Moulded stones for the Egyptian pyramids

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The hypothesis that moulded stones were used for the construction of the Egyptian pyramids has been supported since 1978, notably by chemical engineer Joseph Davidovits. He suggests that the stone blocks of the pyramids of Egypt were not carved, but melted, in the manner of concrete.

This hypothesis is not validated by Egyptologists, who point out that the origin of the stones that constitute the pyramids and the cutting techniques are perfectly informed. In addition, the quantities of materials needed (lime, etc.) far exceed the historical production capacity of the country (mainly due to the absolute lack of wood).

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Presentation of the theory
Joseph Davidovits theory
According to Joseph Davidovits, clay limestone, naturally present at the construction site, disintegrated in water and then mixed with a binder consisting mainly of natron and lime. This mixture, poured into molds on site, would have solidified to form a reagglomerated stone, as strong as a natural stone. Joseph Davidovits and his team conducted large-scale stone casting experiments that demonstrated the feasibility of method1.

This theory tries to provide answers to the difficulties associated with transporting, lifting or adjusting blocks very closely, as well as other issues considered unsolvable, such as the manufacture of statues and vases of hard stone with fine shapes and clean surface appearance, which seem impossible to achieve by cutting methods, especially at a time when tools were made of stone and copper.

On November 30, 2006, the Journal of the American Ceramic Society published the results of research 2 conducted on stones of the pyramids of Egypt using optical microscope and nuclear magnetic resonance spectroscopy. It emphasizes that the samples contain microconstituents with appreciable amounts of silicon in combination with elements, such as calcium and magnesium, in proportions that do not exist in any of the potential sources of limestone and in forms unknown in natural stones2. However, Dipayan Jana, a petrographer, made a presentation to the International Association for Cement Microscopy (ICMA) in 2007 and published a paper3 He concluded: "We are far from accepting even the slightest possibility of a human origin of the stones of pyramids4 ".

Another analysis published in 2011 concluded: "The resonance spectra of NMR 29Si, 27Al and 43Ca of an outer lining

stone of the rhomboidal pyramid in Dahshur, Egypt, were compared with two limestone quarries in the region. The NMR results suggest that the coating stones are formed by limestone grains from the Tura quarries, cemented by an artificially artificial calcium silicate amorphous gel, perhaps by addition of silica, such as diatomaceous earth originating in Fayum 5 ».

A study, published in 2012 in the journal Europhysics News, by a team of two Slovak and Egyptian scientists, measuring the paleomagnetism of the Great Pyramid of Khufu on the Giza plateau, would show that it was built of carved stone, with the addition of cast stones. He concludes that some stones are artificial due to the north-south orientation of magnetic moments (production in situ using the technique of geopolymer concrete) and others are natural.6.

In 2021, another study analyzes the structure of fragments extracted from the Khufu pyramid that would attest to the organic origin of these fragments, since the natural rock of the Tura and Maadi quarries has a different structure. The study concludes that these blocks would have been formed in situ using sediment, natron, lime (probably from burning wood) and water7

Reconstructed pyramid theory
For his part, Joël Bertho, a specialist in casting and transformation of materials, has been proposing since 2001 his own theory on the reconstituted stone pyramid.

According to him, large concave and convex blocks of stone fit perfectly to the millimeter, which is almost impossible to do when cutting stones, this argument convinced the journal Science et Vie in December 2001 to make its cover about the "false stones hypothesis"8.

Validity of these theories
The scientific world does not validate these theories: according to Egyptologist Rosemarie Klemm and geologist Dietrich Klemm, authors of a study published in 2010 on the provenance of pyramid stones, these theories are nonsense9.

Jean-Claude Golvin (CNRS) says:

"The origin of all the types of stone that constitute the pyramid is perfectly known, the foundation stones are made of siliceous limestone and come from Giza itself (the quarries are still visible), the fine limestone comes from Turah and the granite of the burial chambers comes from the quarries of Aswan (certainly distant). I don't see why the Egyptians would have made it difficult to make stone when they had it at 10 spades. »

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Joël Bertho retorts that he never claimed that all the stones were, but that it is much easier to mold a stone on the site by mounting sand, water and a Nile binder than to hoist multi-ton blocks.

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« Palaeodirections at three sampling sites (2 from Khafre and 1 from the pyramid of Khufu) show the common north-south orientation, suggesting that they may have been produced in situ by a particular technique. (...) Finally, we conclude that although the technique of concrete was used, the pyramids were built from a mixture of natural and artificial limestone blocks. »

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Other mentions
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Related article

Teories sobre el mètode de construcció de les piràmides egípcies

Notes

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? Quoted by Science et Vie December 2006 page 97 In the 10-page article titled "Pyramids on False Stones, Science Persists and Signs", we read this excerpt on page 60 of this book "The surface of this vault is covered with a large canvas on which has spread the stone mortar forming this pyramid, As seen when stone chips are peeled off its base with iron levers and wedges. In these detached chips nipples are found in the places that correspond to these holes, and whose thickness is proportional to the fall of the fabric by the weight of the material. This stone contains grains of grayish lime similar to that made with neighboring stones and quarries. When the flakes of this pyramid are put to the test of fire, they cannot turn into lime, but crack and divide, because fine sand has entered the composition of this stone, as has been observed in the decomposition of this stone. In 1774 I made the first obelisk, which suffered at its base, because it was not built on a vault, and with the precautions taken by the Egyptians to effect the desiccation of the material, the lime that has pumped the moisture of the earth has not been able to assume the same consistency at the base as in the rest of the obelisk. (It's twenty-eight feet tall.) »
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