

____A new understanding in Art History____
Mathematics - History of Art - Esotericism - Visual Arts

Comparative Geometry

Composition in artworks
and Geometry with eyes

----- Yvo Jacquier -----

COMPARATIVE GEOMETRY

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PRESENTATION

A new discipline

Four academic departments

The « Comparative Geometry » is a new discipline that studies the composition of the works of Art and Architecture. Its research covers five millennia of an unknown practice, Sacred Geometry, since its neolithic dawn until the Renaissance.

To understand this culture, sacred before to be religious, It has been necessary to combine several complementary approaches within a scientific methodology. [the articles are listed in the last part]

1 • Mathematics

The first aspect is strictly mathematical, and it was necessary to reconstruct the corpus of a « Geometry with Eyes ». *This geometry on a grid avoids calculation for fear to frighten numbers.* However, this practice has nothing empirical. Long before the definitions of Euclid, the Mesopotamian and Egyptian civilizations have built a fully coherent geometry, with the minima of the similar triangles (that Thales will call axioms). Their « monstrations » were ahead of the Greeks' « demonstrations ».

The Mathematicians are interested in this geometry for its historical and educational values. In 2012, the french IREM (Institute of Research in Mathematics Education) published an article by Yvo Jacquier in its national magazine : Repères. The following year, Zdenek Halas invited him to Charles University (Prague) for a conference on Geometry and Art. Meanwhile, Jean-Paul Guichard (IREM) helped Yvo Jacquier to complete the reconstruction of the pre-Euclidean Geometry - the corpus. Recently, the team of IREM-Poitiers has built an article with Yvo Jacquier about the $\sqrt{3}$ and the Tympanum of Conques.

The properties of the geometry with eyes are completely unedited. Eg the value 5 of the hypotenuse in the triangle 3-4-5 is not axiomatic. The four appearances of the golden ratio in this queen figure of the Sacred Geometry are also ignored. Therefore, all the speeches about sacred geometry are completely wrong. *It was impossible to recognize in the works (their compositions) what was completely unknown !*

The 'Sacred Geometry', as a practice by artists and architects, draws its figures in the theoretical repertoire of 'Geometry with Eyes'. These figures are bonded by structures and systems of composition. At the mathematical stage of the study, the significance and the symbolic connections are not established. The mathematician is concerned by the geometric properties, and he doesn't attributes any "mystical" role to the grid. To be precise, mathematicians have passed the border with the G of Conques, as a single occasion at the moment.

2 • Visual Arts & Architecture

The second aspect of the study is practical : we have to recognize the composition in the works and the plans. As a discipline, the Composition is the prerogative of painters and architects. The recognition of the lines (of the composition) and the systems (sets of figures), is the business of specialists. We have at our disposal the geometrical shapes from mathematicians (this part was new, but the rules are the same like in usual mathematics). About the lines of composition, the challenge is multiple.

A methodology has been forged during twelve years of research, which integrates the various approaches, and all these aspects must fit together, without any contradiction.

A particular difficulty has been to trace back the stream of creation, in the inverse sense of its natural flow, historical (from Renaissance to early Neolithic).

Obviously, the Ancients wanted that we find the solutions. They left signs and marks to guide the reader. Also, there are key figures, unique in each case, which round off the major works like a signature. On the side of methodology, the comparison of the works between themselves is an effective way to highlight the structures (what they have in common). The Comparative Geometry owes its name to this search process. And the art of composition shows a great unity throughout its history (5 millennia). But a triangle doesn't stop to be a triangle.

The grid, its definition, is a major point of any study. It accords all the figures and allows to read them, to translate them into human language. But we will leave this precise part of the work to specialists.

However there is a valuable point in the research : the observation of the works. In most cases, a lot of things appear after (or by) the study of geometry. It proves that we have to re-learn how to look.

3 • Philosophy & Theology

The third stage of the study concerns the philosophers, the theologians and the esotericists. It is time for them to translate the compositions that mathematicians and artists have established with certainty.

The ancients didn't respect these complicated and rigorous constraints, in composition, without great reasons. The geometry bears the symbolic meaning of a work, and we can reconstitute this meaning through the numbers that mark the figures.

The part of subjectivity progressively increases with the development of interpretation. Hoping to avoid mistakes, the Comparative Geometry has used at beginning the basics of what we call « Symbolic Tradition ». But recently, the study of pure mathematics called these principles into question. Is it possible to rely on a symbolic system that mathematics contradict ? And do we go outside of the strict field of a scientific study by the interpretation ? The arguments are purely mathematical, they are fully coherent, on the contrary of the dogmas of a so-called tradition, that don't explain nothing. The classical attitude was to admit the basics because they had no rational logic in the mind of people. The symbolic was even conceived as a domain apart of the logic, facing the science and its rationality. The Comparative Geometry can affirm, since the study of the G of Conques, that the Ancients were practicing their symbolic with a real logic.

4 • History of Art

Finally, it remains to art historians the task of organizing the catalog of studies, and to situate the works in the time and in the space.

GENERAL REMARKS

Each discipline is responsible for its part of the study, and none is able to assume (officially) work which concerns the others. Mathematicians could not assign spiritual values to numbers, they could not more discuss the merits of a composition and its observation in a work. Visual artists can know very well sacred geometry, as creators, and they can practice its symbolic values. However Comparative Geometry entrusts a special job to them, because of their ability to recognize the figures. The creation, like the subjectivity inherent in its full development, invests in another frame than the strict study of the works.

A department of Comparative Geometry

A crossroads of skills

Several complementary academic departments are involved in the process of research about composition. They will succeed to organize their exchange around a structure of the same type, a separate department that would be called « Comparative Geometry ».

The initial library

This project can rely on dozens of studies. Their articles represent an initial library.

A scalable structure

A minimalist beginning

Under these conditions, the initial budget is reduced to the minimum, both in personnel and equipment. It is possible to share the costs of management with other departments, possible also to outsource the work and to use partially premises - for a periodic roundtable.

The development of the department

Over time, the Department of Comparative Geometry can integrate the skills that are necessary, organized in four poles. The mathematics may remain the matter of their department, most of the work in this area is acquired. In contrast, the recognition of figures in the composition of works from the most "alive" part of research, that which brings the most progress. This aspect must be reinforced in priority, by the development of the team. An hybrid formation in this case might be appreciated.

Subsequent choices

The interpretation of the compositions is the most critical point of that department. Without explanation, a composition becomes empty and conversely, fully developed it could damage the status of the Comparative Geometry - its scientific legitimacy. So we must gauge the right attitude between these two extremes.

Finally, like for mathematics, there is no need to integrate a pure specialist in art history. The useful informations are largely accessible by the book (what one calls the sources). Then, the path has to be decided only on the objectives criteria of the study, in any case according to any subjective vision (eg proposed by historians).

The ideal is to offer to the departments involved in the interpretation (philosophers, theologians and historians), sufficiently precise and explained plans, to allow them to do their job.

The unspoken

In a desire for clarity, certain aspects of the study are not addressed by this presentation. Including several parallels, which bring their tribute to progress. Linguistics, music and its harmony, history of science etc.. Other factors must also be taken into account, such as those brought by climatology, medicine when it explains how the brain works, various forms of development such as the one of technology.

Applications

Direct applications

The application fields of this new understanding of art through a scientific approach are numerous :

- History of Mathematics (pre-Euclidean)
- Pure mathematics (and didactic)
- Conferences, exhibitions/video in schools and universities
- History, art, architecture, mathematics
- Esotericism (and symbolism)
- Philosophy (Platonism)
- Theology
- History of art (interpretation of works)
- Museums* (analysis and presentation of the works)
- The restoration of artworks** (respect of the original design)
- Arts (creation, including video)

This list is not exhaustive ...

* - *In many cases, the composition may help establish the authorship.*

** - *The restoration of the works is conventionally done with the own-judgement. The restitution of the geometrical frame helps to prevent or to correct many errors.*

Artistic creation - external project

The art of composition highlighted by Comparative Geometry does not belong to the past more than the musical harmony. If we have lost the habit of this intelligence, it is now possible to find back its way. The musical harmony has evolved over the centuries, it is likely that sacred geometry will do the same.

We will form a team of painters, a workshop, which will study the lessons of the old masters and will implement these lessons. For the moment, the experience of Yvo Jacquier in his sketches brings real arguments in the understanding of practice by Renaissance painters.

ARTICLES

THEORETICAL

The symbolic function of the composition

This short article shows the different stages of the creation process : from the pure mathematical aspect to its symbolic translation in the works through the numbers.

http://www.contemporary-painting.com/Yvo_Jacquier-Art_and_Mathematics.pdf

The three aspects of « Comparative Geometry »

Three articles present this discipline, in response to three questions :

1 • What is Comparative Geometry ? (this article)

http://www.contemporary-painting.com/Yvo_Jacquier-Comparative_Geometry.pdf

2 • What are the results of the studies ? (to be continued)

http://www.art-renaissance.net/Charles_University/Yvo_Jacquier-Articles-Comparative_Geometry.pdf

3 • What is the methodology, applied to the study ?

http://www.contemporary-painting.com/Yvo_Jacquier-Comparative_Geometry-Methodology.pdf

Mathematics : Geometry with Eyes

The corpus of Sacred Geometry (on a grid),
in collaboration with Jean-Paul Guichard, french IREM.
(Institutes for Research in Mathematics Education)

http://www.contemporary-painting.com/Yvo_Jacquier-Egyptian_geometry-2014.pdf

EDUCATIONAL PROGRAM

Conference at the University Charles of Prague

- Conference about Art and Mathematics - April 2014

http://www.contemporary-painting.com/Yvo_Jacquier-Sacred_Geometry.pdf

To the the schools (Art and Architecture)

- General presentation of the educational program

http://www.contemporary-painting.com/Yvo_JACQUIER-EUROCOMPO-en.pdf

- A particular article (of preparation) is intended for professors

http://www.contemporary-painting.com/Yvo_Jacquier-Professors-en.pdf