SOLVING A MULTI-MILLION-TON JIGSAW PUZZLE: NOVA UNRAVELS ENGINEERING MYSTERIES OF ANCIENT ARCHITECTURAL ICON

Secrets of the Parthenon
Tuesday, January 29 at 8pm ET/PT on PBS
pbs.org/wgbh/nova/parthenon

They don't build them like they used to. They don't even know how—until now. For 25 centuries the Parthenon has been shot at, set on fire, rocked by earthquakes, looted for its sculptures, almost destroyed by explosion, and disfigured by well-meaning renovators. It has gone from temple, to church, to mosque, to munitions dump. What could be next? How about a scientific search for the secrets of its incomparable beauty and astonishingly rapid construction? Granted unprecedented access, NOVA unravels the architectural and engineering mysteries of this celebrated ancient temple in ***Secrets of the Parthenon***, airing Tuesday, January 29 at 8pm ET/PT on PBS (check local listings).

NOVA was given permission to film the Greek government's Acropolis Restoration Project—a multi-decade, multi-million-dollar effort to rescue the Parthenon and other ancient structures on the Athenian Acropolis. The Parthenon, in particular, was in danger of collapse. Over the last 32 years, experts have disassembled, analyzed, and painstakingly repaired thousands of marble blocks, bringing to light the Parthenon's astonishing, unsuspected design features and raising questions about how, exactly, the ancient Greeks did it.

How did they build this magnificent temple with such incredible precision in a mere eight or nine years? How did they manage to achieve apparent perfection in a building that contains almost no straight lines or right angles? And, most baffling of all, how did they accomplish all this apparently without using the tools that a modern architect would find indispensable-building plans and blueprints?

Watch as NOVA takes on these mysteries with the help of some of the foremost experts on ancient Greek architecture, including the chief architect of the Acropolis Restoration Project, Manolis Korres, and scholars Barbara Barletta of the University of Florida, Mark Wilson Jones of the University of Bath, and Lothar Haselberger of the University of Pennsylvania.

For historical and cultural context, NOVA calls in Jeffrey Hurwit of the University of Oregon. Professor Hurwit is an expert on the significance of the Acropolis throughout Greek history, particularly during the "Golden Age," when the Parthenon was built. Athens was then a young democracy, victorious in the Persian wars, and enjoying the riches and power of its growing empire.

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Science Unit

One Guest Street
Boston, MA 02135

617.300.2000

www.pbs.org/nova

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DAVID H. KOCH
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NOVA covers the Parthenon at the largest scale—and the smallest. Manolis Korres tells how his investigation of tool marks on the temple's marble blocks revealed the distinctive workmanship of some 200 different masons. From his study of these marks, Korres has also reconstructed a whole range of ancient stonecutting tools that he believes are superior to most of today's hand tools. Their exceptional sharpness and durability, he thinks, helps explain how the ancient Greeks erected their architectural masterpiece so quickly.

The Parthenon's design conceals subtleties that at first glance seem impossible given the techniques of the day. For example, the columns have a slightly bulging profile that would require a compass with a radius of nearly a mile to draw at full scale. The curve is apparently an intentional optical refinement that lends the column a certain muscular grace. But how did the Greeks achieve it?

Lothar Haselberger tells NOVA how he literally saw the light while visiting an unfinished Greek temple built a century and a half after the Parthenon. When the sun shone across its walls at a grazing angle, a remarkable series of diagrams suddenly appeared, carved almost invisibly into the stone. This was the modern age's first glimpse of authentic Greek "blueprints"— construction plans for the temple's components, including its subtly curving columns. Haselberger's astonishing discovery reveals ancient Greek building secrets that are as ingenious, concise, and easy to use as anything in today's toolbox of architectural techniques.

Now entering its 35th year of broadcasting, NOVA is produced for PBS by the Science Unit at WGBH Boston. The director of the WGBH Science Unit and senior executive producer of NOVA is Paula S. Apsell. Funding for NOVA is provided by David H. Koch, the Howard Hughes Medical Institute, the Corporation for Public Broadcasting, and public television viewers.

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Senior Executive Producer Paula S. Apsell

Written, Produced, and Directed by Gary Glassman

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Pressrooms

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Press Contact

Eileen Campion
Dera, Roslan & Campion PR
212.966.4600
eileen@drcpublicrelations.com

Photography Contact

Lindsay de la Rigaudiere
NOVA National Promotion
617.300.4258
lindsay_delarigaudiere@wgbh.org