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The Power of Science Fiction Films on Visionary Creativity and Innovations

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ABSTRACT

A visionary view of the future is currently more important than it has been for a long time - especially in product development. Numerous crises, conflicts and threats have been shaking up politics, society and markets for years and are having a profound impact on supply chains and markets, but also on demand and purchasing behavior. In addition, the need for innovation continues to grow, development cycles are becoming even shorter and markets are becoming more dynamic, partly due to disruptive technologies. However, people find it difficult to think several years into the future, especially when they are young and lack life experience. This is particularly noticeable in higher education. Technical courses teach methods and techniques to tackle problems and develop creative solutions, but not with a visionary time horizon. In this publication, films are presented as a potent source of inspiration and a powerful support tool, especially those from the genre of science fiction. Experiences and findings from several years of use in teaching in specific projects for partners from industry and research are displayed and opportunities as well as obstacles and challenges of this innovation method are described.

Keywords: Visionary creativity, Science fiction films, Future innovation

INTRODUCTION

The world is changing faster and more radically than ever before. This applies to technology, where AI, for example, is shaking up many industries, as well as to markets and politics. Just a few years ago, it was unthinkable that there would be another war in Europe with incredible human suffering, catastrophic destruction and severe upheaval. But even without such serious crises, it is now very important for engineers to be able to think in a visionary way and develop sustainable, future-proof products. Hofvenschiöld & Turber (2023) call this “futures literacy”.

The challenges that have existed for years have not become any smaller: Development cycles are getting even shorter and technology is changing even faster. Technologies such as artificial intelligence in particular have an enormous impact on products as well as creativity and the mechanisms with which innovations are generated.

Mechanical engineering courses, especially those focusing on product development, have been teaching how to solve problems and design suitable products for decades. A large number of methods and support options such as creativity techniques are available for this purpose.

On closer inspection, however, it is noticeable that the focus of studies is usually on solutions that can be realized in the short term, i.e. the aim is usually to evolve existing products and very rarely to achieve a technical revolution. Looking into the more distant future, i.e. to a time in 10 or more years, is almost non-existent in higher education. Michaud & Appio (2022) list universities that explicitly offer courses in science fiction. Despite a global view, this is only a small number and not all of them are aimed at engineers. This is remarkable, as both in the US (National Research Council, 2012) and in Europe, the potential was known early on and programs were designed for funding as early as 2012. The European Union's SciFiEd project for example aimed to provide teachers with tools, training and guidance to integrate science fiction into their lessons and make science more attractive to students (Vrasidas et al., 2015).

INTEGRATION OF VISIONARY THINKING INTO THE BACHELOR'S DEGREE PROGRAM

The need was also recognized at the Faculty 03 of Mechanical Engineering, Automotive Engineering and Aeronautical Engineering at Munich University of Applied Sciences and thus visionary thinking was included in the education of mechanical engineering bachelor students several years ago. In the product development specialization, a lecture was redesigned and deliberately focused on the generation of visionary but also sustainable innovations. The two belong together; innovation without taking sustainability aspects into account is no longer justifiable. Here, too, the need to think more comprehensively and to consider a longer period of time is evident.

The most important key element in the concept of the course is an intensive project with a partner from industry or research, in which real topics are worked on in teams. This not only provides the necessary seriousness and application orientation, but also honest feedback on the results from proven experts in the field. Another positive effect of this constellation is that transfer is made possible in both directions. The industrial partners support the students with their know-how and experience, but benefit from the ideas and results of the budding engineers.

Coaching sessions are held during the project to support the students, where their approach can be observed and their partial results assessed. In the first project of the new course, it was noticeable that the students did not really think in a visionary way, but merely suggested small improvements, in which the degree of innovation was minimal and in some cases not recognizable. And this despite the fact that the task was to find products and fields of action for the future. It was an innovation competition organized by a well-known manufacturer of hand-held forestry and gardening equipment. The students only made evolutionary and not revolutionary suggestions. Even the application of creativity methods did not bring any great improvement in this respect. The results were creative and there were good ideas, but the step into the future was small. Variations were often created and incremental improvements were suggested. The breakthrough only came with the reference to science fiction films and the request to explicitly search for

suitable films that have to do with the subject area or are at least inspiring. Only then were real visions generated and the quality and number of ideas improved many times over. Apparently, the students needed the visionary worlds of the films to understand what is possible, but also what is expected.

Reboud and Mazzarol (2023) report a similar effect among schoolchildren. Writing science fiction stimulated their imagination and future-oriented thinking. The positive influence of science fiction on creative thinking, especially in STEM subjects, was also confirmed by Cropley and Cropley (2020), who used imaginative narratives to encourage students to think divergently.

It is noteworthy that the students themselves did not come up with the idea of using science fiction, although films play a major role among young adults and students in particular also come into contact with science fiction, for example in the student cinemas that take place regularly.

It was also surprising that the competition jury, which consisted of high-ranking company representatives, was not particularly keen to find a visionary solution, contrary to the competition's brief. The winning solutions were close to existing products. Perhaps this was because they were easier to understand and the implementation was already foreseeable or at least easier to imagine. The courage of some participating teams who proposed completely new approaches was not rewarded, although the degree of innovation was named as the most important evaluation criterion.

EXPERIMENTAL PROCEDURE

In the following four years, the course was used to review and deepen the observations on visionary thinking from the first run, but also to test new things and conduct field research. To ensure that the results could be compared with each other, we tried to create conditions that were as similar as possible. The participants in the experiments were always 20 to 30 students on the Bachelor's degree course in mechanical engineering with a focus on product development in higher semesters, who worked together in teams of 4 to 6 people. These teams competed with each other to create conditions that were as realistic as possible, i.e. grades were awarded in relation to the results of the other teams.

The same procedure is followed with new students each semester: The student teams are given a task by the practice partner and initially start working on it independently. The results of this phase are assessed at the first milestone, for example in terms of creativity, achievement of objectives, number, etc. This is the reference for determining the changes through the science fiction method.

Before working on the task again, the students are introduced to science fiction films as a tool for visionary creativity processes. At the second milestone, the results are then re-evaluated and compared with the first ones in order to record the improvement effect.

In the second participation in the innovation competition, in which innovative devices for the garden of the future were to be developed, the improvements through the use of the films were clearly measurable: all first

places in the relevant categories of the competition were won by a team from the course.

In addition, innovation projects with renowned partners from industry and research were also carried out as part of the lecture. The task for these projects was even more visionary than for the two innovation challenges. In the first, concepts for the vehicle interior of the future had to be designed in cooperation with the renowned Fraunhofer Institute IAO. The main aim was to significantly improve sustainability and implement recycling processes. In another project with the same partner, the students developed solutions for the future design of car interiors, especially the center console, in the event that cars are autonomous in the future. Then no one will have to actively drive and the center console will lose the role it currently has. This opens up opportunities to repurpose the space, but also the product, and to implement additional or different functions in it to meet changing needs. The last project was about nothing less than the future of the printing industry. Ideas were developed for a well-known manufacturer of printing machines on how the products can be designed so that they will still be in demand in many years' time.

POWER OF SCIENCE FICTION FILMS FOR VISIONARY INNOVATION

The potential of using science fiction for visionary creativity processes became clear in these student projects with various partners in the field. Essentially, the students were able to generate a large number of creative and, above all, disruptive ideas based on this method, which were new even to the experts at the partners from industry and research. Surprisingly great progress was made on the path to the future, so that the clients were thoroughly impressed.

The following advantages stood out in particular:

- Eye Opener for the Future: Films can open people's eyes to the world of visions and are therefore particularly suitable for students, but also for all people who have not yet developed visionary ideas. Science fiction films give them an idea of the direction in which thinking is possible and where it can lead. They are therefore particularly suitable for big steps into the future and disruptive changes.
- Visual Stimulation: Science fiction is a great source of inspiration. It can directly stimulate creativity by allowing you to imagine yourself in a future world and let go of the limitations of the current world. To do this, it uses the power of visual stimulation.
- Inspiration Through the Power of Moving Images: It is well known that images stimulate creativity. This is used, for example, in the creativity method of stimulus images. Videos also appeal to the visual imagination, but go far beyond this. The moving images make virtual worlds tangible, so that you can think your way into them. It is also easier to empathize with the people living there and their wishes and needs.
- Catalogue for Ideas: The easiest way to find solutions is to apply existing approaches to your own problem. This creativity method is called

synectics. It shows ideas of future realities and products that can be models for your own ideas and solutions. Science fiction films contain a wealth of ideas and visions that are presented. You don't necessarily have to be creative yourself, you can also draw on ideas that the filmmakers have considered. The abundance of science fiction films offers an extensive catalog of product ideas. This is also analogous to a well-known innovation method, the design catalogs in mechanical engineering, in which principle solutions to frequently occurring problems are listed.

- Low Threshold: Science fiction offers simple, low-threshold access to visions. All you need to do is watch a movie.
- Joy and Fun: The aim of science fiction films is to provide enjoyment and entertainment. Therefore, generating innovations with this tool can also be fun. Analogous to learning through play, we can speak of innovating with fun. This was also evident in the projects: The students shed their initial reserve and enjoyed developing visions.
- Immersion: There is no easier way to immerse yourself in a virtual world and feel part of a possible future as films. You just have to get involved. This is a very powerful basis for creative innovation.
- Risk Awareness: Science fiction - like the real world - is not always positive. But this is also important, because the negative consequences of technical developments, the dystrophies, can help to develop solutions for the future or avoid undesirable developments. Disasters and problems can be considered and anticipated in films. This facilitates a holistic view and the assessment of risks and effects. The virtual experience in the film creates motivation to prevent negative developments.

CHALLENGES IN THE APPLICATION OF SCIENCE FICTION

When accompanying the teams on their way to the solutions, it was often observed that the method was not always as easy for the students as the genre of film would suggest. It was often associated with challenges and obstacles, some of which had to be overcome with great effort. The lack of knowledge in many cases should be mentioned here in particular. The support provided by science fiction films only works if suitable examples are known. As with the development of innovations in general, the available knowledge is a very important success factor. Surprisingly many students had deficits here. They only knew a few science fiction films, which is probably due to the changed viewing habits of the younger generation. In the age of TikTok and reels, the younger generation in particular consumes a lot more films, especially on social media. However, these are rarely fictional films and are therefore not helpful for visionary projects. Cinema films have become less important. Some students had no connection to the science fiction genre. Some could not remember the content of the films or could not use it for the development of innovations.

The level of knowledge of films also depends on age and life experience, or on how many films you have seen. Young people are generally at a disadvantage because they haven't had as much time as older people. It is therefore important to familiarize young people with this method at an early

age so that they understand the principle and can gather impressions and sources of knowledge - in this case films - over the course of their lives, which can be used for creative tasks. However, the students were able to close the gap sufficiently for the projects.

Another difficulty with the method is identifying the films or content that are helpful for developing a solution, as they are not usually made for this purpose. They are intended to entertain, so the useful information is usually not directly available, or at least not easily accessible. Therefore, films must be viewed with different eyes, for example by actively paying attention to what suggestions arise from the plot or the actions of the person acting. In some cases, the plot even has to be hidden in order to perceive the virtual world in which the story takes place or the devices that appear in it. The films must be consciously perceived as a method of creativity and the useful information must be collected.

However, there are also topics that are easy to find because they are often addressed in films, such as the mobility of the future. In many films, the characters are on the move, use transportation or are at least indirectly involved with it. But some films can also provide answers to other questions, such as how people will be able to feed themselves in the future, possibly on another planet, what advanced medicine could look like, how health can be maintained or restored. Here it is possible to make use of ideas that have already been conceived or to be inspired.

However, films that do not provide direct solutions to technical issues can also be helpful for the development of visionary ideas, for example by making it possible to experience a possible future world, by giving an idea of how customers think and act in this time, what they need and what problems prevail, but also what solutions are available.

The challenge is also to transform the ideas from science fiction into technically feasible products. Some science fiction films do not claim to be technically feasible. For example, floating means of transportation in the air are often shown without it being clear what technology is being used.

The challenges of the method were solvable for all students within the scope of the projects, but had an impact on the quality of the results and the time required to achieve them. This is a disadvantage of this method. Creativity techniques should be simple and low-effort. However, the potential of this method also justifies greater effort, which is higher for visionary projects anyway. In addition, the disadvantages disappear if the method is mastered and sufficient knowledge is available, i.e. if the appropriate films do not have to be searched for and watched first.

FURTHER FINDINGS AND OPEN QUESTIONS

In the search for suitable films, it became clear that it is often not possible to clearly assign them to the science fiction genre, but this is also not important for their usefulness. For this reason, the publication refers to science fiction films for simplicity's sake. There are sub-areas of this genre or related categories that can also provide more or simpler benefits, for example tech fiction or design fiction. The science fiction classics such as

Star Trek, *Star Wars* or the *Matrix* series were sometimes not so helpful because the distance to the current world is often very great. Instead, the students preferred tech fiction, i.e. films that merely anticipate technological developments. These include, for example, action films or comic adaptations of the *MARVEL* universe or agent thrillers such as *James Bond* or *Mission Impossible*. Some socially critical films such as *Elysium* are also very interesting, even from a technical point of view.

The projects of the students with partners from the field showed that science fiction is not necessarily needed to stimulate the imagination and that elaborate Hollywood productions are certainly not required. Animated films of visions were also helpful, which are more easily available and are being generated in increasing numbers. The image video of The Line, a visionary city of the future with attractive green spaces, or videos of a simulated settlement on Mars, for example, helped the students to develop ideas for gardening gadgets of the future. It is important that the future is depicted visually and ideally also in motion so that it is easy to imagine it. Images of visions certainly also have an inspiring effect. How great this effect is should be determined in further studies.

The benefits of video games should also be analyzed in this context. Here, too, people often immerse themselves in visionary, artificially created worlds. Intensive interaction while playing may make this medium even more immersive. However, video games are even more exclusive than science fiction films because they are less available. Awareness and distribution are generally even lower and, above all, you cannot simply visit the worlds of the various levels, you have to play your way into them.

Searching for films, or primarily for content, is only possible to a limited extent. A database would be helpful here, ideally with a division of the films into categories and with an assessment of their usefulness for creativity. Artificial intelligence could possibly help with the search. This also should be investigated in future student projects.

CONCLUSION

The observation of the students in the real projects has shown that the use of films, especially science fiction, can be a game changer in the development of real innovations. This enabled the goal of creating a mindset for future-oriented thinking in a short space of time and breaking the spell that often prevails in visionary tasks to be achieved. The visionary ideas and concepts developed by the students also showed how powerful the method is. It became clear that the videos are a very good tool for inspiration and can help to master the major challenges of our time.

The students succeeded in surprising and inspiring even the experts from the field. However, the method is also associated with challenges and limitations. In order to be able to use the rich treasure trove of science fiction films, for example, access and availability of the content must be ensured. It therefore makes particular sense to start using this method at an early stage in order to gain experience and films that can be used to generate innovations. It is therefore important to lay the foundations while still at university.

There are still unanswered questions and there is a need for further clarification, which is why the investigations that have been started must be continued. Particular attention must be paid to the use of AI, which can support the science fiction method on the one hand, but can also be a very powerful alternative on the other. AI is easier to use, more convenient and can be significantly faster. With the right query, an AI can generate a large number of suggested solutions. However, the question is whether AI can really create something new and whether the quality of the results can compete with those produced by humans.

REFERENCES

Cropley, D. H., Cropley, A. J., (2020). The Psychology of Innovation in Organizations. Cambridge University Press.

Hofvenschiöld, Elizabeth, Turber, Markus. (2023). Futures Literacy. Stuttgart: Intuity Media Lab.

Michaud, T., & Appio, F. P. (2022). Envisioning innovation opportunities through science fiction. *Journal of Product Innovation Management*, 39, *121–131*. https://doi.org/10.1111/jpim.12613

National Research Council. (2012). A framework for K-12 science education: Practices, crosscutting concepts and core ideas. Washington, DC: National Academy Press.

Reboud, S., Mazzarol, T. (2023). Stimulating Entrepreneurial Students' Imagination to think about the Future: The Benefits of Science-Fiction Writing. Entrepreneurship Education and Pedagogy, 25151274231168389.

Vrasidas, C., Avraamidou, L., Theodoridou, K., Themistokleous, S., & Panaou, P. (2015). Science Fiction in Education: Case studies from classroom implementations. Educational Media International, 52(3), 201–215. https://doi.org/10.1080/09523987.2015.1075102