

Technical analysis

Tracing Bernini's fingerprints

A forthcoming exhibition uses an unprecedented combination of scholarship and science to reveal the touch of a master

By Molly Heintz

At first glance, a small terracotta angel in the collection of Harvard University's Fogg Museum seems to be just a rough working model from a sculptor's studio. But a closer look reveals an intriguing detail—around the upper edge of the angel's right wing, a series of light lines evokes the texture of feathers. On even closer inspection, it becomes clear that the cascading impressions were created not by using any tool, but by a row of overlapping thumbprints.

The angel is a study for one of ten monumental sculptures, which were intended to adorn the Ponte Sant'Angelo in Rome and were commissioned in 1669 by Pope Clement IX. The job went to Gian Lorenzo Bernini, a perennial papal favourite, who was one of Europe's most celebrated artists at the time. Bernini's work for the popes and princes of Rome is well known, from architectural designs such as the majestic portico that unfolds before St Peter's Cathedral to sculptural groups, notably *The Rape of Proserpina*, 1622, in which the god Pluto whisks Proserpina to the underworld (his hand squeezing her thigh may be the most electrifying case of pressed flesh ever rendered in marble).

Inside the master's studio

Although dynamic and full of drama, Bernini's finished sculptures, polished to perfection, give the impression of flawlessness. There is little hint of the hours of labour, the workshop assistants and the iterative process behind each endeavour. It is this process that is the focus of "Bernini: Sculpting in Clay", an exhibition due to open in October at the Metropolitan Museum of Art, New York. The show will bring together 50 clay models from collections around the world, plus 30 drawings and several marble and bronze sculptures, before travelling to the Kimbell Art Museum in Fort Worth, Texas, in January. The exhibition and its catalogue will offer an unprecedented merging of connoisseurship and science.

Through a methodical analysis of the models, including x-radiography and rigorous observation, a cross-disciplinary curatorial team is shedding new light on the working methods of Bernini and his studio. The team has also explored what would otherwise be ephemeral clues that happened to be captured in the clay: sand used to prevent the models from sticking to the table, impressions of a cloth used to keep the clay damp, and fingerprints left behind unintentionally, or sometimes, as in the case of the Fogg angel, with a purpose.

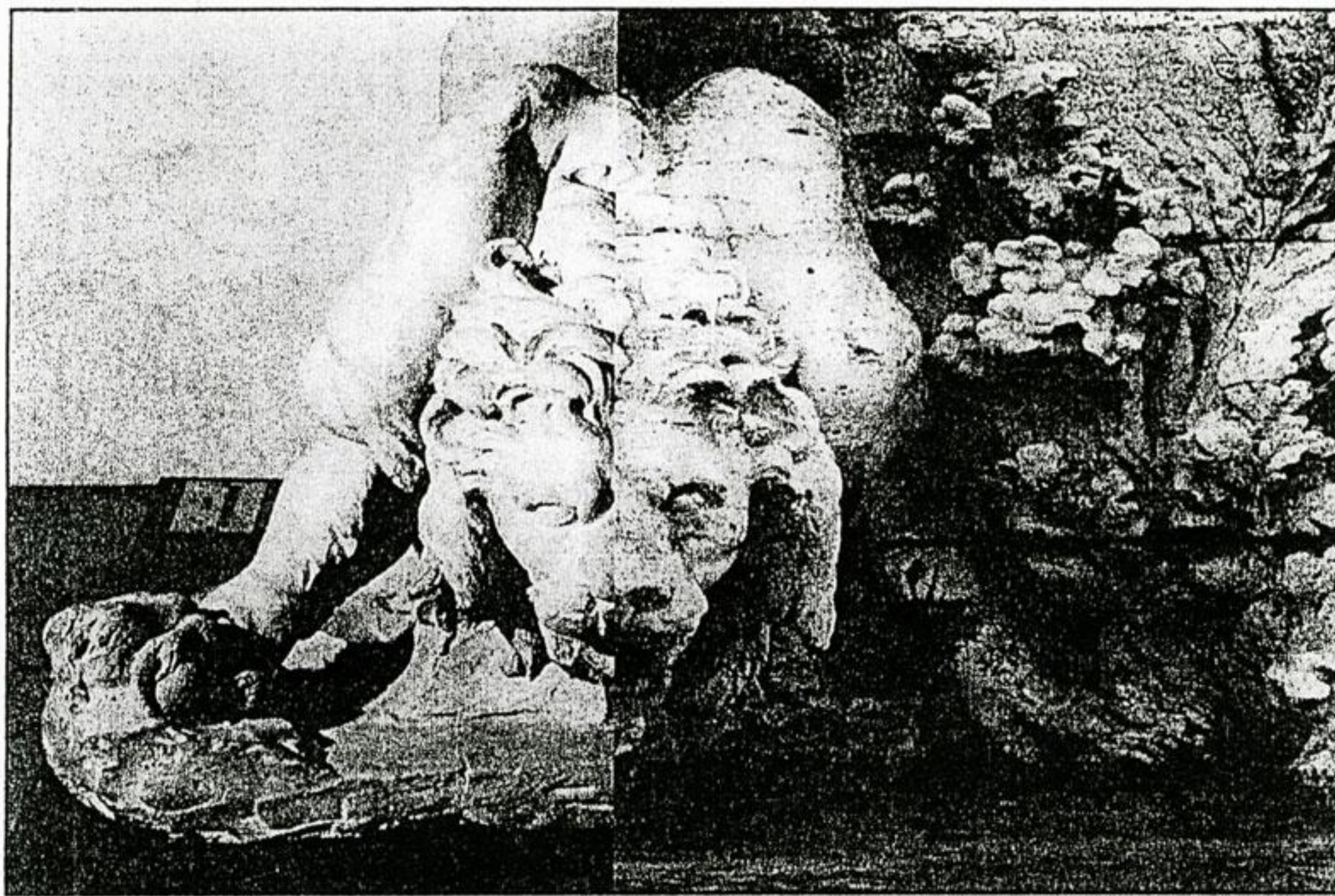
The immediacy of the hand of the master is the most exciting prospect of such a show. Bernini's abilities made him a legend in his own time, as did his flamboyant personality and close friendships with those in power. "Bernini became phenomenally wealthy and lived the life of a prince artist," says C.D. Dickerson, the curator of European art at the Kimbell and one of the show's organisers. "He had the ego to go along with his reputation, although he was also deeply religious and devout."

After Bernini's death in 1680, his son Domenico codified the artist's personal myth with a biography of his father brimming with the memorable, if exaggerated, tales of a prodigy. Domenico reports that, at the age of ten, Bernini had an audience with

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Pope Paul V. Asked by the pontiff to draw a head of Saint Paul, the young Bernini produced a virtuoso sketch that prompted the pope to declare: "He will be the Michelangelo of his generation." A few years later, while working on a sculpture representing the martyrdom of Saint Lawrence, who was burned to death on a grill, Bernini put his leg in the fireplace, not just to empathise with the saint's trial but to witness in a mirror what tortured expressions the pain produced on his own face.

According to Domenico, Bernini was inclined as much to strategy as to suffering. After a brief



Bernini's model of a lion for the *Fountain of Four Rivers*, an angel model revealing the "neck pinch" method and an x-ray of the *Kneeling Angel*, 1674-75, showing Bernini's pressure on the clay

falling-out with Pope Innocent X, Bernini made the most of a friendship with the pope's relatives, who slipped the sculptor's model for a proposed fountain in the Piazza Navona into the papal quarters. When the pope discovered the model, "he was sent into a state of ecstasy for half an hour's time", Domenico wrote, and immediately reassigned the fountain commission from Borromini, Bernini's rival, to Bernini himself.

Bernini's models are the stars of the Met's show, but ecstasy may not be the first reaction from visitors looking through 21st-century eyes. The idea of an exhibition devoted to models—and weighted towards preliminary sketches in clay (*bozzetti*) rather than finished presentation models (*modelli*)—took some selling, says Ian Wardropper, another of the show's curators, who, during the course of planning the exhibition, left the Met to become the director of the Frick Collection. "When I had to go to the director [Thomas Campbell of the Met] to persuade him that the Met should do this exhibition, he was a little concerned that many of the models were fragmentary," Wardropper says. "It's a legitimate question to ask, whether the terracottas are a worthwhile subject. But what they are is brilliant examples of modelling at the highest level, certainly the equivalent of drawing."

Anthony Sigel, the conservator of objects and sculpture at the Harvard Art Museums' Straus Center for Conservation and Technical Studies, is leading the scientific side of the investigation. Sigel has been studying Bernini *bozzetti* for more than a decade, starting with the Fogg's collection of 15 models, which will be lent for the first time for the Met show. Getting under the skin of objects through x-radiography is not new, but Sigel's method of applying the technique has led to some groundbreaking observations.

Rather than simply hunting for support structures such as metal dowels, which glow on x-rays, Sigel is analysing what he calls the "clay

grain". Bernini did not use armatures for his models, preferring to keep them as solid pieces supported, if necessary, by clay buttresses. To create the column-shaped piece of clay for the base of a model, Bernini's studio used a technique commonly known as "wedging", a methodical folding and kneading of the clay to drive out air bubbles that might cause problems during firing. "The clay grain formed during the wedging process has a directional character just like wood grain," Sigel says. "If any new clay is added, it has its own directionality, and because of that, you can see what was added, you can see how it was assembled and you get a sense of what techniques are repeated. We've managed to tease out a lot of information about how Bernini modelled."

Going against the grain

A case in point is another Fogg angel in a kneeling pose; a model for a sculpture on the altar of the Chapel of the Blessed Sacrament in St Peter's. But this angel did not start out on its knees: Sigel's analysis of the x-ray reveals that Bernini treated the clay column much like a choreographer might work with a dancer, taking the malleable body and bending it over by pressing down on what would become the angel's back. The resulting s-shape of the clay grain is apparent on the x-ray.

Sigel also carefully studied the surfaces of the terracottas under raking light, discovering a host of clues about the life of a model in Bernini's workshop and enabling the curators to distinguish between so-called "single session" pieces, which might be made over the course of several hours, and others created over a period of days or even weeks. "Some are just as fresh today as they were when Bernini made them, and every movement of the tool is recorded," Sigel says. Before firing, other models were kept under a damp cloth to keep the clay moist for longer sessions. And on several models, Sigel has identified not only the

impressions of that cloth, but also spots of deterioration where the clay was attacked by the mould growing during a hot Roman summer.

Occasionally, the models offer evidence of how Bernini envisioned the final product in context. For example, two intersecting lines on the haunch of a terracotta lion point to how the artist planned to position its full-size counterpart in his hard-won Piazza Navona commission, the *Fountain of Four Rivers*. The marble sculptures of the fountain sit on a mountain-like foundation created by stacked slabs of travertine, and the lion crouches at the base. Sigel, who received a Prix de Rome in 2004 for his work on Bernini, was strolling by the fountain one evening after

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spending a day studying the lion model in the Accademia di San Luca. He happened to notice the lion's alignment with the mountain, realising that the drafting marks on the model indicated how the final travertine lion would be chiselled from the in-situ slabs.

The lion is one of several pieces whose attribution is being addressed by the curatorial team, based on their intensive examination. Although they argue that the lion model is by Bernini, they believe that another model of an angel—from the Musée des Beaux-Arts et d'Archéologie de Besançon, France—may not be by the master, an attribution proposed by the eminent Bernini scholar Irving Lavin. "The Besançon model looked good, but it didn't hold up under examination," Wardropper says. "There will be controversy; we're well aware that there will be some disagreement over some of the attributions. But we're trying to be as open as we can and just present the findings." Of the potential debates generated by these findings, Dickerson says: "It's a generational thing. Every generation will look at material differently."

To that end, the team has taken full advantage of current science, even employing forensic techniques. Fingerprints detected on the Fogg terracottas were studied and compared by forensic experts in the late 1990s, leading to the identification of several "matches", or recurring examples of the same print across several pieces. For the forthcoming exhibition, this fingerprint study was pushed further with the help of David Goodwin, a UK-based, Scotland Yard-trained fingerprint analyst who now works as a consultant for art institutions as well as law enforcement agencies. Goodwin notes the challenges of analysing the prints left in the clay. "With fingers moving through a soft and pliable medium, the prints do strange things," he says. "At a crime scene, you usually don't get that kind of slippage." Still, Goodwin says, it was possible to make sound identifications, offering up additional matches of prints, which Sigel states are "undoubtedly Bernini".

This assessment of the fingerprints is based on cumulative evidence that also includes stylistic clues. Through intensive looking, Sigel and the curators have identified what they believe are a set of signature Bernini manoeuvres, the "neck pinch" among them. "It's a distinctive modelling technique defining the back of the neck," Sigel says, pointing to an example on an angel model for the Ponte Sant'Angelo. "The fingernail would make a curved line at the back of the neck while the fingers were squeezing out the ponytail." In addition to tiny but distinctive clues such as this, Wardropper says, the hand of Bernini can be detected in the overall speed of the modelling, with its confident, sweeping strokes in the clay. "A sure sign of him is the velocity. He's not patiently, slowly working—he's looking for something."

In a word, that is what this pioneering exhibition is about: looking. And by illuminating a single gesture, the distance between artist and viewer evaporates.

□ "Bernini: Sculpting in Clay", Metropolitan Museum of Art, New York, 3 October-6 January 2013; Kimbell Art Museum, Fort Worth, Texas, 3 February-14 April 2013