

Dr. Claudia Schnugg

*Curator and Producer of art and science collaboration
Researcher in the intersections of art and aesthetics with
science, technology, and business*

Lee Anderson (LA) *When I first reached out to you, I had been reading your book, *Creating Artscience Collaboration*. And I found that it fits so perfectly into what I was researching and the language that you use to describe this space is really beautiful. I'd love if you would share about your background in the context of how you arrived at this research.*

Claudia Schnugg (CS) My background and how my trajectory developed is actually is very much intertwined with how I arrived in this research. To explain how I arrived here, I have to go back a few years. When I was still in school and was trying to find my way to university and what I wanted to do. I was very much drawn to many different disciplines: I was drawn to the art school—but I wasn't ready yet (laughs)—So, I was also interested in humanities and cultural sciences, but everybody would say, "Yeah, but what are you gonna do with this? How will you find a job?", so I got super insecure, but there was also my interest in the natural sciences.

After talking to some friends who already studied biology and chemistry, I didn't see myself so much in a lab, but as I was super interested in pure maths and philosophy, I started maths with a focus on logic.

But some banal things went wrong, like lodging and problems at the start, I had to change city and thus universities, and I landed in social economic sciences.

I studied this with a strong focus on Social Sciences, social theory, but also social psychology, cultural theory, and how all these various social aspects come to play when people work together in organizations. And I never wanted to leave all these other interests aside.

I first reached out to the arts and cultural sciences when I started my PhD, including studies at the Art University in cultural theory and art philosophy as part of my PhD curriculum. Plus, I had supervisors from both universities, from Social and Economic Sciences, but also

from the Cultural Sciences at the Arts University.

My PhD research looked at how to intertwine all this knowledge in order to understand why organizations, especially companies, are interested in working with the arts. A special focus on individual and social dynamics when it comes to engagement in arts and in artistic processes emerged, and I was also interested in understanding how this changes processes, adds ways of doing, adds new modes of thinking, and enhances, actually, skills.

During this time, I got a lot of support from Pierre Guillet de Monthoux and Antonio Strati who are important scholars in this field connected to critical management studies. Early in 2011, shortly after finishing my PhD,



Claudia Schnugg, Photo by Pavel Tavares from The Traveling Plant Project Video Shooting



I got to know Victoria Vesna from the Art+Sci Center UCLA who was a great inspiration to me.

After my PhD and some post postdoc research in this field was done, luckily, I got a position at Ars Electronica as head of the Ars Electronica Residency Network in 2014, which allowed me to finally integrate the full spectrum of my interests. There I started to work with artists and scientists in diverse organizational constellations with a major focus on media art and upcoming technologies. Since then I have been developing my practice and research in this field. In 2016 I started to work independently as curator and researcher with a stop in Venice at Ca' Foscari's Science Gallery Venice 2018-2019.

So this is how I arrived in this spot where I'm at right now. In the beginning, I was insecure about my background in social economic sciences, but actually it's the one perspective that enables me to talk to both communities and understand the dynamics they are experiencing. It helps to talk about value-added, identify it, and explain possible effects or experienced outcomes.

The knowledge also helps me to support organizations and individual actors from different (professional) backgrounds to talk to each other, exchange and create meaningful collaborations. It also provides knowledge about formal organizational structures and processes that help to formally integrate art-science projects or other arts-based initiatives as well as guiding their processes and results.

For example, often these interactions between artists and scientists do not come automatically, they need

support, some facilitator, mediator and a person they can trust to bring their joint project forward. It's a lot about bringing together different backgrounds and ideas and mindsets, and ideas of how the world works

layers to their work, get in touch with their own implicit knowledge, or be inspired by the interaction.

Above all, this research and experience helps me to approach

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but also how their shared interest works. So I was motivated to push my research into this direction, to understand what happens in this process between artist and scientist and what it needs to translate this to the organization and other organizational members. (And to be able to articulate more clearly processes, possible outcomes, and benefits to all participating parties; how I see the interaction and its outcomes from my expert position.)

Realizing such projects is a lot about supporting these processes. It's a lot about how to create this bridge between the artists and scientists to create something that's artistically valuable but also scientifically valuable. Because we also don't want something that's about scientific visualization and just pure instrumentalization of the arts for science communication, and the scientists only being in the position of giving information.

They are part of the process and will learn through this experience, develop new skills, add reflective

scientists in order to be very open in these collaborations, but it also gives me important arguments in conversation with organizations - who actually are the ones who have to fund, or to make space for these initiatives - to understand what such inter- and transdisciplinary work adds for them. This knowledge is as important as the question of what such collaborations can bring to the art world and artists.

LA It makes sense. And I appreciate that as one of the goals of your book, to try and show, through examples, the long-term value of incorporating this type of work into an organization in a regular way. And I can call out examples that you gave of work at the European Space Agency, and Planet Labs for example, with their Artists in Residency Program. It could be interesting to start there in terms of why and how these organizations saw that value, and what has your experience been in witnessing those interactions?

CS The cases at Planet Labs and the European Space Agency are

based on different formats, but they have one aspect in common: both were not about specific projects the scientists are working on, but about the organization and its core organizational mission.

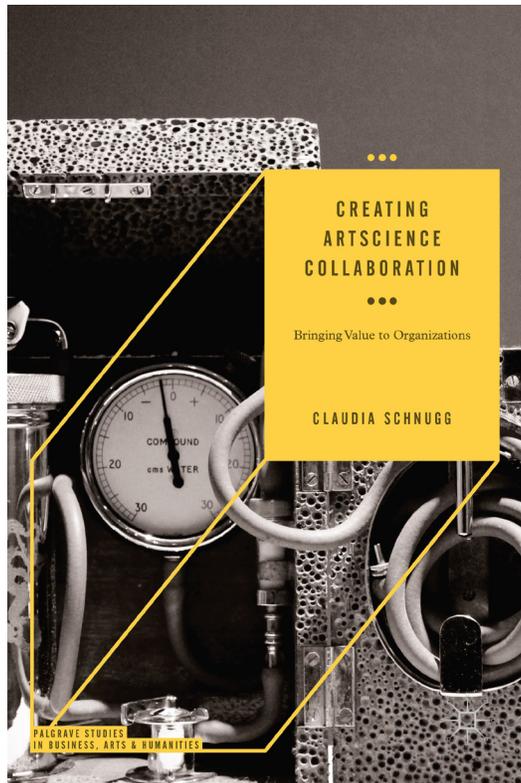
At Planet Labs the first artist working at the organization, Forest Stearns, developed an artist-in-residence program that offered the opportunity to artists to spend three months at Planet Labs and realize some artistic work. So, a very diverse range of artists was invited to Planet Labs, created interactions facilitated by Forest Stearns. The program developed as essential to developing a positive, open and inclusive organizational culture, and contributed to employee retention. Also, very diverse artwork and design was created.

At the European Space Agency (ESA) two residencies became possible that were part of an EU funded project, the Digital European Art and Science Network, headed by Ars Electronica. The call was about a residency at ESA's scientific research center ESTEC within the space science group. Two very different artists won this opportunity, Aoife van Lindentol with her work and artistic research on explosions, and Sarah Petkus with her work on robotics, exploring the question of an artistic robot on a mission on a foreign planet. Both residencies were inspiring to the employees and triggered interesting developments.

In my book, I am using Sara Petkus' residency at ESA as an example for storytelling, contextualization of work, but also referring to effects along the ideas of meaningful work theory, inspiration, and social networks. Just shortly, as I think

this is what you are hinting at, I will sum up aspects on meaningful work theory and social networks.

Work at such places is on a high level and is very demanding for employees. They are experts and excellent in their field, otherwise they would not aim to work there. Often, idealistic goals and high aims are major motivators.



Creating Artscience Collaboration, Book cover, Claudia Schugg, 2019

Within demanding organizations, these motivators can be pushed into the background while workload, deadlines and demanding projects dominate the daily work. Thus, a discrepancy between perceived working life and personal aims can affect motivation, or obscure the view on the connection between personal ideas and worklife. The interactions with the artist, the way she used storytelling, and the interactions over her ideas about her robot,

inspired scientists and engineers to also re-connect to their own personal goals and remind them of why they chose this career path. On the side of social networks, the residency had interesting effects in establishing new connections between laboratories and departments that otherwise barely interact, initiated through the interaction with the artist.

LA *Do you find that the definition of creativity is different for the science community than for the art community, or is the definition the same?*

CS I wouldn't say that it's different. I think it's an overused word, actually. I think both scientists and artists are creative. And both can be in this mode of a tunnel vision, that you just mentioned. Although a common understanding of creativity suggests that it is about doing something with colors, to sculpt or practice such handicraft, creativity is not limited to the arts.

I would like to bring in a cognitive scientist's definition, Margaret Boden's: creativity is the ability to come up with something new that's valuable and that's surprising. This definition is far from a common understanding that connects creativity to more artistic doing, and it has important implications for any realm a human can be working in, in the arts and in the sciences.

LA *And it's something where you could surprise yourself or you could surprise an audience.*

CS Sure. It's also a lot about pushing boundaries and recombination of something existing into something surprising and new. It's also overcoming challenges in that sense.



LA *There is a concept that you pulled in from Robert and Michele Root-Bernstein (p.129), about the most successful scientists being those who are polymaths or who, at some point, had a sense of aesthetic sensibility infused through even minor experience with art or music, and that maybe tuned them in to this level of their work that opened up this kind of creativity that you're talking about?*

how artistic interventions and learnings can establish new strategies to approach tacit and implicit knowledge and embodied skills. What is the role of aesthetics and sensory knowledge? And again, how can this be connected to overcome some kind of "tunnel vision" or habitual blindness. What I also find inspiring in the work by Bob and Michele Root-Bernstein is that they are also looking at education,

This differentiation between the two uses of the words already points to the first challenge: when we communicate, we think a lot about what we communicate and how somebody else could understand it. But sometimes we forget that the main word we use can be understood in a different way. Saying a word might mean something completely different to somebody with another educational

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CS I find their work extremely important and inspiring, they are pointing to interconnectedness of skills, learning, experience, and ultimately insights. As you are mentioning a sense of aesthetic and sensibility, I think learning, the understanding of situations and processes, as well as skills is also connected to aesthetics and aesthetic experience. It helps to become aware of different aspects and helps to initiate new levels of understanding.

Different levels of experience also play a role in drawing new conclusions or re-combine ideas to become surprising, valuable, new. Because you might see something you thought you knew in a new way after an aesthetic experience, or you're pushed to get out of your comfort zone, or you learn to approach your trained skills in a more differentiated way.

Personally, I've also been investigating

integration of artistic training into scientific and engineering career paths, and how this alters the skills of the students: how STEAM influences education positively.

LA *That makes me wonder also about some themes you brought up about communication between the different parties involved in these collaborations, and then also the question of trust and how you build that trust. I wonder if you could speak to that from some of these collaborations that you've observed?*

CS Communication is a central topic for such collaborations between artists and scientists. Unfortunately, it has been overused in the context of outreach and science communication and thus it can become confusing to talk about communication in this context. What you are referring to is communication between two individuals, between the artist and the scientist.

or professional background. So, in such interdisciplinary collaborations, we need to become aware of such discrepancies in language and disciplinary jargon to avoid misunderstanding. This is an important skill to learn. How to express our thoughts so somebody who is not from the same background understands what we're saying?

This is a competency not only scientists need, also expressions in art and language used by curators can be hard to understand, confusing or even excluding for scientists. This applies to disciplinary language used, but also to ways of how ideas are expressed and research questions are phrased.

It is important to find a common ground. Especially at the beginning of such collaborative processes, being aware that those interacting might not be used to interact with the other's respective field. This is

not about understanding concepts, it is mainly about the language used, building a common ground, acknowledging learning in the new field, and building up trust. This can be challenging and a painful process, especially without guidance or support from a bridge-builder, or curator who is experienced in such processes.

LA *You addressed getting an audience engaged in a topic that might be very complex or potentially controversial and just peeking their interest. They become engaged in subtle ways that can be valuable in terms of social change, or other goals that the partnership might have in mind. Can you speak to that a little bit from your point of view, and the role that these collaborations might play in those kind of lighter-touch engagements with an audience?*

CS I think there are a few interesting examples that show the diversity. First, I think translation to aesthetic experience helps a lot to reach out to an audience and to make complex and controversial ideas understandable through experience. And as soon as it's not only purely scientific and highly demanding language full of concepts and maybe even scientific references, it's much easier to engage the audience and to bring the audience in.

And also many artists say they are not good communicators. But they can create these experiences and translate ideas into artworks that so-to-say speak to the audience and let them feel. An example I like to refer to is Quadrature's work *MASSSES* which was conceived after the residency at the European Southern Observatory which refers to the fragile balance of binary systems. The artwork is

not showing the process how these systems work, but watching the artwork, the audience experiences the tension and "feels" the fragile balance.

Additionally, many artists are very good at inviting the audience into processes through creating participatory or interactive art, but also through artistic workshops, storytelling, and establishing a different relationship with the audience with different tools than a scientist has at hand.

Of course when you create something that's participatory or interactive, it's even easier to create audience engagement or open discussions to reflect issues. But such engagement opportunities can also emerge along the artistic research process before the final artwork is realized.

Agent Unicorn by Anouk Wipprecht has been developed within such a Responsible Research and Innovation project and developed interesting connections and a lot of engagement since it was conceived.

Another very different example that I write about in my book, the collaboration of Anna Dumitriu with scientist Nicola Fawcett, the scientist points out that the artist was able to reach the audience differently, inviting them to talk about their experience and problems in a way they never talked to her because the scientist was perceived as an expert and they didn't want to say something wrong.

LA *Which could have to do with the context of where they're engaging with that work, or that outcome.*

"...translation to aesthetic experience helps a lot to reach out to an audience and to make complex and controversial ideas understandable through experience."

This can be important for research projects. As an example, I want to refer to an idea which promotes inclusive and participatory processes into research. The European Commission advertises "Responsible Research and Innovation" in order to integrate a diverse range of perspectives into research like future audiences, future users, industry partners and so on.

Artistic initiatives and collaborations with artists have been integrated successfully in such research projects. For example, the project

CS Exactly. Nevertheless, what I want to point out here is that a contemporary museum is intimidating to an audience just as the university, or a renowned research organization. Both are fields that a broad audience might feel they don't understand enough. But there are ways to turn this around and make the setting more inviting. Science Gallery is very successful in providing this for young people. Maker communities, or media art festivals like *Ars Electronica* are also interesting role models. But there are plenty of opportunities to create an



open and inviting environment in artistic, scientific, and technological contexts.

LA *I wonder if, when collaborators are seeking funding for projects like this or an artist is seeking a residency in a context that is a little bit of a different discipline, do they have to have an end goal in mind, like “this will be commercially viable in two years,” or can it be more abstract?*

When I ask this, I’m looking at some of the examples: there are tools or technologies that are maybe applicable right now, but for a very specialized goal. And there might be further applications, but it may take longer for those to be realized. And then there are others where, maybe it’s biomaterials, where right now it’s very speculative, but the promise is there for something that could be very transformative.

CS The one designing residencies might have such goals in mind, but also residencies without such specific goals or connections to cutting-edge technology and science can end up in groundbreaking speculative design or valuable contributions to the development of new applications. In seeking for funding, it definitely helps to refer to this exploratory potential and speculative design, but also to the inspirational component and the opportunities an artistic perspective on application can

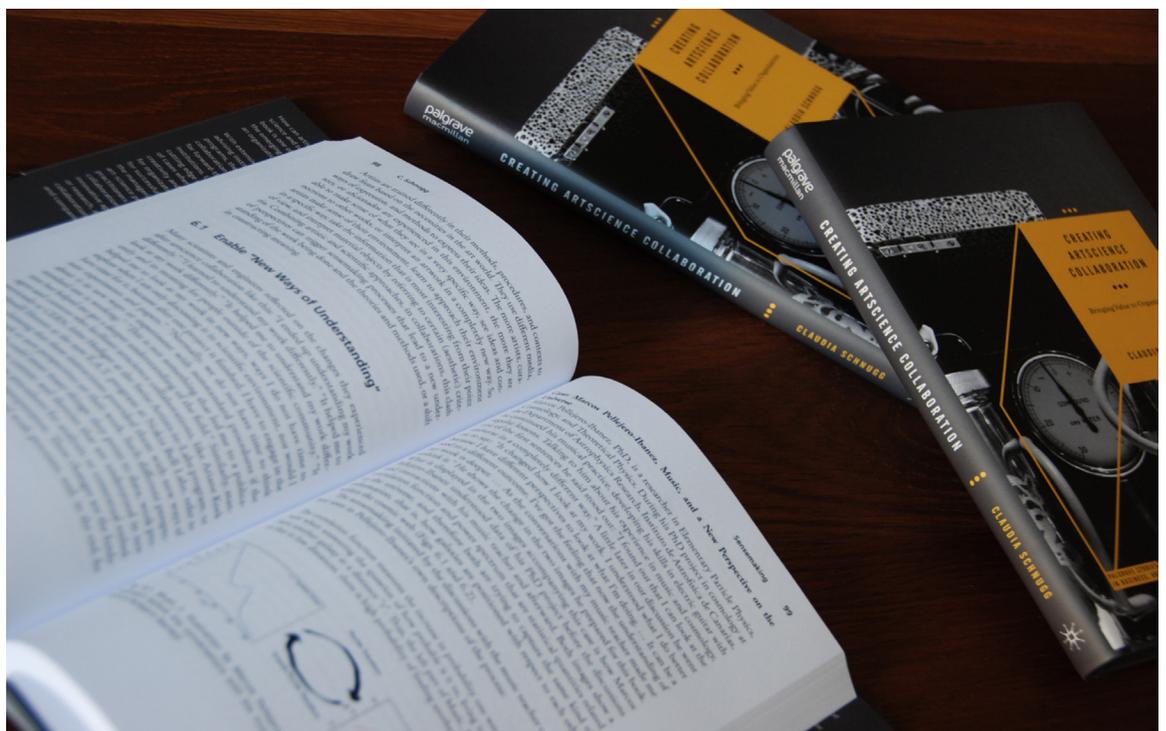
bring to a research & development project. An artist might have completely different applications in mind than a scientist. The former Autodesk Pier-9 residencies show this very well, but also Experiments in Art and Technology (E.A.T.), both in the 1960s and the revived program at Nokia Bell Labs. There are many interesting cases of art-science or art-technology collaboration that underpin such arguments.

To be honest, although this is an important argument in seeking funding, there are other arguments, too, and thus it is not the only way to initiate valuable collaborations in this field. There are also interesting initiatives tackling diversity, challenges in the development of specific applications of algorithms, or also contextualization of scientific work or promising technologies. (And then there are organizational and skill development aspects of such collaborations that can be a major argument to establish such a project, or public engagement opportunities that we’ve talked about before...)

LA *And I wonder if, because all of those approaches are valid, when talking about funding and where there is value in these collaborations, all of those should be on the table as ways that organizations could find value.*

CS Yes, I think it’s really just a decision, what you want to do in which context. Or what’s actually the best solution for the project you’re envisioning through this artsience approach. It also depends who you are talking to when it comes to the funding and for which context you are developing the artsience project. It is important to be clear on the process and the goals. For some institutions one or the other argument might be more important than the other one.

The one you’ve mentioned before is closely connected to conversations about innovation and creativity and thus easily understood as important contributions, but there are also other aspects that are connected to innovation and creativity. Developing



Creating Artsience Collaboration, Claudia Schugg, 2019

a clear argument tackling issues and challenges that are important to the funders or organizations helps to find the right approach - and to design the project that fits best the demands of the situation.

LA *Where do you think the biggest opportunities are still for getting more organizations behind arts/science collaboration? You list out a bunch at the end of the book that are already engaging in this type of work. But if you could just speak to where you're putting efforts, or where you wish people would put efforts into expanding this practice?*

CS Recently I've been putting effort a lot in creating a better understanding in management and high level management, how these different perspectives, add to the organization but also even add to very basic skills that are even necessary for the managers, themselves, to overcome

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their narrow perspectives to get out of these routines that are there in their own perception, but also in their doing. I think there is still a lot of potential there. There are some researchers, especially in the field of business, who are interested in exploring artistic methods in management education.

This might also be a key to take it as an opportunity to create arguments and understanding for arts/science collaboration as an important contribution to the organization, HR development, exploration of

technological possibilities and applications, but also to broaden the perspectives of managers themselves, add to their skills and create awareness of contexts and implications of their doing, their organization and their products.

This is an aspect that is also interconnected with business education, institutionalized thinking in management education, but also connected to practical requirements in management that need to be re-thought: how to change from short-term thinking to long-term thinking



Enjoying Yves Klein 'Blue' at the Centre Pompidou, Courtesy of Claudia Schnugg



and goals? This is hugely complex, and maybe I am too optimistic, but I think there's a lot of potential to revisit how organizations view disciplines, their own role, and develop projects, and change in a way to allow for more interdisciplinarity, reflection on social impact, and long-term goals.

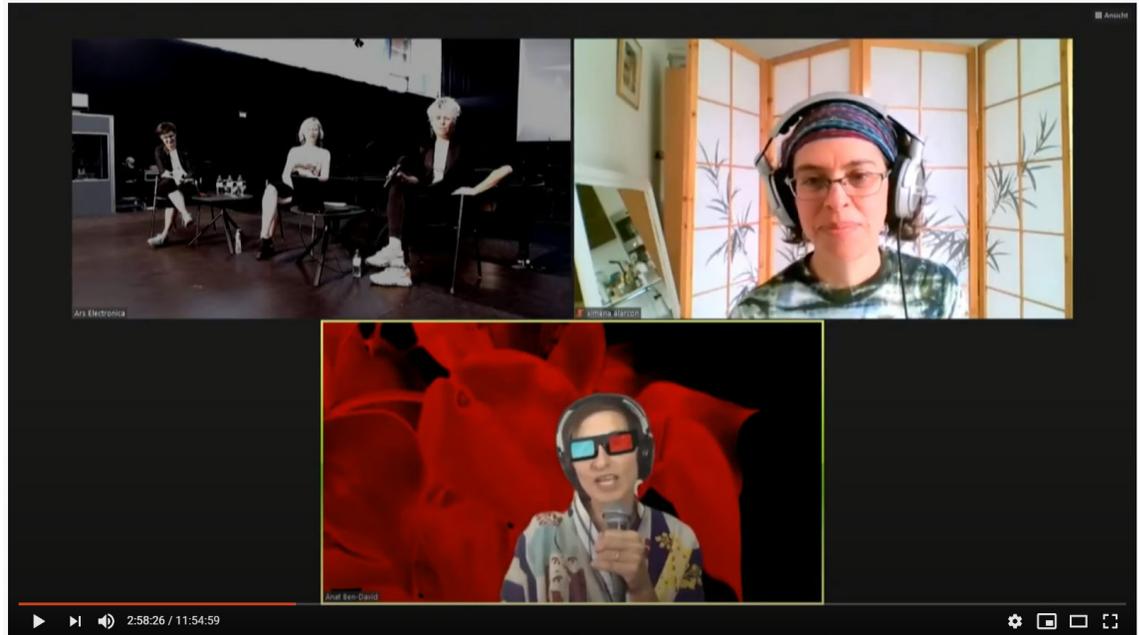
Most recently, Jack Dorsey, CEO of Twitter, said one thing he would have done differently when he had to start Twitter again was to bring social scientists and game theorists on their team to include reflections on social implications and dynamics from their perspective right from the beginning.

Right now there are a lot of dynamics and challenges humanity is meeting, the pandemic, digitalization of work, environmental crisis, this also affects organizations, forms of work and workplaces of the future, and ways of living in the future.

I do not want to go too much into this direction in this answer, but I feel a lot of change needs to happen and many perspectives, trans- and interdisciplinary approaches, as well as non-academic contributions and public engagement are necessary to solve them. At the moment

organizations, such as companies, NGOs, research institutions and governmental organizations are key, so they need to learn to apply this.

that we're all engaging in every day. So, the more people who engage in these collaborations, the better likelihood we have and solving our bigger challenges.



Screenshot Telematic Performance Panel Claudia with Alex Murray-Leslie Tina Frank Ximena Alarcon Anat Ben-David, Ars Electronica, 2020

What we're doing now in these small labs and specific artscience collaborations is actually, I think, a blueprint for something bigger that should come when we want to rethink organizations, economy, and other processes. But maybe I'm thinking too big here. I'm not sure (laughing).

LA I think that's such a beautiful concept that these smaller nodes, where it's like miniature examples of how complex all of these ideas and systems are. And then if you scale that out, we're looking at the systems

CS Yes, I think so, too. And I think you can also see this when you, for example, when you look at the new OECD study where they are really pushing transdisciplinary research and often say how important humanities and the arts are in actually solving major challenges. It is also essential to understand the different contributions specific disciplines and methods can provide, for example, that qualitative studies can give context to quantitative studies by explaining crucial factors, settings or interconnections (historical dimensions, social dimensions, or cultural dimension, for example). There is always an interplay between these different approaches.

So, I think artscience collaborations are actually already showing the

"...there are plenty of opportunities to create an open and inviting environment in artistic, scientific, and technological contexts."

possibilities and the kaleidoscope of how bringing together different disciplines enriches the outcome, enriches the process, and invites many diverse audience groups in.

LA *Obviously, we're on the same wavelength with that. But it reminds me I wanted to ask you about one of your projects at Ars Electronica because I had never heard the term "telematic art," and I would love for you to speak a little bit to that project and what that means to help build that vocabulary, a little bit.*

CS Okay. Telematic art, it's actually about connectivity, simultaneity, and how you create this shared space and shared experience through technologically mediated connections. It started from artistic investigations in telecommunication systems, creating shared experiences and creating art employing these systems as a medium.

Especially as we're now in COVID-19 restrictions and a huge share of interactions got technologically mediated, questions got more dominant: What can we do with these systems? What is missing or gets lost? Where is it limiting and where is it establishing new spaces? What are those tools made for and how can they be explored or even exploited for a different use? Can conference applications be used for audio-visual jam sessions? We wanted to address these questions in the symposium at Ars Electronica this year. Ars Electronica explores the nexus of technology, society and art, so telematic art is an important case study to explore these questions.

As we've been part of Ars Electronica's "Women in Media Arts" stream, we also took the chance to shed light

on pioneering female artists in this realm and contemporary work in this field by women. We all acknowledge the important contributions of artists like Roy Ascott and the seminal book by Edward Shanken exploring this work, and Eduardo Kac; or early work by Laszlo Moholy-Nagy, ideas by Berthold Brecht and the important contributions of thinkers working on cybernetics like Norbert Wiener.

So we set out to invite female artists and researchers to contribute to this session and reference the work from women that inspired and influenced their work. So we were able to reference female artists like Valie Export, VNS Matrix, and Lynn Herschman, but also artists like Rachel Hanlon who created interesting media archeological research around the telephone for the development of her piece Hello Machine. And on the other hand, our research also led us to very unexpected directions, as a predecessor of early telematic art is actually connected to feminist ideas.

Some art historians consider telematic art going back to the (spiritual) medium, and the medium actually predominantly female: women experimenting with spiritualism, and shamanism. Some cultural research by a Finnish cultural theorist, also hints at connecting spiritualist

movement in the Victorian age, for example, to feminist developments, as this transcendental, spiritual practice is—many people laugh about it—allowed women to create their own space and to get agency over their own worlds. So I find this a very interesting connection that actually these telematic arts and conversations also have a very strong female component.

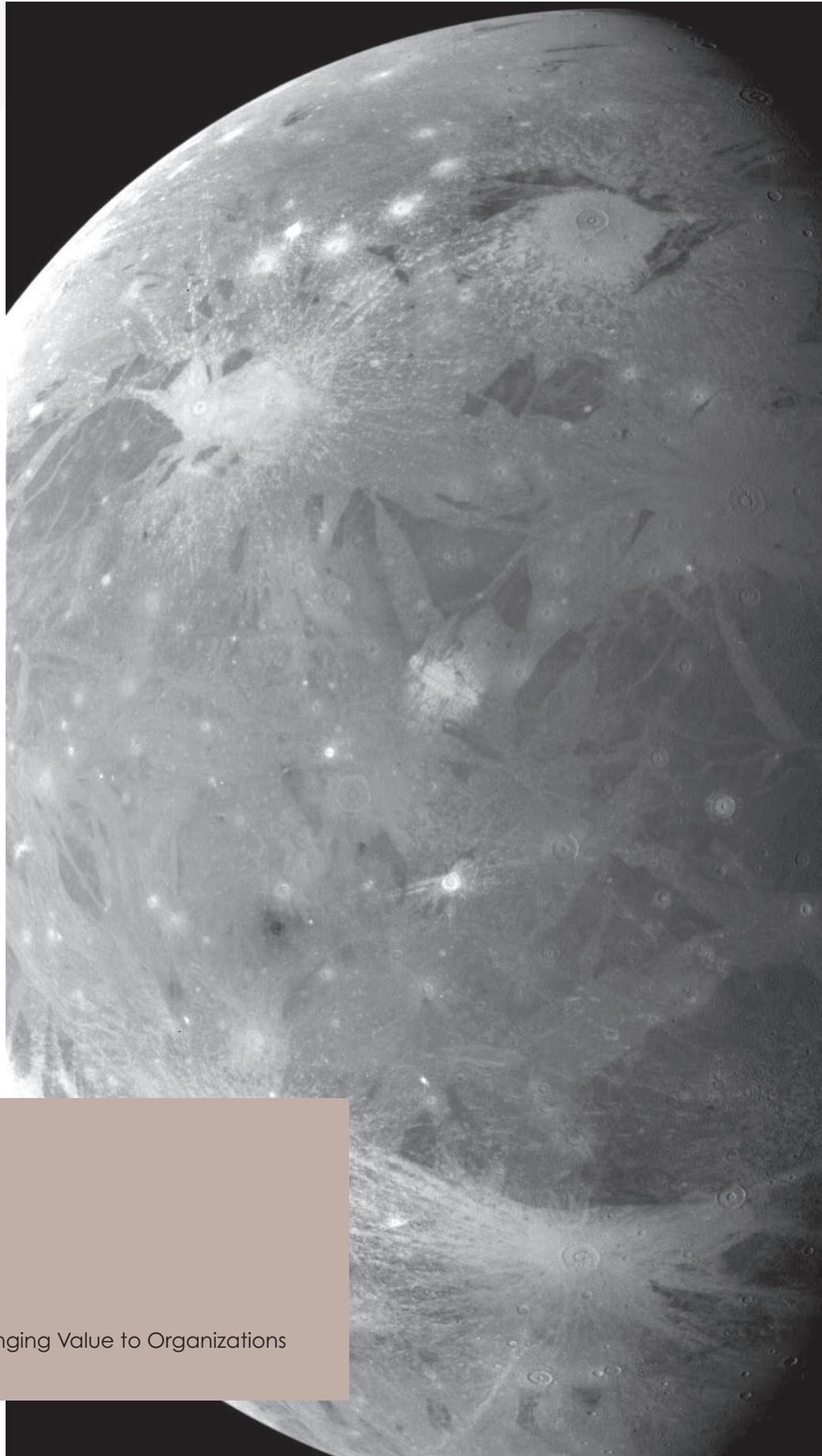
This was only a first approach, the panel was curated and conceptualized together with artist Alexandra Murray-Leslie. The contributors Tina Frank, Ximena Alarcon and Anat Ben-David talked about dimensions of telematic art such as listening and deep listening methods, roles of environment, virtual space versus physical space, or exploring the limits of the technology. There are a lot of timely questions that can be approached through the lens of telematic art, as also mentioned previously, which are connected to art, science, technology, and humanities. I hope we will be able to do so in the future.

LA *That makes me think back to something you were saying earlier about creativity as, it's not just if your hobby painting, but art that really delves deep into something new. And you just described something that really sounds like a lot of research*



went into it in an almost scientific way. So just calling out again one of the ways that these two fields are much more related than maybe they appear in the broad definition.

CS Yes, absolutely. Even if they use different methods, strategies, and standards, deep engagement with ideas, artistic research, craft skills in artistic practice - or knowledge about the artistic medium and its manipulation - are aspects of artistic processes leading to outstanding art, it is more than a spark (which does not come out of nowhere), just as deep investigation, knowledge of methods and tools is essential in scientific processes in order to draw relevant conclusions.



LINKS

Claudia Schnugg

Creating Artscience Collaboration: Bringing Value to Organizations