EDUCATING YOUNG PEOPLE TO IMAGINE THE FUTURE THROUGH SCIENCE

Multiplier event –I SEE project

Opificio Golinelli, Bologna, April 19th, 2018

The project is co-funded by the Erasmus+ Programme of the European Union. Grant Agreement n° 2016-1-IT02-KA201-024373.

I SEE

It's your time to imagine the futures

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FONDAZIONE GOLINELLI

Institutional Greetings

Eugenia Ferrara

Responsabile Aree Scuola e Divulgazione Fondazione Golinelli

The I SEE project

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Opificio Golinelli, Bologna, April 19th 2018

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Inclusive STEM Education to Enhance the capacity to aspire and imagine future careers

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Coordinator

Alma Mater Studiorum – University of Bologna

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Partnership

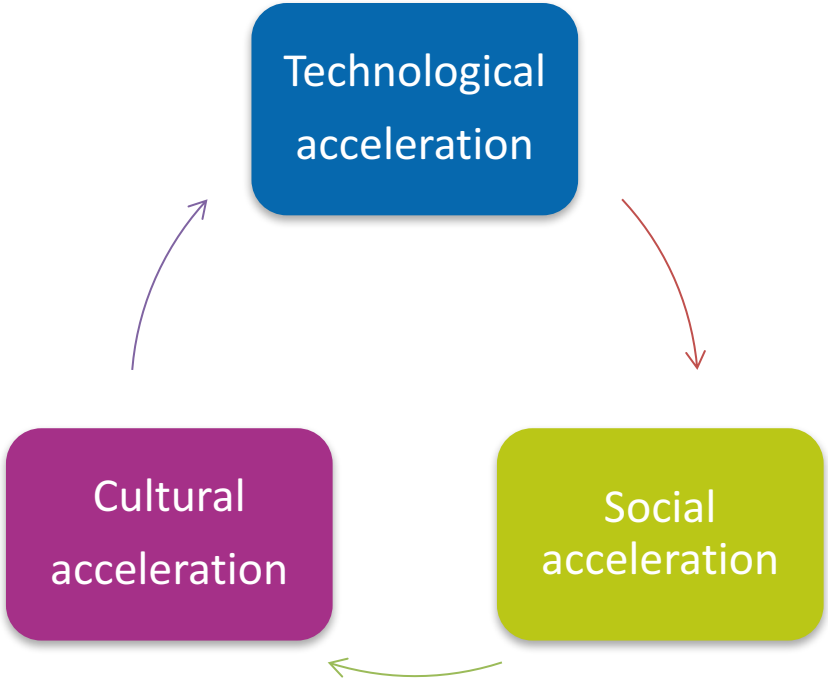
- Liceo “Einstein” – Rimini
- Fondazione Golinelli – Bologna
- University of Helsinki and Normal Lyceum
- Association for Science Education – UK
- Landvernd – Reykjavìk
- Hamralid College – Reykjavìk

“Philosophy” of the project

- Starting point: the problematic relationship between the younger generations and time

- In this age of **social acceleration** (Rosa, 2013) and **uncertainty** (Morin, 2001), the future is no longer perceived as a promise but as a threat (Benasayag & Schmit, 2003), and the present becomes “dust of moving splinters” (Leccardi, 2009) "Ashes blowing in the air", in *Nowhere fast* (Eminem, 2017).

Society of uncertainty and acceleration



"Economics (finance), science and technology have become too fast for political, legal and educational systems" (Poli, UniTN)

Dust of moving splinters

Walter Benjamin, talking about episodes of present, distinguishes between:

- **Erlebnissen**, episodes of mere experience: They seem to pass slowly and leave no trace in their memory (***long-short***)
- **Erfahrungen**, experiences that leave a mark, that controbute to build our identity: They seem to pass quickly but leave a trace in the memory (***short-long***).

A century ago, Benjamin suggested that we were approaching an era rich of Erlebnissen and poor of Erfahrungen ...

Today, we are experiencing a world of ***short-short*** episodes (H. Rosa): Frantic standill

“Philosophy” of the project

How can science teaching contribute to developing competencies for managing, rationally and emotionally, uncertainty towards **the future** and to push imagination forwards?

How can science teaching provide the students with opportunities to experience the **present** as a real moment of world understanding, sense-making and self-construction?

How can science teaching foster the development of a dialogue with **a past** able to grasp the present?

Main research question and key-word

How can science teaching contribute to developing competencies for managing, rationally and emotionally, uncertainty towards **the future** and to push imagination forwards?

Future-scaffolding skills:
abilities that enable students to construct visions of the future that empower action in the present with an eye on the horizon

Intellectual Output of the project

O1. **“I SEE” start-up module** on climate change, tested in the I SEE Summer school (June 2017);

O2. **Three (implemented) “I SEE” modules** tested in at least two different Countries and two different cultural contexts;

O3. **I SEE module guide** to develop further I SEE modules;

O4. **Case studies** to evaluate the potential of the I SEE modules to enhance students’ capacity to aspire to and to imagine their future through inclusive activities in science education;

O5. **Recommendations** for crossing the barriers between schools and society.

START-UP MODULE on climate change (I year, since Sept. 2016)

- Co-designed by the partners
- Implemented in the I SEE summer school (Opificio Golinelli, Bologna), June 2017 and in local contexts (PLS Bologna and Rimini)
- 24 students and 8 teachers (from Italy, Finland and Iceland) + 8 researchers

FURTHER MODULES ON OTHER INTERDISCIPLINARY TOPICS (II year, since Sept. 2017)

- Italy: artificial intelligence (100 students); 20 and 40-hour modules
- Finland: quantum computing (30 students); 20-hour module
- Iceland: carbon sequestration (30 students); 20-hour module

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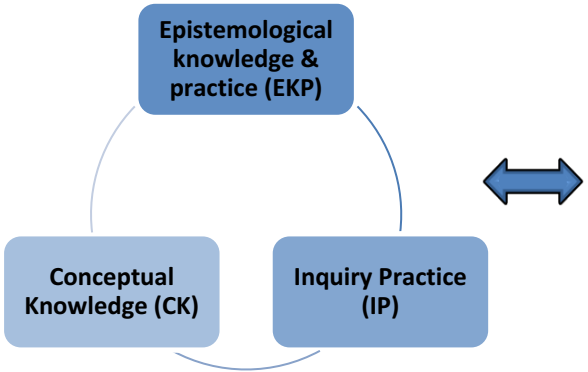
Structure of the modules

ENCOUNTERING WITH THE FOCAL ISSUE

ENGAGEMENT WITH



Future-oriented practices

- activities to flesh out the future-oriented structure of scientific discourse, language and concepts
- activities inspired by future studies or by the working life and societal matters
- exposure activities to enlarge the imagination about possible future STEM careers
- action competence activities

SYNTHESIS OF IDEAS AND PRACTICES

planning actions to contribute to ones' own desirable futures

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Two crucial aspects (knots) of the modules

- The science of complex systems as a precious source for developing future-scaffolding skills;

- Futures studies and action competence to move behond science: from the future to the futures, the concept of scenarions, the fan of possibilities to re-engage with the societal challenges and their multi-dimensionality (scientific-technological, social, political, ethical, economic ...)

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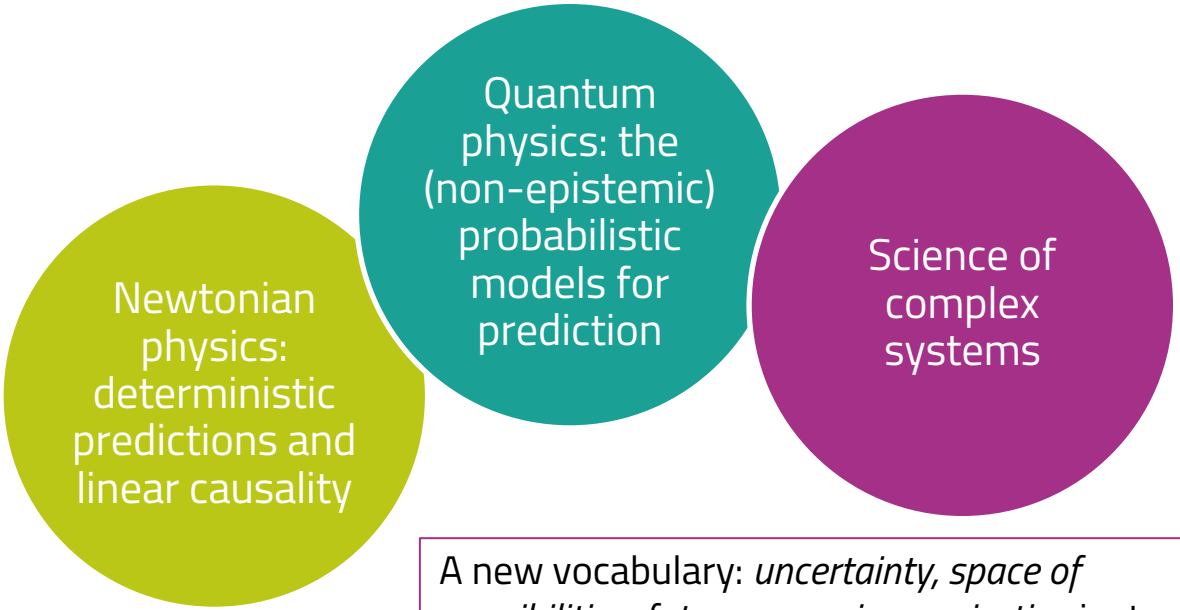
Future in science

- Future is intrinsic to science;
- Future is absorbed and integrated into the epistemological structure of science and is closely linked to the models of causal explanation gradually elaborated by science.

For example, future in physics



A new vocabulary: *uncertainty, space of possibilities*, *future scenarios*, *projection* instead of *deterministic prediction*, *feedback* and *circular causality…*

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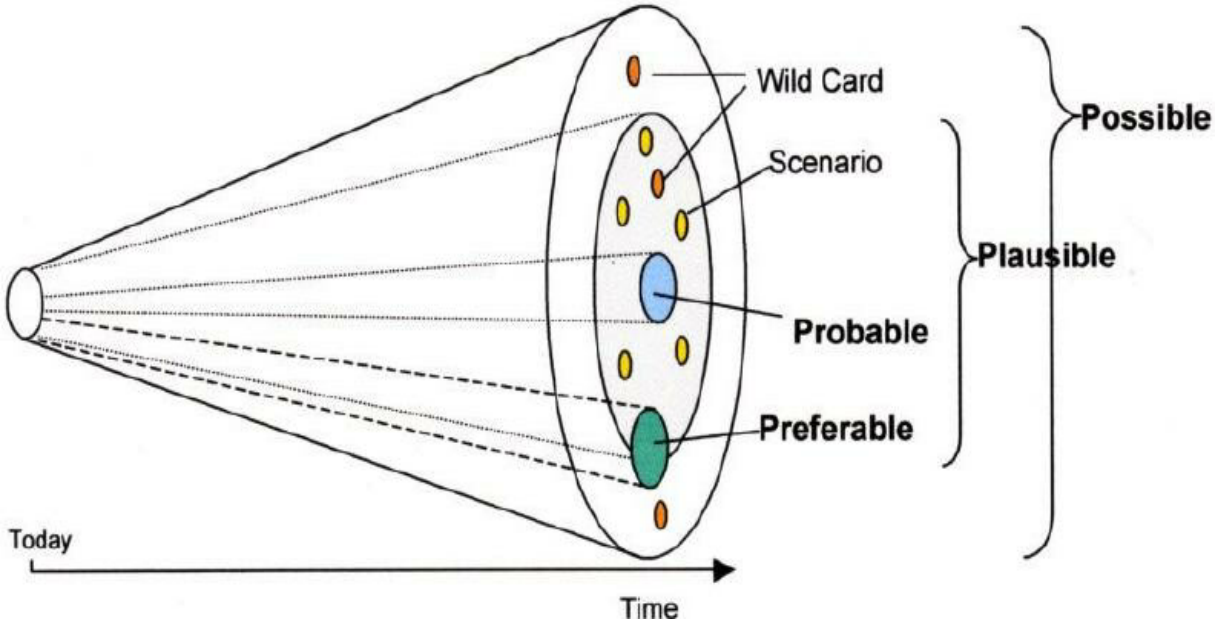


The futures cone by Voros

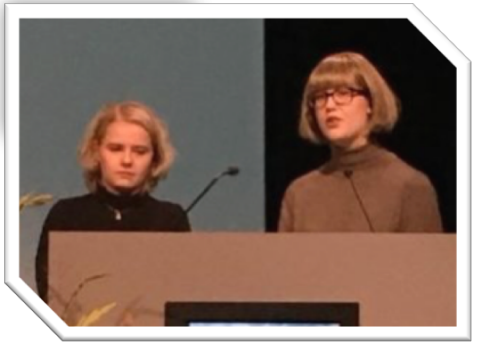
[*Image credit: Ironing drone by Max Cougar Oswald & Nihir on the Noun Project via Creative Commons*]

The structure of today's event

- 15:30-17:00, Lectio Magistralis: **Complexity and future**, Prof. **Gianni Zanarini**, University of Bologna
- 17:00-17:15, *coffee break*
- 17:15-18:00, **Teach the future**, prof. **Peter Bishop**, University of Huston (USA)
- 18:00-18:25, **Results from class experiences**, Proff. **Michela Clementi, Paola Fantini** and **Fabio Filippi**, Liceo "A. Einstein", Rimini.

Anticipation … First results of the project

"Do young people today look with optimistic or pessimistic eyes to the future of the environment? We asked a few of our friends at school and I have to tell you that it's really leaning to the darker side. The perspective of young people is often, we have found out, either that they know very little about it or they see little hope to be able to do something about it, that they could do something about it. […] I'm not saying the solutions to the problems are so easy and just take a few hours, but for me, for us, it's exactly these ideas, these optimistic ideas, this optimistic thinking that will serve us well in the future". (Saga and Briet)



- Students have learned to share their ideas about their desirable futures and have felt able to become agents of their own future
- STEM education, if properly renewed to face social challenges, can become a vehicle for social innovation

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I SEE on social media

- Facebook page: https://www.facebook.com/iseeproject.eu/
- Instagram page: i_see_project
- Youtube channel: https://www.youtube.com/channel/UCsw5RSFI3R8UsnKLeYb_Juw