

7. New perspectives

Via Don Minzoni, 14

The MAMbo – The Museum of Modern Art of Bologna is housed in a former bakery factory in the so called “manufacturing district”, a city area fully devoted in the past to manufacturing and marketing activities.

The museum’s permanent collection is currently based on nine thematic areas representing some of the most important and innovative art forms from the second half of the twentieth century until today. Inside the section called: “1968. I – New perspectives” there is a section devoted to Kinetic and programmed art” a movement that originated in Italy at the beginning of the sixties and whose influence results from science, physics and technology.

A proof of the constant research work on the theories and the mechanisms of visual perception is the installation called “Schema luminoso variabile R.Y. Vod” (1962) by Grazia Varisco, whose neon light keeps designing ever-changing patterns through two overlapping screens, one of them rotationally engine-driven.

www.mambo-bologna.org

8. Official sizing of the Bolognese noodle (tagliatella) – Piazza Mercanzia, 4

Since the end of the XIV century until the end of the XVII century the Palazzo della Mercanzia di Bologna, also known as Loggia dei Mercanti or Palazzo del Carrobbio, hosted the Universitas mercatorum (merchants’ academy) and also the seat of some local guilds. From 1797 on, with the French occupation it became the seat of the Chamber of Commerce. From 1972 on inside its premises was put on display a golden template of the authentic Bolognese noodle (Tagliatella bolognese) whose width equals the 12,270th part of the Asinelli Tower. This is a typical local example of the procedure applied internationally to define standard units of measurement.



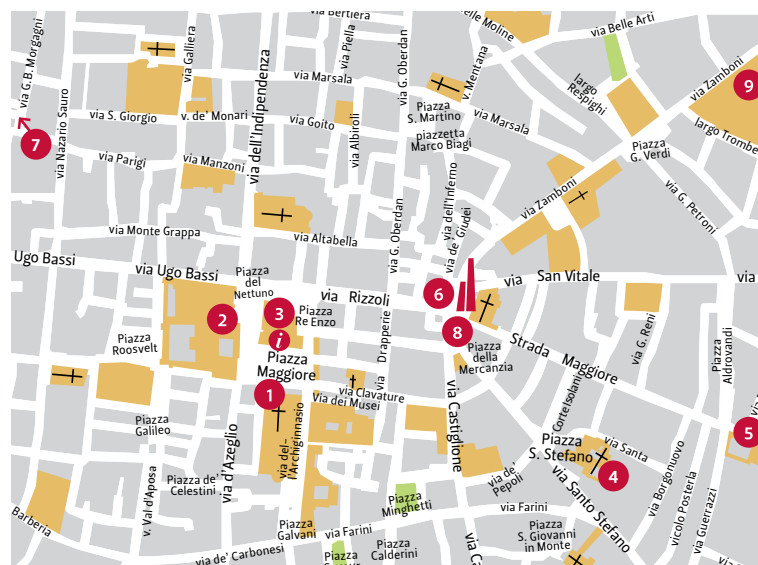
Official sizing of the tagliatella

9. A tower for sciences

Via Zamboni, 33

This tower has nothing to do with all the others in Bologna: this is a real scientific lab! Here for almost two hundred years astronomers have observed stars, celestial phenomena, made calculations and developed scientific theories using in-house equipment and its extensive library. Right here Giovanni Guglielmini made experiments to prove the earth rotational motion. The tower was built in the sixteenth-century Poggi palace between 1712 and 1725–1726. Now it is a University seat and also home of the Science History Museum. The Globe room (Sala dei Globi) hosts a unique collection of earth globes and armillary spheres, the working and teaching tools used by astronomers in the past. www.sma.unibo.it/specola

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FONDAZIONE MARINO GOLINELLI



ForMATH Project



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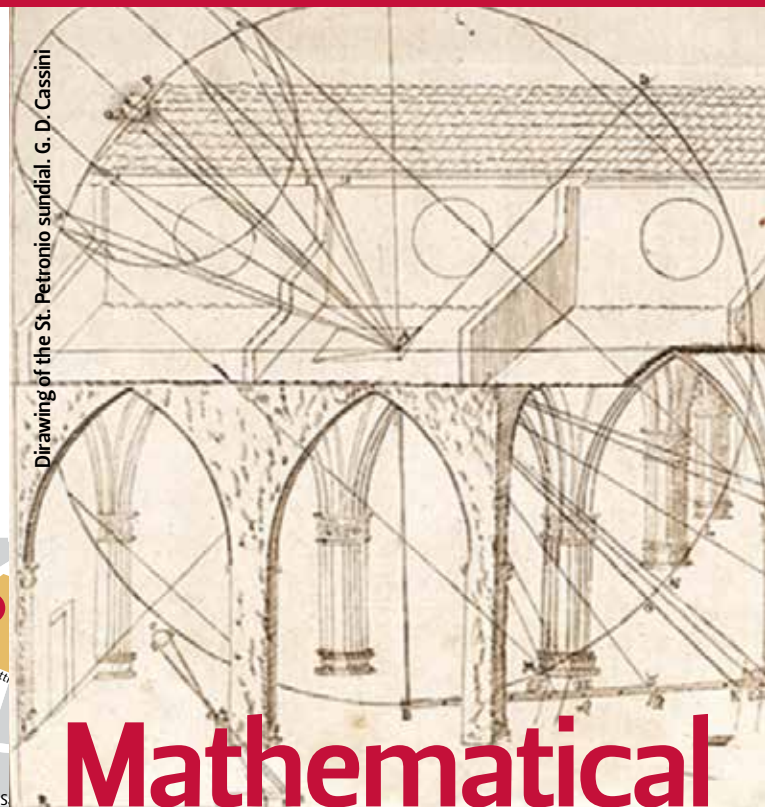
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Design IT - tipografia metropolitana bologna - dicembre 2015
Drawing of the St. Petronio sundial. G. D. Cassini



Mathematical Bologna

Like the chapters of a math handbook, the buildings of the historic city centre trace geometrical shapes, hide calculations and tell stories of special characters. Monuments, churches and arcades enshrine the knowledge that over the centuries forged not only the lives of their designers and builders but also those of their inhabitants.

A stroll through the city centre can turn into a quest for shapes, numbers and connections.

1. Cassini Sundial

Piazza Maggiore, 1

The world longest sundial was traced on the floor of the San Petronio Basilica in 1655 by Giovanni Domenico Cassini: its length equals the sixhunderthousandth of the earth's meridian.

A cone of light projected onto the floor designs an ellipse that when crossed by the meridian line tells the time.

In order to find the best place to locate the perforated plate that lets the light beam go through, Cassini made very accurate geometrical calculations.

www.basilicadisanpetronio.org



Cassini's Sundial

2. Ancient measurements

Piazza Maggiore, 6

On the podium of the Town Hall a marble plaque shows templates of the ancient units of measurement used in Bologna: the Bolognese foot, the basic unit of length of the local metric system, corresponding to 38 cm; the perch, equal to 10 feet; the arm, equal to 64 cm; and finally the double arm. Next to it there are also the templates of a regular sized brick and roof tile. For centuries measuring techniques and tools were the main drivers of mathematical research. In times of change, when Bologna became a Municipality, the public display of measuring units was a sign of efficiency, technical mastery, transparency and honesty. The plate recalls the old market that used to take place in the nearby square.



Ancient measurements

3. A strange sound effect

Piazza Re Enzo

The vault of the ancient Podesta' building saw not only countless merchants but witnessed also the execution of several capital punishments.

Here also works a mysterious and yet always impressive sound trick: the words whispered by a standing person facing any of the vault corners, just at the feet of the city guardian angels, can be distinctly heard on the opposite corner.

This peculiar phenomenon of sound wave transmission is possible thanks to the special elliptical shape of the vault.

4. Numerology in St. Stefano

Via Santo Stefano, 24

The Santo Stefano Basilica is a set of worship buildings that, even if designed and built at different times, perfectly match with each other. It is usually known as the "Seven Churches" a name that translates not only the number of its buildings but also a way to enhance the symbolic and holy value of the early Middle Ages.

The number seven can be seen recurrently in several architectural elements and in many geometrical decoration patterns: circled six and seven-pointed stars are depicted on the wall bricks in the Pilato countryside.

This is an indirect reference to the problems raised by the construction of regular polygons.

www.basilicasantostefano.it



Church of Santo Stefano

5. Mathematical contests

Strada Maggiore, 43

The extraordinary setting of the Basilica of Santa Maria dei Servi with its legendary arcades staged some of the most important mathematical contests. These challenges date back to the Renaissance when scholars used to settle their disputes by public duels. In front of a crowded audience, two or more mathematicians used to compete for the solution of mathematical problems, often presented and solved with rhyming sentences, real "poetic theorems". One of the most important duels of the sixteenth century, the one that led to the solution of third grade equations by Scipione dal Ferro, took place under the very same arcades of the Portico dei Servi.



Specola Museum

6. Proof of earth's rotation

Piazza di Porta Ravegnana

The Asinelli tower was built between 1109 and 1119 to bring prestige to the family with the same name but soon became a public-owned property. Located at the entrance of the city, close to the via Emilia main road, it played a very important protection and defence role.

In 1791 the tower was used for a very famous scientific experiment, carried out by physicist Giovanni Battista Guglielmini (1763–1817). He dropped a heavy body from the tower top and noticed that it diverted by 17 mm from its vertical falling line: that was the first direct proof of the earth's rotational motion, more than fifty years earlier than the famous Foucault's experiment.