

# Renaissance man for the digital age

FLORENCE, ITALY

## Put the chisels away: Italy is giving David a high-tech twin

BY ELISABETTA POVOLEDO

For the past five centuries, Michelangelo's David has been celebrated for its sculptural perfection and its embodiment of youthful beauty and strength.

Now, Italian officials want the sculpture to help showcase Italian craftsmanship and high-tech expertise in the digital age.

Over the next several months, a battery of Italian engineers, technicians, craftspeople and restorers will use what the project's coordinator has described as "the most advanced technologies available today" to print in three dimensions an exact copy of the 17-foot statue. The copy will then be the centerpiece of the Italy Pavilion at the next world fair, Expo 2020 Dubai, which was originally scheduled to open this month but was postponed until next October because of the coronavirus pandemic.

"It's technology tied to historical memory, for future memory," said Paolo Glisenti, the commissioner general for Italy at the expo. "History and innovation — those are the themes that interest us."

Italian companies will work on all aspects of the project, Mr. Glisenti said: "The promotion of Italian scientific and technological expertise is part of the operation."

He was speaking at the Galleria dell'Accademia, the Florence museum that David has called home since 1873, at one of a series of events being held in Italy last week to mark a year to go until the expo.

David is arguably the most famous Renaissance statue in the world. The first colossal statue made since antiquity, it made waves practically as soon as

it was unveiled in 1504. In his chronicle of Michelangelo's life written about 50 years later, Giorgio Vasari described it as a work of "just proportion, beauty and excellence" that surpassed "all other statues, modern or ancient."

Even in a year when tourism to Florence has been hobbled by the coronavirus, the statue has remained a powerful draw.

"He's my marketing department," Cecilie Hollberg, the Accademia's director, said with a laugh. "He attracts visitors, and we steer them to all the other collections that are exceptional and splendid."

Though it hasn't moved for nearly 150 years, the statue has had its share of drama. It has been damaged. It has been fought over. It has been at the center of copyright controversies. It was cleaned in 2004 for its 500th anniversary, amid a bitter dispute.

It has inspired other artists, and in 2012 a giant copy even journeyed to New York City. More recently, it starred in a video installation featuring fabric patterns. But above all, it has been copied. Repeatedly.

It is one of the few works of art to have a Wikipedia entry dedicated to its copies, which adorn the most unlikely places, like the main entrance to City Hall in Montevideo, Uruguay, a community park in Queensland, Australia, and downtown Sioux Falls, S.D.

The plaster cast of the statue at the Victoria and Albert Museum in London has drawn visitors since it arrived there in 1857.

Even Florence has two copies. One, in marble, was placed in 1910 in front of the Palazzo Vecchio, Florence's City Hall, where the original statue had been unveiled. A bronze copy also towers over the city at Piazzale Michelangelo, a square on a tall hill.

The 3-D printed David is the only copy the museum has authorized since Ms. Hollberg won a copyright battle over the statue in 2017. The countless plastic statues, fridge magnets and colorful T-shirts filling Florentine souvenir shop shelves are technically "not legal,"

she said. "But it's hard to get to the bottom of this."

Twenty years ago, the computer graphics department at Stanford University digitized David and made a 3-D copy using rapid prototyping technologies that allowed for the production of "accurate reduced-scale replicas," the project's leader, Marc Levoy, an emeritus professor of computer science at Stanford, said in an email.

The Italian reproduction will take advantage of technological advancements since the Stanford project, said Grazia Tucci, a professor at the University of Florence who is coordinating the creation of what she called the statue's "digital twin."

The project will use laser scanners and other instruments "normally used in industry as well as aeronautic engineering" to produce the highest resolution possible. The original statue will be digitized on Mondays, when the museum is closed to the public, Ms. Tucci said.

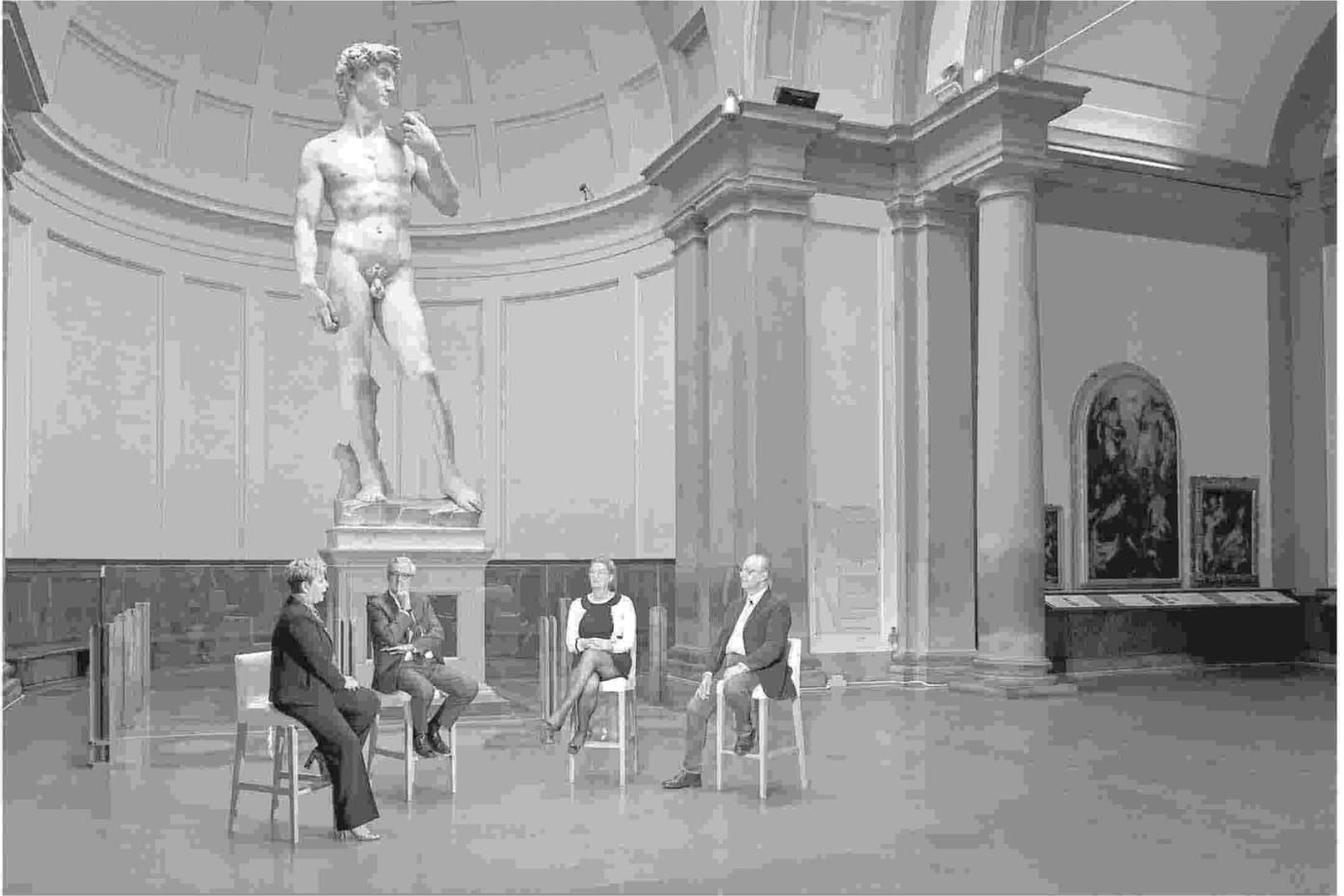
The data will be processed and then used to create the reproduction with "the largest 3-D printer in the world," along with "innovative materials" and resins, Ms. Tucci said, though she declined to specify what kinds of materials would be used. "We're still in the testing stage," she said.

The entire "making-of" the statue will be chronicled on video and shown to visitors at the expo in Dubai, Mr. Glisenti said, and the copy will be placed at the center of Italy's multilevel pavilion so that visitors can view it from different angles and at different heights.

The process will create a treasure trove of data that technicians will turn over to the Accademia and could prove priceless, in the event that something happens to the original. That possibility caused fresh concern several years ago when Italian scientists published a paper positing that putting any stress on its already cracked ankles could topple the masterpiece.

For now, Ms. Hollberg said, the ankles are doing fine.

"Everything is under control," she said.



PHOTOGRAPHS BY SUSAN WRIGHT FOR THE NEW YORK TIMES

Above, members of the team behind a project that is creating a digital version of Michelangelo's David, meeting in Florence, Italy, next to the original 17-foot statue. Right, a "David" T-shirt and other novelty garments on sale in Florence.

