The Funding Program LINK—AI and Culture

Five Lessons Learned after Five Years

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When foundations initiate funding programs, they associate them with concrete goals such as strengthening a theme, but they also conduct their own research and experiments. By asking specific questions, it is possible to generate findings and experiences that are relevant to other disciplines as well. The LINK funding program of the Stiftung Niedersachsen is a good example of this approach. Starting in 2018 in an early phase of experiments involving artificial intelligence and culture, a three-stage, cross-regional funding program was developed to answer fundamental questions regarding the future of culture. Can creativity and technology be reconciled? In art, is the artistic creative process of the individual not worth more than Big Data? Does an application of AI in culture really make sense, even though it is considered a key technology for the future in industry and business? To answer these and other questions, an expansion of competence and intensive exchange between cultural workers, scientists, and companies in this field was necessary. Some of these questions will be presented and answered below.

What Are the Application Areas for AI in Culture?

Several branches of culture are well-suited for AI applications: (creative) cultural production, cultural management, and visitor research or needs analysis. For the creative use of AI as a co-creator of almost any art form, various tools that enable human artists to produce art in collaboration with machines have been developed in recent years.[1] The degree of collaboration and thus automation can vary. In any case, a human is needed to provide the prompt (work command) and the final selection decision. Contrary to fears being propagated by the media, human artists are not being replaced by machines. In the LINK program, but also beyond it, it became apparent that automated art production is used as an entry point into artistic work

1 List of tools: https://aiartists.org/ai-generated-art-tools (all URLs here accessed in June 2023).

with AI.[2] In the long term, equal collaboration and interplay between humans and machines seems to be more attractive.

Based on AI tools already used in business or industry, adaptations can be developed for cultural management. This area includes the planning of events, space, or personnel capacities, forecasts for future income, expenditures or visitor interest, and, of course, the handling of big datasets, for instance museum objects (Murphy/Villaespesa 2022). These areas of application come with two important prerequisites: 1) data and processes must be digital, and 2) there needs to be an awareness of which data is collected and considerations of how it can be used. Even today, in 2023, the utilization of cultural data is still in its infancy, but it is nonetheless part of a cultural transformation towards a holistic approach to digitality in culture. The focus here is on reducing the workload of staff and on planning cultural services more effectively, so that culture can be perceived in the best possible way by society and also meet its needs.

As a data-intensive area, the field of visitor research in particular is immensely suitable for the use of AI. Data can be collected and evaluated with the help of AI, from searching for information in the run-up to a cultural visit, to visitor observation using tools that comply with the Data Protection Act,[3] to examining the respective cultural services on site, and evaluating the visitor experience or forecasting future visitor behaviour. The goal here is not to create a transparent visitor for commercial purposes, but instead to realize the best possible implementation of culture's societal mission so as to customize services and plan resources efficiently.

How Does AI Change Culture and How Does Culture Change AI?

A transfer from one discipline to another facilitates a change in perspective that may also affect the original discipline. This is even amplified by longer-term exchange or collaboration. Cultural practitioners ask completely different questions and react with a fresh view to traditional processes and products, for example in computer science. Stimulating impulses arise precisely from the differences between culture and classic AI fields of work. In the context of bias, the fact that technology can function as a magnifying glass for social imbalances has already been intensively discussed.[4] The ostensibly 'normal' thus comes under scrutiny and, if sensitized and technically balanced, in turn has an influence on society.

2 Interviews with the program participants: https://www.link-niedersachsen.de/blog/blog_kultur/ki_schule.

3 Project overview: https://www.mad.tf.fau.de/research/projects/tracking-in-the-deutsche-museum-nurnberg/.

4 Basics of bias in AI systems: https://bias-and-fairness-in-ai-systems.de/grundlagen/.

A translation of AI applications to cultural products can help to a considerable extent with the transparency and communication of the 'black box of AI'.[5] The mere fact of its being presented in an exhibition or a play helps the technology stand out and facilitates an intensive discussion that would probably not take place in everyday life. Cultural production and science are important drivers of a social discourse whose feedback also flows into technical disciplines. Science, business, and culture are not rigid systems, but are instead dependent on each other and require interaction for their own processes of maturing. In the LINK program, targeted exchange and collaboration formats were created to make diverse interaction between the sectors possible and thus a mutual 'cross-fertilization' between ways of working and thinking. The first pilot projects in 2018, which could be experienced across Europe from 2020 on in cooperation with the Volkswagen Foundation (Stiftung Niedersachsen 2019, 166), already illustrated the possibilities and risks of success on a small scale.

The influence of AI on cultural sectors varies depending on the focus, but the technology has nonetheless found its way into all areas. The assessment of its influence is emphasized by the media as 'disruptive', whereas cultural workers describe AI as one of several tools. Similar to the invention of digital photography, AI is changing the scope of its own possibilities, especially for society. Photographers today opt for a specific recording medium as part of the artistic process. This may be a digital camera, but it may also be a specific analogue camera or large-format camera. Each camera will take a different photograph and the choice of technique is thus as important as the choice of a colour or brush in painting. Mobile phone cameras in particular have had a major impact on the photography habits of the general population and it can therefore be assumed that the majority of society will also increasingly switch to AI tools for the creation of 'utility art', while artists will continue to choose their tools with great precision.

A Question of Dominance—Art with AI or AI with Art?

From the very beginning of the LINK program, one of the most complex questions was providing an idea of what can result from a collaboration between AI and cultural experts. Will it be an artistically-enhanced AI product or a technically-enhanced work of art? The goal should not be one of these variants, but rather a fusion, meaning a merging of two starting materials into an entirely new product. This process can only succeed if both partners work together on an equal footing. The result will thus not be part of the existing spectrum of one of the two origins,

5 Documentation of the InnovationCamp 2019, 'Gestaltungsmaschine. Künstliche Intelligenz trifft Kultur- und Kreativwirtschaft': https://kreativ-bund.de/camp/gestaltungsmaschine.

but instead something completely new. This also means that in a merging of theatre and AI, the results will not necessarily be the best possible theatre product or the best AI product, but the emergence of a new hybrid. The disadvantage of fusion is the lack of purity, while the advantage is greater resilience. An example for this approach is the LINK master project Digital Baroque, which combined Baroque life, music, dance, and robotics.[6] The resulting show was exceptional in creating access to all three disciplines even for a non-culturally inclined audience or for people with some resistance to robots.

LINK attempted to answer this fundamental question with, among other things, the AI School for Cultural Professionals. Between November 2019 and May 2020, 20 participants from music, museums, architecture, literature, visual arts, performing arts, film, and education were taught the basics of developing machine learning models in the cultural sector. The course was aimed at technically interested but not necessarily pre-educated cultural practitioners. The training program took the form of online lectures and the independent completion of programming tasks in Google Colab notebooks, with weekly office hours and monthly block of events at the Leibniz Universität Hannover in order to clarify questions and provide advice. The main programming language was Python, which has a wide range of libraries and tools available to it. The spectrum of motivations and individual project ideas were just as varied as the prior knowledge. During the first four months, craft skills were acquired using audio, image, and text data, while in the final two months their own artistic or practical projects were executed with support of the three tutors.

The 15 individual and group projects[7] reflected the respective focus of the work and included, for example, a TalkBot that (in contrast to conventional ChatBots) can hold long and in-depth conversations based on interviews from American Public Radio. Furthermore, an object recognition algorithm for birds in paintings, sculptures, and reliefs was developed to simplify the processes of indexing digital museum collections. Another project created new building structures with coloured surface patterns from perspective architectural photography and abstract painting through a Y-GAN (generative adversarial network). After the initial uncertainties regarding the hitherto foreign way of working and thinking had been overcome and a particular orientation in the new content emerged as the course progressed, much more targeted questions could be asked. The course and the results of the AI School clearly showed that cultural workers see AI as a creative tool or collaboration partner and not as a threat. This element of the program was intended to test whether artists would be dominated by the technology acquired, but it turned out that it was instead integrated into their own creative or practical work as one of several tools.

6 https://www.link-niedersachsen.de/link-masters/full_grants/digital_baroque.

7 https://www.link-niedersachsen.de/blog/blog_kultur/ki_schule.

Who is the Creator of Art? Human, Machine, or Coder?

Another fundamental question concerns an aspect that is very important in culture, namely authorship and thus a question of legal protection, but also of appreciation. According to German law, a human being is required for the protection of authorship, whereas a legal person (that is, also a company, et cetera) is necessary under ancillary copyright law (Mosing/Jokesch 2022). AI is currently not accepted as such. For quite some time, a discussion about who the author of a work is has been developing. Is it the human artist, who created a work with the help of AI? Is it the AI itself? Or is it the coder who designed the AI? The decisions leading to the final work are in fact very important. These include the choice of training data, the programming, and the selection of the final product. In this context, it is thus definitely a disadvantage to speak of an autonomous creative process of AI, because the results would then not be protected.

Many artists do not name the coders involved in a work at all or merely as subordinate individuals (Epstein/Levine/Rand et al. 2020). But a change in thinking is taking place, and artists and programmers increasingly regard each other as equal partners or as a collective with different work focuses. AI therefore has a clear influence on the perception of artists. In addition to the legal aspects, AI, however, also confronts human artists with a profound question about the meaning of being human. Is developing creative powers part of being human? Does this definition change when machines are able to become artistically active themselves? The very definition of creativity and an apparently necessary demarcation brings the questions back to fundamentally philosophical aspects. Opinions differ widely on whether machines can truly be creative (Haase/Hanel 2023). In the case of humans, we know that they are able to produce very surprising results and it is often unclear where the inspiration comes from. In the case of machines, we know that the inspiration must derive from the database and its linkages. Whether one finds the results creative or surprising is perceived very differently. Since there thus are no universal evaluation criteria for works by human artists, why should it be any different for machine art? Human artists are assumed to have an intention, but it is sometimes chance itself that gives rise to the most remarkable products. Some questions we may never be able to answer satisfactorily and others we should take as an opportunity to reflect on across genres.[8]

8 See also the contributions by Schubbach, Carré, and Fischer in this volume.

What Happens When Science and Culture Work Together?

Cross-disciplinary cooperation was necessary for success in both the development and implementation of the LINK funding program and the respective projects funded by it. Particularly the multidimensionality of artificial intelligence blurs boundaries between disciplines and promotes interdisciplinary cooperation not only between IT and culture, but also between literature, music, and the performing and visual arts. One of the goals of LINK was to establish this sort of communication and to stimulate the development of a common language.[9] In the previously mentioned pilot projects in 2018 between IT and contemporary electronic music, it very quickly became apparent that successful collaboration requires more than just getting to know each other's fields of work. The first misunderstandings quickly arose and the projects were soon on the verge of being cancelled. While computer scientists often work in a goal-oriented manner, artists are used to producing creatively in an open-ended and sometimes even chaotic way. In order to work successfully in heterogeneous teams, it is thus necessary to invest time at the beginning in developing a common language and defining common goals (Peukert/Vilsmaier 2019). Each industry has its own vocabulary, ways of thinking and working, and seemingly its own 'laws of physics'. Projects are therefore ideally accompanied by a facilitator who speaks both 'languages' and is in the position to mediate and find compromises.

LINK was able to make a contribution by showing AI culture outside the culture bubble, for instance, at the HannoverMesse (industry) and hence reach completely new target groups. The same applies to the Culture Meets Health events in Hannover and Oldenburg in 2022, where the sectors of health, technology, and culture came together. The need for a digital platform of relevant persons, projects, resources, events, and media content in the intersection of AI and culture was formulated as a work assignment at the LINK conference in 2019. The platform 'creAItix' was then successfully realized in 2020 in cooperation with partners. It is a platform for interdisciplinary exchange, which is currently still far too rare in the cultural sector. It is, consequently, now time to ensure networking and transparency and thus facilitate synergies.[10]

Despite the increased demands for collaborations between science and culture, such projects are worthwhile. The artist and scientist Claudia Schnugg speaks of 'friction gains' and thus describes the positive effects of the unavoidable friction resulting from heterogeneity.[11] These are expressed on a personal level and the participants learn to talk differently about their own work or to question and validate

9 https://www.link-niedersachsen.de/mediathek.

10 https://creaitix.com/.

11 https://www.claudiaschnugg.com/talks/ or https://youtu.be/XrOKwDSWd5s.

aspects. Furthermore, gains from friction are extremely valuable for breaking up and changing structures, but, naturally, also on an objective level: on the one hand, for the benefit to artistic creative processes and, on the other hand, for the development of innovations. Schnugg quotes Albert Einstein: Problems can never be solved with the same way of thinking with which they were created. Einstein's friend Kurt Gödel, the mathematician and logician, also explained that a system is not able to prove on its own that it is complete, true, and free of contradictions.[12] When applied to different sectors, this approach makes it clear that science, culture, education, social affairs, or medicine need each other in order to function in the long term. This may be one of the reasons why collaborations between science and culture are now being encouraged on many levels.

For a selecting jury or funders, these projects are naturally a greater risk because it is unclear in advance whether the cooperation will bear fruit and whether the desired goal can be achieved. They are experiments, whose likelihood of succeeding depends very much on the people involved and their willingness to communicate. The three LINK master projects experimented, for example, with a fusion of Baroque music, dance, and robotics (Digital Baroque), the empathetic development of stories between human and machine in an installation (ANA), or the combining of e-textiles designed through image generation, human performance, sound generation by means of skin microphones, and the immanent influence of programming through live coding (Patterns of Intelligences). All three projects convey partial aspects of technology in their own specific way.

Culture Shapes the Future

In order for culture to have an effect on the AI sector, but also on other challenges confronting society as a whole, more work must be done in the coming years on the acceptance of transdisciplinary cooperation. The resilient further development of our society requires the interference of cultural (perspectives) and individuals and institutions each trying to develop solutions to the challenges of our time from their own perspective. It has, however, become clear that we need a change of perspective. So, how can we look beyond our own professional horizons? Cultural policy is called upon to become involved proactively and to create networks between sectors and different approaches to solutions, because joint projects can only be developed based on existing contacts. Culture thus has a social mission, not only as a provider of leisure or education, but also as a connective and stabilizing element in society.

The LINK funding program was able to answer many questions regarding cultural production and management and stimulate an intensive debate. What we now

12 https://www.spektrum.de/lexikon/mathematik/goedelscher-unvollstaendigkeitssatz/3535.

have to do is pursue the open aspects and continue experimenting with an open mind. In five to ten years, we will look back on the valuable experiences and find that although we have left some paths again, we have consolidated other promising applications. With the conclusion of LINK in the summer of 2023 after five years of networking, experiments, and thought-provoking impulses, it is thus important to continue and develop them further—an opportunity for funders and cultural practitioners alike. Let us therefore help culture shape the future—also with AI.

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