The Geometry of Roman Mosaics. An example in Vaison-la-Romaine.

Marie-Françoise Dumont-Heusers.
AIEMA Paris

How the roman artists could design and set up complex geometric mosaics? Bernard Parzysz [1,2] answered to this question: *One must determine a basic pattern and some key diagrams, which can be concretized on the ground with usual instruments, ruler and line (or compass)*. He studied many geometric mosaics and showed that a regular grid is the basis of all constructions. On this grid, a small number of points are used as the centers of circles and arcs.

First, we showed the geometrical analysis of a simple mosaic from Timgad, as presented by B. Parzysz in 2011, at ENS (Paris). Then, using the same method, we presented the geometrical construction of two mosaics from the *House of the Dionysian Procession* in El Jem (Tunisia) [3] and one from the *Villa Romana del Tellaro* (Sicily)

Then, we went to Vaison-la-Romaine in the south of France. After showing the roman city [4], we presented the Forum, which was discovered in 2011 by J.M. Mignon (Architect-Archeologist CGV Avignon) and his coworkers. We presented the history of the excavation of the Peacock Villa (discovered in 1963) and of its seven mosaics [5]. Now, the central Peacock Mosaic is presented in the archeological museum. This mosaic, from the middle of the second century A.D., is constituted of seven hexagons in honeycomb arrangement inside a large circle. Each hexagon contains a delicate medallion with different birds. The central one is the famous peacock which was severely damaged and which was restored in 1986, by Claude Bassier. The missing parts were painted on a smooth mortar, for a better presentation to the public. Curiously, the lateral borders and three of the spandrels were restored with a very different and quite mediocre style, before the destruction of the Villa, at the end of the third century.

Finally, using the ideas of B. Parzysz, we presented a simple hypothesis for the construction of the seven hexagons [6]. The same structure is very common all over the Mediterranean world, particularly in Gaul and in Italy, but also in Africa Romana.

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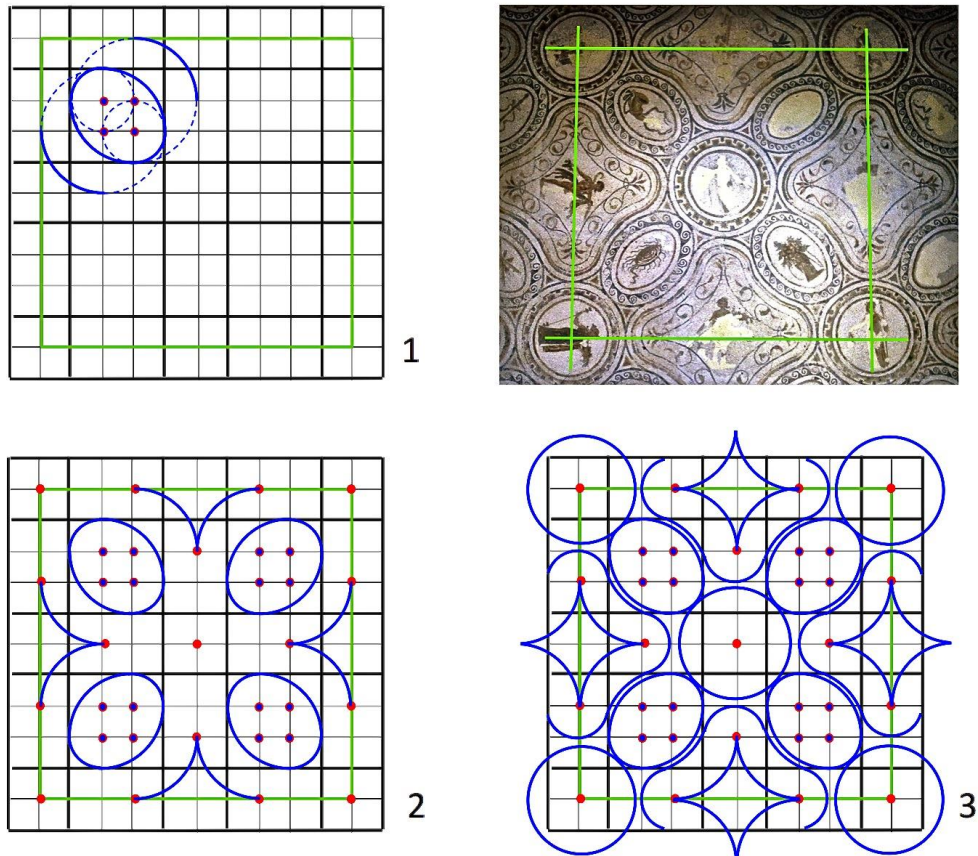
[6] With the help of Michel Dumont.

FIGURES

Figure 1. Geometrical construction of a mosaic from the *House of the Dionysian Procession* El Jem : 1) Drawing a grid and a pseudo-ellipse built with four circles. 2) Repeating ellipses periodically and finding new centers for new circles, as shown in 3).
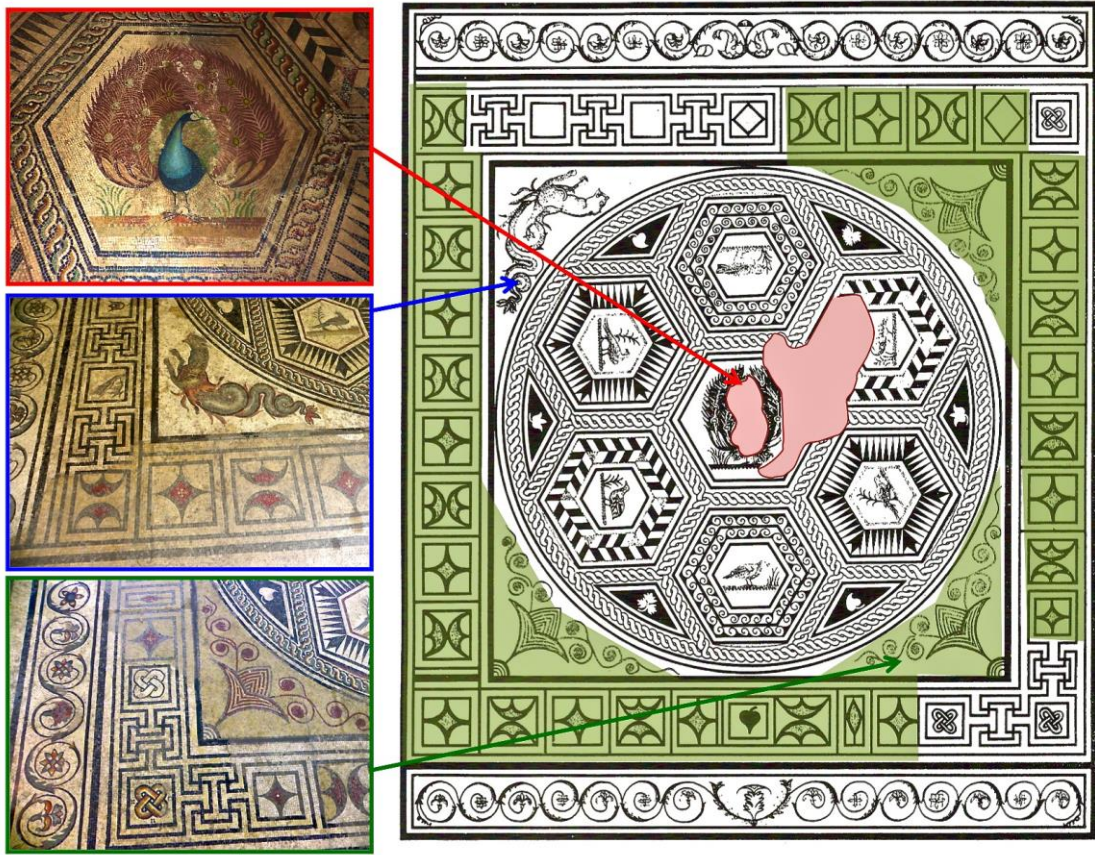
Figure 2. On a drawing of the Peacock Mosaic by J. Lassus (*Gallia* 1971), the lacunae are represented in pink and the upper left photograph shows the restoration by Cl. Bassier (1986). The areas in green emphasize the crude antic restorations. Pictures on the left show the original spandrel with a sea-panther and a restored one with a stylized lotus flower. On these pictures, the original and the restored parts of the borders appear clearly.