Art Schools in the Age of Algorithmic Image Production

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Schools and faculties of film, art and design are currently giving serious consideration to the question of how they should respond to developments in the field of algorithmic image production. At the same time there's been a shift in the university landscape: engineering sciences have become increasingly interested in the production of images not only as «data» but as cultural artefacts which are embedded in the cultural and social creation of meaning. Qua technology they build responsibility for a field of competence that would traditionally have been the core concern of the art schools. This shift represents a challenge for the art schools, but it's also an opportunity to identify and question gaps and potentials on their path to the digital future.

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The rapid development of generative AI image production technologies shines a spotlight on the relationship between technological innovation and cultural production – on the generation and perception of images, spaces and atmospheres through technological devices and environments. Within this, the engineering sciences find themselves in a constantly changing situation: rather than treating images as technical artefacts (as «data») they're increasingly dealing with the cultural and social dimensions of images and how they can be «used» in business and entertainment.

While there's always been a strong interest in the visualisation of data (particularly among computer scientists and in computational engineering, which depends on precise visual representations of physical properties in space and time), the *cultural* significance of such scientific imagery tends to be limited to the study of science and technology – at least beyond its educational uses, such as the visualisation of aerosol distribution during the Covid-19 pandemic etc.

This is starting to change with the significance that's now being attributed to both generative technologies and immersive technologies for the future of work and everyday life. An increasing number of technical faculties – particularly at the more application-oriented colleges and universities – are expanding their study programmes to include curricula that address the production of *visual culture*, be it images, animations, spaces, games etc. Some of these programmes are the result of joint ventures between art schools and technical faculties, as with the «Digital Ideation» programme at the Lucerne University of Applied Sciences and Arts, a collaboration between the School of Design, Film and Art and the School of Computer Science and Information Technology.[1]

Interdisciplinary programmes such as these are of undisputed strategic value and provide models for higher education in the post-digital world. However, they do not relieve universities for film, design and art of the question as to how they intend to deal with the increasing links between creative processes and generative AI technologies – and where they see their position within the changing education and research landscape. What skills and knowledge will they need in order to keep step with, anticipate and shape the socio-technological transformation of work and society? How will art

Fig. 1 Reflecting on technology through critical image strategies: Christian Schuhmacher, *Screen Paradox*, desktop performance at the MA Fine Arts degree show at the Lucerne School of Design, Film and Art, 2023
Photo: Franca Pedrazzetti

Fig. 2 Outlooks on human–technology relationships in the digital age: Andrea Ricklin, *Simulated love is never love?*, and Nathalie Specker, *Storytime Mondays with Elisabeth*, exhibition at Ahoi, degree show BA Fine Arts and Art & Design Education, Lucerne School of Design, Film and Art, 2023
Photo: Kim da Motta
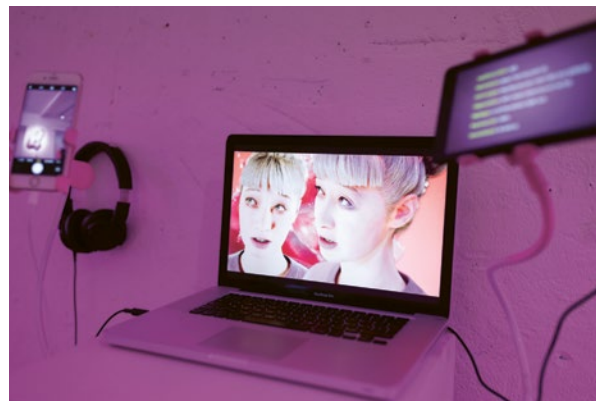
Fig. 3 Detail of *Storytime Mondays with Elisabeth* by Nathalie Specker
Photo: Kim da Motta

schools relate to the scientific and technological disciplines such as computer science and information technology? And how will they handle the fact that key topics in artistic education and research are increasingly being assigned to academics and faculties that have previously paid little attention to the interplay of creativity, technology and aesthetics?

Art schools can stake out their position on the basis of decades of engagement with the potential of algorithms and computing for the production of both meaning and aesthetic experience. Here, technology has always been a spur to the imagination, something to reflect upon (as in media art and artistic research), as well as being a means for the development and design of new processes and applications. Experimentation with immersive technologies and critical, creative work with artistic intelligence started at an early stage in artistic disciplines such as media art, interaction design or game design and became an established part of teaching and research. One particular advantage of these artistic and creative approaches

is that they're capable of reflecting *on* the medium (the technology) from *within* the medium (the technology) as they explore the risks and potential of the new technologies by appropriating and «using» them in different and sometimes unintended contexts. In doing so, art schools benefit from a broad understanding of technology and aesthetics in the interlacing of their social, cultural, economic and political dimensions. Aesthetic knowledge, artistic strategies and media-anthropological framing provide both the practical and theoretical foundation for a critical image practice which goes beyond simply acknowledging digital images as «techno-aesthetic» phenomena and instead treats technology, aesthetics and culture in their mutual dependency (figs. 1, 2 and 3).

1   See www.hslu.ch/en/lucerne-school-of-information-technology/degree-programs/bachelor/digital-ideation/ (retrieved 26 Feb. 2024).

But rather than just commenting on technological change from the side lines, future-oriented art schools have to be predicated on bringing their critical know-how to bear on the development of processes, applications and infrastructure. In order to succeed in this they will have to keep up with technological knowledge from the computer sciences and information technology, which is constantly being expanded and refined. In this the art schools are faced with several challenges: they will have to create structures that encourage and facilitate the transfer of knowledge from and to the engineering sciences. And they will have to pursue a human resources development strategy and organisational structures which expand and promote technological knowledge within the organisation to empower staff (and, by extension, students) to be innovative in a technologically highly challenging environment. This is of significance for three reasons:

First, because technological knowledge will improve the ability of the artistic and creative disciplines to establish connections with the technological disciplines and associated industries. A well-founded understanding of technological requirements and possibilities will facilitate the planning and implementation of collaborative projects in the area of digitality and digitalisation. Second, because technological knowledge will contribute to overcoming established structures and hierarchies of knowledge between the arts and the scientifically and physically oriented disciplines. This poses a challenge to art schools in terms of the way they view themselves: they need to move on from their established (and comfortable) junior partner role and be willing to take the lead in technology related collaborations. Third, technological knowledge will help the art schools prevent the migration of competence for image production to the field of engineering and technology. This is a strategic issue regarding funding and financing. But there's also a strong element of responsibility to society with respect to reflecting the cultural, social and political power of visuality.

Empowerment through technological knowledge

Technological knowledge is predisposed to provide know-how and support for specific contexts of action, so it has a deep-seated social and cultural dimension. It's based «on practical doing» and aims «to shape and produce concrete reciprocities that work in socio-technical contexts».[2] Technological knowledge is therefore not a unique characteristic of the technical and engineering sciences; it is also fundamental for design, film and art. And its spectrum is as broad

↑ **Fig. 4 Technological knowledge in action: Hack media class at the Media-Dock, Lucerne School of Design, Film and Art, 2021 Photo: Thomas Knüsel**

as the diversity of artistic and creative subjects, their media and methods; it ranges from the mixing of colour pigments based on historical recipes to the digital modulation of bodies in the production of animated films. It is one of the tasks of the art schools not just to teach this knowledge but to expand it, update it and keep it relevant for the future. They achieve this by appropriating, modifying and adapting new technologies and scientific knowledge to the context of design, film and art. The historically innovative power of the arts and their institutions is based in no small part on this capacity.

Technological knowledge knows no disciplinary boundaries *per se*. In its practical orientation it actually tends to overcome the gravitational pull of (scientific) disciplinarity and become productive in new theoretical and practical contexts. One example of this is the creation (coding) of computer applications using programming languages in art and design. In media arts, coding is a very common and established technique which would usually employ that knowledge for purposes quite unlike those of the R&D departments of the technical faculties.

But in the arts the technological knowledge emerging from the field of information technology is of relevance beyond «just» the programming and coding of applications and interfaces; it's also important in the experimental development and prototyping of infrastructure and hardware. Industrial standard solutions are often limited in their scope of applications, which is why they can't always provide designers, filmmakers and artists with the hardware they need for their own specific purposes. Infrastructure and competence hubs like the MediaDock – the ideation space at Lucerne School of Design, Film and Art – provide support to students and staff as they experiment with technology and develop innovative tailor-made solutions for their projects (fig. 4).[3]

However, this provision of digital know-how and infrastructure – from soldering irons to CPU capacities to mixed-reality headsets – is not quite enough unless it's also embedded in a genuine *culture* of digital knowledge. This culture is characterised by connectedness, by making connections between technological knowledge and knowledge about cultural techniques and aesthetics as well as the politics, economics, history and ethics of the digital. Within this culture, the capacity for creativity and innovation goes hand in hand with the capacity for reflection and critical thinking. Nurturing this culture of digital knowledge has to be a key task for the future of higher education. And in this there are two conditions that the art schools are predestined to build upon:

Firstly, they benefit from a generation of students whose thoughts and actions have evolved along with the development of digital media and for whom the linking and hybridisation of digital and analogue spaces and practices is an everyday routine. When it comes to digital communication, art school students have extensive knowledge of social, cultural and aesthetic trends and tendencies. Harnessing the potential of this knowledge, which is sometimes explicit but often implicit, represents a major opportunity. Secondly, schools and faculties for film, art and design benefit from longstanding engagement with the social and cultural aspects of digital technology. The combination of innovation, experimentation and critical thinking is inscribed in the DNA of digital media art, in every conceivable variant and denomination. From the 1990s onwards, some of the earliest programmes in media art or «new media» drew attention to a field that was instrumental in the development of critical (media) activist perspectives on digital technologies, just as it served as an incubator for the growth of new professions and fields of work. The history of internationally renowned festivals such as Ars Electronica (est. Linz, 1979) and Trans-

mediale (est. Berlin, 1988, as VideoFilmFest), which focus on the relationships and reciprocities between art, technology and society, goes back even further.

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It is festivals and exhibitions such as these that show how both the methods and subject matter of media art have transformed and grown into a broad spectrum of professional and disciplinary perspectives: from film to game design, from interaction design to spatial design and so on. They also showcase a wealth of knowledge and experience in design, film and art at the intersection of technology, aesthetics and society. It's a knowledge with deep roots in the history and the present of our art schools, but a knowledge that constantly needs renewing. Now it's up to the art schools to build on these assets, to channel them into programmes that will stand up to the competition in the higher education market while also shaping the future for the benefit of society.

2   Werner Rammert, «Die Pragmatik des Technischen Wissens oder: ‹How to Do Words with Things›», in: *Technologisches Wissen. Entstehung, Methoden, Strukturen,* ed. Klaus Kornwachs, Berlin and Hamburg 2010, p. 37.

3   For further information about the MediaDock at the Lucerne School of Design, Film and Art see Alexandra Pfammatter, Thomas Knüsel and Beatrice Alves Capa-Schilliger, «Interweaving Disciplines: How Workshop Spaces Generate New Forms of Creating», in: *Nummer* 11 (2023), pp. 46 – 51, doi:10.5281/zenodo.7418195.