

Make Science into a TV Series

Research in movies or TV series? Not a chance – not in Germany anyway! Yet this is actually an area with huge potential to encourage young people to go into the sciences. After all, despite all of the politically instigated job market, educational and equal opportunity measures, there has been hardly any progress in cracking open the gender-typical study and career choices and the distance felt (by females) toward scientific and technical professions in business and academia. What is needed is a dialogue between science and fiction – as is practiced very successfully in the US.

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What is it that makes movies and TV series interesting for science communication? It's more than just the fact that they have much greater reach than traditional forms of science communication, appealing even to sections of the population with little interest in education. As a number of different studies have found, movies

professional associations, companies or universities. However, they also indicate that the range of professions depicted in fictional programs is extremely limited and gender-typical.

In actual fact, the fictional formats broadcast by the five major German channels in 2009 and 2011 featured only 2 percent of characters who had a technical job and just 1.7 percent with a job in the natural sciences – and jobs in STEM disciplines were overwhelmingly represented by men. (STEM is the acronym for Science, Technology, Engineering and Mathematics.)

This picture has remained unchanged for the past ten years, as confirmed by a comparison against analyses conducted by the Institute for Employment Research. Unlike in journalism, there is no recognizable trend toward more STEM and equal opportunities here. What's more, women are still underrepresented in professional STEM roles. They are portrayed chiefly in gender-typical occupations. Traditional role models persist: women are, of course, actively employed, but they are not defined by their professional role.

The studies also show that the virtual non-existence of STEM and women in STEM professions is primarily a hallmark of German-made productions. In

Television – Inspiration for a dream job

and TV series also have a stronger and more enduring impact on education relating to professional roles than do information-based media and communication formats.

Our own studies in this context found that more young people claim to have discovered their dream job through watching TV series and motion pictures than through information-based, non-fictional media offerings, career studies classes or any career guidance available from career information centers, pro-

the American TV series and movies predominantly broadcast on commercial channels, in contrast, STEM-related subjects and settings are on the rise. No longer are STEM characters, male and female, portrayed as protagonists and action heroes only in the science fiction genre, in crime series, spy thrillers, disaster movies and dramas. They are now increasingly found in the animation genre and in comedy formats, such as the highly successful sit-

Many US formats have substantial STEM educational content

com *The Big Bang Theory*. Many of these formats, which sprang from the ranks of so-called American quality TV, have a decidedly pronounced STEM-based educational content.

The work of American physicist Paul Halpern, for instance, points to the astonishing variety and correctness of scientific ideas featured in the world's most successful animated comedy series, *The Simpsons*. Young people, and particularly young women, are fascinated by the forensic methods employed by mathematicians, computer scientists, natural scientists and engineers in their investigative work in American crime dramas. Series like *CSI: Vegas* have triggered a run on the corresponding study paths and occupations in many countries around the world – especially among young women.

In Germany, professors of medicine, such as Jürgen Schäfer, are harnessing the substantial medical school content and enormous audience popularity of the series *Dr. House* to the benefit of medical schools. Studies by British biologist and media scholar David Kirby attest to the fact that movies with STEM subjects at their core can even inspire scientists to embark on research and development projects, provoke scientific controversies and foster a willingness for political involvement.

Indeed, movies and TV series in which STEM topics and figures feature prominently are favorites among the young audience in particular. This indicates that, far from diminishing the entertainment value and audience enjoyment, highly educational content is in fact a major success factor. These exam-

ples are evidence that it's possible to attain good audience ratings without sacrificing quality.

German media legislation assigns the country's public service media an educational and cultural mandate. In practice, however, there is a lack of consensus among public service broadcasters when it comes to the entertainment media fulfilling educational functions and informing people about real-world problems. Our own anonymous surveys of film and television professionals on the function, mandate and quality of fictional TV entertainment, and on the reasons why STEM is practically non-existent in German motion pictures and TV series, indicate the exact opposite.

It is, in fact, representatives in those same public service broadcasting corporations who stress the fact that fictional entertainment should enable the audience to relax and get away from real-world problems. Quote: "When we tell a story, we like to make it suitable for a bit of escapism [...] And with everything that science and technology signifies, one needs to do a bit of learning and understanding. If we want to properly tell a story about that, we need to get the facts right. And that's a little bit, well, not exactly painful, but it's a little bit tiring."

Then why should media-makers tire themselves when they can get great broadcast ratings with saccharine-sweet and escapist programming? They consciously accept that this ratings success accommodates principally the older, over-60s age group, and that younger audiences, including teens, are turning to the American quality TV formats that they find on the commercial channels.

In practice, broadcast ratings success has become the key measure of performance for any programs with fictional narratives, unlike journalistic programming. Consequently, not only is there no incentive to bother about the minority interests of young people in an aging society and to seriously enter into competition with the commercial stations and American quality TV series, but the one-sided focus on measuring performance against ratings success apparently also promotes an attitude of sticking to tried-and-tested formats, eschewing risky innovations and avoiding investing in the development of new material. Film-industry professionals therefore refrain from addressing relevant and controversial real-world topics that could bring them into conflict with influential groups in society.



Fictional programming suffers from a lack of (self-)binding principles as regards the topicality, relevance, variety and balance of topics, genres and professional and social settings. This invites producers to tailor their choice of storylines to their own tastes and personal preferences, making these a benchmark for the assumed interests of the audience.

Surveys on this subject have shown that the reasons why STEM-related subjects, professions and settings are practically non-existent are far more diverse than merely the focus on escapist themes and the assumed tastes of the over-60s audience base. Our own surveys demonstrate that, not only do film industry professionals show little awareness of the problem of STEM worlds and women in gender-atypical STEM professions being practically non-existent, and of the inadvertent effect this has on the career paths on which young people embark, but the majority of them also admit to having very limited knowledge of STEM-related topics and professional worlds.

The surveys also found that the film industry, where people come from predominantly artistic and cultural backgrounds, is full of exceedingly clichéd ideas about STEM jobs. In particular, some of the editors of public service programming display a skeptical attitude toward science and technology.

For instance, we asked a senior editor for TV movies at a public service broadcasting corporation what the main reasons could be for the world of STEM professions barely featuring in fictional productions made in Germany – despite their social relevance. Her answer? “Science and technology, those words, make such a cold impression. And they leave most viewers cold, too [...] I don’t want to make a TV movie on a scientific topic and explain in great detail how it all fits together. No one would be interested in that, not even me [...] Child poverty is a topic that affects me much more deeply than the knowledge that there’s a lack of scientists out there.”

According to a project developer at one of a public service broadcaster’s own big production firms: “You know, there are certain professions in TV series like lawyers, park rangers, pastors, actors, doctors, and of course these are jobs that are seen as socially relevant or exemplary, in whatever way. These are ethical values, firmly embedded in society and producing role models whose examples people want to follow.” She goes on to fundamentally question the social relevance and the value and benefit of STEM sciences and jobs.

Although the American movies and TV series on the commercial stations in Germany showcase the fact that STEM offers subject matter for movies and TV series with audience appeal in all genres, most of the decision makers, of both genders, whom we surveyed in the entertainment divisions of public service broadcasters cite the following reasons for the fact that these topics aren’t featured: they’re too abstract, too intellectually demanding, too dry. Moreover, STEM scientists are too unemotional and boring, and there is too little public interest in them. Furthermore, they claim, STEM topics, settings and characters lack relevance to people’s everyday lives, and they can neither be serialized nor visualized.

In contrast, American film and television professionals point out that STEM enriches the storylines, on the one hand, with socially relevant topics and new character types with unusual attitudes and values, competencies and methods that are typical in

Too challenging, too dry and not relevant to everyday life ...

the science world. On the other hand, STEM offers new visual presentation opportunities, ways of visualizing what is beyond everyday human perception.

As we have seen, awareness of the social role of STEM sciences and STEM knowledge is conspicuously underdeveloped, and clichéd ideas dominate, among film and television professionals and programming decision makers who come from predominantly artistic and cultural backgrounds and/or have been educated in the humanities and social sciences. That is why scientific organizations are emphatically pressing for film and television professionals, not only journalists, to be addressed as a new target group in the scientific dialog, and for adequate formats to be developed for the dialog between science and fiction.

Whereas science journalism in Germany has become a profession in its own right, fictional programming has seen neither the establishment of any specialized editorial and department structures nor the development of opportunities for education and training for authors, producers and editors. >



In the US, in contrast, highly successful and well known film and television professionals actively involve scientific advisors in all phases of developing and producing their STEM material. Even leading organizations from the American science world and entertainment industry are keen to take part in the dialogue. The National Academy of Sciences, for instance, initiated the Science and Entertainment Exchange, which puts film and television professionals in touch with scientific advisors and stages a range of events to foster dialogue and exchange between science and fiction.

The Academy of Motion Picture Arts and Sciences, which awards the coveted Oscars, organizes events to raise awareness of how science enriches content development and film production technology. By the same token, it also addresses how movies themselves can inspire scientific research and development and get young people interested in

Even production technology can benefit

STEM. Large and traditional STEM research funding organizations, such as the Sloan Foundation, foster the development of ambitious STEM material, working in conjunction with places such as the Sundance Lab, and also offer film academies incentives to deal with those subjects.

Public service broadcasters in Germany are under increasing pressure to demonstrate the “public value” they provide to the audience with their fee-financed fictional television entertainment. They are also being pushed to make intensive efforts to win younger audience segments since the introduction of the per-household fee. This should make stations more willing to sharpen their profile with quality (STEM) TV formats. After all, they have seen in the experience from across the Atlantic how the American channels won back younger audience segments, and – especially – well-educated ones that have a great deal of purchasing power, not with escapist, saccharine-sweet offerings, but with quality TV programming. ◀

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THE INITIATIVE

With the support of the German Federal Ministry of Education and Research, and in cooperation with the Fraunhofer-Gesellschaft, the Helmholtz Association and the Max Planck Society, MINTiFF tests new formats for exchange and dialog between science and fiction and offers support for ambitious and innovative projects to develop material with STEM at its core. It funds ambitious projects for German TV movies and series centering on STEM topics by providing material development fellowships of 10,000 euros plus integrated advice from renowned STEM scientists awarded in the context of MINTiFF ideas contests.

The success of the initiative to date is expressed in more than just the considerable demand for exchange, dialog, advice and support that has come from film and television professionals. In spite of the lengthy development and production lead times involved in television productions, a first fellowship-funded sequel of the crime series *Tatort* has already found its way onto German TV screens, and two other TV movie projects funded by fellowships are currently under development.