

IN PERSPECTIVE

FALL 2022

WHEN IN ROME....

Portraying the lengthy history of architecture in an exhibit to be viewed in an hour is an interesting challenge. Our approach seeks to anchor the story to the emergence of architectural concepts, each to be illustrated with a model.

Since high quality architectural models cannot be purchased off-the-shelf they are being constructed for the Museum. Depicting the arch as a structural element in the Pont du Gard was proposed by Biden Hall when he joined the Canadian Museum of Architecture as an Intern in 2021.



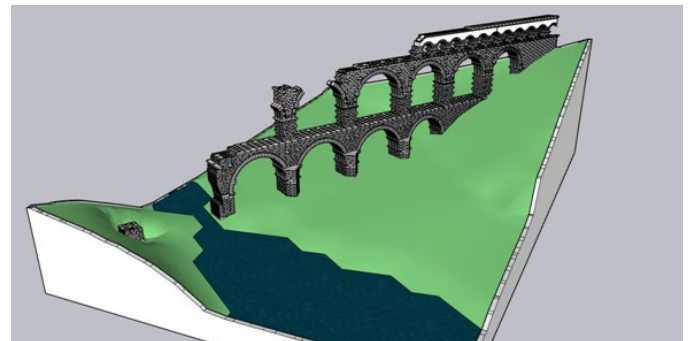
Biden Hall.

Since then, in addition to completing his Master of Museum Studies degree, Biden has worked on this display, which is now nearing completion. In this issue Biden explains how he is bringing a two thousand year old architectural project to life.

- Peter Brueckner

MODELING A ROMAN AQUEDUCT

The Pont du Gard, a Roman aqueduct bridge in southern France, is an intriguing subject for a display about structural arches from both the historical and aesthetic perspectives. It demonstrates the impressive engineering achievements of its builders as well as key stylistic elements of Roman architecture. Modeling it as under construction provides the opportunity to explain aspects of ancient building technology.



The original concept shown as a computer-generated model of the aqueduct under construction.

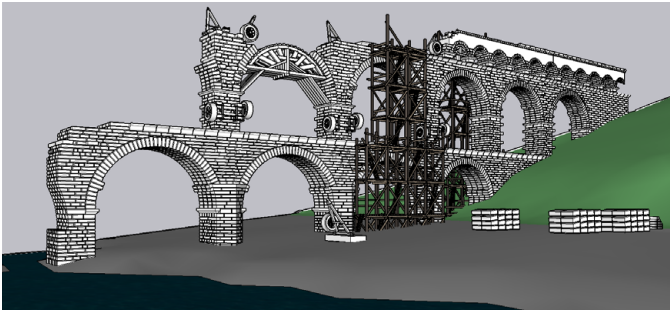
Ensuring authenticity required that the project begin with several weeks of research. A number of sources were consulted but the most helpful, Jean-Louis Paillet's work¹, gives a detailed account of the methods used to build the aqueduct. His descriptions and drawings of cranes, winches and supports were instrumental in the design of the display. There is some controversy as to whether the three tiers were built one at a time or simultaneously from one side of the valley to the other. For reasons of practicality we chose to depict the latter.



The model under construction.

1. Paillet, Jean-Louis. "Réflexions Sur La Construction Du Pont Du Gard." Gallia 62 (2005): 49-68.

Data from various plans and drawings were developed into a 3D software model using Sketchup. Much attention was paid to ensure correct scaling of the components of the structure and to the representation of fine details. The 3D gypsum powder printing technique used produces a texture simulating limestone. Colour was added digitally to the file and applied during the printing process.



Detail of the construction scene, itself a work-in-progress.

The river valley is modeled using wood, wire mesh and plaster. The addition of foliage, rocks and simulated water will complete the landscape. At a scale of 1:200 the model measures 36"x24".

Since one prominent characteristic of Roman architecture was the introduction of novel construction techniques, our model depicts some of the building practices believed to have been used.

Centering was necessary for the construction of arches and appears to have been built to be readily moveable and reusable. This likely played a role in achieving the uniformity seen in Roman arcuate structures.

A variety of lifting equipment was also available. Interestingly, this was integrated with the construction in that the structure was provided with projecting components that held the machinery and scaffolding in place.



Roman cranes were human powered.

Perhaps most remarkably, a well established organization was able to provide the means to complete these projects quickly, be they buildings, aqueducts or roads. It is estimated that the Pont du Gard was built in fifteen years. Given its enormous size this would be impressive even today.

As education is the principal objective of the CMA's mission, considerable thought has been put into the narrative that accompanies the model. Many features of Roman architecture are exemplified in this aqueduct. However the evolution of architecture over time is not readily demonstrable in a single model. In fact, significant improvements were made to aqueduct building technology during the next few centuries of the Roman Empire.

- Biden Hall

Image 5: *Reduced-scale replica of a Roman treadwheel crane.*
Photo by Dan Diffendale. [flickr.com/photos/dandiffendale/](https://www.flickr.com/photos/dandiffendale/)



The Pont du Gard as it is today. It was designated as a UNESCO World Heritage Site because, in part, of its architectural ingenuity.