



# Out of the dark

## Astronomy as unifying thread for cultures



ERASMUS+ 2017-1-ES01-KA219-038074\_1

 Supported by  
the Erasmus+ programme  
of the European Union



Centro de Especialización  
Deportiva



Eskilstuna  
kommun

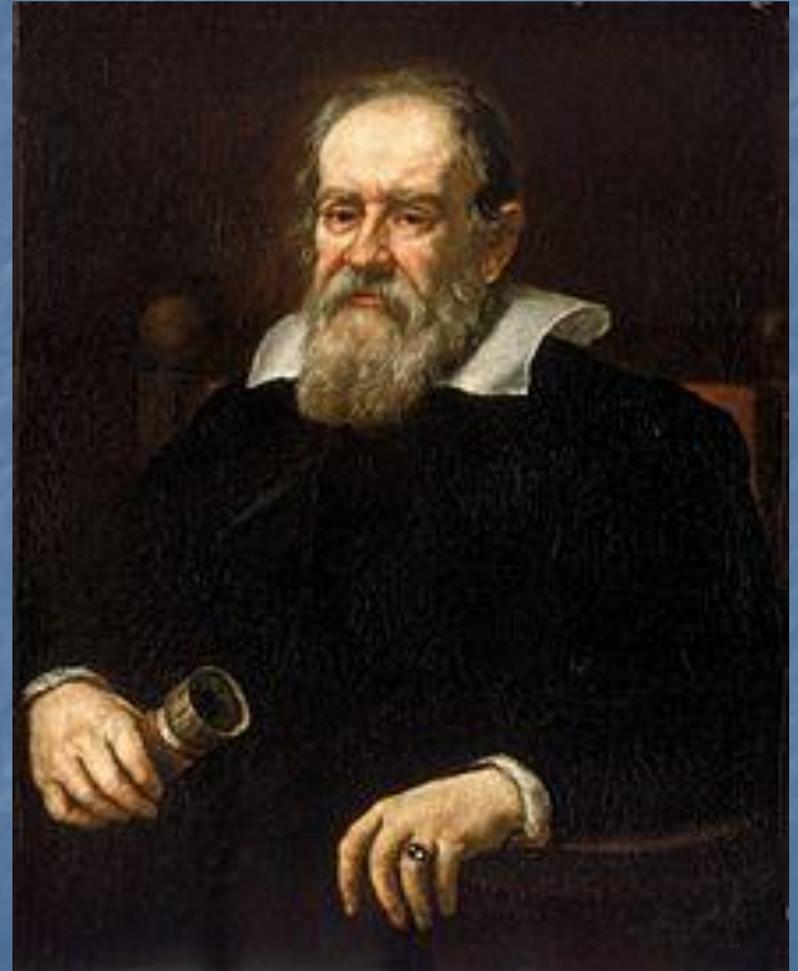
# Astronomy in the Italian culture

# Galileo Galilei

His contribution

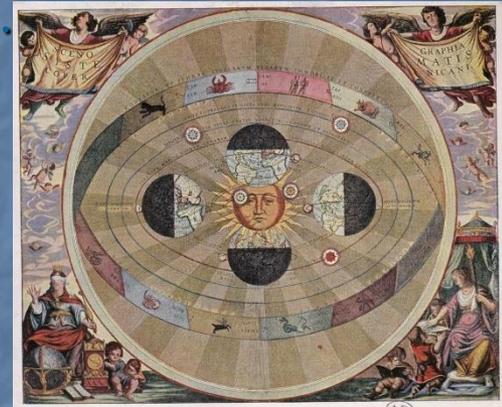
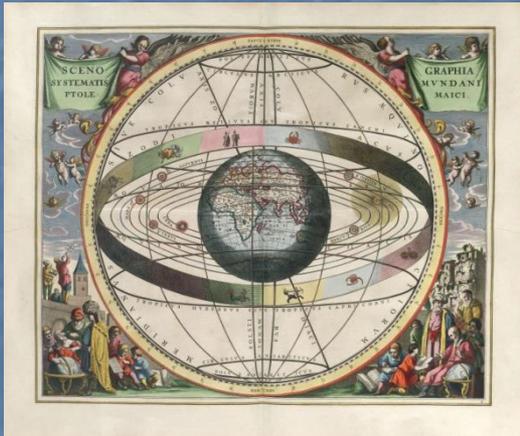
# Galileo Galilei

- Galileo Galilei was born on 15 February 1565 in **Pisa** and he died on 8 January 1642 in **Arcetri** (near Florence) .
- He is known as “**The father of modern science**”, especially because he introduced the scientific method.



# Geocentrism and Heliocentrism

- The Church professed the theory of geocentrism, based on Ptolemy's ideas.
- One of his most important theories is heliocentrism, based on Copernicus' ideas.



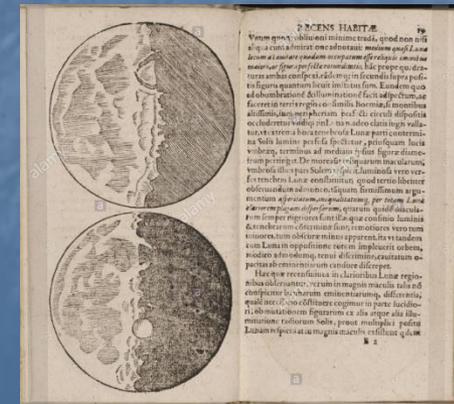
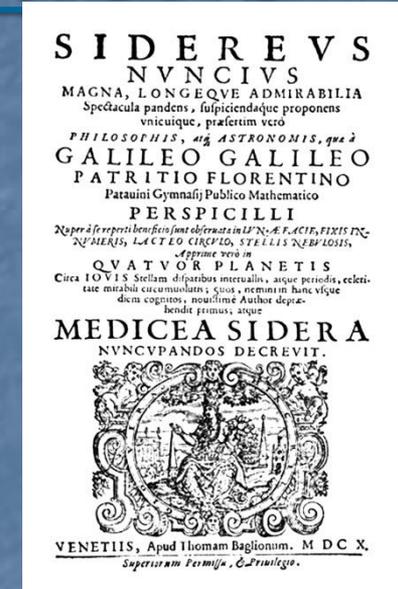
Consequence:

*Process against Galileo on 22 June 1633 by the Pope Urban VIII.*



# Galileo's main publications

- *Siderius Nuncius* (starry messenger). Venice 1610.
- The famous 'Dialogue between two world systems'. Florence 1632



# The use of the telescope

Galileo was the first astronomer to build and use a telescope. He made it with simple materials, as we tried to do last year at school. The telescope enabled him to show that Copernicus' general theory about the Solar system was correct.



*Galileo's Telescope*

*His main discoveries are:*

- The Milky Way is made of many stars.
- The Moon has got some mountains.
- Jupiter has got four moons around it.
- The Sunspots, *dark areas of the Sun.*



*Our telescope*

# Physics

- Galileo also studied natural forces, and was one of the most important discoverers of the part of physics that is now called kinematics.



→ A legend says that he climbed the Leaning Tower of Pisa, and dropped cannonballs of different weights, to see which would strike the ground first. They hit the ground at the same time. Galileo found that objects fell to the ground at the same rate, unless natural events like wind resistance change the result. This went against Aristotle's views that had been accepted as correct until Isaac Newton proved that Galileo was right. This also led to Newton's Law of Gravity.

*Tower of Pisa*

*maggior favore può ella desiderarsi, che il vedere loro  
satisfazione di discorrer seco, di promouerli dubbi,  
e finalm. di restare appagati delle risposte della  
loro, che ella disse, referitimi dal S. Arrighetti in  
di tornare a questa materia, e di general' air  
a sacra in diffusi di conclusioni naturali, et alcuni  
opra /*

# **The case of the Galileo's letters**

*, e stabili /*

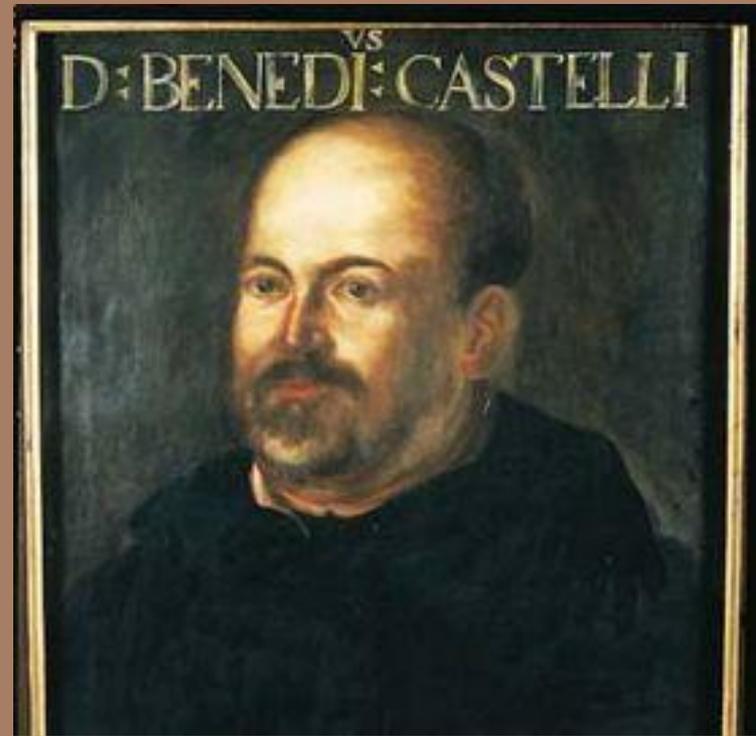
**By SAMUELE DISCEPOLI**

*costi alla p. domanda generica dell' /*

*orto da quella, e conceduto, e stabilito dalla P. V. non  
a sacra mentire, o errare, ma esser i suoi decreti d'*

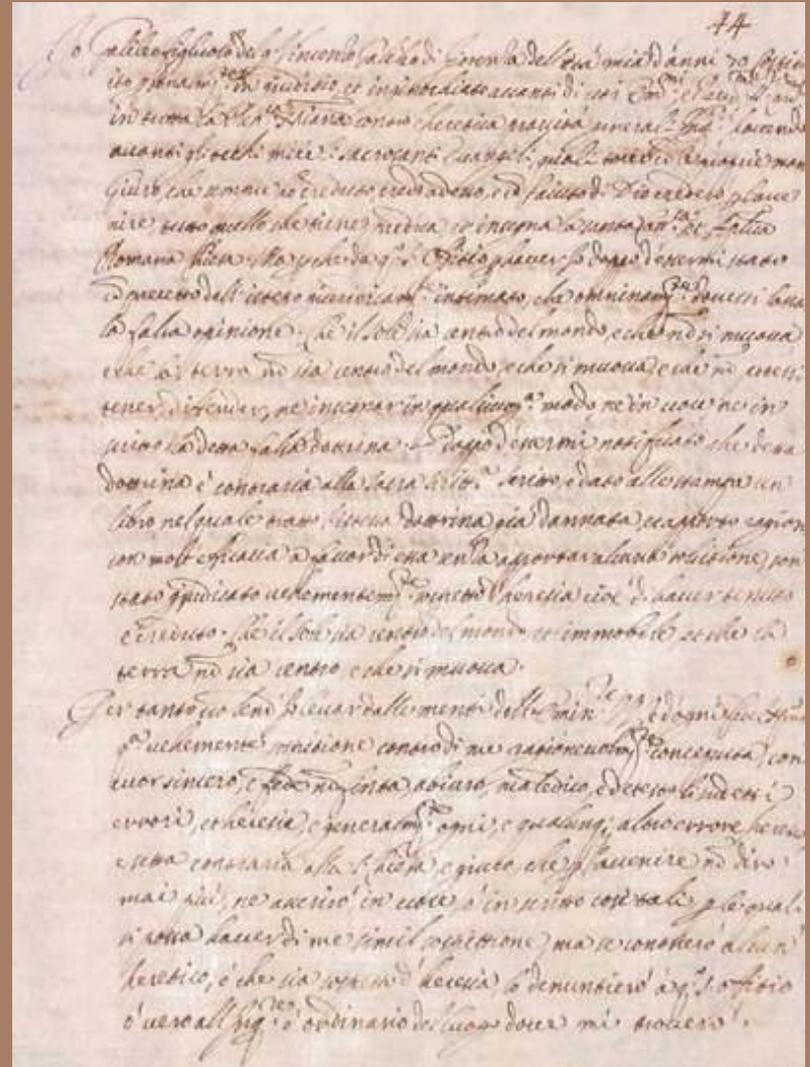
# *Galileo's letters and the church*

- In 1613 Galileo wrote a letter to his old student the christian monk Benedetto Castelli, stating that Copernican theory wasn't in contrast with the Sacred Bible.*



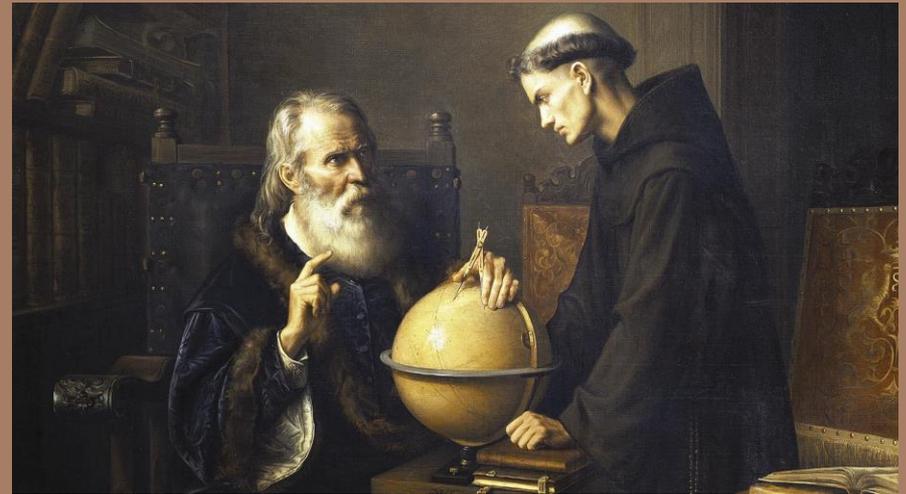
# The Real Intentions

- The eldest version of the letter has been recently discovered in the library of the Royal Society in London by the Italian researcher Salvatore Ricciardi.
- The language of this letter has a more inflammatory and lively tone.
- It was his real first thought to support the scientific method and to confirm that it had to be separated from the church.
- In fact, his old student Castelli told him that, if he wanted to publish it, he had to correct the tone he used in the letter to avoid Inquisition.



# “ The letter of sin”

- *This letter stated about the Heliocentric theory, according to which the Sun is in the middle of the Universe and the Earth spins around it and at the same time around its axis. This model was completely against the Ptolemaic system, followed by the Church.*
- *The text was sent to the Inquisition on the 7th February 1615 by Niccolò Lorini*



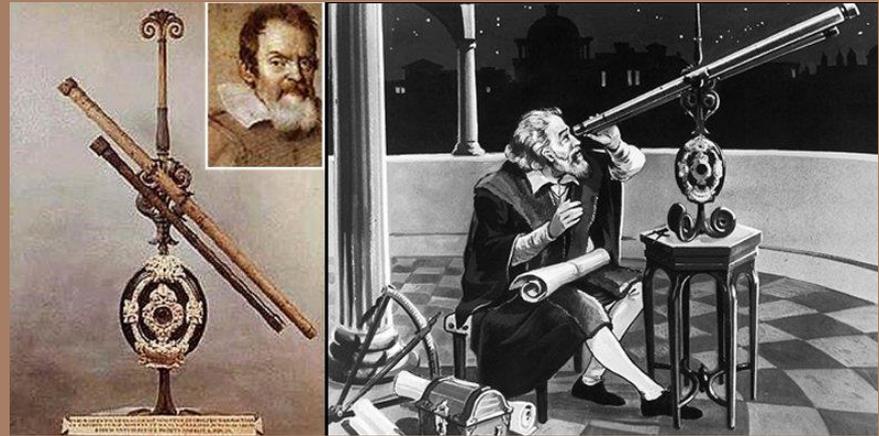
# The Second letter

- *When the first version of the letter was sent to the Church, Galileo sent to his friend Piero Dini a text, suggesting that the letter had been corrected before being read by Lorini. So he decided to send another one where the language was rather passive and flat.*



# Denial of his thought

- *The Scientist, to escape from the condemnation of the Inquisition, abjured his theories, refuting what he said in the letters.*
- *The process started and ended in 1633 in Rome.*



# THE ROYAL SOCIETY

THE WORLD'S OLDEST  
INDEPENDENT  
SCIENTIFIC ACADEMY  
(FOUNDED IN 1660)

IT IS A LEARNED SOCIETY,  
FOUNDED IN NOVEMBER

1660, IT WAS GRANTED A ROYAL  
CHARTER BY

KING CHARLES II AS « THE  
ROYAL SOCIETY».

# «NULLIUS IN VERBA»

- THE ROYAL SOCIETY  
MOTTO AND IT MEANS:  
«TAKE NOBODY'S WORD  
FOR IT».

# MISSION AND PRIORITIES

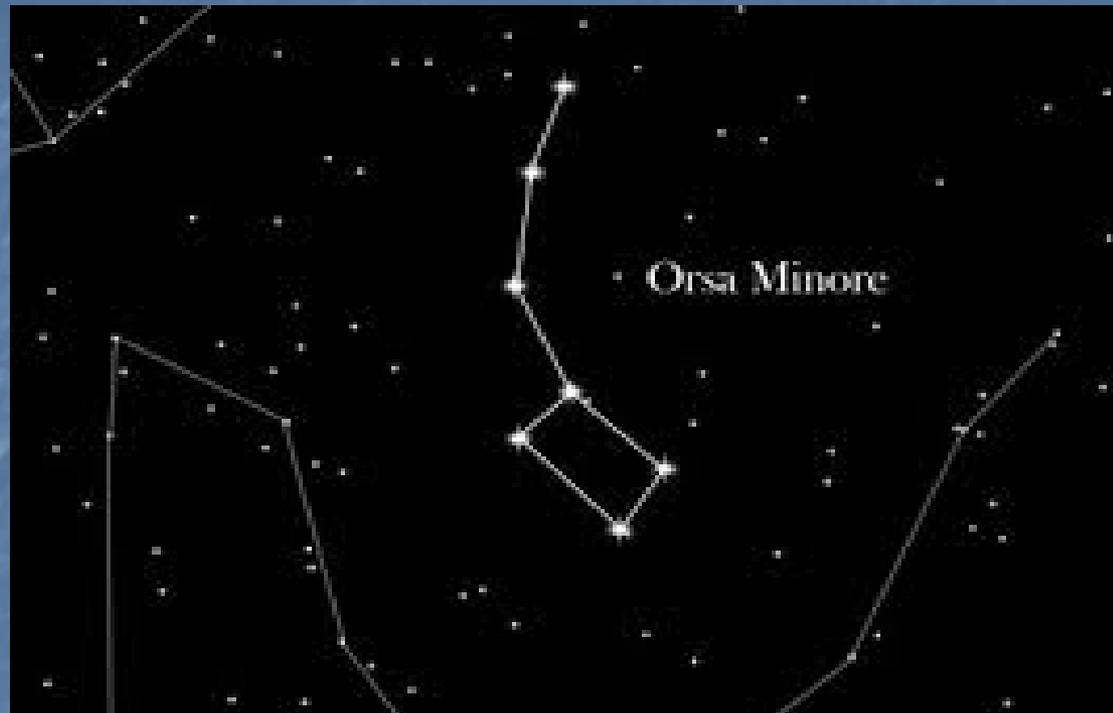
TODAY, THEY ARE THE SAME

- PROMOTING EXCELENCE IN SCIENCE;
- SUPPORTING INTERNATIONAL COLLABORATION;
- DEMONSTRATING THE IMPORTANCE OF SCIENCE TO EVERYONE

# Constellations

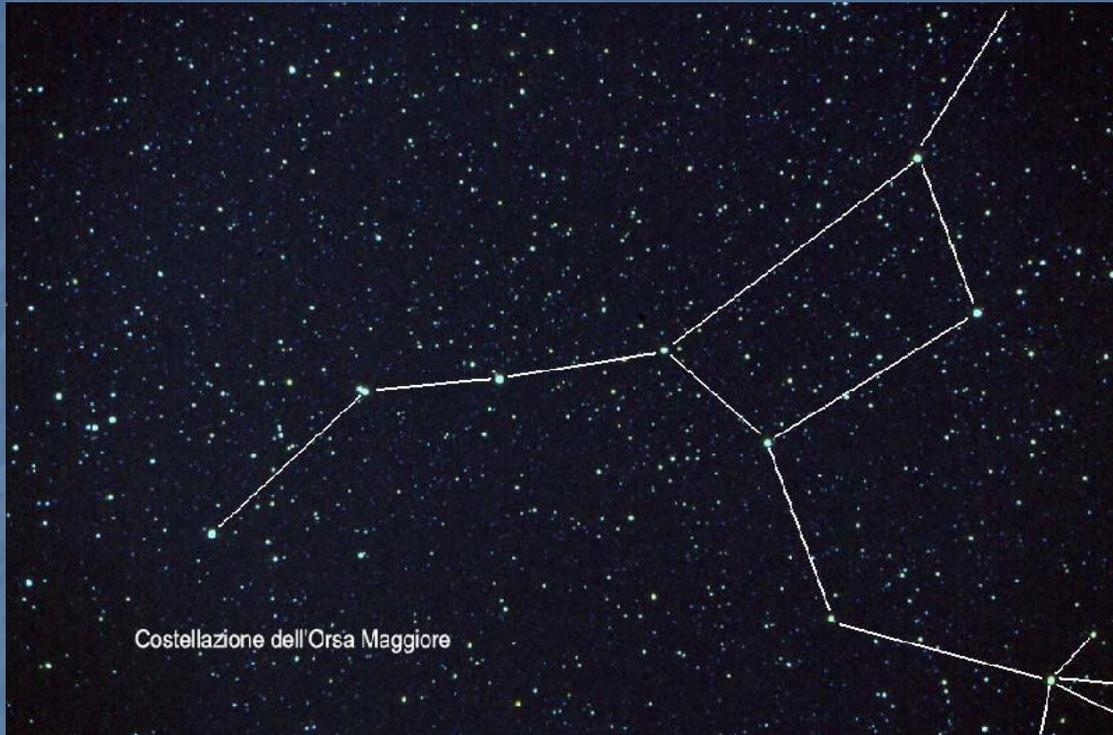
Myths and Legends





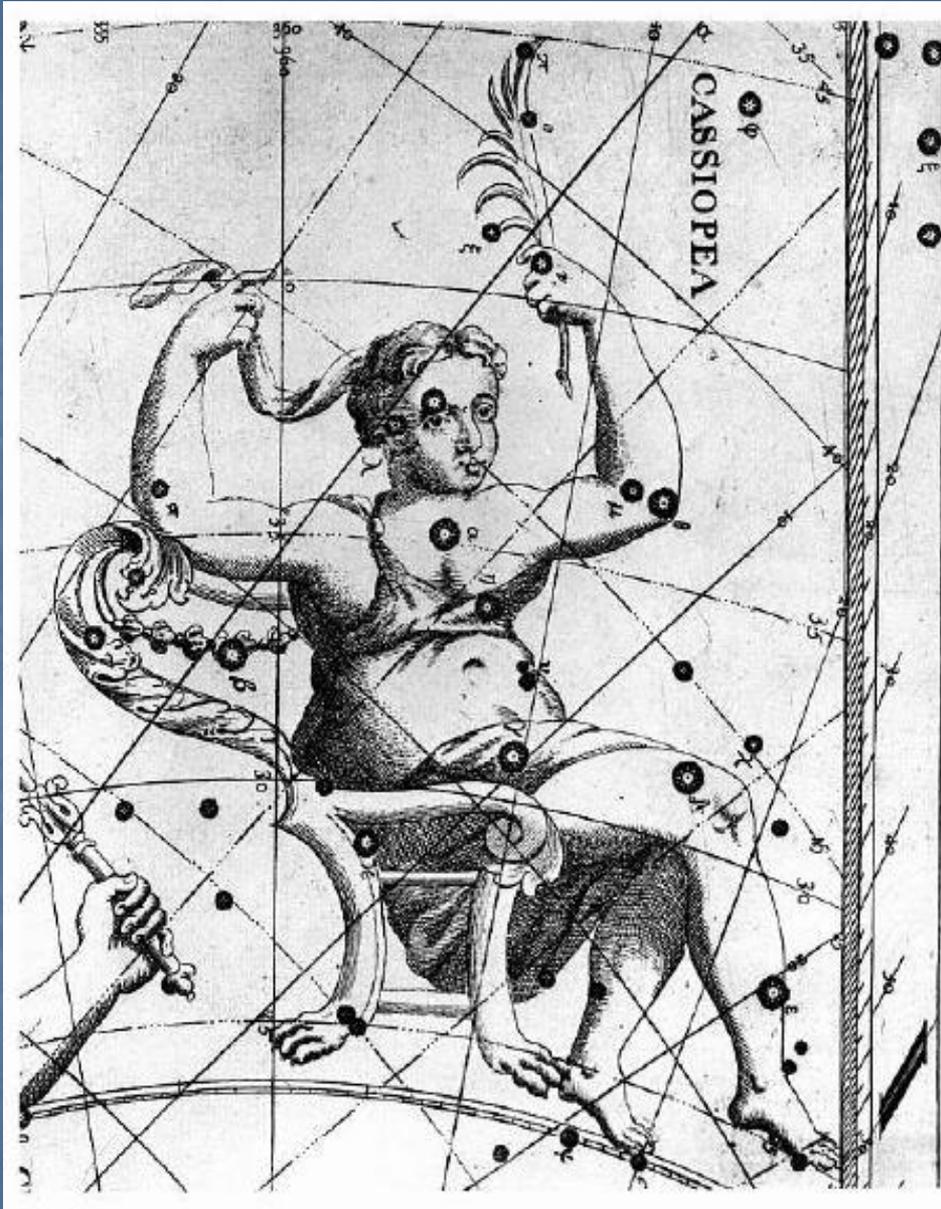
*The name probably derives from the Greek “arctos” meaning bear, with which the Greeks pointed to the northern regions, and from which derives our Arctic.*





*The Greatest Ursa is the most easily recognizable constellation of the northern hemisphere.*





*Cassiopeia was the vain and boastful wife of King Cepheus of Ethiopia, who stands next to her in the sky. They are the only husband-and-wife couple among the constellations. Classical authors spell her name Cassiepeia, from the original Greek (Κασσιόπεια), but Cassiopeia is the form used by astronomers.*



**THE END**