RESOLVING THE RIDDLE OF THE SPHINX

Egyptologists place construction of the Sphinx around the time of the pyramids, about 4,500 years ago. But based on the degree and type of weathering Dr. Robert M. Schoch’, a geophysicist claims the Sphinx was exposed to prolonged periods of higher precipitation. There is no doubt that such conditions existed until the end of the last ice age about 9,000 to 12,000 years ago. At first this assumption appears plausible as even in desert environments weathering is typically dominated by precipitation. The riddle is humans were not capable of constructing anything so complex at that time. Such an early date would require construction by a lost civilization or perhaps even ancient astronauts. Some have even claimed the weathering is proof of Noah’s Flood. The Internet is full of wild speculation but the true cause of ancient weathering remains elusive.

WEATHERING TODAY

Today the Sphinx is under attack by shallow salty groundwater that wicks up and evaporates at the surface. As does salt precipitates in the pore spaces causing the rock to exfoliate. This is a common problem in the Cairo area. Dewatering is being used to lower the water table and reduce this threat. Modelling was performed to evaluate the influence of dewatering.

WEATHERING & AGE OF THE SPHINX

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CONSTRUCTION

Unlike the pyramids the Sphinx is a statue carved from limestone bedrock. The excavation significantly decreased the depth to the water table bringing the Sphinx within the upper limits of the annual Nile flood waters.

REPAIRS

Due to extensive bottom up weathering repairs have been documented on at least three occasions between 1,400 BC and today. If weathering was due to precipitation, simply diverting runoff could have resolved the problem.

PROPOSED SPHINX WEATHERING PROCESSES

PRECESSION: About 2.7 cm annually for the last 5,000 years. Much higher prior to 3,500 BC.

ANCIENT NILE FLOODING: Upward wicking of shallow salty groundwater that evaporates at the surface depositing salt causing the rock to exfoliate.

GROUNDWATER: Annual flood water is funneled via the Nile River past Giza. Levels above 20 m would flood the Sphinx excavation.

CONCLUSIONS

• Weathering appears to be the combination of wicking groundwater and Nile floods, not precipitation.
• Explains the bottom-up weathering without resorting to recarving the head.
• Weathering is the result of a sporadic interaction of various processes, thus weathering cannot be used to estimate the age of the Sphinx.
• Today the sand is gone, so weathering is turned on.
• Not seen on other monuments as they are high and dry.
• Weathering cannot be used to estimate the age of the Sphinx.
• Precipitation charging through the sand may have soaked the Sphinx in a perched water table.
• Excess precipitation that supposedly weathered an older Sphinx would likely flood the excavation.
• Dewatering should reduce and eventually halt groundwater wicking.

REFERENCES