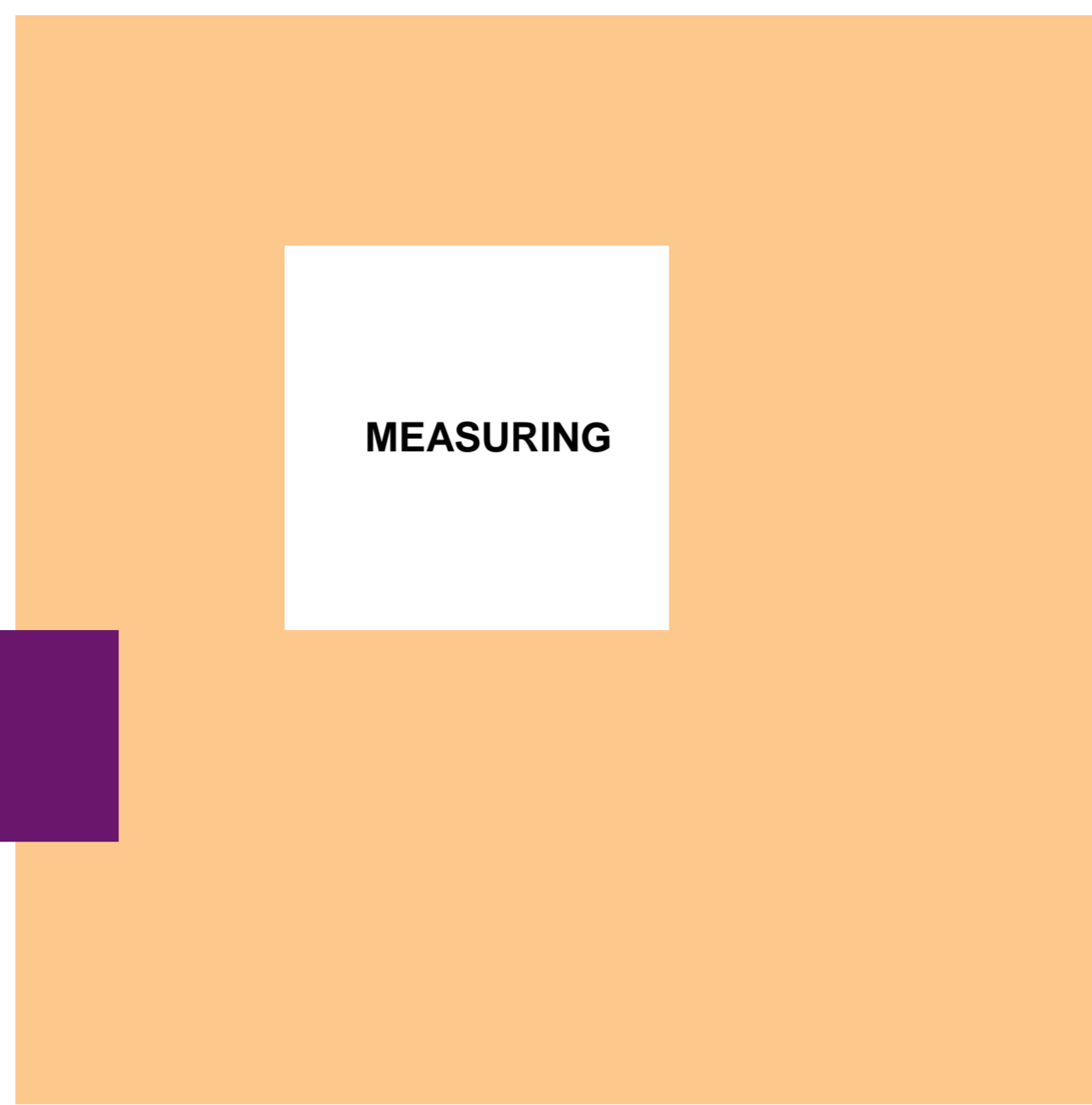


# INSTRUMENTS

## ACROSS TIME



Etymologically, "instrument" comes from the Latin "instruere": "to dispose, to equip," which gave us "to instruct".

A scientific instrument can have several functions:

- measuring, manipulating, comparing, counting, identifying, representing
- increasing the power of our strength (screw, lever, pulley, winch)
- allowing experimentation

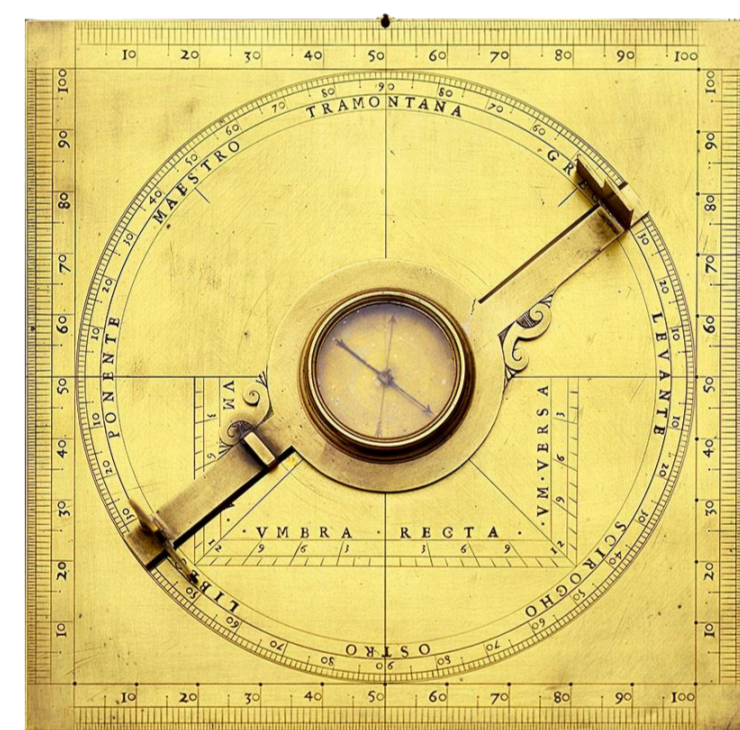
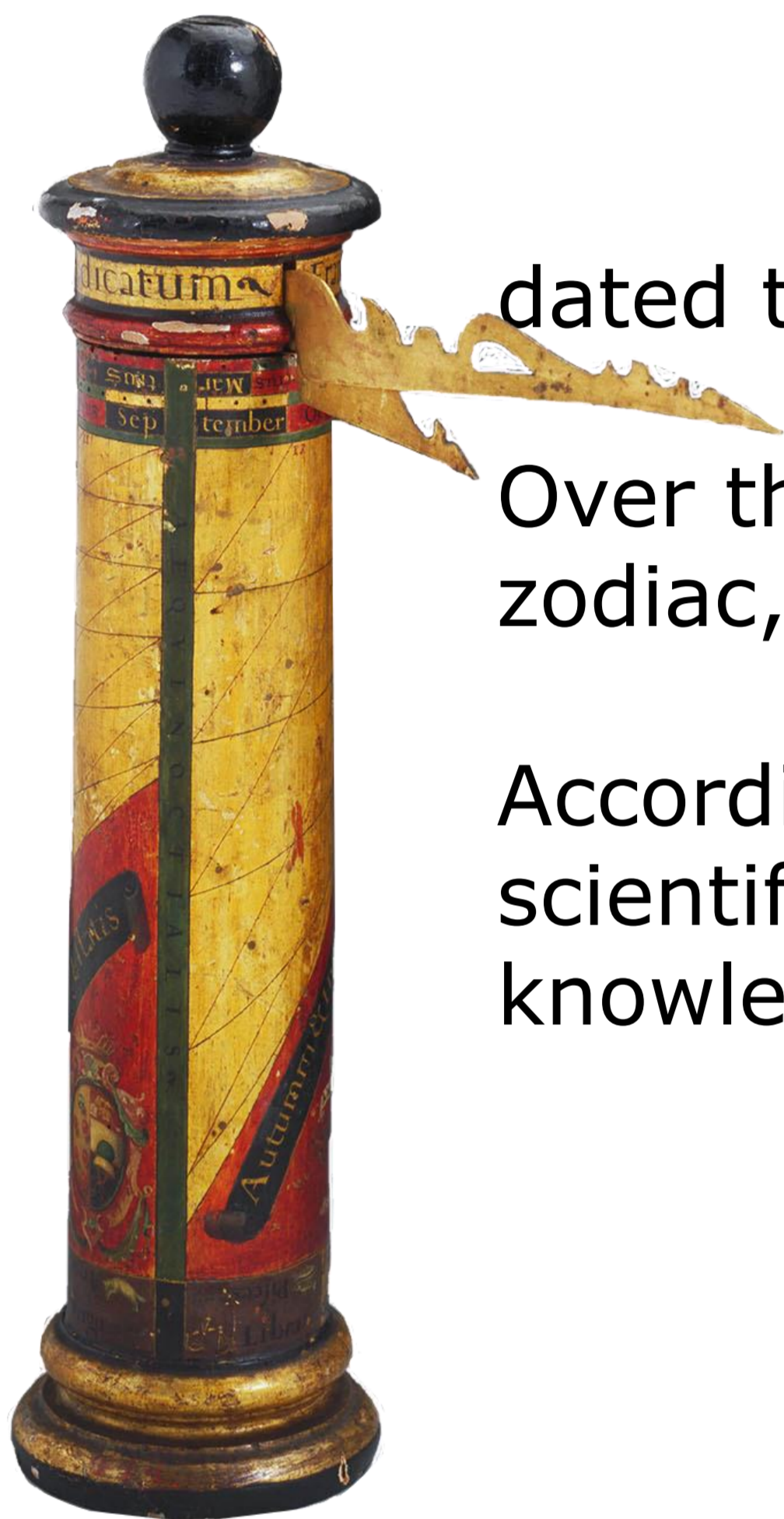
Scientific instruments have a very important role in the construction of scientific knowledge and we wanted to show you some in this exhibition so that you can understand, manipulate and experiment with them but also for your viewing pleasure!



We don't have any scientific instruments dating from prehistoric times, nevertheless the Carnac Alignment, for example, dated to 3000 B.C.E., has an indisputable link with astronomical observations.

Over the protohistorical period, considerable technical progress was being made in the development of materials and we owe the zodiac, the division of the circle into 360 degrees and of the degree into sixty minutes to the Babylonian astronomers.

According to Anaxagoras, the Greek miracle sees "man thinking with his hand". The square and the compass were tools before being scientific instruments and the genius of Greek engineers is certainly that of having demonstrated the theoretical principles of technical knowledge.



Taking up the works of the Greeks, Arab scientists used instruments like the astrolabe and improved them. Probably invented by Hipparchus and perfected by Ptolemy the astrolabe is found at all periods, throughout all the West and in large numbers.



With the need to measure the inaccessible, and probably for military purposes, scientists of the Middle Ages developed rudimentary instruments such as geometric squares and quadrants, Jacob's staff, etc ...

Even if the mathematical content of these instruments is interesting, as for precision, it is much less so !

It is therefore natural to find many old Renaissance instruments and see other instruments appear (especially for measuring extended distances) in order to develop them. The 7<sup>th</sup> century saw the flowering of a variety of instruments (mostly in copper and brass) based on the principle of measuring angles (graphometers, surveying compasses, Dutch circles, theodolites, ...). These instruments were perfected by the improvement in sighting techniques, the precision of angle readings and much later with the appearance of the bezel.

Among the instruments presented, some are stored at the Marseilles Observatory, others at the Galileo Museum in Florence and all have a close connection with the evolution of knowledge around the Mediterranean.

