

Reconciling Global Trends and Regional Traditions in Contemporary Design: Abstract Geometric Structures as a Key to Cultural Identity in Architecture

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PREAMBLE

"The major historical styles have been few. To originate one is no more important in the long run than the gift of being able to make it one's own."⁽¹⁾ These succinct words stated towards the end of the second millennium should serve as a sober reminder of the importance of seeing the development of architecture in broad, comprehensive terms. Referring to the various cultural transformations of the Gothic style, Spiro Kostof extends the notion to other historical periods and by implication offers a potential guiding principle for our own.

In current practice we witness massive imposition of uniform sterile urban environments around the globe, a "style" not made "one's own." Commenting on a supposed diversity and the actual state of affairs, Kenneth Frampton observes: "...strange how very little choice there really is....corporations and large industrial organizations actually arrange things so that there isn't as much choice as one might like to think."⁽²⁾ On the other hand, attempts to counteract such homogenizing trends and to achieve local relevance by superficial introduction of archaic symbolic shapes in new buildings have resulted, for the most part, in anachronistic parodies of historical architecture.

THE PRESENT-DAY PEDAGOGICAL CONTEXT.

Overwhelmed by these wide-spread developments and a plethora of recent diverse theories and design attempts, which obscure the basic nature of architecture, many in academia today find comfort in the relatively safe investigations of marginal historical phenomena or promotion of esoteric design approaches of little general or particular environmental relevance. Thus, architectural discourse, in the main, tends to ignore the issue of cultural identity in contemporary architecture and focuses on its own neutral, albeit sophisticated, global agenda. The current adulation of idiosyncratic buildings produced by a handful of fashionable international design stars indicates little, if any, critical appreciation of, and concern for, absolute architectural quality and the demands of place and its cultural specificity.

Among such structures are some major projects for cultural institutions in Europe and North America. Attempting to attract attention by means of formal acrobatics and theatrical stage-set effects, visually attractive and sensually tantalizing, but disrespectful to their immediate setting, and insensitive to the nature of the purpose they should serve and to the nature of architecture itself, these buildings seem devoid of

any real architectural substance. They represent a global trend, but based on personal whims of the star designers, who are ready to export their routine approaches to any city or country of the world, rather than on relevant contemporary global principles and the cultural and geographic context of the respective location. In the name of diversity such trends are accepted by current critical opinion as valid. Witness the prominent coverage the typical star projects receive in the architectural press. Academia follows, and in many quarters, forgetting that "major historical styles have been few," students have the temerity, and are even encouraged, to reinvent architecture in every project. And yet it is surprising to discover how very similar student projects around the world look. Should one blame only "corporations and large industrial organizations" or also the uncritical promotion of superficial fashions for such uniformity? An overriding grasp of the global and culture specific aspects of the discipline and a concomitant design action seem to elude our time.

The pedagogical and, therefore eventually, professional consequences are alarming. Commenting on a recent European east-west conference on design teaching, Pierre von Meiss, former president of the European Association for Architectural Education, warns of the precarious state of architectural education today:

"In comparison to other disciplines, the teaching of architectural and urban design still is in a rather chaotic state. Many Eastern and Western schools...are still dominated by contradictory dogmatic assertions, uncertainties, confusion and unfounded differences...there still are many studios where 'artistic' idiosyncrasies prevail."⁽³⁾

He observes that there does not appear to be even minimum agreement on what the essential paradigms of architecture are, and concludes that: "There is not much time left, unless we don't mind to lose credibility and continue to risk for the majority of our students to become pseudo-artists or decorators in the margins."⁽⁴⁾

BASIC PRINCIPLES

A significant, culturally specific architecture will have a chance to emerge again only when the essential nature of architecture is recognized and its underlying principles are followed. A careful examination of the culturally diverse yet universally valid works of Louis I. Kahn, arguably the greatest architect and architectural thinker

of the second half of the 20th century, offers some meaningful insights. „Kahn is convinced that there is a historical wealth of architecture, with form-finding principles, eternally valid laws that overcome time and space, and that it is necessary to transform these so that they can be applied to present-day conditions.“(5)

Such laws or principles imply the relevance of character, the appropriate organization, and the integrity and poetry of the built form in a work of architecture. As abstract principles they can manifest themselves in countless forms and thus in any building type and style. Being “universally valid,” they form the basis of Kostof’s “major styles,” which can then be made “one’s own” in any country of the world. The apparent admiration by both the experts and the general population for the great cities and their buildings around the globe offers a convincing argument for their validity. It is not because such cities and buildings from various historical periods and various regions are old that they have an exhilarating immediate impact, but primarily because their underlying architectural “laws” are timeless and placeless.

The concept of integrity comes close to the notion of order in architecture as understood by Kahn. His daughter writes: “To Kahn, order was the basic, immutable law that governs the organization of natural structures... Kahn’s understanding of order was shared by Albert Einstein, ... Like Kahn, Einstein was a deeply religious man...”(6). The importance given to linking the concept of architectural order to nature and to the supernatural by this creative genius is borne out in his mature built projects. His ability to achieve an immutable integrity in these great works pays witness to the supremacy of spirit over matter.

As I believe that such architectural principles are fundamental to any intervention in the built environment I try to follow them in all my work. Most of the inherent theoretical notions have been explored with varying emphasis in teaching and in other papers.(7) In the Ukrainian Catholic churches which I designed in association with, or as consultant to, various architectural firms, these principles were rigorously applied, especially in the later projects.

STYLE AND CULTURAL IDENTITY

The genesis of a new “major style” occurs periodically in specific places and at specific times, where and when humanity exhibits exceptionally significant advances in its thinking and perception, and sensitive and creative designers who can interpret them according to the above basic principles are present. Consequently, the essential features of the resulting architecture are of such an irrefutable character and substance that they are readily accepted around the accessible world. The case of the Baroque style, which originated in Italy, can serve as an example. It demonstrates that several countries with their own distinct architectural traditions could not resist the influence of a new style. At the same time, it also shows how decisively an imported style could be transformed to conform to these traditions, i.e., made “their own”. It also demonstrates that representative buildings in different countries can display the absolute quality based on Kahn’s “eternal laws,” along with the typical contemporary stylistic features and a specific national character.

Historians generally recognize the differences in the variants of the same style in diverse countries. The terms, *Italian Baroque*, *Austrian Baroque*, *Spanish Baroque*, or *English Gothic*, *French Gothic*, *German Gothic*, *Italian Gothic*, for example, are accepted and used. However, descriptions of the apparent differences refer usually to objectively perceived features, such as colors, textures, decorative motives and explicit symbolic shapes. The reasons underlying these differences are seldom thoroughly explored, and while geographic, economic, or political factors are sometimes cited, cultural interpretations are in most cases avoided. The apparent reticence to deal with intrinsic cultural aspects of architecture in the mainstream theoretical discourse may stem from the now prevalent attitude to view political nationalism as an evil trait, an attitude which then gets transferred to other questions of national

identity. It gives rise to misguided aspirations towards some falsely perceived neutral standards of an advanced, supposedly culturally uniform global civilization. Such aspirations are understandable. What appears, and possibly is, humanly most advanced at a given time, becomes desirable everywhere, not to speak of the political and economic advantages to the groups or countries where such standards originate. However, if culturally not modified, such standards become a hostile, artificial imposition. Therefore, those isolated descriptions which attempt to penetrate beyond the quantifiable physical indicators, even if limited by the abstract nature of culturally conditioned spatial determinants and thus vague, are especially valuable.

Stressing the importance of both the specific physical and cultural contexts which determined the unique character of the architecture of Florence, Nikolaus Pevsner states: “The geographical and national character of the Tuscans had found its earliest expression in Etruscan art. It was again clearly noticeable in the eleventh and twelfth centuries in the crisp and graceful facade of St. Miniato, and in the fourteenth in the spacious and happily airy Gothic churches...”(8)

Referring to the transformation of the Renaissance style in France, W. H. Ward writes:

“In this long architectural evolution, which resulted from the continued fusion of French and Italian, Gothic and Classic ideas, the parts played by each side are equally important, if not equally obvious... Though the detail and typical features of the native element soon disappeared, yet the principle, which underlay them, remained. It survived in many characteristic arrangements, the insistence on verticality... and in the soaring and picturesque effects...”(9)

R. Furneaux Jordan describes the differences between French and English Gothic cathedrals thus: “The English cathedral was very long from east to west, while the French cathedral remained relatively short, especially in relation to its great height...”(10)

Peter Murray states briefly: “Fundamentally, ... the difference between French and Italian Gothic architecture comes down to the question of the shape of each bay; that is to say, the relationship between the width, length, and height of the spaces covered by a single ribbed vault ...”(11)

From Pevsner’s “crisp and graceful” and “spacious and happily airy,” through Ward’s “insistence on verticality... and in the soaring and picturesque effects....,” Furneaux Jordan’s “... very long from east to west....,” and Murray’s “relationship between the width, length, and height of the spaces covered by a single ribbed vault ...,” one sees a progression from vagueness to an attempt to define the distinct character of each major variant in spatial dimensional terms. Especially the last statement singles out specific proportional differences in the abstract geometric structure of a spatial component as the essence of the difference in the various manifestations of a major style. Only Pevsner and Ward attempt to explain the differences in cultural terms, i.e., “national character” and “native element.”

Commenting on my work in Ukrainian churches, different writers resorted to a similar type of descriptive words: “...ability to evoke the vernacular architecture of the Ukrainian mountains...”(12) “... geometry is used... in the service of tradition...”(13), or “Traditional design elements merge into a stark contemporary silhouette...”(14), and “churches which, while they have particular resonance with Ukrainian culture, do not copy the forms of the past but abstract from them...”(15)

Suggestive, alluding, even partially descriptive, these words only hint at the essence of cultural identity in built form. If, however, one were to extract from these statements the implications of historical continuity and combine them with the notion of specific abstract geometric attributes, a possible identification of architectural means of achieving cultural identity could be obtained.

GEOMETRIC STRUCTURES

An investigation of key examples of Ukrainian church architecture, which in its thousand year history has “made” at least three “major styles,” i.e., Byzantine, Renaissance, and Baroque, “its own,” and exhibits unique cultural characteristics, confirms the validity of a distinct geometric structure as such means. Several churches have been analyzed in my recent studies. (16) Reflecting the three “major styles” mentioned above, the appearance of each of these churches is quite distinct. The contrasts can be observed in the overall shape of each building, and in the stylistically characteristic shapes of the plans, of the buildings’ major components, and of architectural elements such as windows, doorways, pilasters, cornices, etc.

While obviously belonging to the respective major style, they are different from their foreign precedents as well as from each other. At the same time they are sensed as being somehow specially related. It is this sensed relationship which elicits such vague terms as “national character,” or “ability to evoke vernacular architecture.” As this special relationship extends also to numerous other urban and rural churches in various regions of Ukraine, I concluded that a common denominator underlying this relationship which cuts across regional, stylistic and temporal boundaries must exist. As it can not be clearly described, it must be abstract in nature, i.e., a geometric structure that responds to the inherent native preference for particular rhythmic and proportional patterns, in a way that musical patterns of different cultures have their specific rhythmic and harmonic configurations.

Since it is the roof outline, which most clearly distinguishes Ukrainian church architecture from that of other nations and assuming that it is not a particular perspective view, but rather the fixed compositional relationship of the roof profile which is retained subconsciously in the memory after experiencing the building from a variety of views, a typical elevation or section was taken either perpendicular to or parallel to the building axis. In order to discover the characteristic abstract relationships, the varying stylistic geometric shapes have been inscribed into simple rectangles, which define the extreme points of each major roof element vertically, horizontally and in relation to the main body of the building (Fig. 1).

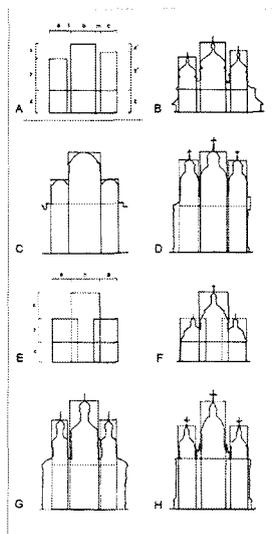


Figure 1

Fig. 1. Analytical Diagrams. A. Generic diagram showing asymmetrical relationships, derived from the vernacular church of St. George in Drohobych (second half of the 17th century). B. Same diagram, with the profile of the church inscribed. C. Church of the Transfiguration of the Savior in Chernyiv (first half of the 11th century). D. Chapel of Three Saints in Lviv (second half of the 16th century). E. Generic diagram showing symmetrical relationships, derived from the church of the Holy Protectress in Nyskynychi (middle of the 17th century). F. Same diagram with the profile of the church inscribed. G. Church of All Saints in Kyiv (end of the 17th century). H. Church of St. Nicholas in Kyiv (end of the 17th century).

In the generic diagram, obtained from a superimposition over the profile of the wooden church of St. George in Drohobych, letters a, b, and c, represent the horizontal dimensions of the roof elements at their respective bases. The letter z represents the vertical dimension of the principal building walls taken to the main cornice or eave. Letters y and y’ represent the vertical dimensions of the lateral roof elements above that line of the main building wall, and letters x and x’ the vertical projection of the central roof element above the respective lateral towers. Letters l and m indicate the horizontal dimensions of any gaps between a and b and b and c, respectively. In buildings whose profiles are symmetrical, c is assumed to be equal to a, and m equal to l.

The profile diagrams of the urban churches show close similarities to each other and to the generic diagram, linking them all over a span of some eight centuries to the most authentic source of cultural identity, i.e., vernacular Ukrainian architecture. In spite of the drastic differences in their plan shapes, and obvious distinctions in the geometric shapes of their divergent stylistic elements, the very close relationship between their abstract geometric outlines suggests that it is this typical abstract order which determines the essential native character of a Ukrainian church.

In an early study in which four distinct vernacular church types and twelve urban buildings were examined, the results confirmed convincingly that in a great majority of these buildings similar abstract structures pertain. (17) The horizontal rhythm a-b-c or a-b-a followed a similar pattern in all cases but two, where the values of l and m had to be added to b, and the value of l to a, respectively, to obtain comparable results. In all cases the ratio of b:a, b:c, b:a+l, b:c+m and l+b+m:c was found to be smaller than 2:1, greater than 1:1, and usually in the area of 3:2. The value of x was found to be positive in all cases but one, and also x+y greater than z in all cases but one. The ratio x:y was found to vary, but in more than half of the examples the value of y was found to be substantially higher than x.

It can be concluded that cultural identity in architecture is inherent in specific rhythmic and proportional relationships which tend to persist within a cultural tradition, irrespective of the prevailing world style. The above analysis and the historians’ references to proportional distinctions in various countries suggest that cultural identity can be achieved when the respective current “global” style is transformed to correspond to such specific relationships.

RECENT APPLICATIONS

The typical abstract geometric structure has been used also as a guide in my own design work. The Ukrainian character, implied in the commentaries mentioned earlier, is due primarily to the presence of the characteristic rhythmic patterns identified in the above studies. This can be discovered by superimposing the typical geometric diagram over a selected critical view of the building concerned (Fig. 2), or by identifying similar or related abstract patterns when examining the churches on site or in various publications. (18)



Figure 2

Fig. 2. Characteristic geometric diagram superimposed over the rear view of the church of the Holy Cross in Thunder Bay, Canada (1968)

When considering other views, however, it can be seen that in their general formal configuration, use of contemporary technology and local materials, these buildings are clearly products of their time and place, i.e., in the late modern idiom, and (northern) North American (Fig. 3). By maintaining the essentials of the characteristic abstract geometric structure, they represent a continuation of the long historical tradition of pertinent stylistic transformations in Ukrainian architecture. One hopes, that in their adherence to the basic principles of architecture they shall also continue to constitute a meaningful part of the built environment, beyond their "style" and cultural specificity.

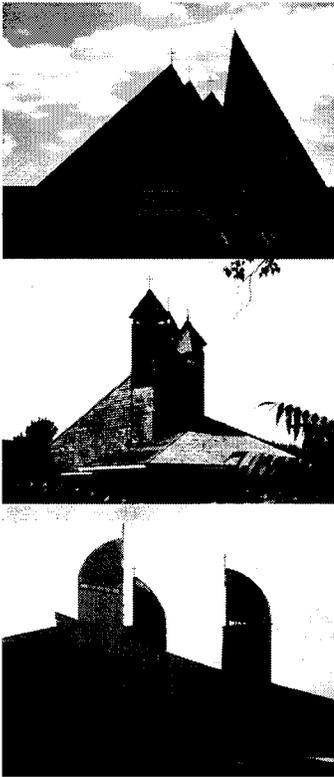


Fig. 3. Random views of three buildings. From top to bottom: Holy Cross Church, Thunder Bay, Canada (1968); Holy Trinity Church, Kerhonkson, USA (1976); St. Stephen's Church, Calgary, Canada (1982).

PEDAGOGICAL AND DESIGN CHALLENGE

The realization that there are fundamental principles of architecture, which in each period of human evolution can manifest themselves in new forms, could lead to a search for new globally valid design approaches in the third millennium. The recognition that a specific abstract geometric structure, the basic catalyst of a specific cultural identity in architecture, has the potential of transforming such approaches into culturally relevant contemporary variants, could lead to an innovative and universally advanced, yet culturally distinct, architecture in any country of the world. The challenge is to accept Kahn's notion of "universally valid laws" in this search, and to undertake serious studies of abstract geometric structures in the historical architecture of each respective cultural tradition.

NOTES

- ¹Spiro Kostof, *A History of Architecture* (Oxford: Oxford University Press, 1985): 346.
- ²Kenneth Frampton, "Modern Pluralism," *Constancy and Change in Architecture*, Quantrill, M. and Webb, B., eds. (College Station: Texas A&M University Press, 1991): 67.
- ³Pierre Von Meiss, "Style and Manner in Architectural Education," *EAAE News Sheet* 55 (October 1999): 7.
- ⁴ibid.
- ⁵Klaus-Peter Gast; *Louis I. Kahn: the Idea of Order* (Basel: Birkhäuser, 1998): 192.
- ⁶Alexandra Tyng, *Beginnings - Louis I. Kahn's Philosophy of Architecture* (New York: Wiley, 1984): 29.
- ⁷The most recent summary of these explorations may be found in Radoslav Zuk, "The Ordering Systems of Architecture," *11th International Conference on Systems Research, Informatics and Cybernetics*, Lasker, G., ed., vol. III, (Windsor: IAS, 1999): 63-67.
- ⁸Nikolaus Pevsner, *An Outline of European Architecture* (Harmondsworth: Penguin Books, 1963): 174.
- ⁹H. E. Ward, *The Architecture of the Renaissance in France*, Vol. I (London: B. T. Batsford, 1926): xxv.
- ¹⁰R. Furneaux Jordan, *A Concise History of Western Architecture* (London: Thames and Hudson, 1969): 142-143.
- ¹¹Peter Murray, *The Architecture of the Italian Renaissance* (London: Thames and Hudson, 1969): 17.
- ¹²*The Architectural Review* (April 1978): 199.
- ¹³*Progressive Architecture* (October 1978): 66.
- ¹⁴*AIA Journal* (mid-May 1979): 151.
- ¹⁵*The Architectural Review* (April 1992): 51.
- ¹⁶Most recently three urban churches have been considered in some detail in Radoslav Zuk, "Geometric Characteristics of Cultural Identity in Architecture," *Studies in Ancient Structures*, Görün Özsen, ed. (Istanbul: Yildiz Technical University, 1997): 49-57.
- ¹⁷Radoslav Zuk, "Some Geometric Characteristics of Ukrainian Church Architecture," *Millenium of Christianity in Ukraine: a Symposium*, Joseph Andrijsyn, ed. (Ottawa: St. Paul University, 1987): 163-204.
- ¹⁸For descriptions of the individual churches see:
The Architectural Review (November 1965): 365-368.
Kirchliche Kunstblätter, (1/1969): 19-22.
The Architectural Review (April 1978): 199-200.
Progressive Architecture (October 1978): 64-67.
AIA Journal (mid-May 1979): 151.
Kunst und Kirche (1/84): 39-43.
Domus (October 1984): 26-28.
Architectural Record (August 1986): 64-65.
Architektur Aktuell (October 1991): 33-36.
The Architectural Review (April 1992): 51-57.
Parametro (March-April 1995): 71-73.

The analytical diagrams in Figure 1 first appeared in Radoslav Zuk, "Some Geometric Characteristics of Ukrainian Church Architecture," *Millenium of Christianity in Ukraine: a Symposium*, Joseph Andrijsyn, ed. (Ottawa: St. Paul University, 1987): 163-204.

Photographs are by Radoslav Zuk.