

Order is very interesting thing, even in architecture. Mostly in architecture, maybe.

From classical times to the present, harmony has meant a healthy mind in a healthy body: in philosophy as well as in architecture. The beauty itself cannot be defined. It is a matter of fashion and applicability, that vary over time.

Knowledge, schooling, heritage are elements that are not so different in their results. Schooling gives shape to scientific knowledge, heritage knows only order. Order does not mean recipes, for instant use, but can be applied to architecture with individual inspiration, without constraint or command.

‘Order and reality’ is an eternal question but the wise man used myth for the realization of wisdom. Wisdom in architecture, especially in vernacular architecture, means understanding materials, techniques and design. The elements of the house, and the house itself, mean the essential parts of materialism as well as in symbolism.

Simple man, as a builder, could not know everything or master all the skills. An architect has to coordinate wisdom, skills and the ability of workers and of users.

Harmonization is the most important part of an architect’s work, and the most visible.

Simplification of the work and avoiding mistakes are the elements of designing space, the result is aesthetics.

Geometry and mathematics are very important elements of sense in architecture. Simplification is of primary importance, because only simple things can be visible, understood, in the end real.

The use of simple mathematics and geometry is essential for architect’s work, from prehistory till today.

One of the first architectures, sacral complex Hagar Him in Malta, shows the simple mind and anthropomorphic understanding of the prime man: use of his own elements. In groundplan, the morulla and symmetry are in use, as well as the corbelling.

The next elements are square, cube, triangle, and the use of square root of two in plain, square root of three in space, and finally the golden section, the closest proportion system to the man himself.

#### The square

A square is one sixth of a cube, of its outer faces. It has four sides and all right angles. It is defined by its diagonal, the square root of two.

#### The cube

After a sphere, a cube is the simplest body. Its use can be described in terms of the whole cube, its half, its third, and several cubes in composition.

#### The triangle

A triangle can be of different types but the most usable is equilateral, with all three sides the same. Its height is equal to the square root of three divided by two. Stone objects in dry stone from the ancient monuments as well as from shepherds huts have construction in corbelling: the construction of stone shelters is always the same, composed with help of the square root of three divided by two, but the elevations are quite different - from Iceland to Yemen and from Lanzarote to Palestine.

#### Golden section

The golden section is the most usable system of proportion system, in which the shorter part has the same ratio to the longer one as the longer part to the whole, where this is the sum of the shorter and longer parts together.

Proportion systems in use: square roots

Square root of two: Slovene kozolec/hayrack is composed in a square, with help of its diagonal - in plain, in its main elevation. Square root of three is equal to the height of an equilateral triangle. It is in use for composing the corbelled dome.

Three thirds of a cube:

Where the cube is cut into three parts, three segments with dimensions 3 : 3 : 1 appear. The beehive hut in Slovenia is embraced in a cube.

Two thirds of a cube:

The ground plan of a house has a ratio of dimensions 2 : 3, including side elevations, while the main facades are embraced in a square 3 : 3. The granary near Vrhnika is composed in this order.

Three cubes:

A Slovene kozolec/hayrack in the space is a composition of three cubes, in which only one length is determined, the others are the result of diagonals: the diagonal of a square is the square root of two, and the diagonal of a rectangle with sides one and  $\sqrt{2}$  is the square root of three.

A kozolec (hayrack) in Slovenia is the only ethnic architecture I know (May 2010:66).

#### Conclusions

Order in architecture is used for simplifying work, for avoiding mistakes - in technical mean of the construction. The use of such order results in beauty.

With the help of order, even unschooled, but not unskilled, man can achieve the effect: good, usable, achievable and harmonious objects, which are successful and beautiful and in which the users enjoy living. Quality of life means culture itself: the culture of mankind and of architecture, in time and in space.

And nobody is perfect. Except vernacular architecture.

JUVANEC, Borut. Architectural theory : order in reality. V: NAGY, Dénes (ur.). Folk architecture - vernacular architecture: traditions and rural development, Budapest - Veszprém - Szentendre, Hungary, June 8-10, 2012, (Symmetry, 1-2). Melbourne-Kew: International Society for the Interdisciplinary Study of Symmetry, 2012, str. 68-73, ilustr. [COBISS.SI-ID 2723716]

**Borut Juvanec**

**Clay in Architecture: Slovenia and beyond**

**UL Faculty of Architecture, Slovenia**

**RESTAPIA 2012 International congress on rammed earth**

**Universitat Politècnica de València**

**Valencia, 21. – 23. 6. 2012**

Earthen architecture is more or less architecture in clay, but the boundaries between earth, clay, gypsum, lime and stone are not very clear. Earth, soil and turf can be used in construction

in a number of selected environments with constant moisture and with limited construction possibilities. Clay and concepts of construction with all the associated problems are a matter of bearing strength, resistance to external circumstances and execution.

A healthy relation between man and the clay construction is essential for the natural material. Modern clay can be used as a veneer, as insulation and as hard surfaces: insulation tiles in space capsules, in brakes, as hard, sharp knives. Use of clay in architecture: current maintenance means to live with the material; it is not a sterile relation. Clay cannot only be used in construction, it depends on the circumstances - protection and feelings, as a real human material.

JUVANEC, Borut. Clay in architecture : Slovenia and beyond. V: MILETO, Camilla (ur.), VEGAS, Fernando (ur.), CRISTINI, Valentina (ur.). International Conference on Rammed Earth Conservation, Valencia, 21-23 June 2012. Rammed earth conservation : proceedings of the First International Conference on Rammed Earth Conservation, Restapia 2012, Valencia, Spain, 21-23 June 2012. Boca Raton [etc.]: CRC Press, Taylor & Francis Group, cop. 2012, str. 145-150, ilustr. [COBISS.SI-ID 2717060]



**Lara Slivnik**  
**TROČLENSKI LOČNI KONSTRUKCIJSKI SISTEM**  
**34. zborovanje gradbenih konstruktorjev Slovenije,**  
**Slovensko društvo gradbenih konstruktorjev**  
**Bled, 11.-12. oktober 2012,**  
**<http://www.sdggk.si/index.php?id=100>**

Organizatorji dvodnevne zborovanja, ki združuje slovenske gradbene konstruktorje, vsako leto povabijo tudi goste iz tujine. Letos sta se vabilu odzvala dva uvodna predavatelja: prof. dr. György L. Balazs in prof. dr. Goran Markovski. Sledilo je 28 prispevkov, ki so bili razdeljeni na pet tematskih skupin: Mostovi, Konstrukcije, Gradbena fizika, Eksperimentalna in numerična analiza konstrukcij ter Gradbeni materiali. V sklopu

zborovanja je tudi skupščina društva in družabni večer. V sekciji Konstrukcije sem predstavila prispevek Tročlenski ločni konstrukcijski sistem.

V prispevku je obravnavan eden izmed najenostavnejših konstrukcijskih sistemov: tročlenski ločni konstrukcijski sistem. Teoretično so predstavljene osnovne konstrukcijske značilnosti, tem sledi zgodovinski razvoj tročlenskih konstrukcij in zgodovinsko pomembni primeri tročlenskih konstrukcij. Dva mostova v Ljubljani sta primera najzgodnejših tročlenskih ločnih konstrukcij v svetu: Hradeckega most (najstarejši še ohranjeni litoželezni tročlenski most, ki je bil pred kratkim obnovljen ter prestavljen na že tretjo lokacijo) in Zmajski most (najstarejši še ohranjeni most, zgrajen iz železobetona po tehnologiji sistema Melan). Pri obeh mostovih je tretji členek izjemno pomemben in bistven element konstrukcije. Opisani so tudi sočasni primeri tročlenskih konstrukcij iz Evrope. V zaključku so predstavljene prednosti in slabosti takšne konstrukcije.

SLIVNIK, Lara. Tročlenski ločni konstrukcijski sistem = Three-hinged arch structure. V: LOPATIČ, Jože (ur.), MARKELJ, Viktor (ur.), SAJE, Franc (ur.). Zbornik 34. zborovanja gradbenih konstruktorjev Slovenije, Bled, Hotel Golf, 11.-12. oktober 2012. Ljubljana: Slovensko društvo gradbenih konstruktorjev, 2012, str. 131-138, ilustr. [COBISS.SI-ID 2763396]

**Lara Slivnik**  
**A PREFABRICATED CAST IRON THREE-HINGED**  
**ARCH BRIDGE IN LJUBLJANA**  
**The Fourth International Congress on Construction**  
**History,**  
**ENSA Paris - Malaquais, ENSA Paris - La Villette, ENSA**  
**Versailles, Conservatoire national des arts et métiers**  
**(CNAM)**  
**Pariz, 3.-7. julij 2012,**  
**<http://www.icch-paris2012.fr/>**

Organizacijo tokratne trienalne mednarodne konference, ki združuje znanstvenike s področja raziskovanja zgodovine konstrukcij, so prevzele tri pariške arhitekturne šole: Paris - Malaquais, Paris - La Villette in Versailles, skupaj z Conservatoire national des arts et métiers. V petih dneh so pripravili pet uvodnih predavanj s preko 220 prispevki v več vzporednih sekcijah, vodene izlete po znamenitostih, ki niso odprte za javnost, in bogat večerni družabni program. V sekciji Metal Structures sem predstavila prispevek A Prefabricated Cast Iron Three-hinged Arch Bridge in Ljubljana.

The paper is an overview of the Hradecky Bridge (1867) across the River Ljubljanica in Ljubljana, the first three-hinged arch bridge built in Habsburg Monarchy and the oldest three-hinged cast-iron bridge in Europe (excluding the British Isles) still in use. The supporting structure is a prefabricated three-hinged arch with the total span of 30 meters. It is made of cast-iron pipes which are joined together with screws to make one