

Challenging Organisations and Society

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Beware of Art: ARTificial Intelligence Challenging Organizations and Society

Edited by Claudia Schnugg and Andrea Schueller

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Claudia Schnugg

Collaborations of Art, Science and Technology: Creating Future Realities with Art and A.I.

Abstract

Artists explore new territories in their work by exploring new media, imagining new futures, contextualizing ideas, creating aesthetic investigations into new environments, or posing questions and leading theoretical discussions. Interaction among art, science and technology can contribute to the creation of future societies – of future realities – on many levels, e.g., it can contribute to communication, create experience, enrich discussions, feed into scientific processes and support personal learning.

Especially when it comes to something influential like current developments in Artificial Intelligence, contributions of artscience collaboration can be essential for designing a positive future reality for our society. Supporting collaborations in organizations through well-structured formats in the organization supports the realization of elaborate art on the topic that contributes to important developments in the organization as well as to an informed discussion with broad audiences and shareholder groups.

Keywords: Art and Science, ArtScience Collaboration, Art and Technology, Artist in Residence, Artistic Inquiry in Social and Economic Development, Corporate Artistic Residency, Art and Innovation, Artistic Strategies in Innovation

1. Three Scenes: Explorations, Future Visions and Questions

ONE: In 1999 *The Laboratorium* took place in Antwerp. As a major artistic event, the exhibition brought together art and science, staging scientific laboratories and experiments in an artistic environment to initiate relevant

interactions between art and science, at the same time addressing a broad audience. One of the experiments presented at the exhibition was *The Talking Heads experiment* by Luc Steels (see Fig. 1). It interrogated the genesis of a cognitive system – like a language – through the interaction of “talking heads”, i.e. two interacting artificial systems (computer agents) developing a cognitive system to interact, challenged by inputs from the environment. Scientifically, the project investigated the genesis of a language system. At the same time, it used a bottom-up approach to understand Artificial Intelligence: it is a case study in how an artificially intelligent system can develop.

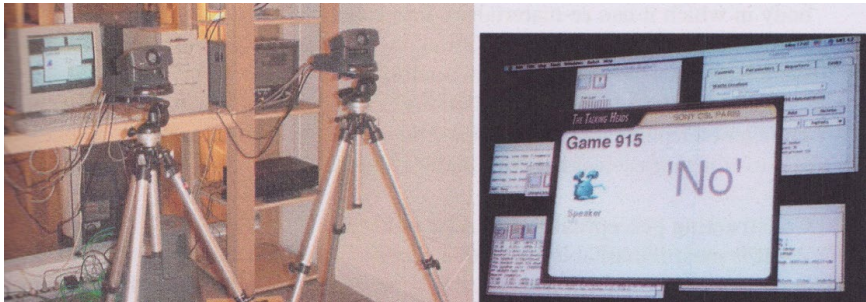


Fig. 1: *Talking Heads Experiment* Installation View at the Wellcome Gallery in London (2000). Left: Talking Heads cameras oriented towards the wall where the input is provided to them to process, in the back the computer system operating the Talking Heads. Right: Outcome projection of the interaction during an ongoing experiment. After a game failed, one of the talking heads says “No” as reaction to the failure.

Credit: Luc Steels, 2015: p. 239.

Because of the art-science exhibition situation, the experiment was presented with the support of curators to a broad audience, who were asked to interact with and challenge the artificial system. Afterwards, the project was shown at numerous artistic spaces. Thus, it supported the development of a more informed discussion with a broad audience on A.I. while contributing to the ongoing scientific research. In 2001, scientist Luc Steels teamed up with renowned artist Olafur Eliasson to take the project into an artistically elaborate

presentation with a focus on light and color.¹ The artwork *Look into the Box* developed and was presented worldwide and was shown in exhibitions and workshops on A.I. up until 2019 (see Fig. 2).

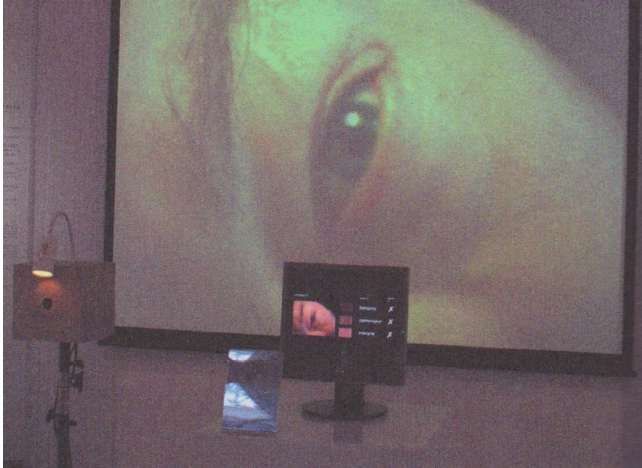


Fig. 2: *Look into the box* (2002) by Olafur Eliasson and Luc Steels, as presented in 2006 at the Tokyo Explorascience Museum, Credit: Luc Steels, 2015: p. 264.

TWO: In 2019 at *La Biennale di Venezia* artist Hito Steyerl² contributed two artworks to the main exhibitions in Arsenale and Giardini: *This is The Future* (Fig. 3) and *Leonardo's Submarine* (Fig. 4). For both installations, the artist used A.I. algorithms and digital media to create imaginative future scenarios, tackling questions of complex interdependencies of social, environmental, industrial, technological and corporate environments. She asked how A.I. systems affect future scenarios and questioned types of connections between stake- and shareholder groups that have the potential of undermining society

1 Steels (2015).

2 For background information on the Biennale exhibits in 2019 by Hito Steyerl see <https://www.labiennale.org/it/arte/2019/partecipanti/hito-steyerl>.

and culture. With this critical work, Steyerl created something highly experiential that feeds into discussions about societal and cultural developments.



Fig. 3: *This is The Future* by Hito Steyerl, installation view at Arsenale, La Biennale di Venezia, 2019; photo credit: Roland Aigner.



Fig. 4: *Leonardo's Submarine* by Hito Steyerl, installation view at Giardini, La Biennale di Venezia, 2019; photo credit: Andrea Kurz.

THREE: In the 1960s at AT&T Bell Labs the art and technology program *Experiments in Art and Technology* (E.A.T.) became famous by bringing artists into the laboratories, creating a new generation of interactions leading to iconic artworks. Most recently, with the anniversary of some prominent E.A.T. projects³ at the end of 2016, the program was revived at Nokia Bell Labs. The goal of the new E.A.T. program is to invite artists into the laboratories, exploring the future of communication and technology from a human perspective. One of the artists-in-residence, world-class beat boxer Reeps One, explored human creative potential through collaborative exercises between his human creativity and A.I. technology⁴. In addition to reaching beyond usual techniques triggered by the unforeseen interaction with the A.I. system, the project explored the role of human-embodied knowledge, human voice and human identity in interaction with communication technologies. The project fostered his own creative process, led to new, unexpected artistic output, and created contributions to the research process by generating valuable experiences. Here is the link to listening:



Fig. 5: Screenshot of the video *v* in which Reeps One develops creative sounds and patterns in exchange with an A.I. which is his Vocal Twin. For true experience of this work, follow the link https://www.youtube.com/watch?v=q981cTdL0_Y and listen to the interaction. Reeps One describes his journey in his own words and gives more examples here: <https://www.youtube.com/watch?v=wTMMopLYJn4>.

3 For more information about the anniversary of the “9 Evenings”, see a series of performances and staged artistic production that marked the beginning of the E.A.T. in the 1960s: <http://www.9evenings.org/eat/>.

4 For more details see <https://www.bell-labs.com/var/articles/we-speak-music-potential-ai-and-how-we-got-here/>.

ONE-TWO-THREE. These three scenes show how artists explore the new territory of Artificial Intelligence (A.I.) and leverage their and their collaborators' work by bringing artistic strategies into the exploration of newly-developed technological possibilities. The first scene shows a pure research setting that was enriched by artistic approaches and through interaction with broad audiences. The second scene shows critical reflections produced by an artist interrogating A.I. systems and utilizing them in a political way to create reflective experiences. The third scene shows multiple layers: an organization investigating their core mission in collaboration with artists, learning from and with the artist about the human voice and communication, but also technology, namely A.I. tools, allowing the artist to experience his own very special abilities from a different perspective and thus enabling him to push the limits of his own artistic craft and become more creative. In Reeps One's case the A.I. tool is more than a sparring partner because it allows him to see his own processes and patterns through the AI twin from an outside perspective, which helps him to see underlying principles and even overcome "organizational (inattentive) blindness"⁵.

These examples give small glimpses into what is possible by intertwining art, science and technology, in this case art and A.I.: it leads to unexpected outcomes while it helps to actively create future realities, understand the realities individuals and groups/organizations live in, explore new approaches, and introduce critical reflection. Exploring new territories with artists can bear risks for everyone, as logics from different fields and cultural backgrounds meet when the worlds of art, science and technology collide (organizations add another layer with their predominant economic embedding). When we step into uncharted territories, important challenges can be tackled in new ways and contributions will be generated. It is difficult to say in advance

⁵ Inattentive blindness is defined as something that is invisible to a person although "in plain sight". Organizational blindness can be understood as something that you cannot see anymore because you do it every day or because your attention is focused on something else due to the information you have and your internalized processes.

whether every encounter will be innovative or have a tangible outcome that will immediately make an audience understand why this specific encounter was important. And it is even more difficult to say in advance which specific outcome there will be, but if we knew what the “new” that we wanted to find was, we would not have to search for it. The cases can be seen as footsteps into the unknown, maybe having solved an important puzzle of a later prototype or served as a challenging insight or idea.

To untangle the contribution of interweaving art and A.I. in order to create positive future realities we first point to research on the effects of art in scientific, technologic and economic/organizational environments. Based on this body of research we will be able to look more closely at dynamics that emerge in the interaction of artists and A.I. researchers, engineers and other stakeholders, and by looking at these dynamics we will be able to identify relevant possible outcomes that go beyond typical buzzwords of inducing creativity or producing innovation.

2. Art and Science, Art and Technology Exchange in Society and Economy

Art historians⁶ as well as experts in technology⁷ have acknowledged the valuable contribution art-technology interactions to the development of their fields. In management science, artistic interventions into organizations have been understood as valuable opportunities to develop diverse organizational aspects by a growing group of scholars⁸. Looking at the potential of art in diverse organizational contexts, a broad range of contributions have been identified⁹ that can be located on different organizational levels (see Fig. 6)

6 Shanken (2002), Taylor (2014).

7 Lindgren (1969).

8 Seifter et al. (2010).

9 Edwards (2008), Sköldberg et al. (2016).

and a review of 74 cases has shown the breadth of the asserted effects on these different organizational levels (see Fig. 7).

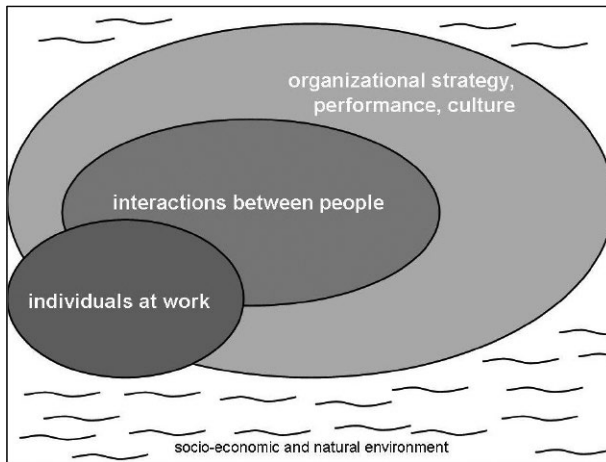


Fig. 6: Where artistic interventions add value in organizations, Antal Berthoin (2009).

It is not possible within the limits of this article to go into depth on all possible effects in relation to art and A.I. processes. With an eye to the creation of future realities through technology and science, not only is art a creative explorer of possible applications of brand-new technologies, but artists are also able to create new contexts, add meaning and investigates stories of future realities. Artworks can create experiences to get in touch with imagined future scenarios through different bodily senses. They can initiate important discussions, allowing a society to contribute to the development of the future reality that society wants and needs. The experience of the collaboration process is important so the collaborating partners can learn, explore new methods and skills, get in touch with new perspectives and create new insights¹⁰.

10 Schnugg (2019).

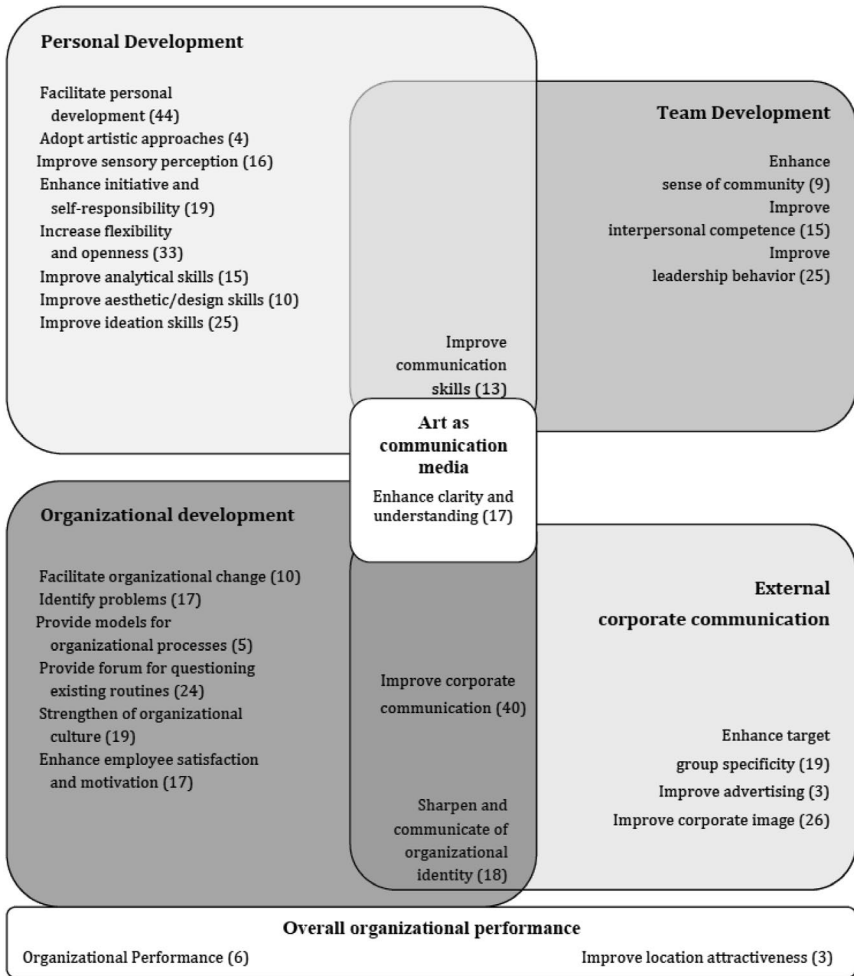


Fig. 7: List of asserted effects of arts-based initiatives in business organizations. Numbers indicate in how many cases out of 74 the specific effect was asserted; Schnugg (2010).

We must be aware that diverse, real human beings interact with non-human actors, forming a social prototype, a seed for a yet-unknown collective future. The three scenes presented above exemplify some of these dynamics beautifully.

3. What about Art and A.I.?

After a long research phase, tools integrating A.I. are rapidly becoming more capable of solving tasks and are becoming integrated into technologies that affect different levels of society: the labor market, work processes and businesses¹¹, e.g. digitalization and automation incorporating A.I. create new demands on personal skills, responsibilities and collaborative capabilities¹². At the same time, A.I. tools influence individual experiences, from personalized shopping experiences to security and safety measures in public spaces, and personal exploration of art, like music suggested by algorithms in semantic players. These changes not only challenge users and creators of applications by accustoming them to them or creating a need for new sensemaking and learning systems¹³, but they can also lead to problems, for instance enforcement of stereotypes, raise ethical issues¹⁴ or lead to problems through misinterpretation of data in cases of algorithmic overdependence¹⁵.

At the same time the body of research mentioned above shows that integrating art, artistic strategies and artistic processes in organizations, projects and development processes leads to an abundance of possible effects, adding knowledge and feeding into the potential to overcome challenges. **So, how**

11 Frank et al. (2019).

12 Autor (2019).

13 Mesgari (2019).

14 Coeckelbergh (2019).

15 Wei et al. (2017).

can we gain an understanding of the potential of pairing art and A.I. to create future realities?

The three scenes presented above point to the different layers of effects in scientific or research settings, in societal discussions, in corporate organizations and for artistic practice. Depending on the lens we take, it is possible to analyze the impact of the interdisciplinary inquiry among A.I., art and the different actors (e.g., scientists, collaboration partners, audience, engineers). What we are interested in here is how working with art and A.I. can become a platform that enables all these wonderful effects and potential outcome. We will have a closer look at what the potential of the three presented projects is and what the dimension where they contribute is while keeping an eye on the body of literature on impacts of artistic interventions in diverse organizations.

Artists explore A.I. as a tool to create their art, to find new forms of expression or to enhance their creative process as these systems makes suggestions in unexpected ways¹⁶. In that sense, they can contribute to a broader body of knowledge about skills, new work processes and which possibilities interaction with and application of A.I. systems bear. Going even further, artists approaching A.I. as collaborative partners and investigating the role of the human in the context of A.I./A.I.-powered technology create an understanding of future shared practices, limits of technology and humanizing processes (instead of adapting humans to technology)¹⁷. Artistic exploration thereby goes beyond understanding a possible interaction process; it also enables learning about humans, individual processes, and needs. It can touch important questions that have been asked without finding definite answers in order to add new layers of understanding. The case of Reeps One at Nokia Bell labs is a wonderful example of this. The A.I. twin of his voice and professional

¹⁶ Jochim (2020).

¹⁷ Chung (2020).

skills acts as a sparring partner, a mirror and an externalized entity of his embodied skills, which helps to push the professional borders and supports creative processes. Learnings can bring insights into important dynamics and fuel the so-much-needed discussion of A.I. in broader society. This discussion is mainly brought to a broader audience through presentation of the artwork, either in exhibitions or in events, but it can also be embedded in public engagement methodologies, as suggested by toolkits for Responsible Research and Innovation¹⁸. Although the project also created important dynamics in scientific developments, the Talking Heads experiment is a wonderful example here.

Themed exhibitions presenting artistic work on A.I. and reflecting on historical developments in art, computer science and A.I. can offer new access points to scientific and technological developments. At the same time, artists are in a position to go beyond intellectual discussions of topics by creating an experiential understanding of complex interrelations. This may be an experience of the abstract concept of Algorithmic Overdependence¹⁹ or interaction with robotic systems. In this sense, art makes you feel what you can barely understand. Combining intellectual aspects and embodied experiences can lead to an informed and relevant discussion. Therefore, commissioning artists to explore such issues in their practice supports the creation of a considerable body of artwork that supports social, ethical and economic discussions. The artwork of Hito Steyerl goes even further: it gets under the skin of the participating observer. Her work is highly self-referential, both by enhancing critical discussion through art on social and economic developments and by utilizing the technology that drives these developments in the artwork.

Artistic exploration of A.I. as technology or in social contexts is relevant beyond the outcome that is presented to and discussed by the public. In

18 Sparks Toolkit (2018).

19 Stary et al. (2020).

artist-in-residence programs in organizations, the artistic process carries the potential to become an important contribution to the development process in the organization, bring in new perspectives and help to overcome organizational blindness. The artist herself is the intervention in the social system. The magic happens when, systemically speaking, the two systems positively irritate each other, fostering the emergence of new communication patterns and subsequently carrying forward new meaning. Reeps One mentions that the A.I. system based on his voice gave him a new perspective on his own work, patterns, and processes while suggesting completely new constructions. This inspired him to become more creative and push the boundaries of his (artistic) craft. At the same time, artistic research puts the scientific questions and technological outcomes into broad contexts, asking different questions than scientists, engineers, policy makers and corporations ask. The case of Hito Steyerl is at first sight rather critical, but many projects inviting artistic strategies in contextualization processes and the development of future scenarios bring in new connections of matter and mind, propose valuable development, and show realistic dependencies.²⁰ Thus, the contribution can be invaluable for those inviting artists to work with them, just as it brings new dimensions to the project, scientific and technological endeavors.

4. Formats Supporting Art-Science-Technology Collaboration Frequently Found in Organizations

So how can these collaborations between art and A.I. be realized and their contribution understood as relevant? I will illustrate these questions concerning the creation of opportunities supporting art-science-technology collaboration.

²⁰ Malizia et al. (2019).

They are often created as collaborations between artists and scientists in A.I. or artists and engineers. Artscience collaboration programs as fruitful platforms for interaction between artists and scientists often take place within organizations²¹ and thus must be discussed in a language that organizations currently speak – or at least can connect with. This leads artsience programs to be designed around specific goals like contribution to creativity, innovation, or HR development. Unfortunately, buzzwords like these are frequently used to argue for such programs in communication with the organization, employees, and to stakeholder groups. This communication of goals inevitably leads to evaluation of the outcomes along these major goals. Taking the example of creativity, at the beginning of the discourse artists were brought to corporate organizations in order to add creativity because they are artists: art seen as connected to “the new” in the Western cultural understanding²² was something scholars and practitioners started to look at to infuse corporations with creativity²³. In some of these attempts, the creative processes of the organization and the artists were not taken into account, and some programs did not even bother to create a structure for artists and employees, for artists and the organization as such, to interact. When the success of such programs at the end in terms of heightened creativity was evaluated, the outcome was inevitably poor²⁴. Artists became a decoration, the desired creative powers stayed isolated, and the possible chaos or breakdown of common ways of thinking, sensing, and acting was eroded.

Nevertheless, these projects have relevant outcomes when viewed from a different perspective, which teaches important lessons: if a program for art and science in an organization is developed for a specific goal, it is important to understand the theoretical concept of the goal (i.e., What is creativity?)

21 Schnugg (2019).

22 McRobbie (2001).

23 Styhre et al. (2008).

24 Raviola et al. (2016).

and how to integrate it into the organizational structure (i.e., management, responsibilities, hierarchies, processes). If planned well with understanding of the organizational, personal, and artistic strategies, programs with art on science and technology in organizations can be successful in many ways. These undertakings require leadership giving explicit approval of and opening spaces for co-destroying and co-creating meaning. Art by definition is not primarily logic but rather combines pre- and transrational as well as rational modes. These are also helpful capacities in business and especially where business is stuck or ready to step onto the next level.

As the three scenes at the beginning of this article show, contributing to scientific research in unexpected ways, inducing critical reflection and discussion of future realities of society, and tackling an organization's important research in a new way while pushing the creativity of the artist by exploring technology in relation to individual knowledge are three completely different outcomes. Curating their process, connecting them wisely to organizational goals and visions, and relating them to strategies to actively create positive futures by following up and managing the different levels of the outcome will lead to positive results for all parties involved²⁵.

Methods organizations use in their interactions with art, the artistic process, and the artists were clustered into formats ranging from events to consultancy, workshops, and artist-in-residence programs²⁶. Artist-in-residence programs are a convenient opportunity to initiate collaboration. Within the limits of this text I will give a taste of these programs and examine the most important preconditions for this popular intervention to bear fruit.

However, artistic residencies do not automatically imply collaboration processes; collaboration must be facilitated and given enough space and time from the organization's side. Artistic residencies are a basic mechanism in

25 Schnugg et al. (2020).

26 i.e. Berthoin Antal et al. (2013), Schnugg (2014).

the artistic community, just like visiting research opportunities in the scientific world. They imply the opportunity for the artist to be hosted by an institution, organization, or place, providing space and time to work on their artistic project. Here are major aspects that influence the procedure of an artist-in-residence project:

- Themed work, collaboration with local individuals, different funding schemes (artist fee, production budget, travel, accommodation): artist-in-residence programs in corporations and scientific organizations range from inviting artists into their premises, giving them access to facilities, commissioning themed artworks, or building up intense interdisciplinary collaboration.
- Regular shorter visits over a long period (from one year up to several years) vs. fixed periods on site (e.g., two or three months, up to a year).
- A residency can be framed differently: some visiting artists receive the status of visiting researchers because the organizational structures cannot deal with them differently; sometimes the format of a fellowship provides more flexibility in terms of interaction and access.
- Art-science collaboration can aim at collaboration in the sense of co-creation (create one shared output, which may be scientific, artistic, product, or somewhere in between). Collaboration does not need to lead to a shared outcome but should feed into the artist's and the collaborating partner's (e.g., scientist, engineer, project group) goals separately through the joint experience and learning process.
- Focus on the process means focus on personal development and experience, broadening the scope of methodologies and engaging in joint research, whereas dealing with the outcome can lead to in-depth discussions, experience of previously purely intellectual concepts, or having experiential entities to reach out to broader audiences.
- Commissioning an artwork on a specific topic related to the organization can be combined with an artscience collaboration process or a residency, but basically it means that the artist will engage in the topic

to develop an artwork. These artworks can be brought back into the organization (which can be a scientific, corporate, cultural, or educational organization) to be discussed or engaged with.

5. Conclusion

Artists investigate scientific and technological developments; they interrogate cultural and societal questions. Thus, a broad audience gets in touch with these topics, and future visions can be generated and discussed. Engaging in art in the process of investigating new technologies – and the social and cultural challenges that they bring – with art is a powerful tool. It is important to approach artscience/art-technology interactions with the full freedom of each disciplinary background, not to push art into more scientific or corporate methodologies, but letting the different worlds **collide as they are**. Moreover, the outcome is less about tangible innovative products and more about critical reflections, elaborating on questions to understand in which way it is important to go forward, and learning processes on personal, interpersonal, organizational, and societal levels. Collaborators should crack each other's shell – on a personal as well as on a systems level. Otherwise new weavings will not occur. By realizing this and supporting the exchange or collaboration in an open way, these interactions can be fruitful for everyone, the process and outcome of the joint experience can reach their full potential, and problematic situations of instrumentalization of art can be avoided.

Bringing these fields together can – and most likely will – be challenging for the acting parties, but whatever interaction or joint exploration is initiated, it will lead to unexpected as well as valuable multi-layered contributions to a sustainable integration of technological opportunities into the creation of shared future realities.

References

- Autor, D. (2019). Work of the past, work of the future. NBER Working Paper 25588, National Bureau of Economic Research, Cambridge, MA.
- Berthoin Antal, A./Strauß, A. (2013). Artistic Interventions in Organisations: Finding Evidence of Values-added. Creative Clash Report; WZB: Berlin, Germany.
- Berthoin Antal, A. (2009). Transforming Organisations with the Arts. Research Report. TILLTEurope Project Report.
- Chung, S. (2020). Interview: Adding A.I. and the Humane to Human-Robot-Collaboration. Challenging Organizations and Society. Reflective Hybrids, Vol. 9(1), in this issue.
- Cockelbergh, M. (2019). Artificial Intelligence: Some ethical issues and regulatory challenges. *Technology and Regulation*, 31-34, DOI 10.26116/techreg.2019.003.
- Edwards, D. (2008). *Artscience. Creativity in the post-Google Generation*. Cambridge, MA: Harvard University Press.
- Frank, M.R., Autor, D. Bessen, J.E. et al. (2019). Toward understanding the impact of artificial intelligence on labor. PNAS Latest Articles, DOI 10.1073/pnas.1900949116.
- Jochim, E. (2020). Bridging the Gap between Art and Science: How Generative Art Captures the Essence of Our Times and Brings with It New Opportunities. Challenging Organizations and Society. Reflective Hybrids, Vol. 9(1), in this issue.
- Johansson Sköldbberg, U., Woodilla, J., Berthoin Antal, A. Eds. (2016). *Artistic Interventions in Organizations: Research, Theory and Practice*. New York: Routledge.
- Lindgren, N. (1969). Art and Technology II – A Call for Collaborations. *IEEE Spectrum*, May 1969, p 46-56.
- Malizia, A./Bond, R./Turkington, R./Mulvenna, M. (2019). Human and data-driven design fictions: Entering the near-future zone. ReCogErg 2019: Proceedings of the International Workshop on Rethinking Cognitive Ergonomics co-located with the 31st European Conference on Cognitive Ergonomics (ECCE), Belfast, UK.
- McRobbie, A. (2001). Everyone is Creative: Artists as Pioneers of the New Economy? *Opendemocracy*, 31 August. Available at: <http://opendemocracy.net/node/652>. Accessed 26 March 2020.
- Mesgari, M./Okoli, C. (2019). Critical review of organisation-technology sensemaking: towards technology materiality, discovery, and action. *European Journal of Information Systems*, 28(2), 205-232.

- Raviola, E./Schnugg, C. (2016). Fostering creativity through artistic interventions: two stories of failed attempts to commodify creativity. In: Johansson Sköldböck, U., Woodilla, J., Berthoin Antal, A., (Eds.): *Artistic Interventions in Organizations: Research, Theory and Practice*. New York: Routledge, pp. 90-106.
- Schnugg, C. (2010). *Kunst in Organisationen. Analyse und Kritik des aktuellen Wissenschaftsdiskurses zu Wirkung künstlerischer Interventionen im organisationalen Kontext*. Johannes Kepler University Linz: Doctoral dissertation.
- Schnugg, C. (2014). The organization as artist's palette: arts-based interventions. *Journal of Business Strategy* 35(5): 31-37. DOI: 10.1108/JBS-02-2013-0015.
- Schnugg, C. (2019). *Creating ArtScience Collaboration*. Palgrave Macmillan, Cham. DOI 10.1007/978-3-030-04549-4.
- Schnugg, C./Song, B. (2020). An Organizational Perspective on ArtScience Collaboration: Opportunities and Challenges of Platforms to Collaborate with Artists. *J. Open Innov. Technol. Mark. Complex.* 6, 6. DOI 10.3390/joitmc6010006.
- Seifter, H./Buswick, T. (2010). Editor's Note: Special Issue on arts-based learning for companies and leaders: arts-based learning for business. *Journal of Business Strategy* 31(4): 5.
- Sparks Toolkit (2018). *Engaging Citizens in Research and Innovation. A Playful Toolkit of Activities*. Edited by KEA European Affairs, available at: https://www.ecsite.eu/sites/default/files/sparks_toolkit.pdf.
- Shanken, E. (2002). Art in the Information Age: Technology and Conceptual Art. *Leonardo* 35(4): 433-438.
- Sary, C./Schnugg, C. (2020). Algorithmic Overdependence: Fostering Awareness through Digital Facilitation and (Re-)Construction. *Challenging Organizations and Society. Reflective Hybrids*, Vol. 9(1), in this issue.
- Steels, L. (2015). *The Talking Heads experiment*. Berlin: Language Science Press.
- Styhre, A./Eriksson, M. (2008). Bring in the arts and get the creativity for free. A study of the artists in residence project. *Creativity and Innovation Management* 17(1): 47-57.
- Taylor, G. (2014). *When the Machine Made Art*. New York et al.: Bloomsbury.
- Wei, V./Stephenson, T. (2017). *Algorithmic Discrimination White Paper*, University of Washington School of Law UW Law Digital Commons Technology Law and Public Policy Clinic, available at: <https://digitalcommons.law.uw.edu/techclinic/15>.

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Sougwen Chung is an internationally renowned artist and a pioneer in the field of human-robot collaboration. In her work she artistically explores and researches ways to work with machines and the potential of artificial intelligence in creative cooperative processes. Chung has been artist-in-residence at distinguished organizations like Nokia Bell Labs, is a former research fellow at MIT's Media Lab and was selected as the Woman of the Year in Monaco in 2019 for achievement in the Arts & Sciences.

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Paola Michela Mineo is an Italian visual artist: her research is rooted in relational art, but she uses an interdisciplinary language that ranges from performance art to photography, from the purest sculpture to installations. She graduated in Architecture at the Polytechnic of Milan and Athens; she reinterprets the concept of human cast and fragment, transforming them from

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Claudia Schnugg is independent researcher and curator in the field of art and science. Her work focuses on analyzing the effects of art in organizational and social settings, including change processes and new technologies. As advocate of artscience collaboration, she has been the catalyst for numerous projects. Claudia is working with leading scientific institutions, tech corporations and cultural partners. She researched at JKU in Linz, Copenhagen Business School, UCLA Art|Sci Center+Lab, and at European Southern Observatory, Chile. She headed the Ars Electronica Residency Network and was first Artistic Director of Science Gallery Venice. Her most recent book is “Creating ArtScience Collaboration” (2019).

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