

# EXPAND THE HORIZON

## Humanities and Culture in Space 2

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# EXPAND THE HORIZON

## Humanities and Culture in Space

As far as our experience goes, working in a mixed team with specialists and generalists of different multidisciplinary backgrounds is always a business that pays. You are able to react flexibly to changes, can have more control regarding the density of content and can choose your methods from an abundance of approaches. Ideas, that have evolved from a single mind can be developed together and transformed into concepts and deliberated strategies using different kinds of speech. When we first tackled our task, we were not familiar with many things, but as we dived deeper and acquainted ourselves with the topic, we now find ourselves in a position to also fascinate others. By following this line of inquiry, the space topic and all its challenges immediately soaked up our full attention and aroused our passion and ambitions, although we are not scientists. It would be wasteful to relinquish such a valuable input, which could raise DLR's work to the next level. It would be a shame to deny those people who don't have a scientific background the same fascination and knowledge. Since the beginning of time human beings have been successful because of their unique adaptability and their diverse problem-solving strategies. Let's take our chances!

### Enrich Natural Sciences

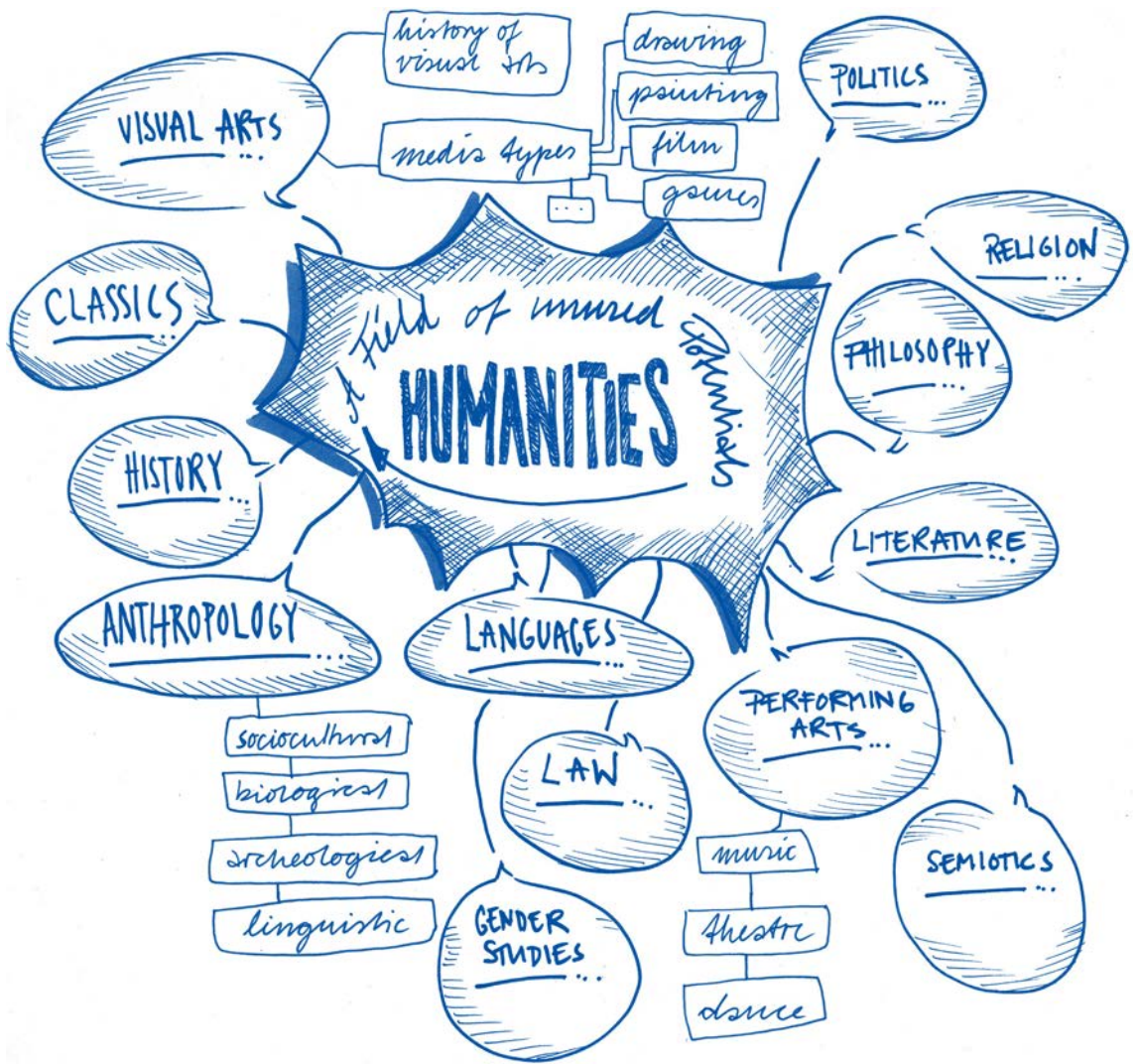
The academic disciplines dealing with human culture are called humanities. Space research and human spaceflight is all about investigating our surroundings further and improving our knowledge of both our habitat on earth and the laws of science in the orbit and beyond. The goal is to answer and generate open questions and create a vision for humankind.

Until now, space research has focused mainly on natural sciences, such as astrophysics or chemistry, applied sciences and technology, such as engineering and material studies. The humanities include a lot of interesting fields, which could complement the range of approaches to the aims of space research.

They can bring new methods and different ways of thinking to the table, which DLR could benefit from. It would improve not only justification and communication, but also make the research more effective, more sustainable and in the end would even engage many new stakeholders and actors within society.

For example, to obtain this new input in the existing course of action, DLR and space research in general should consider working together with philosophers, designers, and people from fields such as history, semiotics, religion, gender studies, anthropology, ethics and social studies. While natural scientists try to find the origin of life using technical instruments, philosophers ask questions and humanists describe the impact on culture. Furthermore, the external circumstances for space travel are historical development – like the space race – and ethical questions and their pursuit of perception. Some philosophers and humanists already see space exploration as a general cultural task for the humanities. They consider questions such as:

- What advantages do the phenomena of space flight have for our society?
- What do we learn about the nature of humans in space flight, when astronauts are experiencing the boundaries of our civilization?
- Is there a space culture and how could it be described?
- How does natural cosmic selection work?



• What are human rights and duties in space?  
**Humanities Are Bridging the Void**

As we, the BRENNEREI – next generation lab 2015, began our collaboration with DLR, our task was to “fill the void between sceptical and visionary opinions regarding space in people’s minds by making space understandable to everyone.” The challenge was to address the person without any interest in space. Our task is not only to create a fascination with space for this kind of person, but also to raise awareness about the benefits of space research on earth. To this end, we had to understand how fascination works, evolves and develops. The big questions of humanity play a major role in this regard. As we asked the question: “Are you interes-

ted in space?” on the streets, some people answered that they were not interested because they don’t see how human issues are affected by Spaceflight. We realized that fascination is created differently: It is not only related to technical progress, but is also connected to the background of each and everyone of us.

So we took the challenge to come up with ideas which communicate the impact of humanities in space science in order to fascinate people who show no interest yet and engage them with space topics. What helped us was being our own lab rats. We found out about the way that fascination exists within the gap between awareness and ignorance. We call it the void we have to bridge.

SCIENCE

WHERE DO WE

HUMANITY

bridge

APPLICATION

abstract

unknown

bridge

course interest!

the VOICE

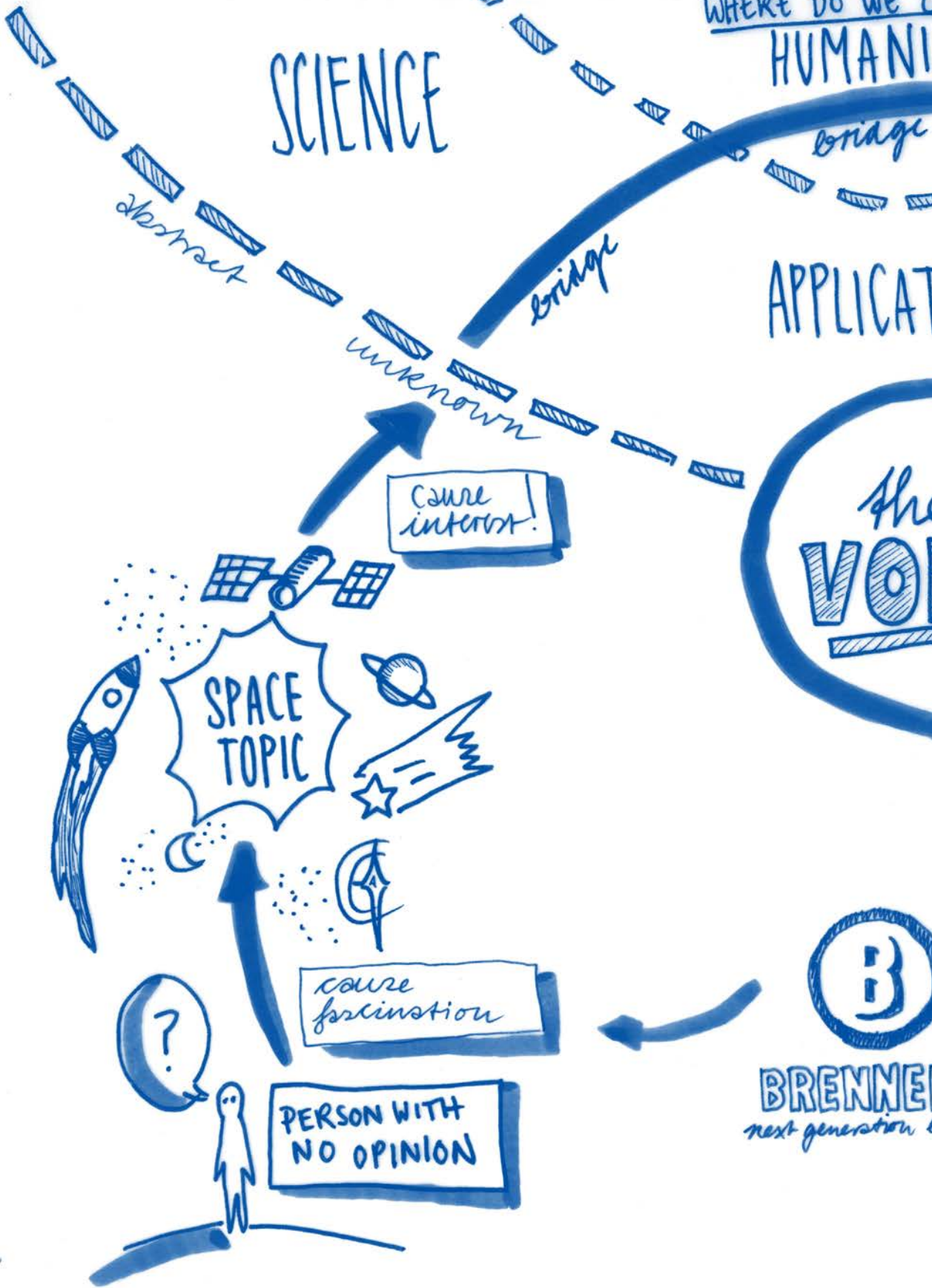
SPACE TOPIC

course fascination

PERSON WITH NO OPINION

B

BRENNE next generation





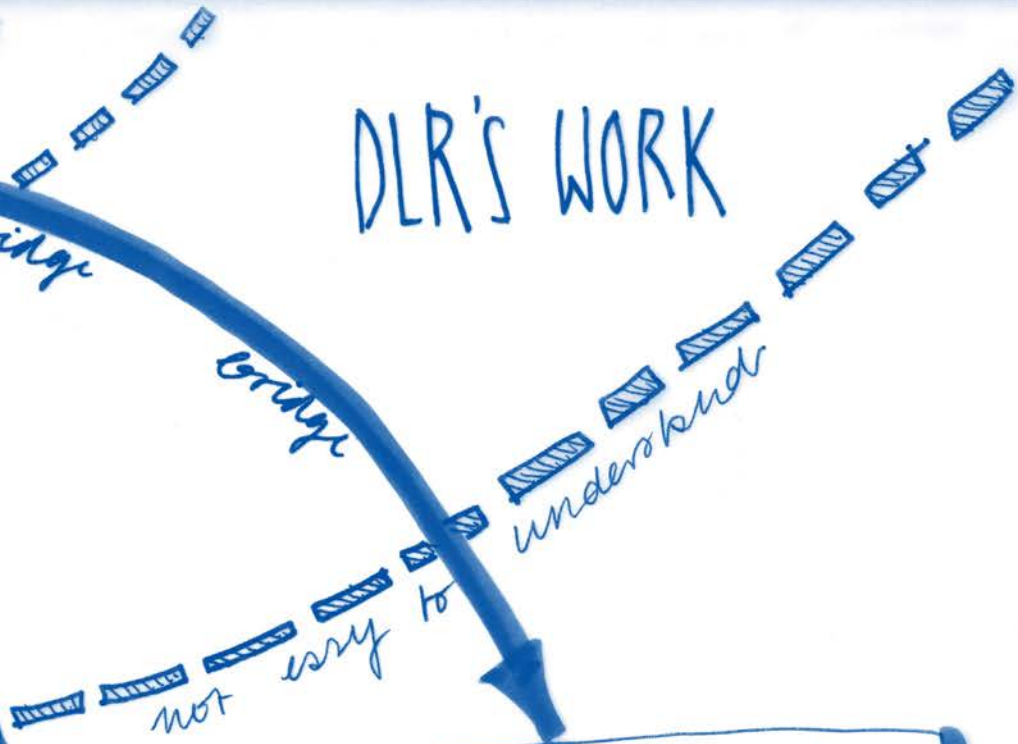
COME FROM?  
TIES

# DLR'S WORK

TIONS

ID

RED  
lab



understanding



PERSON WHICH UNDER-  
STANDS, APPRECIATES,  
KNOWS WHAT SPACE/  
DLR CAN DO FOR  
LIFE ON EARTH AND  
HUMANKIND.  
HAS AN OPINION!

=  
AWARENESS

down to  
earth

The starting point of fascination can be everywhere, as everything is connected. And no matter which way you take, at some stage of your own inquisitive-ness you reach a point where you get stuck. As soon as you enter the zone of the abstract and unknown, you are confronted with applied space sciences, sophisticated technology and other fields of that kind. If you are brave and interested enough or receive some explanation from professionals, you will find out that everything is related to the big burning questions of humankind, such as “Where do we come from?”, “What is life?”, “What makes us human?” or “What is infinity?” At this point, the humanities and sciences are no longer separated. You begin to understand the benefits that space science could also have for your life. You will be able to make up your own mind and form personal opinions and awareness regarding space topics. That’s why we believe: Humanities can bridge the void!

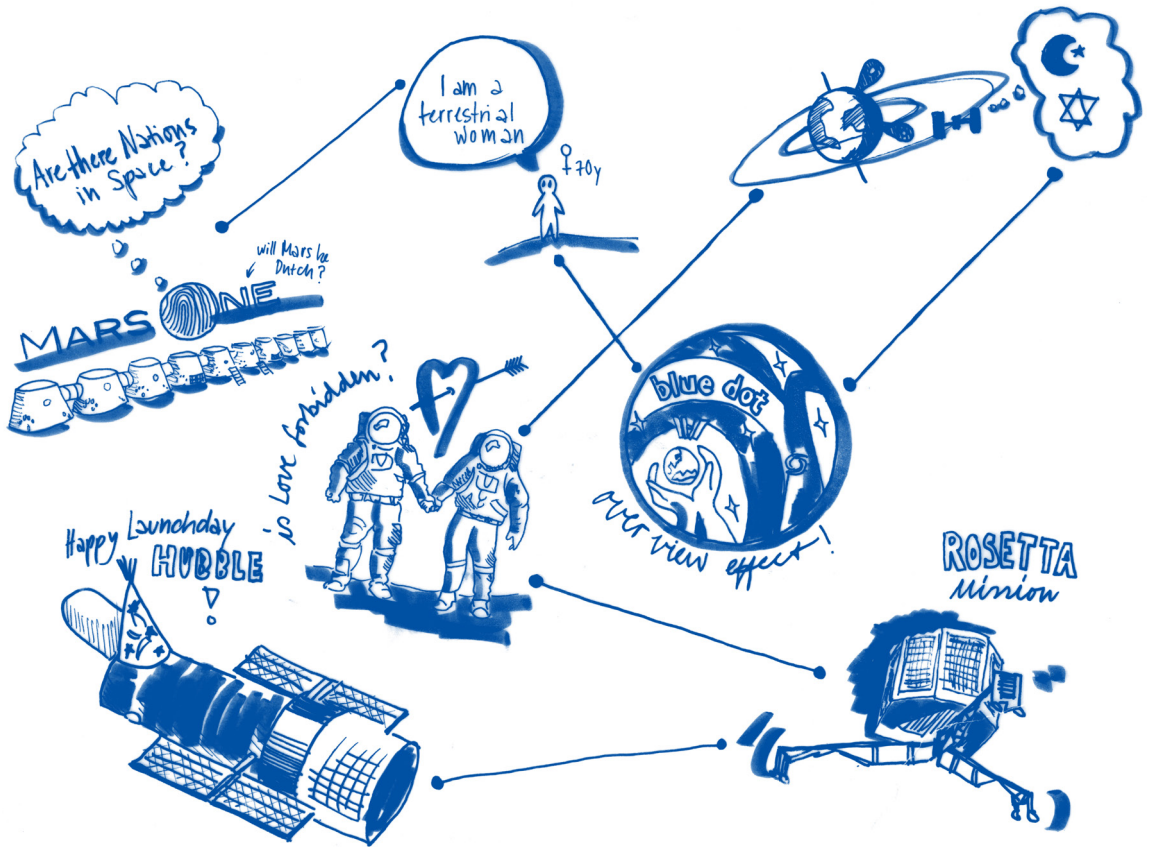
### The Pinball Methods of Interconnections

How does it work? As we started collaborating with DLR, our inquiry worked like a pinball machine: You start at a random point with a fact that interests you the most. After that, one fact leads to another because everything is interconnected.

In this way, you can start with a random everyday life topic and end up with the awareness that you have learned something about a technically very ambitious mission of DLR.

Let’s have a look at one example of how the pinball method works:

When you are, for example, politically interested and work like this you might start with the question: “Are there nations in space?” Let’s see how this example will lead to the topic *Rosetta*



Mission.

## Crossing Borders

By following the pinball method, the humanities might guide you on the trip to space like this: As a result of the moon landing in 1969, the planning of *Mars One Mission* and the discussion about the conquest of other planets, we asked ourselves the question: “Are there nations in space?” We read a lot of articles about it. Is our identification as a society related to the design of our flag?

At our second Lagrange Point (for further information please refer to the *Lagrange Point* book), a 70 year old Lady said: “I am a very terrestrial woman.” She does not identify herself with a certain nation but with the fact that she comes from planet earth!

This great sensation of being part of something bigger than just a nation lead us to the *Blue Dot* mission of the German astronaut Alexander Gerst. Seeing earth from far away it is just a small blue dot in space. When looking at our home planet from far away, national borders actually don't matter.

Human space travel provides the possibility of a new point of view on social and political discussions. A lot of homecoming astronauts call themselves pacifists. To recognize that there is only that one tiny planet on which we all live together and that we should protect is called the *Overview Effect*.

How this works and how it could also happen on earth is a field for social and philosophical studies. Taking these starting points and cooperating with institutes from other fields is a chance to let people feel personally affected by space. If people on earth also have the *Overview Effect* in their minds, they might approach the world's problems differently.

## Belief and Behaviour

We found out that not only does the *Overview Effect* open up a transcendental aspect of space, but religious customs also have to be redefined or discussed again when they are practiced in microgravity or the earth's orbit. “How can you pray towards Mekka or Jerusalem when the rotation speed of the ISS is so fast that you fly by in just a second?” In 2006, the Malaysian Space Agency *Angkasa* together with 150

Muslim scientists and scholars not only tried to answer this question but developed a guideline for religious issues in space. These new rules guided the first Muslim Astronaut Sheik Muszaphar Shulor on his journey to the ISS.<sup>1</sup>

If you are Muslim, you just have to pray towards Mekka at the beginning of your prayer. Once you have started, you do not have to change your position again. The more astronauts practising religion go up into space, the more important those discussions will become in future.

Another issue of behaviour is examined in ESA's code of conduct, which deals with the issue of behaviour on the ISS and at ground control.<sup>2</sup> The conduct states that, being part of the station's crew, you are not allowed to favour another crew member. If you read this statement, this question immediately comes to your mind: Is love or sex between crew members forbidden on the ISS or is it even possible to have babies in space? How did life actually develop on our planet? Can it happen somewhere else as well? The *Rosetta* Mission tries to answer this question by finding out more about the beginnings of the universe.

## There Is Even More

This was also the reason why we followed the awakening of *Philae* with great excitement. We also celebrated Hubble's 25th anniversary. By using the pinball method of inquiry, we became more and more fascinated by space research and we are sure that it can be also used to fascinate others. Technical development is just one part of the fascination for space. We discovered a lot of other fascinating aspects to attract people's attention.

There are more things up there than scientific breadboard constructions, measuring devices and damageable sensors. There are also women and men up there, with feelings, expectations, concerns, wishes and dreams. They want to make friends, stay in contact with their families, and they have their very own opinion on politics, beliefs, their





identities as scientists and goals for the future of humankind.

These approaches get more and more important and should be frequently discussed since the missions are getting longer. Humans will soon really start living in space and the every-day-life culture issues will be of much bigger interest. Social behaviour, collectivization, languages, semiotics and media now happen in space and are very much influenced by these new conditions. Microgravity, the constrictions of the ISS, the international backgrounds, the tough working schedule and mental stress have an effect not only on the scientific experiments up there, but also on the astronauts themselves and their social behaviour, thoughts and opinions.

In contrast to 10 day missions in the beginning of Spaceflight, we are now facing longer time spans, like the Year-in-Space mission by Scott Kelly and Michail Borissowitsch Kornijenko. One of the tasks

of this mission is to carry out investigations that are expected to yield beneficial knowledge on challenges faced by astronauts during long-duration space flight. Most of them are of a medical, psychological and biomedical nature, and thus scientific topics. What hasn't been researched deliberately is how relationships, behaviour and social culture work in space. Imagine if Goethe could have been on the ISS – what kind of challenging questions would he have thought of? Maybe we would look at space research in a totally different light today if we had an opus from Goethe about space in our libraries.

The interviews we conducted and the answers to our questionnaire clarified that those who do not understand highly sophisticated technological approaches would be very thankful and much more interested in space research if somebody would identify and use starting points which they can refer to for pointing out the importance or explaining details. The following quotes are in German. We did not translate them to avoid losing the poetry and authenticity they have in their original form.



*„Die Russen haben gesagt nachdem sie ihren Sputnik da hin geschickt haben: Es gibt keinen Gott, wir haben nachgesehen! Jaja, das bisschen, was man halt nachsehen kann.“*

*„Vielleicht für mich als Frau, als sehr irdische Frau, für mich gäbe es viel wichtigere Sachen im Alltag, die das Leben des Menschen angenehmer und leichter machen würden.“*

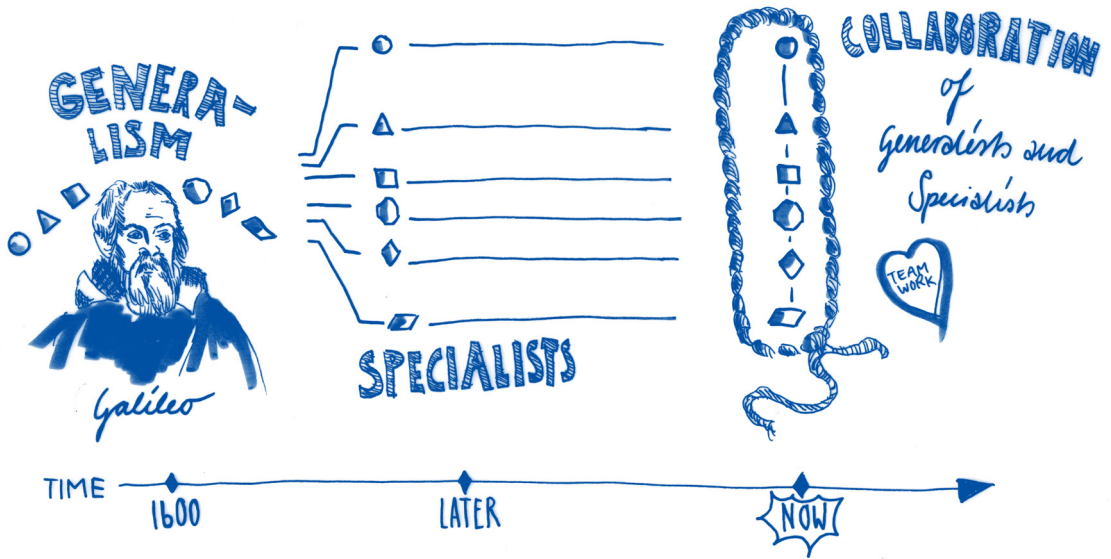
*„Die Verhüllung des Reichstags war ja nur möglich mit den Materialien, die auch im Weltraum genutzt werden. Ich war auch da und habe mir das angesehen und auch mal den Stoff angefasst. Also wir haben hier schon Vorteile davon. Aber muss man immer einen Vorteil davon haben? Ich denke uns Menschen fehlt auch ein Großteil Bescheidenheit. Wenn die Leute sagen, dass sie an Gott glauben, dann müssen sie sagen sie glauben, wissen tun sie nichts. Aber die, die nicht glauben, die geben einem das Gefühl, dass die was wissen. Aber die wissen auch nichts. Da habe ich gesagt: Ehrfurcht vor dem Unbekannten. Das ist das wichtigste, was man haben muss. Eben weil wir nichts wissen. Es ist toll, was schon erforscht worden ist. Aber insgesamt wissen wir gar nichts ... Also, ... wenig.“*

*„Ich habe mich nur optisch mit Weltraum auseinandergesetzt. Ich studiere Design, ich bin gerne kitschig und trashig und deshalb ist Space ein ganz gutes Thema. Science Fiction ist ja auch trashig. Aber ich weiß nichts über Raumstation und die ganze wissenschaftliche Seite.“*

*„Die Probleme dieser Welt sollten erst mal anders, besser gelöst werden. Da sollten die Gelder erst mal anders platziert werden. Punkt.“*

*„Klar müssen wir forschen! Das ist doch wie die Sache mit Don Camillo und Peppone da erklärt Don Camillo, wie das mit der Erkenntnis ist: In einem großen dunklen Raum sind viele Leute, alle haben eine Kerze in der Hand. Es ist dunkel. Einer macht eine Kerze an und dann sagen die Leute: Oh es wird hell. Und plötzlich entzünden alle ihre Kerze und der ganze Raum ist hell. Deswegen müssen wir!“*

*„Ich interessiere mich nicht so sehr für Weltraumforschung. Das ist so technisch und abstrakt. Keine Menschen – Kein Interesse!“*



## Generalism

To broaden the horizon by considering other fields is not a new approach. The very first pioneers to explore the universe were all generalists. They unified a lot of different fields within their profession. Galileo Galilei (1564–1642) was a mathematician, physicist and astronomer, but also a philosopher and always very interested in religion.<sup>3</sup> He was not only a successful scientist because of his brilliance but also because he examined everything in an integrative way. A lot of his contemporaries did. So did Johannes Kepler (1571–1630), who was known as a mathematician, astronomer and optician, but also as a natural philosopher, theologian and stargazer.<sup>4</sup>

Today, we are at a point where a generalist approach is once again becoming more and more important. Due to technological developments and the rise of connectivity between different fields, the need for heads that are able to cross the borders of these artificial categories has increased significantly.

So why not also follow this trend in space research and take all the advantages that go with it? This starts with communication in several directions.

## Finding the Right Questions

During our interviews, we discovered different ways to fascinate people. First you have to fascinate people about space. But it is also important to fascinate people who already work in space research about people and get them back on track to the point where they started from. A lot of them have been fascinated by space since childhood (you can find out more about the results of our research in the *Lagrange Point* book). When they ask themselves why they started this job, they might also better understand what sparks their fascination. So why not implement space science in other fields and make space people curious about the humanities. This knowledge transfer enriches the different approaches. BRENNEREI – next generation lab 2015 can provide many different kinds of platforms to make this encounter happen.

As mentioned before we started asking and trying to answer the big questions of humankind using the pinball method to get people on board who are not interested in technology itself. This can also point out the importance of space research for all the challenges of humankind, e.g. to safeguard the cultural and environmental heritage. This could make DLR more important for other institutions and consequently have more power and influence in other fields as well. Also, sustainability could be improved by spreading the knowledge also to other sectors and getting different insights back in return. Sharing is one of the biggest opportunities to benefit from others.

## The Power of Art

The second method of communication, we found out, is entertainment. You can fascinate people by making complicated things interesting and accessible. Performing arts are an important part of the humanities and can be used perfectly to approach people in a poetic way without words or the barriers of language.

A few ways of performing cultural space exploration have already been tried out. In 1971, the first cultural artefact called *Fallen Astronaut* was placed on the moon, which is a statue to remember dead astronauts.<sup>5</sup> The “Prince of Space” Charles Wilp, an artist who died 2005, called himself an *ARTronaut*. He planned a culture module for the ISS and did art in microgravity and sent art to space to “let it be signed by the cosmos”.<sup>6</sup> Already on the MIR, the kinetic sculpture *Cosmic Dancer* by Arthur Wood got a lot of public attention, but it was also interesting for scientists because of its movements under the influence of microgravity.<sup>7</sup>

## Getting Active

A third method of communication could be an activity. If you not only inform people but also let them get involved in an active way, they will make their own experiences and become fascinated by space topics in a more physical and direct way. As promised in the very beginning of this essay, you will discover many different ideas to generate fascination about space with the help of the humanities. This collection of ideas is all about enhancing interest.

Ask, entertain and activate!



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- 1 "Malaysia Conference Considers How To Practice Islam In Space" by Staff Writers for SPACE DAILY your portal to Space Kuala Lumpur (AFP) Apr 20, 2006
  - 2 Farand, A. (2001): The Code of Conduct for International Space Station Crews. Legal Affairs, ESA, Paris, in ESA bulletin 105, February 2001
  - 3 Wikipedia (2015): Galileo Galilei. [https://de.wikipedia.org/wiki/Galileo\\_Galilei](https://de.wikipedia.org/wiki/Galileo_Galilei), 10.09.2015
  - 4 Wikipedia (2015): Johannes Kepler. [https://de.wikipedia.org/wiki/Johannes\\_Kepler](https://de.wikipedia.org/wiki/Johannes_Kepler), 10.09.2015
  - 5 Powell, Corey/ Shapiro Laurie Gwen(2013): The Sculpture on the Moon. [http://www.slate.com/articles/health\\_and\\_science/science/2013/12/sculpture\\_on\\_the\\_moon\\_paul\\_van\\_hoeydonck\\_s\\_fallen\\_astronaut.html](http://www.slate.com/articles/health_and_science/science/2013/12/sculpture_on_the_moon_paul_van_hoeydonck_s_fallen_astronaut.html), 14.09.2015
  - 6 Wikipedia (2015): Charles Paul Wilp. [https://de.wikipedia.org/wiki/Charles\\_Paul\\_Wilp](https://de.wikipedia.org/wiki/Charles_Paul_Wilp), 14.09.2015
  - 7 [http://www.arthurwoods.ch/deutsch/about\\_my\\_Space\\_art.php](http://www.arthurwoods.ch/deutsch/about_my_Space_art.php), 14.09.2015

# Collaboration

Interdisciplinary approach to space research





DLR is already conducting different kinds of collaborations with students, with the School Labs, the Rexus Bexus project, the graduate program and so on. However, if we analyse these programs it becomes clear that most of them refer to scientific and engineering topics. How about widening the spectrum of activities to new fields of study and developing ideas? Consider the added value that creative disciplines can provide to space research with their different approaches and methods.

Design thinking is a broad topic that focuses on exploring possibilities and constraints by focusing critical thinking skills on research and defining problems for existing products or services and then creating and inventing new creative solutions. With the increasing complexity of today's society, the classical areas of design – graphic design, industrial design and architecture – are now subdivided into smaller and more specialized domains, such as landscape design, urban design, exterior design, interior design, industrial design, furniture design, fashion design, and many more. They represent a huge variety of unused potential from creative resources.

Engineering is applied to design with emphasis on function and the utilization of mathematics and science. In engineering, design is a component of the engineering process. Many overlapping methods and processes can be seen when comparing product design, industrial design and engineering. The *American Heritage Dictionary* defines design as: “To conceive or fashion in the mind; invent,” and “To formulate a plan”, and defines engineering as: “The application of scientific and mathematical principles to practical ends such as the design, manufacture, and operation of efficient and economical structures, machines, processes, and systems.” Both are forms of problem-solving with a defined distinction being the application of “scientific and mathematical principles”. The increasing scientific focus of engineering in practice, however, has increased the importance of new more “human-centred” fields of design. Why not set up a team composed of these broad disciplines?

The designer's approach often adds a different point of view and gives the opportunity to everyone in the team to take part in the creation process. It is likely that a mindset free from technical and scientific rules and the fresh approach of a designer can give a totally new perspective on how to address a task. These ideas can develop the potential for fostering creativity through education and training, especially with regard to space technology. Applying the creative approach to aerospace technology research can raise people's interest in space research.

DLR could cooperate with BRENNEREI – next generation lab to build up this collaboration. The experience in multidisciplinary approaches with regard to a wide variety of topics could be a valuable expertise.

### Alternatives

Cooperation with Humanities Institutes of Universities to involve not only researchers, but also undergraduates and PhD students to develop a new genre of humanities space research

### Topic/Content

- Creativity and design collaborations
- Extend the topics of interest on space research to the design field

### Reference

#### **Lagrange Point Book**

#### Questionnaires

- *Welche Aspekte sind Ihnen wichtig in der Raumfahrt?* p. 43

#### Interviews

- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74
- *Aktuelles* p. 81
- *Faszination* p. 67

### Considerations

- In order to set up a program focused on DLR's needs, it is important to have an overview of DLR's interests and vision
- Needs involvement and organization by the DLR administration

# Space Law Round Table

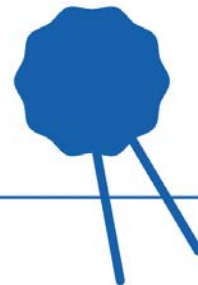
Jurisdiction shapes politics, economics and serves as a mediator between different interests – also in space

§§§

## Article 28

(1) Planets must be guaranteed the right to regulate all planetary affairs on their own responsibility, within the limits prescribed by the laws.

(2) The Federation of Planets shall guarantee that the constitutional order of the different Planets conforms to the basic rights.



We're at an exciting moment in space history. Up to now, all space activities have been conducted and organized by national and government space agencies with terms set out in bilateral agreements. But the emerging market of new private space companies will become more and more important as equal players in the next few years. We need a new branch of jurisdiction: space law.

New fields of space activity are emerging, such as space tourism, small and cube satellites, private space exploration and technology providers. Companies such as Virgin Galactic, SpaceX and Mars One are busy organizing the world's first commercial space programmes and are already co-operating with government agencies. With this new market come new responsibilities, dependencies, contracts and other issues. At the moment, all of the players involved in the space economy follow their own rules or the laws of their respective countries. However, as soon as you leave the earth, matters become international.

That is why the world needs a definite set of rules to rely on while going about their business. Space law should comprise all space-related activities. To come up with the best solutions for space jurisdiction, DLR, alongside other agencies of the ESA could organize a round table that invites all the important stakeholders to discuss international solutions. In the debate on the enforcement of space law, DLR can benefit from managing the trends and tendencies of the New Space business.

Space law can address a large variety of matters, for example the preservation of space and earth environments, liability for damages caused by space objects, settlement of arguments, rescuing of astronauts, sharing of information about potential dangers in outer space, use of space-related technologies, and international co-operation in general. Many fundamental principles can be used as a guideline for jurisdiction in space matters, including the perception of space as a domain for all humankind, for freedom of exploration and as a frontier for everyone.

Considering this necessary involvement in international space law, DLR's position could be in-between, managing the opinions of governmental and non-governmental institutions as a mediator.

Experts dealing with space law are needed, the best-practise example given by the collaboration between DLR and the Institute of Air and Space Law at the University of Cologne with its director, Prof. Dr. Stephan Hobe. Together, both organizations can form a world-leading centre, contributing to the development of the legal framework for space activities and providing a common ground for setting up a productive space law round table to discuss the rules, praxis and conventions that are leading the fast developing space business of the future.

## Topic/Content

- Space law
- International jurisdiction for space matters

## Reference

### **Lagrange Point Book**

#### Questionnaires

- *Worüber würden Sie gerne mehr wissen?* p. 48

#### Interviews

- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74

## Considerations

- Needs an expert to be managed well
- Cooperation within governmental and intergovernmental institutions

# Philosophical Round Table

A place where philosophers, humanists and scientists discuss space topics



- 
- 1 Todeskino, Marie (2013): Auf kultureller Mission im Weltraum  
<http://www.dw.com/de/auf-kultureller-mission-im-weltall/a-17024364>, 31.08.2015
  - 2 Spreen, Dierk (2015): Raumfahrt aus Soziologensicht – Die Welt von oben  
<http://www.wdr5.de/sendungen/politikum/soziologieraumfahrt100.html>, 31.08.2015
  - 3 Ashton, Shan et al. (2010/11): Guide for roundtables  
<http://cocoate.com/sites/cocoate.com/files/guide.pdf>, 31.08.2015



The meaning and source of life is a topic that interests everybody; however scientists, philosophers and humanists approach the big questions from different angles. The idea is to bring them all together at one round table to discuss the origin of humanity and the meaning of space flight.

While scientific researchers try to find the beginning of life using technical instruments, philosophers ask questions and humanists describe the impact on culture. Some philosophers and humanists already view space exploration as a general cultural task of the humanities.<sup>1</sup> They consider questions such as: What function does the phenomena of space flight have for our society, e.g. global security?<sup>1</sup> What do we learn about the nature of humans in space flight, when astronauts are experiencing the boundaries of our civilization?

Applied ethics with regard to science and research already emerged in the 1930s due to human progress. It shows that we can't think about technical development without an anthropological view on things. We have to consider the impact of technology on human behaviour. Astronauts that are hands-on scientists experience the *Overview Effect* that describes the profound impact of seeing the earth from outer space. Philosophical questions and deep emotions arise. So what kind of profound impact will people experience once they are on Mars or reach even further? In 2010, the "Gesellschaft für Kultur und Raumfahrt" was founded after a series of seminars that began in 2004. They discuss the influence that culture and space techniques have on each other. The first lecture series invited either philosophers or scientists. Joachim Fischer, Dierk Screen and Dr. Marie-Luise Heuser are German researchers already focussing on the meaning of space for humanities in an anthropological way, not just about technical application. However, it is important to go a step further and move from presenting into common discussion, bringing scientists and humanities researcher together at one round table.

The format of a round table is thought to confront issues, not people and create a win-win situation. It is usually used when a new issue has been identified and when it's about exploring solutions, defining actions or developing strategies.<sup>2</sup> And that is currently the case: the post ISS era needs to be discussed. Right now, this discussion is led from a technical point of view and depends on political decisions. A need for a paradigm of change is necessary. An open discussion with humanists and scientists can bring a new perspective, new arguments and different benefits to the table. Maybe the ISS should stay but its purpose should be expanded; maybe human space flight has an impact on our culture ... there is a lot to discuss!

### Implementation Alternatives

The already existing task group about the Post-ISS Era could invite social researchers (e.g. the above named actors) who, after a short presentation about their work, could discuss the different arguments of space Research for Humanity. The "Gesellschaft für Kultur und Raumfahrt e.V." can be the starting points for a new discussion series, that is not about a panel structure where everybody presents, but about the common dialogue.

Cooperation with humanities departments of universities to involve not only researchers, but also undergraduates and PhD students to develop a new genre of humanities research.

### Topic/Content

- Discuss the essential questions of humanity
- Discuss the benefit of space flight for humanity from different research perspectives

### Reference

#### **Lagrange Point Book**

#### Questionnaires

- *Was bedeutet Weltraum für Sie?* p. 18

#### Interviews

- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74
- *Faszination* p. 67

### Considerations

- It is not just about finding different arguments as to why the ISS should continue, but about opening the sector to different sciences
- Finding a common language to discuss the issue can be difficult
- A good moderator is important

## Space Slam

A poetry slam with quotes from interviews, from famous researchers, astronauts or other celebrities about space topics

I don't know if you  
have to be mad  
to go to space.

If you are fascinated  
it doesn't matter  
if you come back.

I admire those people  
who are sitting there  
in their space laboratory.  
I couldn't do that.  
Not at all.

The *Space Slam* is a presentation format which uses quotes to build up an impression of several people's opinions and statements to start a discussion or introduce a topic.

Statements from interviews and questionnaires are often very poetic. By giving these quotes an artistic frame or a stage, it is possible to tell touching stories by using them. A stage show, similar to a poetry slam or stand-up comedy with actors who read out what the people think about space is entertaining, inspiring and allows the audience to reconsider their own opinion and knowledge about space.

The *Space Slam* with quotes from *Lagrange Point* gave a widespread impression of people's diverse opinions on space.

Although this is not a scientific, measurable source of a statistic study, it paints a picture of people's mindset which can be used for discussion as well. In the case of *Lagrange Point*, we used our own research outcomes to point out the importance of DLR's public communication strategies. However, it is also imaginable to use quotes from astronauts, researchers or celebrities and employees of the DLR.

The *Space Slam* can be used at the beginning of a presentation to make the kick-off of a new project interesting and emotional right from the beginning. It could also be a part of a media show or used as the opening show for an exhibition about space. It can also be used as an icebreaker at the *Philosophical Round Table* (also in this folder). It is an entertaining way to dive into a topic and catch the attention of the audience from the very start. It leads them to make up their own minds and is an ice breaker for every discussion by showing a variety of opinions.

## Topic/Content

- Presentation format
- Starting discussions
- Start discussions in an entertaining way and justify public relation projects like exhibitions or books

## Reference

### **Lagrange Point Book**

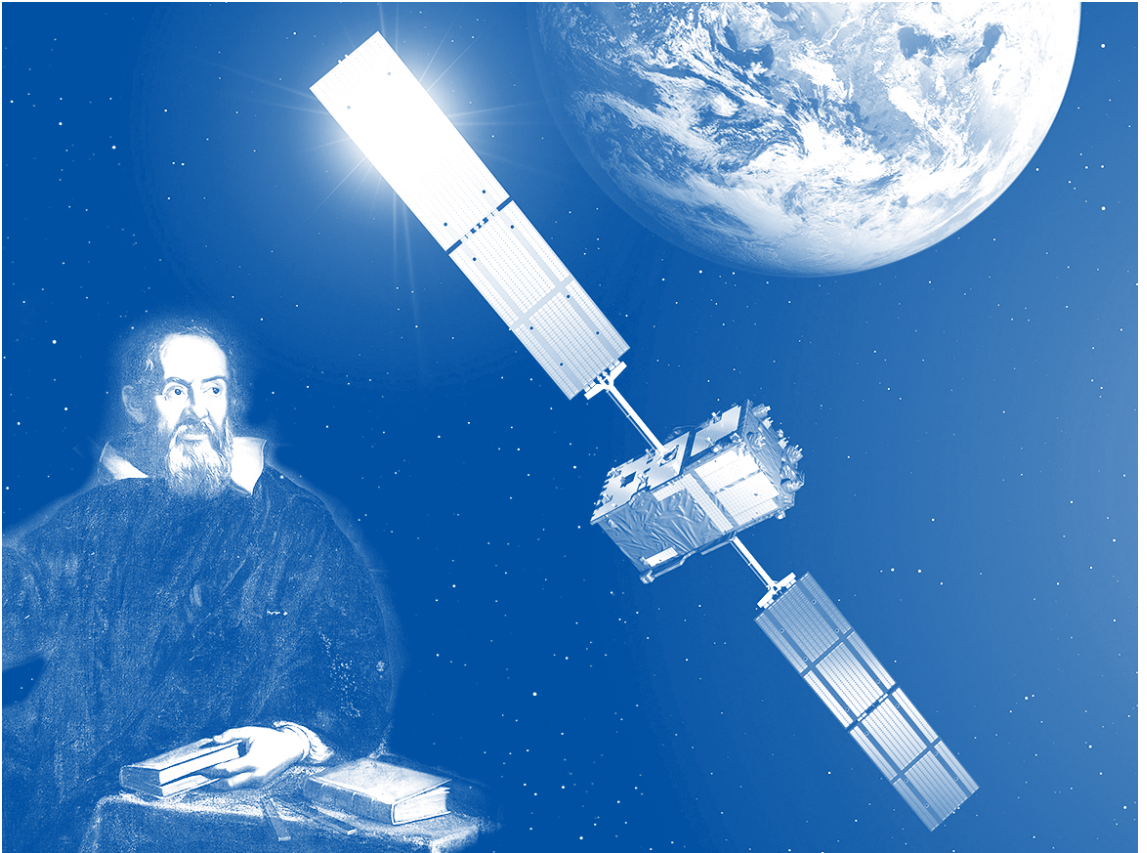
This is a presentation format for all written outcomes of research

## Considerations

- What impression do you want to give?
- Which quotes are funny, entertaining, uncommon, smart or provocative?
- The entertainment level rises by combining the quotes of fictive conversations
- You can collect similar quotes to point out an argument which you want to prove

# From Galileo to Galileo

A journey through the history of space exploration





From Galileo to Galileo is a documentary excursus on the main scientific discoveries in space research. Its title refers to Galileo Galilei and Europe's satellite navigation system, also called Galileo. This idea is about the narration of the history of space science, which can be produced in different formats, from a book to a video, from a magazine to an exhibition. It could be a book to start with, combined with a website where further explanations can be provided.

The idea of setting up this kind of narration on the history of space science stems from the need to give another point of view on some of the big questions that humanity has struggled with during the passing of time. What is our feeling when we look at the sky? Why is the sky this big unknown? When did we start regarding the sky as space? When did we start to look into space? These kinds of questions are the guidelines for the journey through the history of space research which the public can undertake by reading this volume.

It could be a sort of interactive book that contains different levels of ways to approach it, read it, and it will give input and inspirations through its pages. The chapters of the book provide a chronological overview of the main steps in the history of space science, from the Ancient World through the Modern Ages up until modern times. The different levels should lead the reader according to his or her interest and curiosity: Some parts are about the biography of the fathers of space science, there is also a timeline of the big discoveries and explorations, while another level is about the main facts that changed the history of our mindset! Other parts are about the instruments invented and developed for the important discoveries, and one part looks at the technologies that have affected our everyday life throughout history. All of these topics are completed with a dictionary that will help to understand everything, even if you skipped some pages which are less interesting for you.

The book about the Galileos is aimed at children, young people and adults alike, and for this reason, a clear and easy way to communicate the content is required. Therefore, different levels of exploring the information provided are needed, not due to the different ages of the readers, but because of their different levels of acknowledgement and interest. There can be different series of this format, from beginner to expert reader. A book called *SCIENCIA* by Burkard Polster already follows a similar approach. It could serve as handy inspiration while planning this project.

The book should have an interactive approach so that the reader is allowed to move through the arguments as he sees fit, using the different levels as a reference, easily identified by a colour code. The reader can choose which steps he prefers to take his own journey through the universe of interest. With the idea of making an interactive book, initially DLR can benefit from attracting the interest of a wide range of people and providing the quality of information that will be delivered with the book, or whatever other format.

### Alternatives

A cartoon TV series as *Es war einmal ... Das Leben* that shows the discoveries of space research through time and history of our civilization.

A game app or board game for children or adults that informs and entertains at the same time, through travel into the discoveries of space.

A website where you can follow your inspirational travel into the universe of discoveries and explorations in history.

### Topic/Content

- Communicate the history of space research in a charming way
- Get people interested in space research

### Reference

#### **Lagrange Point Book**

#### Questionnaires

- *Was muss noch erforscht werden?* p. 48

#### Interviews

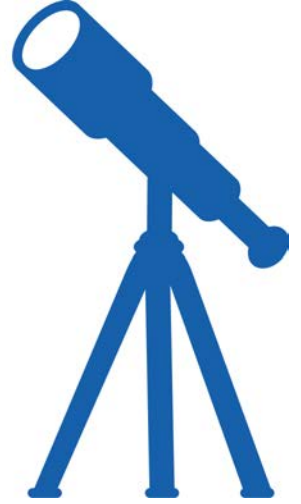
- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74
- *Aktuelles* p. 81

### Considerations

- It is aimed at every kind of person who wants to know more about history, space, and people's discoveries
- It has to deal with a clear and easy way to communicate commonly considered difficult scientific topics.
- Can be used as an instrument for the School Lab
- Can start with a pilot
- The investment is about the cost for the expert in producing captivating graphics, and an easy communication concept to capture all kinds of readers' interests.
- The economical return will derive from sales
- Storytelling experts are needed to help prepare, write and organize the content

# Space Religion

Because you have to believe in it



Describe the feeling evoked by a picture of our planet earth from outside, of another planet thousands of light-years away, or a colourful shot from the space telescope Hubble. These impressions don't only serve a scientific cause, they also provoke much deeper emotions and thoughts within us as human beings, in relation to ourselves and our universal environment. We question the reasons and meaning of it all, amazed by the findings of space scientists, which in turn raise even more questions. Many people are afraid or anxious when it comes to space-related questions because the topic is so much bigger than our small existence that no one can imagine it.

So believing all the thought-provoking information that space research and exploration produce really has a religious touch to it. Many people still don't believe that NASA actually went to the moon, they think it was all staged in some studio.

Starting a much deeper discussion and discourse about humanity, the drive to go further, to go beyond, to try to understand our past and future a little better, is a big chance and opportunity for DLR's activities and space research as a whole to justify their existence. To expand the spectrum of activities from technical solutions to an overall discussion. Most certainly, many employees and engineers involved in space research cherish space religion ideas of some sort.

DLR could support an open platform to start an interdisciplinary conversation about why research should continue. This can also contribute to the question of whether the ISS project should be carried on after 2020 and what should be researched there. It can also be a topic for the *Philosophical Round Table* of disciplines to be broadly discussed.

## **Topic/Content**

- Space as a religion
- A spiritual conversation about space

## **Reference**

### ***Lagrange Point Book***

#### Questionnaires

- *Worüber würden Sie gerne mehr wissen?* p. 48

#### Interviews

- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74
- *Faszination* p. 67

## **Considerations**

- As with all religious contexts, there are probably fanatic and more tolerant opinions
- It would be great to involve space researchers, theologians and philosophers

# Time Capsule

Send a time capsule to space containing items that most represent humankind



To engage the public with space missions, a time capsule is a good way to gain interaction with the audience. Everybody is invited to vote for the most representative items of their time on an online platform. Later the time capsule is sent to space and everybody can watch its launch in the media. While participating they learn a lot about the other aspects of the mission and the work of DLR in general.

To think about what really describes our society in a certain timespan of civilisation, considering the state of the art, politics, technology, crises and successes of humankind, people will reflect on the really important aspects of their lives and the meaning of research and space travel in general. Thus they will become interested in contiguous topics and want to know more about DLR's work and its benefit for earth. What would you want to put in the time capsule? Pictures of fashion shows, political contracts about peace, your smartphone, an audio file that describes the journey of a Syrian refugee or a seed of your favourite flower?

The Voyager Project from 1977 was very popular in the media and with the public because they attached the *Voyager Golden Record* to the space probes which was supposed to tell the rest of the universe about planet earth and its inhabitants. But what the inventors of this media coup really wanted to achieve was to engage the public with the mission and make them feel united in this project.

The *DLR Time Capsule* can have the same impact on today's society. The media can report on this and the Time Capsule can be used as a springboard for other aspects of the mission which DLR wants to be communicated. There are already a lot of time capsule projects with other backgrounds, such as school projects or the time capsule to Mars, which shows how easily people can be brought to participate and vote online.

The *Time Capsule* will need a story to be convincing. We can consider the fact that our universe is a time capsule on its own, giving the example that some of the stars are already dead when their light reaches us. So the *Time Capsule* could be sent to the edge of our solar system and beyond to tell possible other forms of life later on about what and who we are. Also, it could be saved for our own sake as an encyclopaedia or for future reference. The capsule can orbit the earth for a while and then be brought back to earth to remind our descendants of the important milestones of humanity. With our own past, we can remember the importance of peace and our achievements. Landing the *Time Capsule* on earth after 50 years, for example, could be a big event. To realise this, DLR could work together with social and culture studies institutes, universities and schools. It would be the perfect starting point to discuss the relationship between the humanities and human Spaceflight. The discussion should not only be broadcast widely in the media and over the internet, but it should also be expanded to school projects and universities to reach all parts of society.

## Alternatives

Already the question: "What would you pack in there?" would be a nice topic to discuss in schools and universities.

The Time Capsule could also take place on the show *Germany's Next Astronaut* because it is easy to get the audience involved in the discussion and it puts everybody (experts and general public) on the same level.

## Topic/Content

- Getting a discussion started about our human identity and space travel

## Reference

### **Lagrange Point Book**

#### Questionnaires

- *Haben Sie das Gefühl, im Alltag von Weltraumtechnologien beeinflusst zu sein?* p. 44

#### Interviews

- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74
- *Faszination* p. 67

## Considerations

- Do you want to realise the *Time Capsule* or just use it as a topic for discussion?
- To what missions do you want the time capsule to refer?
- Should it be sent into orbit to get it back one day (and how), or do you want to shoot it to the edge of our known universe?
- Consider if you want to produce even more space debris



# Zero Gravity Dancing

An artistic way of capturing the magic of floating in space



Imagine a ballet piece that involves the lightness and magic of movement in microgravity. Since the beginning of space travel, people have been amazed by the different gravitational conditions in space. Everyone knows the pictures of the astronauts jumping on the moon. There is a lot to be learned from this environment for all ranges of the performing arts. Many earthly adaptations of space movement have already entered popular culture and dance floors, e.g. the moonwalk by Michael Jackson.

Until now, an unheard-of form of dance is the actual dance in outer space. A program for moving artists and ballet dancers to adapt their profession to the microgravity environment. This is not only entertaining and easily documented and marketed, but it can also lead to a deeper understanding of human movement in this different environment.

DLR can play a major role in choosing the right performing person or dance group. Dancers and choreographers from all over the world could vote for the most inspiring person. The chosen winner will have the opportunity to visit the ISS and dance in the station modules, next to the station in a space suit or in a special oxygen bubble construction to allow free movement.

This project would attract worldwide attention across all age groups because it is a sensual, emotional approach to the space topic – something that hasn't been done before. The media would want to take a big part in the distribution of these images and videos. This would be a new way for DLR to spread their message across all platforms.

### Alternatives

A fund to allow artists to take Zero G-flights. Other artistic/aesthetic activities in space. Dancers or choreographers can give a course for future astronauts that can involve microgravity lessons to train their muscles, relax and free their mind.

### Topic/Content

- Experience of micro-gravity
- Aesthetic, emotional approach

### Reference

#### **Lagrange Point Book**

#### Questionnaires

- *Welche Aspekte sind Ihnen wichtig in der Raumfahrt?* p. 43

#### Interviews

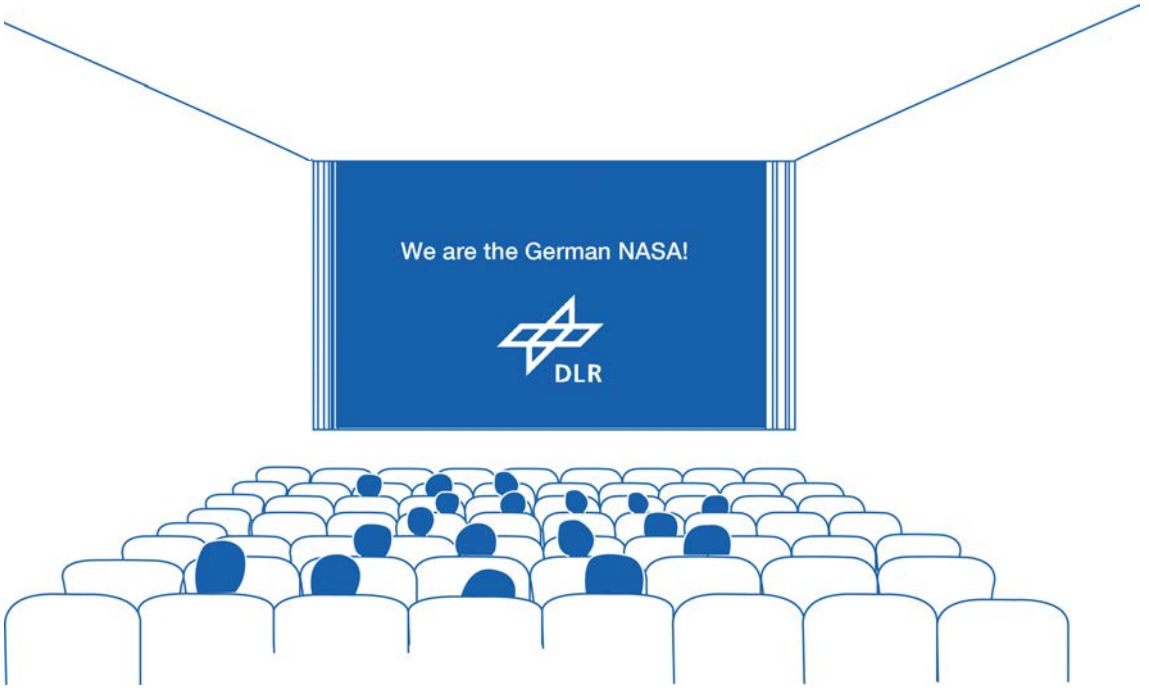
- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74
- *Aktuelles* p. 81
- *Faszination* p. 67

### Considerations

- A number of artists and dancers have tried to start such a project
- Dancing in micro-gravity can be a way for astronauts to train their muscles and stay fit

# No Alien Was Harmed for this Movie

## DLR spot before science fiction films in cinemas



When you go to see a film, there are always adverts for local shops, popular brands and upcoming films. The idea is to use this time slot to advertise the DLR, but only if a science fiction movie is shown that is set in or is related to space. The aim is not to advertise the DLR, but to mention the name in order to make the DLR more popular. Let's remind the audience in their curiosity and euphoria about space that actual space research is currently being performed by the DLR. The spot could be only a text and a voice-over saying: "No Alien was harmed for this movie – approved by DLR"

On 17 December, *Star Wars VII* will be released and millions of fans worldwide are already eager to see the movie. This would be the perfect occasion for DLR to make an appearance. Our research has shown that many people relate to space via popular culture and science fiction. Star Wars and Star Trek were the number one hits during our research, but more recent ones also figure, such as Interstellar.

Besides Star Wars, another blockbuster will be in cinemas. It is a futuristic Robinsonade on Mars, called *The Martian*. NASA plays an important role in this movie and press events are used not only to promote the film, but also NASA projects. Matt Damon, the main actor, visited the NASA Jet Propulsion Laboratory and it has been shared all over social media. The Astronauts even gave him a call. This example shows that it is possible to use the existing curiosity and fascination about space adventures and combine it with actual information about real missions.

The DLR is unknown to most Germans. We asked people on the street which space facilities they know and while 9 out of 10 know NASA, only 3 out of 10 named the DLR. As described, NASA also plays a major role in space movies. We don't suggest starting a German Blockbuster to promote the DLR, but while watching a film that deals with space, it is possible to tell viewers that real-life space research is also happening here in Germany.

The Spot could be a mixture of the popular medical warning "Zu Risiken und Nebenwirkungen ..." and the information "No animal was harmed during the making of this movie". Let's mix these components together and create a slogan for the DLR. This slogan is not meant to advertise something, but to say in a bold and simple way: we are here and hey, we do actually work on space topics!

Homepages like kinowerbung.de provide an easy way to broadcast advertising in cinemas. They take care of the distribution, but also help to realise and produce a spot. They also offer the possibility of only advertising in some movies. The production cost can be kept low. A slogan would only need a speaker to read the text.

## Topic/Content

- Relate the fascination of space with information about DLR

## Reference

### **Lagrange Point Book**

#### Questionnaires

- *Was bedeutet Weltraum für Sie?* p. 18
- *Welche realen und fiktiven Raumfahrt-einrichtungen kennen Sie?* p. 46

#### Interviews

- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74
- *Faszination* p. 67

## Considerations

- To create a good slogan, it could be useful to ask an external advertisement company to manage the task
- The screening can be tested in only one city or one town, maybe also in connection with a special occasion such as the *Tag der Luft- und Raumfahrt*

# Germany's Next Astronaut

A multi-channel media documentary about the journey of the chosen ones from earth to space





*Germany's Next Astronaut* is an exciting media event, which is filmed in a documentary style. During a period of around two months, the public can watch DLR's selection process of German Astronauts. Once a week, it will be supported by a prime time Late Night Talk Show with interviews and discussions about Spaceflight and space research, and with participation from the future astronauts, DLR staff, celebrities and researchers from other fields such as humanities, talking about the broad range of topics that space provides.

In addition, the audience will be given interesting facts about the benefits on earth by means of short infotaining clips. These clips will explain technologies such as GPS or applications for environmental protection.

People are curious about astronauts: How does the training work? What does their family think about it? What is their background? Are they nervous during the selection process? What are their dreams? How do they prepare for psychological and physical pressure? Will there be a German woman in space? Are they friends or competitors? What kind of people are they? And, last but not least: Could I do it as well?

All of these questions will be answered in the series via Interviews, visits to the participant's homes, accompanying their training and tests with cameras, and talking to well-known public figures to understand their opinion. The public takes part in this process by asking questions or doing the same fitness tests when they watch the show. They will identify with their favourite future astronaut and become curious about the topic in general.

DLR could use this format to communicate its work to the public in an entertaining way. It is the perfect opportunity for the space agency to find out what aspects of Spaceflight the audience is interested in. By using the hashtag *#germanysnextastronaut* they can discuss this on social media. The show's most popular competitor would be the perfect ambassador for the DLR in public relations.

The documentary part should have on the one hand a storytelling narrative and on the other a transparent, scientific and informative content to be taken seriously. The Late Night Show can contain an interactive part with society, including celebrity opinions, games, interviews with the competitors and the possibility of asking questions. A friendly moderator and a broad approach would help to attract people.

In the end, everybody knows our next astronaut because we were there during the whole process and we will definitely want to know how the story continues!

## Alternatives

A one-time feature with the same content as a documentary film e.g. on *Arte* Use an already existing show and do a space special, e.g.:

- *Who wants to become a millionaire* with former astronauts or space questions
- *ZDF Neo Space Special: Jan Böhmermann* visits the training centre
- *Markus Lanz*, topic space research: Fascinating or waste of money?
- *Inas Nacht* with Alexander Geerst and a Scientist of humanities
- *Schlag den Astronauten!*

## Topic/Content

- Show the process of becoming an astronaut
- Infotain the public about Spaceflight and its benefits on earth

## Reference

### **Lagrange Point Book**

#### Questionnaires

- *Was bedeutet Weltraum für Sie?* p. 18
- *Was glauben Sie, wie sieht der Arbeitsalltag von Astronauten aus?* p. 34

#### Interviews

- *Geisteswissenschaften und Kultur* p. 84
- *Kritik und Rechtfertigung* p. 74
- *Aktuelles* p. 81
- *Faszination* p. 67

## Considerations

- What information about the benefits on earth do you really want to communicate?
- Who is your target group?
- Get cross media experts on board!
- What time frame of the selection process would be suitable for such a visual format?
- Be ready to use all the potential of an open exchange of views and opinions with your audience!

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