

Mapping Ancient Rome and Teaching 3D Technologies: Paul Bigot's Bronze Model at the Institut d'Art et d'Archéologie in Paris^{*}

Rome in wooden crates in the Institut d'Art et d'Archéologie in Paris

Teaching classics in the digital age is at the very centre of current challenges; indeed digital teaching has become a major shift in pedagogical paradigms and the flow of knowledge in general. The issue is of the utmost importance. Its significance stems from the fact that such a system, as a series of processes and means (i.e. digital, immaterial), is nothing less than a new kind of language, one that structures power relations, cognition, and volition, that has yet fully to be understood in all its aspects.¹ Aware of this caveat, I always try to temper my assumptions, endeavouring to “possess the other’s eyes” and their universe, as Proust would put it. Such is the case for an extraordinary object, still half-forgotten in wooden crates piled randomly in the basement of the Institut d’art et d’archéologie in Paris – the bronze model of ancient Rome, at a scale of 1:400, created by Paul Bigot.²

Now, the opening of abandoned and forgotten crates in some basement is never a harmless act. A thousand rivulets are left by the interstices of the decayed wood, rivulets that have stories to tell. In the end, they are the only thing left, often with unpredictable implications. Eventually, following perhaps some awe and uncertainty, they always give birth to other stories. This is what happened in the dusty and rather gloomy basement of the Institut d’art et d’archéologie, itself designed by Paul Bigot. In 1986, François Hinard, then professor of Roman History and Archaeology at the University of Caen (Fig. 1) and one of the protagonists in the promotion of Bigot’s plaster model of Rome conserved there, rescued the Parisian bronze model from oblivion. He recalls having found in Paris, in the basement of the institute, “[...] a few cases containing fragments in gilded bronze.

^{*} The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51992>.

¹ The critical debate on the societal impact of 'big data' and information technology is of course huge: see Han 2017 for a rather pessimistic view.

² Bigot 1942; Fleury 2014.

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These are parts of the North of the City (i.e. Imperial Rome). All the cases had been opened, some sets are quite damaged by oxidation and we obviously do not know if the cases found correspond to all that had been completed or if there have been disappearances”.³



Fig. 1: Bigot's plaster model of Rome at the University of Caen (detail). © Université de Caen Basse-Normandie.



Fig. 2: The Institut d'art et d'archéologie in Paris, built from 1925 to 1928, by architect Paul Bigot. © Pascal Lévy, Université Paris 1 Panthéon-Sorbonne.

Paul Bigot and the models of the imperial city of Rome

Paul Bigot, architect of the Institut d'art et d'archéologie, built between 1925 and 1932, was a recipient of the Grand Prix de Rome in 1900 (Fig. 2). During his residency in Rome, he conceived the project of a model of the city as it was at the end of antiquity, whose realisation and successive improvements occupied him until his death in 1942. The inspi-

³ See Hinard et al. 1992; Deniaux 2000.

rational salience of the Roman urbanscape and its ancient ruins had an enormous impact on Bigot. Through a detailed study of the archaeological data known at the time, crossed with an examination of written sources and with the *Forma Urbis Romae* (a general plan of the city, engraved into marble at the time of Septimius Severus, in the late 2nd to the early 3rd centuries AD, published by Rodolfo Lanciani between 1893 and 1901), Bigot produced a true work of art whose scientific value and educational significance cannot be overstated. This model reproduces three-fifths of the city of Rome in the 4th century AD at a scale of 1:400. It is not limited to the time of Constantine – the Arch of Constantine and the Basilica of Maxentius are modelled – but also presents much earlier monuments, such as the Capitoline Temple of Jupiter, built at the end of the 6th century BC.⁴

A first version of Bigot’s work was presented at the archaeological exhibition in Rome in 1911, in a room of the Baths of Diocletian, and then at the Salon of French artists in 1913. The model met with considerable success and was praised by both scholars and the press. Composed of plaster modules with wooden or metal frames, this version was intended for the Sorbonne. However, it was not delivered immediately, with the war interrupting Bigot’s work. It was completed in the late 1920s, and installed on October 3, 1933 on the 4th floor of the Institut d’art et d’archéologie. It is from this original state that the Parisian scholar Elly Niki offers a precise description of the installation, as she saw it in 1933:

“It is 11 meters long, which is more than four kilometres on the ground and 6 meters wide, which corresponds to two and a half kilometres. The total surface is 49 square meters. The ninety pieces of which the wafer is made up have been worked on separately, then brought together methodically to form the whole. [...] Each monument is a small miniature masterpiece that reveals extreme care and delicacy. Nothing has been overlooked, up to the reconstructed sculptures of the tiny pediments of the temples and their columns, however small. [...] One can imagine the effect of the sun, as the glare of the marbles and gold stood out from the yellow and red houses and the dark greenery of the holm-oaks, pines, cypresses, laurels; Mr. Bigot, who did everything he could to bring his model as close as possible to the aspect of the city of the 4th century, tried to give us this illusion by projectors, placed on either side of the relief and fitted with coloured glasses accordingly. So, thanks to this lighting system, we can see ancient Rome at different times of the day or night.”⁵

Ms. Niki’s elegant description pinpoints, presumably unawares, two aspects of the proliferation of urban models to scale, typical of the first half of the 20th century, two examples of what Henry Lefebvre would call “representations of space”: the conceptualised space

4 Royo 1992 and 2006.

5 Royo 2006; Niki 1933.

of planners, scientists, urbanists, etc., that tends toward a system of verbal signs; and representations of space that take place in a physical form, such as maps, plans, models, and designs.⁶ European countries, both democratic and totalitarian, in a post-romantic retro-futuristic perspective, produced a series of models for future urban planning, some of them eventually fulfilled. From Speer's monumental model of Nazi Nuremberg or 'Germany–new Berlin' to the massive demolitions in fascist Rome together with the project of the EUR district, we see nostalgia for ancient Rome, the return to nature or garden-cities and light as common denominators of conservative, imperial, state urban planning.⁷

The revaluation of the bronze model of Rome in the teaching context

We discern here an opportunity in the educational possibilities such a model might offer. A digital copy of Bigot's model is congruent with the context of its conception in the cultural, sociological, and political frame of the first half of the 20th century and the contemporary architectural and urban trends of that time. It also works with the history of the modern expansion of the city of Rome, and the unfolding of the city's layers in time, including archaeological discoveries and the methodologies of that process. Strangely enough, the abstract visualisation of the model (for example as a point cloud or polygons) could enhance some of our understanding of the mystic aspects of architecture and persona so efficiently put in place by Speer, in the wonders of his Cathedral of Light in Nuremberg (using anti-aircraft searchlights).

Unfortunately, the plaster model of the city of Rome, jewel of the University of Paris, no longer exists. Damaged at the end of the war, it disappeared definitively during the events of May 1968: the parts that were not been carried away by the occupiers – as we see in photographs from that time – seem to have paid the price of protesting students. But several other plaster versions were produced in the interwar period by Bigot. Thanks to the support of the Rockefeller Foundation, one was made for the city of Philadelphia and was exhibited until 1953 at the Pennsylvania Museum of Philadelphia (Penn Museum), before being given to St. Charles Borromeo Seminary (Wynnewood, Pennsylvania) and disappearing thereafter. After Bigot's death in 1942, two other plaster versions were donated, one to the University of Caen (Normandy), the other to the Royal Museums of Art and History in Brussels, where they are still kept.

It is the fifth version that concerns us here, the one seen by Hinard and recently 'rediscovered', which the University of Paris 1 Panthéon-Sorbonne and Sorbonne University, both issued from the splitting of the University of Paris in the aftermath of May 1968, inherited through their departments of History of Art and Archaeology, located within the

⁶ Lefebvre 1991.

⁷ Fest 1999.

Institut d'art et d'archéologie. Immediately after the completion of his first model, Bigot envisioned transforming the plaster model into a bronze version. As early as 1913, he had obtained state funding (80,000 FF)⁸ to make a bronze copy intended for the Sorbonne. But World War I blocked everything until 1923, though some elements had been made by the "ateliers Bertrand". In 1923, thanks to special funds guaranteed by the government, the famous Parisian jeweller Christofle received a specific order from the University of Paris, which left Bigot in charge of the project: under the supervision of the artist, Christofle was to produce, in gilded bronze, through a negative electroplating process of which the jeweller was the inventor and the only master, a partial version of Bigot's model of ancient Rome. According to the contract signed on June 12, 1923, the model was to include "all the flat parts of the city located to the west of a line passing at the foot of the Quirinal, Capitol, Aventine hills. The part of Rome which is the subject of this contract therefore includes the entire Champ de Mars, the course of the Tiber and the districts beyond towards the West and the South". The realisation dragged on, however, because Bigot, being extremely picky, required continuous modifications. The year 1927 was punctuated by disputes between the architect and the jeweller, which can be followed in Christofle's historical archives. A first delivery of the work was aborted in 1929, due in part to lack of space in the Sorbonne but above all because of new requests from the architect. Exasperated by three additional years during which nothing happened, Christofle raised the stakes throughout the year 1932. Eventually, on November 18, 1932, 40 crates were delivered to the Institut d'art et d'archéologie.⁹

Strangely, the bronze model was never intended to be exhibited.¹⁰ Delivered in wooden boxes directly to the basement of the building, the bronze plaques will likely never leave it. Rediscovering their heritage, archaeologists and art historians of the two universities that have shared the Institut d'art et d'archéologie since 1970, the University of Paris 1 Panthéon-Sorbonne and Sorbonne University, today are uniting their efforts to build a pedagogical project based on the study of this forgotten masterpiece. A provisional room is being fitted at the Institut d'art et d'archéologie in order to carry out the study under good conditions. Each plaque is currently dusted, identified, measured, weighed, observed, and properly repackaged in consolidated or replaced crates. A restoration, conservation, and presentation strategy are in place, in the hope that a general rehabilitation of the building itself will make room for this great work. What we are trying to do now is to digitize in 3D Bigot's model (Fig. 3/4/5) and study it in the light of other projects on ancient Rome, primarily the digital map of Rome in the 4th century recently delivered

8 Fleury 2014, 114: "Le 11 juillet 1913, l'assemblée nationale française [...] vote à l'unanimité une loi l'autorisant à faire appel à l'épargne publique pour financer une copie en métal du relief. Il est également alloué pour cette opération une subvention de 80.000 francs sur les crédits du Ministère de l'Instruction Publique et des Beaux-Arts."

9 Royo 2006.

10 Ciancio Rossetto 1992; Liberati 2003; Lecocq 2008.

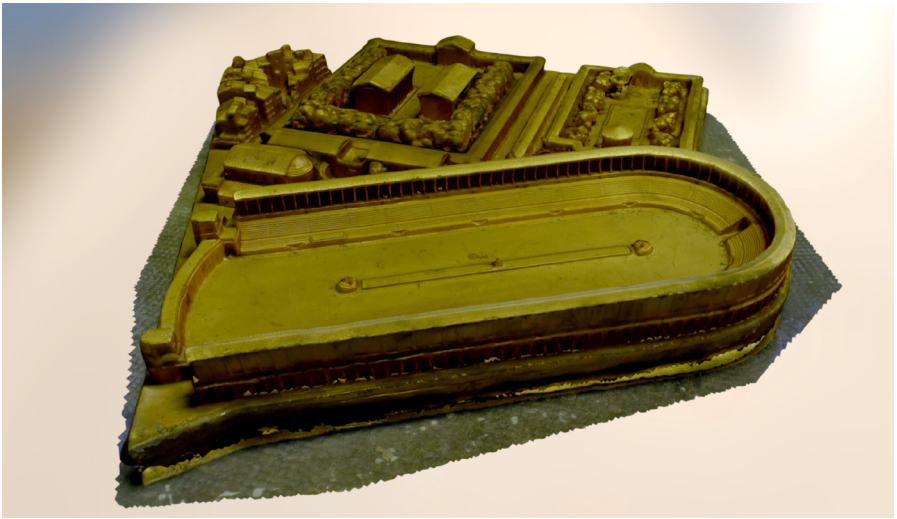


Fig. 3: Module 28 of Bigot's bronze model: 3D output of the Circus Flaminius, © Université Paris 1 Panthéon-SorbonnePascal Lévy, Université Paris 1 Panthéon-Sorbonne.

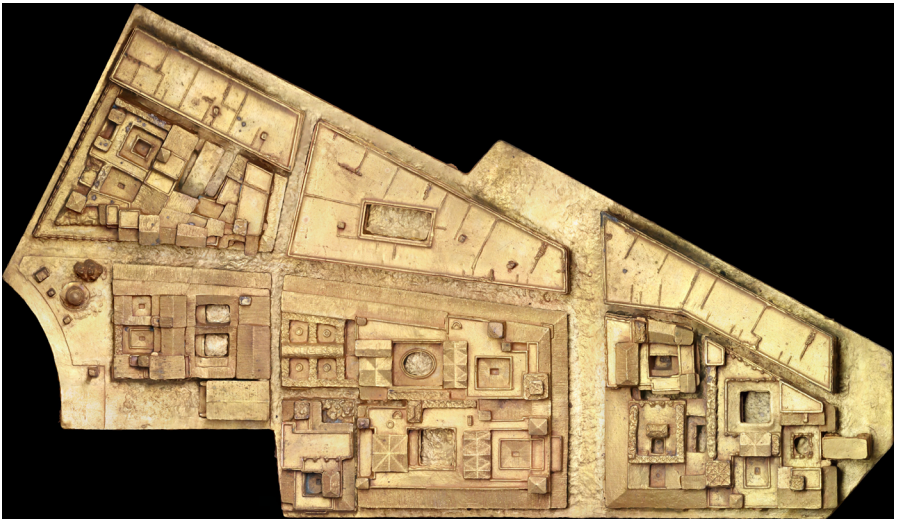


Fig. 4: Module 29bis of Bigot's bronze model: orthophoto extrapolated from the 3D output, © Université Paris 1 Panthéon-Sorbonne.



Fig 5: Module 35 of Bigot's bronze model: 3D output of the Temple of Hadrian (Campus Martius, Rome), © Université Paris 1 Panthéon-Sorbonne.

by the Sapienza University of Rome in the frame of its *Atlas of Ancient Rome* project.¹¹ All this work depends on the active involvement of students at every step of the process.

The educational strategy is based on a multifaceted perspective:

- The model(s) can be used as teaching material for both students and scholars through an in-depth analysis of its construction and its methodological procedures. The model represents a stage of the knowledge available to Bigot, most importantly Rodolfo Lanciani's *Forma Urbis Romae*.¹² This means tracing the history of the topography of Rome from a diachronic perspective, along with the refinement of our knowledge on the subject. Considering that the model is in part made of buildings and arrangements completely invented by Bigot in the absence of data, it also entails a reasoning on the construction of the archaeologist's discourse from epistemological, scientific, and cognitive points of view, including the processes of insight, wishful thinking, and the famous ubiquitous problem in archaeological thinking – the 'interpretative dilation'. Studies on the history and ideological premises of its conception along with similar artefacts of ancient Rome and other ancient or modern cities will reveal much on the epistemological framework or state of mind underlying the attempts of 'representation of space', its biases and possibilities.

¹¹ Carandini 2017; I would like to thank Prof. P. Carafa of the Sapienza University of Rome, who kindly gave us a copy of the auto-cad drawing of Rome in the 4th century AD.

¹² Lanciani 1893–1901; on the methodology and operational approach of Bigot see Royo 2006; Lecocq 2008.

- The model can also be used as a foundation for comparisons with and controls for other projects, both modern (i.e. digital reconstructions of Rome) and previous (for example, the famous Gismondi model of the ancient city),¹³ while its transformation into a 3D digital model will enhance the skills and competence of students. They can practice on the model following a trial-and error experimentation process using photogrammetry, laser scanners, etc. Single parts of the model could be used as thematic targets of in-depth research on the topography of the city. For example, graduate theses and dissertations could explore this possibility. Most importantly, the model, and especially a 3D GIS project based upon it, could provide interesting insights on the movement and perceptions of the ancient personae circulating within the city.
- A decent place of exposition for the general public is mandatory, perhaps involving innovative digital potentials that include experimentation with virtual and augmented reality. The model could then be exploited for the purposes of scientific disclosure to the greater public. The artefact could be visited by students, scholars, and schools in a virtual hall where they could interact with the model using state-of-the-art digital immersions.¹⁴
- 3D impressions in various scale of parts or monuments of the model will be used for further familiarisation with the ancient city, especially for younger children, who could approach the ancient realities with a playful spirit.
- A 3D model visualised on a simple interactive web-GIS will be elaborated for the disclosure of the ancient city monuments on a global level, used by schools and teaching specialists through the net.

We are still in the first steps of this process. We hope and think that the digital instruments now available can enhance and update the history of this artefact, allowing Bigot to continue to share his very personal story of Rome.

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¹³ Rocha 2018.

¹⁴ The University of Caen, where one of the plaster models is preserved, offers us a guiding thread on the subject: https://www.unicaen.fr/cireve/rome/pdr_maquette.php?fichier=histoire (last accessed December 13, 2020).

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