on a thorough literature research each criterion is clearly defined in order to determine its meaning in relation the main topic of architecture in the context. Given the above meaning and validated on specific case studies for each criterion were identified a range of measurable indicators that aimed at improving the exactness of the evaluation procedure.

4.1 Order

Order represents an establishing a harmonious relationship between elements that make it. Regardless of how many elements make it, it is always possible to add a new element or to repeal the existing. The only requirement is that it needs to happen on already defined rules dictated by the existing environment.

Fig. 2: Order analysed by the 1) vertical regulation, 2) horizontal regulation and 3) building contents (Maksic 2015)

Order could be analysed and measured using the following indicators: 1) vertical regulation expressed and compared by the number of building stories and total height of the building (see Fig. 2), 2) horizontal regulation by comparing the relationship between the positions of construction and regulation lines, 3) the

position of the building on the plot, 4) planning regulation – the analysis of what is determined by the plan for a given parcel, 5) the relationship between built and unbuilt compared with the determined construction index and plot occupancy, 6) the existence of greenery and 7) relationship with the present environment.

4.2 Unity

Similarly with the order criteria, the unity implies the achievement of harmony between the elements. While the order is determined by the relationship between elements and allows its differences, the unity is determined by the characteristics of the elements themselves which should be related in order to form a unified whole.

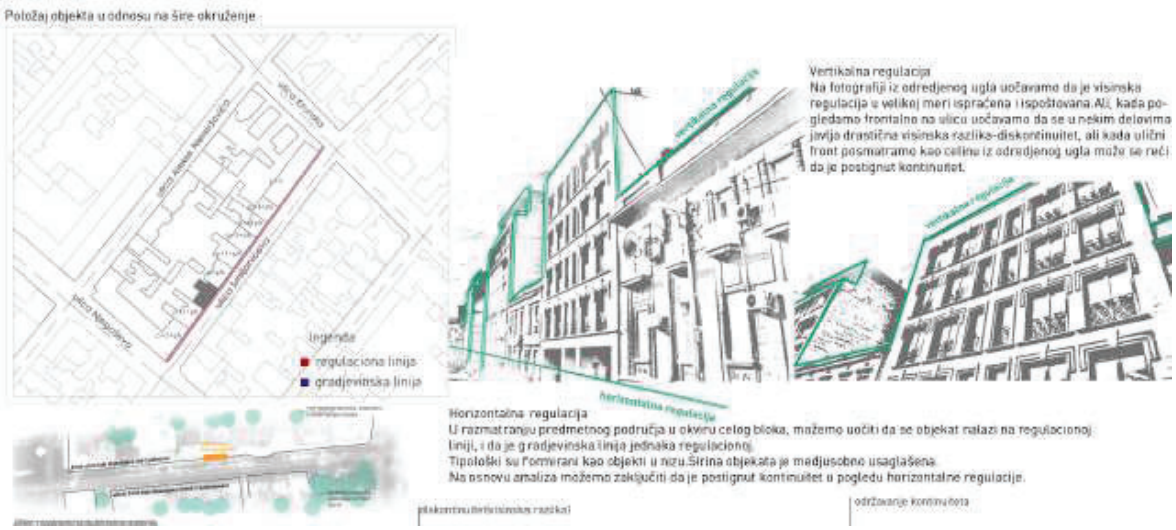

Fig. 3: Unity analysed by the 1) vertical regulation, 2) horizontal regulation and 3) building form and design. (Vartonjic 2015)

This contextual characteristics of the buildings could be evaluated using the following indicators: 1) width of the parcels and street fronts, 2) continuity in terms of establishing harmony between horizontal and vertical regulation and ground floor transparency (see Fig. 3), 3) building shape and form expressed by the geometry of the base footprint, 4) presence of different building contents, 5) coherence of building colours and 6) compatibility of materialisation.

4.3 Ratio

Ratio is defined as establishment of contact, exchange or interaction of elements and it is more general than other criteria. On the other side it could be used as an indicator as well in every of the specified criteria. In accordance with that, ratio would be interpreted only through the physical parameters – width of the buildings footprint ratio, etc.

Fig. 4: Ratio analysed on the basis of 1) width of the buildings and 2) footprint ratio (Vasilev 2105)

Ratio could be analysed using the following indicators: 1) street profile expressed by comparison between the height of the buildings and width of the street (see Fig.), 2) building dimensions expressed by the comparison of the height of the building and its width, 3) ratio of the built and unbuilt and 4) ratio and the position of the building openings.

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4.4 Proportion

The proportion criterion defines as relationship between parts (particular elements), but also as the relationship of parts to the whole. Accordingly, this criterion covers two levels of the research: measurement of the established relations and evaluation of the quality of the established relations.

Fig. 5: Proportion analysed as a relationship between particular elements (Maksic 2015)

Proportion could be expressed by following indicators: 1) street profile as a street cross-section where is presented the relation between building height and street width, 2) building dimensions expressed by the comparison of the height of the building and its width (see Fig. 5), 3) continuity of building widths, 4) part and whole expressed by the percent of the particular object footprint in relation to the other objects and 5) dimensions and distance of the openings.

4.5 Scale

In the domain of the architecture in context the scale includes the relation between elements' sizes (height, width, footprint, etc.). These elements should be appropriately sized in order to establish an adequate relationship with other elements.

Fig. 6: Scale expressed by the relation between elements and their sizes (Vratonjic 2015)

The analysis of the scale should cover the measures and evaluation relative to the following indicators: 1) building sizes, 2) element sizes, 3) materialisation expressed by the size of the used materials, 4) the volume of the object, 5) human scale and 6) ambient compliance of the buildings (see Fig. 6).

4.6 Hierarchy

Hierarchy is defined as the ranked order in which each element is subordinate to that above it. In spatial terms it may imply the existence of plans giving the impression of depth as well as adequate relationship of elements to enhance legibility of place and its particular segments.

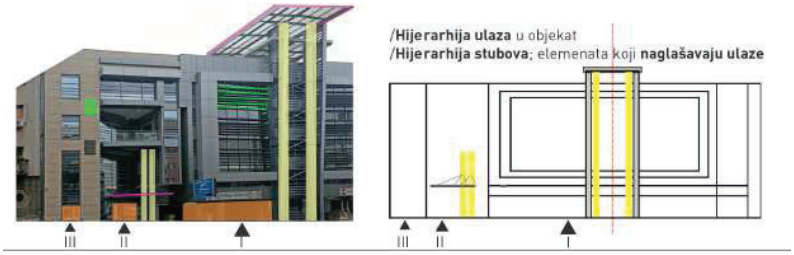

Fig. 7: Hooray of elements of the analysed object (Vasilev 2015)

This criterion covers four indicators: 1) position of the building and position of the element (see Fig. 7), 2) transparency of the ground floor, 3) transparency of the building and 4) the importance of the public space

where the building is situated, analysed by the measures of public spaces and the distances of the potential perceptions.

4.7 Symmetry

In the field of geometry the symmetry is a reproduction of objects in relation to the point, line or plane. Symmetry of objects generally implies the existence of the axis of symmetry in respect of which the two parts of the building are equal. The main character of the symmetrical architectural and urban compositions is that they seem static, steady and composure. Symmetry psyhologically represents positive appearance, on the contrary absence of symmetry could often be linked with feeling of unharmony, disorganization and even ugliness.

Fig. 8: The axis of symmetry on the street cross-section indicates the same height of the buildings across the street (Vasilev 2015)

The analysis of the symmetry should cover following indicators: 1) object distance from the axis of the street, 2) object geometry in relation to the reference point, line or plane, 3) street cross-section character in relation to the height, similar elements and existence of tree lines, street lighting, urban furniture, etc. (see Fig. 8), 4) character and form of the roofs and 5 symmetry of the street frontage.

4.8 Rhythm

In music, rhythm is a series of tones and pauses of different durations in the music section. On the other side, in the domain of visual arts, rhythm is regular shift of the prominent and subordinate motives, or their repetition. In architecture, it is the repetition of elements in equal intervals, like repetition of solid and empty, repeating of openings, colours, lights and shadows, etc.

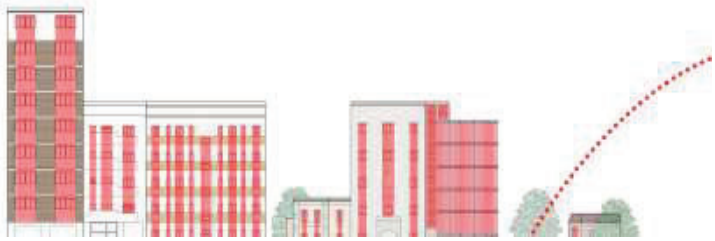

Fig. 9: Rhythm of openings (Maksic 2015)

Fig. 10: Details on the analysed object and details along the street (Vratonjic 2015)

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This criterion covers three indicators: 1) distance between the buildings, 2) building modularity and 3) segment, object and element repetition or redundancy (see Fig. 9).

4.9 Detail

In architecture, detail can be interpreted in several ways, but it general it means a particular, but important item which contributes to the overall picture, or perception.

The analysis of the detail should cover the measures and evaluation relative to the following indicators: 1) colour and materialisation of the particular elements – details (see Fig. 10), 2) uncommonness of the construction solution, 3) footprint dominance and 4) unique form of the building.

4.10 Texture

Texture as a visual element implies the structural composition and the material surface of objects. It could be determined visually as well as by the since of touch, which is of primary importance for the interpretation of textures.

Fig. 11: Different textures identified along the street (Maksic 2015)

The criterion of texture covers seven indicators: 1) character of the finishing (see Fig. 11), 2) reflection, 3) transparency, 4) treatment of the surface (printing, painting etc.), 5) perception distances, 6) personal visual experience and 7) personal tactile experience.

4.11 Harmony

Harmony criterion is determined by the unity and gradient of the parts and segments that are the integral parts of the whole. It involves compliance interaction of the different elements and factors.

Fig. 12: Harmony expressed as an interaction between different buildings along the street (Milanovic 2015)

This criterion of the contextuality of architecture includes four indicators: 1) integration with neighbouring buildings, street and urban block (see Fig. 12), 2) the relationship of the new facility to the existing environment, 3) legibility and 4) the possibility of identifying the harmonious relations among the elements.

Fig. 13: Beauty as a personal feeling of comfort and pleasure (Maksic 2015)

4.12 Beauty

Beauty is an aesthetic category, which means the perfection of harmony. It depends on the cultural context and is prone to change during the time. Beauty is something that fills us with a sense of comfort and pleasure and it is related to the criterion of harmony.

This criterion is the most complex of all the above and it could be analysed as a summary evaluation of all previous criteria. However, if we look at it separately, it covers five measurable indicators: 1) design qualities, 2) quality of fine works and details, 3) liveability measured by the intensity of use of the particular building and public space, 4) additional effects like lighting, greenery, water effects, colours, smell, etc. and 5) personal, subjective attitude of the of users and observers (see Fig. 13) which are pshylogically often linked with 2 attributes: recognisability and comfort.

On the basis of the presented criteria and indicators a unites table (table 1) is formed after fundamental researches and pedagogical work in the studio "Contextual Architecture" leaded by Prof. Eva V. Lazarevic. It is presented below in a form of easy comparable table the possible framework/tool for assessment of the contextuality on architecture which could be used as a raw model:

ORDER	UNITY	RATIO	PROPORTION
• Vertical regulation • Horizontal regulation • The position of the building on the plot, • Planning regulation • The relationship between built and unbuilt • The existence of greenery • Relationship with the present environment	• Width of the parcels and street fronts, • Continuity • Building shape and form • Presence of different building contents, • Coherence of building colours • Compatibility of materialisation.	• Street profile • Building dimensions • Ratio of the built and unbuilt • Ratio and the position of the building openings	• Street profile • Building dimensions • Continuity of building widths, • Part and whole • Dimensions and distance of the openings.
SCALE	**HIERACHY**	**SYMMETRY**	**RHYTHM**
• Building sizes • Element sizes • Materialisation • Volume of the object, • Human scale • Ambient compliance of the buildings	• Position of the building and position of the element, • Transparency of the ground floor, • Transparency of the building • The importance of the public space where the building is situated	• Object distance from the axis of the street, • Object geometry • Street cross-section character • Character and form of the roofs • Symmetry of the street frontage.	• Distance between the buildings, • Building modularity • Segment, object and element redundancy.
DETAIL	**TEXTURE**	**HARMONY**	**BEAUTY**
• Colour and materialisation • Uncommonness of the construction solution, • Footprint dominance • Unique form of the building	• Character of the finishing, • Reflection, • Transparency • Treatment of the surface • Perception distances • Personal visual experience • Personal tactile experience.	• Integration with neighbouring buildings, street and urban block • Relationship of the new facility to the existing environment, • Legibility • Possibility of identifying the harmonious relations among the elements.	• Design qualities, • Quality of fine works and details, • Liveability • Additional effects like lighting, greenery, water effects, colours, smell, etc. • Personal, subjective attitude of the of users and observers.

Table 1: New tool for assessment the contextuality of architecture

5 DISCUSSION AND CONCLUSION

After all, we can conclude that is difficult to found out the exact level for context-sensitive: the right boarder between sensitive and not sensitive. Debating the context of architecture, from the room micro cell to the macro-geographical urbanism, one arrives to problematise of how different cultural identities are constituted, reflected or presented in a specific artificial space (Šuvaković, 2009). Gaston Bachelar (1985) theory of equal importance of empirical, theoretical and abstract approach to evaluating can be very meaningfully for understanding of context. For Bachelard, rationalism makes equal reference to all three systems of thinking.

Renzo Piano once said: "I stick to the rule that I have never broken. Do not start a project without seeing the place of construction. Places talk to you, they guide you, and they give you ideas" (cited in Bojanic/Djokic 2011). Our experience a priori and a posterior while evaluating has to be taken in consideration. We can

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feel, abstractly, something while judging which we cannot rationally explain. But based upon the understanding of knowledge, everything concerning evaluating could be much easier. Contextual philosophy (in term of different layers) could be linked with most difficult valuation, especially of art. As we consider architecture as an art we could suggest that only after profound analytical consideration and a posterior experience based upon knowledge we might be sure about our better and more certain conclusions about any fact including architecture evaluation.

Different approaches in valuing infill development are mentioned in this paper, but considering evaluating approach and process resulting in both creating unique set of specific criteria and indicators and conducting thorough quality assessment of infill development in quarter of Vracar in Belgrade we could argue that this research represents some useful findings in order to upgrade our scientific contribution as the Faculty Educators but also to be of practical use. Quarter of Vracar is already familiar with those researches and would be more than happy to use it in near future.

Quality assessment presented in this paper could be important for future infill development in Belgrade. According to historian and philosopher Miško Šuvaković (2009) architecture in Serbia after the year 2000 was executed as a discursive, ideological and political historically and geographically determined practise within transitional society . In this shifting environment defined by individual projects driven by profit, infill development in Serbia, Belgrade has been neglecting tradition, continuity, identity and character of a place.

The presented framework, after our experiences, could be considered as a foundation in determining the normative framework for evaluating the contextuality in architecture relying on network of architecture elements which are easy comparable and measurable. On the other side, it could be used as a base in generating recommendations and guidelines for future interventions for the same or similar urban environments. It could be of practical value and general benefit to follow these guidelines in order to minimize further „mutations“ of a city of Belgrade but also in other environments & cities.

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