



Out of the dark
Astronomy as
unifying thread for
cultures

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Centro de Especialización
Deportiva



Eskilstuna
kommun

Alice Simonetti - Alessia Marsili - Andrea Ciavaglia - Chiara Campioni
Dario Gatti - Filippo Sabbatini - Ilaria Marini - Gaia Chiocci - Marta Passeri
Matilde Colini - Natalia Ginocchietti - Pemilla Di Cola - Sofia Gramaccia

DIRECTORS

ORIANA SCAPECCIA
BRUNELLA SORBELLI

4 p.m.

Friday, 24th May
2019

IES CARPE DIEM
Fuenlabrada Madrid





OUT OF THE DARK

Script:

On the asteroid

Astronomer: Enea Dudi

Little Prince: Chiara Campioni

The Process

Galileo: Dario Gatti

Bishop: Andrea Ciavaglia

Priest: Filippo Sabbatini

Defender: Alice Simonetti

Defender: Matilde Colini

Accuser: Ilaria Marini

Accuser: Gaia Chiocci

Scientific Cabinet

Dialogue Concerning the Two Chief World Systems

Scientist: Marta Passeri

Scientist: Sofia Gramaccia

Scientist: Alessia Marsili

At school

Student: Pemilla Di Cola

Student: Natalia Ginocchietti



Intro:

Video: video maker: Enea Dudi

The little prince lands on the asteroid and sees a young man sitting and looking in front of him (the L.P. joins him)

PRINCE: " Hi! (*very shy*)

RASMUS: " OH! Who are you? (*surprised*)

PRINCE: " Who are you?! I have just arrived from planet Earth after a long journey and where are you from?

RASMUS: " I come from Earth, too. My name is Rasmus."

PRINCE: " What are you doing here?

RASMUS: "I am looking for a star, it's called " Out of the Dark", but I haven't found it yet, so I lost all hope... I'm from Italy, precisely Florence, in Tuscany."

PRINCE: Amazing! Tell me about your journey.

RASMUS: " I am a space traveller, I got here on this asteroid on my spacecraft from Earth. When I was there, in Florence, I met a group of students from different countries: Sweden, Italy and Spain who were reviewing Galileo Galilei's discoveries and experiences.

PRINCE: " I know lots of things about Galileo's life".

RASMUS: " I only know that he demonstrated that planet Earth is a sphere, so I was curious and I wanted to verify it, that's why I am here."

PRINCE: " I can tell you something about him. R: Yes, please tell me. P: He was a very famous Italian scientist who lived in the 17th century, he studied astronomy and the celestial bodies.

RASMUS: How did he manage to do it using the poor technology of his time?

PRINCE: With the help of a tool: the telescope. Thanks to the telescope he discovered that Earth is not flat and that it's not at the centre of the Universe. These discoveries about Earth, the moon, Jupiter and thousands of stars, caused



him continuous clashes with the Church.

RASMUS: and how did it end?

PRINCE: it ended by a process where he abjured his ideas and denied his theories to avoid death.

(Chiara and Enea go off stage, enters Galileo or lights on Galileo)

DARIO: My name is Galileo Galilei, son of Vincenzo Galilei, scientist, mathematician and physicist. I was born and raised in Pisa. *(little pause)* When I was in Padua... I had the best time of my life! During those years,.. in my lab, ..I focused on my passions doing many experiments that concerned maths and physics. I also invented the telescope *(stress the word)*, I pointed it to the sky and I discovered that the sun doesn't orbit around Earth, but it is the opposite! This new discovery led to a revolution and all churches thesis were invalidated. At this point a new science was born, astronomy, *(stress the word)* ...*(little pause)* but unfortunately this caused me a lot of problems with the church.

When Galileo has almost finished his speech, The priest, the bishop and the accusers enter and the process starts (lights on the scene) Sit in circle. Galileo on his knees

FILIPPO: So.. You want to spread your foolish ideas, don't you?

GALILEO: No! I don't.

ANDREA: Have you ever thought of spreading the Catholic faith?

GALILEO: No, I haven't.

FILIPPO: Have you ever read books by some heretical theorists like Copernicus? Did you read *De revolutionibus orbium coelestium*?

GALILEO: Yes I have. Copernicus was an astronomer in establishing the concept of a heliocentric solar system, in which the sun, rather than the earth, is the centre of the solar system, his theories interest me as an astromer and scientist. He wasn't an heretic, *(stress the word)* like me he studied and made important discoveries.



ANDREA: Silence! Control yourself and tell me: have you ever acted against the Catholic faith? (*cries out*)

GALILEO: No, I didn't! I have only taken into consideration what science claims.

FILIPPO: You are a visionary! You go against God's word, the Bible! Centuries of faith...who do you think you are! (*angry*)

ANDREA: Yours are the theories of a lunatic, you are confusing people, your considerations are even more dangerous than Luther's or Calvin's. You know that if you continue like them, you'll be condemned and burnt. Speak carefully! (*speak out loud*)

Accusers and defenders

ILARIA: It's true! (*stand up*) You're talking nonsense, it's impossible that the earth turns around the sun! The Creator, God tells us the truth in the Bible (*high tones*)

ALICE: I don't agree, other scientists have made discoveries and the theory of Galileo can be proven. (*high tones*)

ILARIA: No, this is blasphemy! How do you dare? Do you want to at stake too? Earth turns around the sun! The Bible is clear, Earth is flat and is at the centre of the Universe. Hell is under our feet and Heaven above our heads. God says so, he created it, He knows. You're defending a heretic! shame on you! (*crie out*)

GAIA: Yes, I underline my colleague's version. For centuries no one has ever had these incredible ideas. We are at the centre of the Universe, the Earth is our home, the sun circles around us, this is why we have light and warmth and the seasons. It is written! You must believe and repent. (*intimidating tone*)

ILARIA: You are accused of reading forbidden books and you haven't been to the church for years! You live in sin with a woman without being married. You'll go to Hell! (*aloud*)

ALICE: Galileo is a man of science, not a heretic. He started studying maths and physics since he was young. His intelligence and skills are known. He worked on his theories for years and experimented them before considering



them right!

GAIA: No, he's an astrologer, he studies the stars, makes horoscopes, tries to read the future but you're not God! Shame on you, repent! (*intimidating tone*)

ILARIA: You must be punished! You are a liar. (*accusing tone*)

GAIA: You deserve to be put at stake! (*accusing tone*)

ILARIA: You consider yourself a prophet but without a faith. You insult the Church, centuries of Christian faith! (*aloud*)

MATILDE: No, no. He's a scientist, he's been illuminated by God. God has given him the intelligence to find out the truth. The Bible is not a scientific book. Galileo invented the first telescope, he can see things that were hidden to our eyes, God helped him! (*aloud*)

ALICE: and he put the bases of astronomy!

MATILDE: I think that these accusations are false, he's not a liar, God wants him to reveal the truth about the position of Earth, Sun, the stars... (*try to convince*)

ALICE: Thanks to his discoveries he has revolutionized the theories of physics going against the ancient and outdated theories of Aristotle! we should thank him for his work not condemn him! People will study his theories for all the centuries to come.

BISHOP: I've heard all the reasons coming from the accusers and your defenders. I am a representative of God on Earth. God has never revealed your theories to me. I don't believe them. I ask you for your sake and for your family to repent and deny these theories otherwise I'll condemn you to death! (*aloud*)

GALILEO: (lying on the floor) I ask your excellency to pardon me for my foolish ideas, I repent and humbly ask you to let me live. I promise I will live a retired life, keeping in silence for the rest of my life. (*repentive*)

BISHOP: Through the ministry of the Church may God give you pardon and peace. I absolve you from your sins in the name of the Father, the Son and the Holy Spirit. (*bishop and all the presents, Galileo included, make the sign of the cross.*)



Everybody: Amen (together)

The group exeunt. Lights on the other group who are entering already talking and carrying books with them, take position around a table and continue dissertations...

FIRST DAY:

SAGREDO: (ALESSIA):- So, I think that it's proper to continue the preliminary examination of celestial and terrestrial matter we started yesterday. Please, my guests, summarize your opinions so that we can state which is the more probable and reasonable-.

SIMPLICIO: (SOFIA):- As I was saying yesterday, Aristotle established that experiments should be put before every mental speech. Because of this we can describe the substance of heavenly bodies as ingenerable, inalterable and free from all mutations.

SALVIATI: (MARTA):- I have reasons to believe that if Aristotle could come back to life nowadays he would change his mind. You said that he used to highlight experiments, didn't you? Well, using the telescope I could observe that the substance which the moon is made of is the same of Earth.

SAGREDO: Yes, we got almost here. I've been thinking about what you said all the night, Salviati, and I was wondering if perhaps the lunar craters are caused by the fall of asteroids. Is it possible?

SIMPLICIO: This is mere heresy. You both are saying that the "Master of those who know" was wrong. Add to this, I consider the moon's sphere to be as smooth and polished as a mirror, whereas that of the earth is rough and rugged.

SAGREDO: Well, he isn't completely wrong, all in all, because the way he describes both Earth and moon is the way we can see them.

SALVIATI: The only thing I can firmly see is that Simplicio does nothing else than repeat what Aristotle said more than 19 centuries ago. I can agree to this. Doesn't Aristotle say that because of the great distance celestial matters can not be treated very definitely?-.

SIMPLICIO: This immense separation seems to me to imply a great dissimilarity. So, maybe you're right, but only when you affirm that we can't establish the truth.



SECOND DAY:

SAGREDO: Another topic which was under debate yesterday is whether the centre of the universe is occupied by Earth or by Sun. What do you think Simplicio? -.

SIMPLICIO: Of course by Earth, we can prove it in two ways. First, all heavier bodies fall down to Earth. Moreover, Earth is clearly motionless and in a sphere the only motionless point is the centre. Just think about it for a second, if Earth wasn't motionless, how could a bullet move in the same way whether it's shot to the right or it's shot to the left?-.

SALVIATI: Well, there are no experiments which would preclude the rotation of Earth. And, what would happen if we applied the statement you've just done to Earth, by removing it from its place in the Universe? So, nothing was proved. By the way, in my opinion the Sun is more likely to be at the centre than Earth-.

SAGREDO: Well, Salviati, you may be right. In physics, for example, it is impossible to make certain observations about a closed system if these observations are made by an observer which is inside the system. But, once again, we couldn't get to a conclusion. We should now discuss about the annual motion of Earth-.

SIMPLICIO: I support the Ptolemy theory about Earth's orbit. As Aristotle believed Earth is at the centre.

SALVIATI: This theory is absolutely out dated. In fact, by the use of the telescope you could observe how Venus and Mars change in size depending on the distance. So I support Copernicus.

SIMPLICIO: I can't believe at how many heresies I've heard during these 4 days. I refuse to continue this discussion even for one more minute. Most of all, because you can't really discuss with people who deny fixed principles, or, to say it in Latin, *contra principia negantem non est disputandum*.

SALVIATI: Once more, you reveal how you've been repeating all the time what others have said before you, firmly believing in the "ipse dixit". I hope that one day people will be free to express their own opinions, careless of such antiquate



theories.

While the group is getting to the end of the discourses they stand up, pick up their books and papers and while still talking exeunt in the meantime the group at the table of the scientists start talking louder, lights on them.

Role: modern scientists

PEMILLA: What are you doing?

NATALIA: I'm going to build the famous telescope that Galileo invented using a wooden tube and some fundamental accessories such as lenses coming from the Netherlands, where, you know, the most famous opticians used to live. And what about you?

PEMILLA: I'm going to build the sundial, that is an important instrument that tells the time of the day when there is sunlight.

NATALIA: I'll show you how to build a telescope! Before anything else, I use the biggest tube and this lens, now I put instant glue on the flat surface of the seal and then I place, like this, the lens with the convex face upright.

PEMILLA: Why does the lens have to be put there?

NATALIA: Because the image that we see is reversed and in order to see it correctly we need a prism, that I have here. Now we need the second smaller tube to apply in the wider part of the longer tube. Then, we connect both the tubes with a black tape to block them. After having prepared a circular piece of paper at the centre, we stick it inside the tube. In the end we place the ocular lens in the ocular components and we connect them with the tubes, so we have this awesome and fundamental instrument!

NATALIA: And how do you build the sundial?

PEMILLA: First of all I make a point on the card from which a 10 centimeters line passes in vertical way. We should make a mark at 5 centimeters (in the center on the line) we point the compass.

NATALIA: Where?

PEMILLA: In the mark and draw lines every 15 degrees to the end of the card.



NATALIA: What do you write on it?

PEMILLA: In one of the faces I put the numbers by 6 to 18 starting to the right side and we write on it "spring-summer", at the other side we make the same thing but starting by the opposite side and write on it "autumn-winter".

NATALIA: And now?

PEMILLA: After this I make a little hole, now I put with hot glue a stick on the triangle, this stick must be inserted into the little hole and the triangle on the card is fixed.

(The objects on the table are lighted, music, while the scientists exeunt. We go back to the little Prince and Rasmus. They end the story saying that they learnt a lot and that observing the sky and following Galileo's theories it is likely that the star they were looking for is ahead of them...)

RASMUS: Can you see that bright light over there?

PRINCE: Yes I can see it. It's the one at the corner of Cassiopea right?

RASMUS: Yes, exactly. I think we've finally found our star, **Out of the Dark!** *(cries out happy)* It's incredible! We spent a lot of time doing research and studying astronomy and finally...

PRINCE: Right, We learnt a lot from Galileo's theories, ideas and observations and just now (pointing his finger)it has always been in front of our eyes... It's so beautiful... Look at it! *(excited and happy, clapping hands)*

(behind the stage there's a scenography of Cassiopea and they point the finger to the star "OOTD")

Prince and Rasmus are happy and smiling because of this new discovery.

video of the Universe, Cassiopea, the star Out of the dark . End. Music everyone on stage, final salutations, bending.