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Abstracts:

**TUDiSC 5th International
Conference: Disrupting
Scientific Boundaries**

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TUDiSC
Disruption and
Societal Change

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Program

9:30	- Registration
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10:15	- Lightning Talks:
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	- Briese, Marie: <i>On the boundaries and the populist abuse of the democratisation of knowledge</i>
	- Leitner, Susanne; Waghid, Zayd: <i>What does Karl Marx have to do with inclusive education in South Africa and Germany? Reflections based on a COIL- research project on Critical Global Citizenship and Defamiliarisation.</i>
	- Hönig, Jasmin: <i>Reframing Faces. Artistic Research and Critique of AI-Training-Datasets through AI-Art</i>
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11:30	- Lunch Break
12:30	- Kickoff Presentations World Cafe:
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	- Honauer, Michaela
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14:30	- Coffee Break
15:00	- World Café in three rounds
17:00	- Coffee Break
17:30	- Closing Session

Lightning Talks

Benedikt Kapteina, Eckhard Burkatzki: *Transdisciplinary Research and Democratic Strength: Uncovering the Role of Corporations*

In an era marked by declining trust in academic institutions and shifting perceptions of knowledge, transdisciplinary research involving civil society stakeholders is gaining traction. Our focus lies in exploring the intersection of management and political science, particularly examining corporate citizenship within democratic contexts amidst societal shifts like eroding trust in democratic institutions and the rise of populism. This inquiry challenges traditional economical perspectives, revealing how corporations' civic engagement defies profit-driven motives and necessitates a comprehensive, transdisciplinary approach for full comprehension.

Our approach takes both theoretical and practical angles. Drawing from business ethics, political science, and business administration, we analyze corporate citizenship and its varying levels of involvement in upholding open and liberal societies. Additionally, we involve civil society actors to understand the motivations and strategies behind corporations' civic engagement for democracy, aiming for a deeper understanding of its implications for management theory and societal governance.

We break disciplinary barriers to examine the motivations behind corporate civic engagement and its impact on democracy. Through analyzing societal challenges like populism, particularly its right-wing variant, we address threats posed by exploiting socio-economic grievances, fostering polarization, and undermining democratic institutions. To counteract these challenges, a comprehensive approach is needed to tackle underlying inequalities, reinforce democratic values, and encourage inclusive dialogue, fostering resilience and unity in society.

Our collaboration with diverse partners, including corporations and civil society organizations, raises crucial questions: How can companies uphold democratic values and counter populist narratives? What strategies promote transparent and inclusive political processes? Amid economic uncertainty, how can businesses enhance democratic resilience and social integration and mitigate the impact of populist ideologies? We develop tailored recommendations for political, economic, and civil stakeholders and advocate for scientific value neutrality to maintain research integrity. Transdisciplinary research on resilience strategies against right-wing populism and sustainability operates within specific value frameworks, presenting a unique challenge for scientists and their collaborators.

Join us in this unexplored realm where corporate engagement intersects with political discourse amidst disruptive changes. Through transdisciplinary research, we aim to foster dynamic discussions that deepen understanding of the evolving relationship between economics, politics, and management science, believing in science's pivotal role in democracy, promoting critical thinking, and providing a valid basis for political decisions. Through education and consultation, science can significantly contribute to consolidating democratic structures in societies.

Marie Briese: *On the limits and the populist abuse of the democratization of knowledge*

“Sind der Duden & ich jetzt hier die blöden oder gibt es dieses Wort in der Tat nicht?“ (außerhalb woker Universitäten)“

By being labelled as “woke” science is experiencing the disruption of its legitimacy and credibility. This hypothesis assumes that the limits of activist / politically relevant research become apparent

in populist reactions to it. Education and participation of the people are seen as the key to solving many current and impending disruptions but are shifting the sovereignty of interpretation from quality to quantity, which can be counterproductive in the case of abuse by populist actors. Through the lightning talk internal scientific reflection on the reciprocal effects of science communication can be encouraged.

Zayd Waghid, Susanne Leitner: *What does Karl Marx have to do with inclusive education in South Africa and Germany? Reflections based on a COIL-research project on Critical Global Citizenship and Defamiliarisation.*

Teachers have a global responsibility to influence future societies by facilitating the educational processes of young people. At the same time, it is clear that schools often contribute to the maintenance and perpetuation of inequality.

Our presentation reflects the initial findings of a current international teaching-research-collaboration between South Africa and Germany on inclusive teacher education, in which we use arts-based methods to discuss issues of global injustice with education students from both contexts.

As a form of defamiliarization (Waghid & Hibbert 2018), the students specifically view a short film titled "Marx and I" (Free All Political Prisoners 2022), which centres on global injustice and exploitation under capitalism. It explores the negative connotations around adverse environmental impacts, labour exploitation, poverty, war, militarization, racism, and patriarchal violence. After viewing the short film, the students would engage online in dialogue using the social networking platform Flipgrid, where they would reflect on the themes around the short film, offering their perspectives concerning the influence of globalisation and capitalism in their respective educational and societal contexts. In focus groups, we then ask the students to reflect on their insights and how they relate the issues raised in class to their roles as prospective teachers.

The focus of the course and our accompanying research is on the extent to which future teachers consider the cultivation of Critical Global Citizenship in the face of global inequality and neoliberal school systems to be relevant to their ideas about their future responsibilities and part of their pedagogical professionalism.

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Jasmin Hönig: *Reframing Faces. Artistic Research and Critique of AI-Training-Datasets through AI-Art*

How can AI-ART disrupt scientific boundaries? This contribution aims to answer this question by providing a concise insight into strategies of artistic research, criticism and influence.

Since the development of GANs (Generative Adversarial Networks) - and even more so with the arrival of the image generators DALL-E 2 (January 2021), Midjourney (July 2022) and Stable Diffusion (August 2022) - there has been a boom in AI-Art in recent years. Faces in particular are a popular motif and lend themselves especially well. The reason for this lies in the large amount of available

training data, which has been fed into massive training corpora in the research field of face recognition since the development of the Eigenface-Method in the 1990s.

Whether the classified faces are based on police archives, images of celebrities or photos from social media, it has become evident in image science and art history that the training data can never be considered neutral, as they are a part of our visual culture. Furthermore, processes of classifying faces, automated facial recognition and generative AI-Art are ultimately always subject to human decisions and are therefore permeated by racial, age and gender bias.

It is precisely this problem that has been addressed by numerous artistic positions in AI-Art for the purpose of revealing the technological processes ("black box") and their social impact. AI-Art thus questions the authority of knowledge and the underlying power structures. The potential of artistic research and debate within the scientific discourse on AI-Criticism can be illustrated by a concise presentation of three artistic intentions:

1. Pointing out the Technological Problem

(What is faulty?)

Example: Joy Buolamwini: *AI, Ain't I A Woman?*, 2018

Example: Trevor Paglen & Kate Crawford: *Image Net Roulette*, 2019

2. Demonstrating the Power of Human Decision-Making within the Technological Process

(Why is it flawed / Where lies the responsibility?)

Example: Mushon Zer-Aviv: *The Normalizing Machine*, 2018

3. Showing Alternatives

(How could the classification be changed / How could the visual canon be opened up?)

Example: Jake Elwes: *The Zizi Project*, 2019

At the intersection of technological science, art and activism, these artists blur supposedly existing boundaries. In doing so, they challenge current systems and achieve an influence not only on our visual culture, but also on the reception of AI-Technology and parts of its underlying system.

Barbara Lüneburg: *Performance of the 5-minute-composition Exploring Gestures*

As lightning talk, I propose the performance of the 5-minute-composition *Exploring Gestures* for air violin and soundtrack by Barbara Lüneburg (2023) as a performative presentation of scholarly content and research findings of the multi-year artistic research project "[Embodying Expression, Gender, Charisma – Breaking Boundaries of Classical Instrumental Practices](#)" (funded by the FWF as project AR-749),

Exploring Gestures emerged from an investigation of how performers' bodies play a central role in communicating musical expression, gender and charisma and how that manifests in and through the body of instrumental soloists in classical instrumental performance practice. The body is the medium through which instrumentalists realize sound, musical ideas, and emotion. Their body, simultaneously, is the emotion, and the conveyer of sound and musical idea. Performers use – consciously or unconsciously – gestures and facial expression as well as the staging of the body as a means of expression, communication, and interaction with the audience. Through their corporeality they allow the audience insight into their individual but also staged and culturally shaped personalities.

The audience in turn perceives and interprets performers through their body language as much as through the sounding, musical expression. Psychologist Jane Davidson reports that “the body movements of the performers inform the audience about their musical intention”, and further suggests that “in live or video performance viewing, audiences can enhance their understanding of a musical performance by observing the performer’s movements”. (Davidson 1997, 222 f.)

Thus, the bodies of soloists on stage, like the music we hear from them, tell a story. Musicians act out not only musically but bodily facets of the music they tell. In doing so, they embody different emotions or personalities. While developing *Exploring Gestures*, I analysed, re-enacted and evaluated the bodily expression of Maxim Vengerov, María Dueñas, Salvatore Accardo, Sergey Khatschaturjan and Janine Jansen and worked out typical postures. I then took the modes of embodiment I had explored out of their original classical context and display them now in a contemporary context, thereby articulating and showcasing my research findings in and through art.

And herein I see a direct connection to the questions asked by the conference about communication in art: What are the boundaries between objective representation and artistic freedom? Which modalities should be addressed — reason, affect, embodied experience?



Figure 1: Barbara Lüneburg performing *Exploring Gestures* ©Reinhard Winkler

World Café

Andrew Erickson: *The Science Fiction Fact of Dark Matter and/as Transformation*

The propensity to communicate scientific knowledge through popular forms of cultural expression and consumption has perhaps never been greater, yet questions remain. This can be witnessed in

diverse social media and in popular narrative modes, marking an important intervention into scientific discourses of knowledge production and dissemination that have increasingly ramped up in the twenty-first century. My presentation interrogates science fiction (hereafter SF) for its propensity to rethink planetary environmental loss and unequal, racialized destruction through intertwining concepts from physical sciences and artistic production. This disrupts conventional thinking to offer alternative strategies for managing the critical present to produce new models for future world-building.

The anthology *Dark Matter* (2000) engages SF's disruptive potential to communicate scientific facts from diverse perspectives, distilling and developing a growing trend. Drawn together across disciplines—sociology, law, literary and cultural theory, as well as creative writing—the contributions utilize SF to communicate complicated and intertwining ideas about personhood, relationality and environments. Inherent in the volume's exclusive foregrounding of writers from the African Diaspora is the disruption of ongoing narratives of exclusion and invisibility of certain contributions and a reclamation of the space of scientific knowledge production. It performs this important cultural work by framing racializing blackness and dark matter as intertwined: as overwhelming, yet unknown forces that act on the world, are in the world, but have been rendered invisible by too narrow a view of scientific inquiry (Thomas, "Introduction"). Contributions center Blackness as dark matter and think with physical sciences to show that darkness and the radical potential of that which has been rendered invisible and otherwise knowingly displaced by western scientific ideas nevertheless continues to transform our understanding of world. The anthology disrupts Eurocentric progressive ideas of science and, at the same time, shows how the works it contains also offer disruptions of societal normalization to instead privilege parallel approaches from writers across the African Diaspora.

My roundtable presentation centers one example from the anthology. Du Bois' short story, "The Comet," originally published in 1920, continues to offer a powerful intervention into thinking about the intersection of climate destruction, sustainability and critical race. The encounters of primary characters with the "dark matter" of Black spaces in the text lead to (however temporary) transformations of ways of being in the world. This takes the form of thinking differently about racial integration and about the relative safety of socially constructed and controlled natural environments. Dark matter offers a powerful metaphor for thinking differently about the intersections of knowledge production, dissemination and consumption as well as the detrimental racialization and impoverishment of knowledge systems and the ability of science fictions to abnegate this fault and to instead center other possibilities as facts to help live with the destroyed world and to prevent further destruction.

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Klavdia Smola: Heterodoxy of Art: Dissent Knowledge in Putin's Russia

The concept of "heterodoxy" served as the basis for creating a new epistemology for Pierre Bourdieu. Famously, Bourdieu contrasts *doxa*, that is, the sum of generally accepted, unquestioned, and often subconscious opinions that ultimately construct the system of institutions of power in a society, to heterodoxy, as the space of debate, disagreement, refutation, and doubt. Applied to the case of Putin's authoritarian Russia in the 2010-2020s, heterodoxy interests me as a concept that designates not simply a battle of opinions per se but rather epistemological dissensus, that is, the work with different knowledge of those representing or following power discourses, on the one hand, and their opponents on the other. Especially after the suppression of large-scale political protests 2011-2013, art became a means of social and political reflection for Russian dissidents, by merging with various spheres of non-art—the humanities, education, social pedagogy, activism, journalism, volunteer organizations. Increasing political unfreedom led to a significant shift of boundaries between art and research, performance and knowledge production. Research art became a medium of nonconforming coexistence with the regime, when spectacular, theatrical political performances such as those acted by Pussy Riot or Petr Pavlensky lost their political effect or were no longer possible.

Under Putin, epistemological dissensus absorbed new sources of global leftist thought, and foremost among them was the idea of "situated knowledge" as formulated by the philosopher of posthumanism Donna Haraway. The philosophy of new materialism, ecofeminism, and posthumanism, a part of which became this epistemological model, inspired a new artistic dissidence in Putin's Russia. The idea that every person bears the responsibility for their own practice of knowledge and, for that very reason, for global processes inspired practices of inclusivity, going beyond the boundaries of a single or universal gender, human, ethnic, or national perspective. In many cases, the principle of inclusivity was specifically linked to the method of micro-practices: studying local contexts and problems. Indeed, following global trends such as "research art" and "social aesthetics" was a reaction to local problems such as the decriminalization of domestic violence by the Duma's decision or laws trampling the rights of sexual minorities.

In my paper, I show how epistemological art in Russia in its own way was eroding the boundaries between open and covert nonconformism and how it contributed to new forms of dissenting coexistence with the regime.

Nadja Lüttich: The role of social movements in a learning society. Wider and specific questions around impart and learning opportunities

Latest discussions on the 29th Conference of the German Educational Research Association (GERA) identified three major crises of the German educational system: the lack of teachers, challenges in digitalisation as well as deteriorating student performances. In a wider field of questioning, the multiplicity of crises, of the global ecosystem, wars, right-wing populism blend into a dashing, often chaotic and dystopic transformation of societies all over the world.

Meanwhile, civil-society actors, and specifically social movements have always worked on transformation, struggling for change while aiming to transgress boundaries between societal sectors. On critically reflecting SDGs on that same conference, Prof. Marco Rieckmann put forward

the proposition to consider education for sustainable development more transformative and political. One question that has moved all the groups I have investigated within the frame of my PhD research in one way or the other was how to impact the general public. How can attitudes, courses of action or policies be effectively reshaped or how can approval be raised?

In taking up these questions, this contribution addresses the impact of social movement research, activism itself and particularly the role of learning in social movements beyond disciplinary (and scientific) boundaries and as a possible model for societal learning. Since obviously social movements bring up politically relevant agendas and could play a key role for a learning society, this in most cases doesn't seem to go far practically.

What are the reasons that we might protest and - sometimes - influence public opinions? But when it comes to politics, real changes are rare (at least here in Germany and in my view). These are big questions that are not easy to fathom but maybe are the most urgent ones today. Discussions with the Movement Learning Catalyst research team loosely connected through Dr. Laurence Cox of Maynooth University have brought up some key insights that I am curious to discuss with you today.

One problem seems to be the lack of a shift of boundaries which has so often been called upon. Moreover, catalysts of change occur beyond the realm of science. The tone has become rougher. My hypothesis poses the necessity to extend our educated criticism on societies and our own self-understanding in order to generate substantial progressive change in any particular social concern.

Rolando Gonzales Martinez: *Beyond the Boundaries of Weak Artificial Intelligence (AI): The Dystopian Nightmares and Utopian Dreams of Artificial Super-Intelligence and Human-AI Symbiosis*

The intersection of artificial super-intelligence (ASI) and human intelligence is a frontier of significant scientific, ethical, and societal implications. As we approach the precipice of potentially creating intelligences that surpass human cognitive capabilities, the discourse oscillates between utopian visions of a seamlessly integrated future and dystopian scenarios marked by existential risks.

Imagine, if you will, a session to discuss ASI, a session not only of sight and sound but of mind. An artistic journey into a wondrous land whose boundaries are those that cross imagination with rigorous scientific inquiry—a gateway of artistic and scientific experience to explore the symbiosis between human intelligence and its most advanced progeny, artificial super-intelligence (ASI). During the session, we will traverse the thin line between utopian dreams and dystopian nightmares, visualized through art created not by human hands, but by the digital intellect of generative artificial intelligence itself. The discussion of these AI-generated illustrations will be accompanied by algorithmic music co-created with AI, powered by Large Language Models (LLMs), and will serve as an audio-visual stage for our explorations of potential futures shaped by ASI.

Our discussion will adopt a unique framework, drawing parallels to the biological symbioses observed in nature - mutualism, commensalism, and parasitism—to elucidate the complex interdependencies between humans and machines. To deepen our understanding, we will employ mathematical models, including theories of singularity in the limit and the Mankiw-Romer-Weil equations, which forecast the trajectories of economic growth in the wake of technological revolutions. The session will also spotlight our groundbreaking Marie Skłodowska-Curie project at RUG (Rijksuniversiteit Groningen) that integrates AI with ethnographic research methods, showcasing how intelligent systems are starting to permeate the most human-centric domains of

knowledge and culture. This project exemplifies the disruption and transformation that AI brings to traditional fields, challenging and expanding the horizons of scientific practice.

Participants of the session should be prepared to engage with ideas that once seemed confined to the realm of science fiction, yet now stand poised to redefine our scientific reality. As we dissect the layers of the complex relationship between man and machine, our session is a ticket to a thought-provoking realm where the boundaries between science, art, and activism blur, and where the possibilities—and risks—of ASI are brought into sharp, unsettling focus.

Barbara Lüneburg: *Between Creativity and Rigour – Validity of Artistic Research*

This input on the validity of knowledge production in artistic research emerges from my practice as a performing musician and artistic researcher and is a response to the conference's question regarding art.

In my current three-year research project "[Embodying Expression, Gender, Charisma - Breaking Boundaries of Classical Instrumental Practices](#)" (funded by the FWF as project AR-749), my team and I are investigating what constitutes expression, gender and charisma in the bodily work of an instrumentalist. The central method "[Reenacting Embodiment](#)" that my team and I use comes from artistic research and is deeply embedded in our own instrumental practice as musicians. In our research, we must constantly ask ourselves how the personal, unique interpretation of our data can be credible and valid as research when our method is so rooted in our own experience and practice.

Not only as an artistic researcher, but also as head of the doctoral programs at the Anton Bruckner Private University, Austria, and as a reviewer and consultant in artistic research, I am confronted with the challenges associated with establishing validity criteria in artistic research. The issue is so challenging because in artistic research we need to include both creativity and rigour and subjectivity in our research process, which is also an artistic process. This can lead to a tension that could jeopardise both our position as artists and as researchers.

In my input lecture and in the later discussion sessions, I would therefore like to discuss how methods of academic research can be put at the service of artistic research, so that they offer us a framework in which researching artists can move freely and yet with the necessary consistency and rigor; and conversely, how artistic research can offer methods and insights that are not accessible to other researchers who view their research goal from the outside and who lack the deep insight through the internal perspective that artistic researchers have. In the discussion, I am also interested in what this could mean for interdisciplinary research.

In my input talk, I will illustrate and deepen these theoretical considerations using a case study from above mentioned research project (<http://embodying-expression.net/>)

Michaela Honauer, Brina van Riemsdijk: *Designing Intimate Technologies through Dance*

Digital information technologies become intimately interwoven with our society and individuals' daily lives. Through developments in sensor technology and material sciences, technologies become embedded in environments and bodies. This merging of cyber and physical worlds in combination with advances in AI gives rise to questions about what it means to be human in a society where people and digital technologies become intimately connected.

We present our overarching project "Designing Intimate Technologies through Dance" that investigates human-AI entanglements. We disrupt scientific boundaries through our creative,

transdisciplinary design research approach that encompasses different disciplines – computer sciences, social sciences, design, philosophy and the performing arts. We deploy participatory, performative and speculative methods to research, design and reflect. Beyond design thinking, we develop innovative methods to embody diverse perspectives in our research (Honauer, 2023). Beyond academic publications, we aim at disseminating our insights through alternative formats (e.g., short performances and public discussions). The close collaboration with different stakeholders enables us to tackle ethical and designerly questions through means of the performing arts: How can intimate technologies support human connection through human-technology partnership? How do AI-enabled technologies change the perception of ourselves, other humans and the environment? How can the design of emerging technologies responsibly treat (new) vulnerabilities?

Our theoretical understanding is grounded in the concept of intimate computing (van Riemsdijk, 2018) and post-phenomenological mediation theory (Verbeek, 2005). Accordingly, technologies become closely intertwined with our human condition. They have agency and co-shape our being in the world. Designing emerging technologies should thus emphasize the relations that humans enact with/through such non-human agents instead of creating experiences (Frauenberger, 2019). Emerging technologies consequently challenge traditional human-centered design approaches; designers need to develop ethical know-how and new practices to account on more-than-human perspectives (Giaccardi & Redström, 2020). We contribute practical and theoretical knowledge 1) to understand the dynamic entanglements between humans and technology and 2) to design vulnerability-aware, AI-enabled technologies that partner responsibly with individuals.

Three case studies build the foundation for our practical explorations: 1) A workshop series with a social robot and performers to investigate how humans improvise their social encounters with robots through performative approaches; 2) a three-part study with primary-school children to unravel how vulnerable groups perceive AI-enabled technologies and speculate on their shared future through different, including non-verbal, modalities; and 3) a design study to explore how people with diverse communication needs could leverage wearables to connect nuanced to their social environments.

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Daniel Prantl, Christopher Wallbaum: *Objective Visual Representation of Pedagogical Practice - the Analytical Short Film*

The merits of using audio-visual media in education research, especially regarding music teaching, cannot be neglected (Fankhauser 2013, p. 1; Rauin et al. 2016, p. 9–10). For a music-pedagogical perspective which is often focused on aesthetic processes as well as aesthetic products (e.g., Wallbaum 2000), the possibility of addressing both in the analysis of video can be seen as a huge benefit (Gebauer 2011, p. 18, Kranefeld and Schönbrunn 2010). The drawbacks of this medium like its high complexity are often overcome by establishing specific notation systems for the analysis

(e.g., Buchborn, Theison & Treß 2019, p. 78) that reduce the ambiguity of the video data (cf. Prantl, Wallbaum 2018, p. 77-80). As of now, a multitude of methodological approaches using this kind of material in pedagogical research are widely used.¹

Besides this focus on visual material as research object in pedagogical research, science and technology studies are pointing out a „pictorial turn“ (Schnettler, Pöttsch 2007, S. 483) which means, that “visuality [... is] no longer an illustrative addition in observing and recognizing knowledge“ (ibid, Transl. DP). Schnettler and Pöttsch remark that „visual logics are playing a central role in the constitution of scientific knowledge“ (ibid, p. 482, Transl DP, cf. Latour 1999, p. 24–80). This can also be observed in recent music education research, when e.g., puzzle pictures or graphic diagrams are part of the presentation of key results (Göllner 2017, p. 259, 260, 262; Hellberg 2019, p. 128, 130; Niessen 2020, p. 19). However, video material itself is seldom used in the presentation of research results, even though its potential of “giving information regarding aspects that cannot be perceived using the five human senses“ (Schnettler, Pöttsch 2007, p. 484, Transl. DP) is pointed out.

In this contribution, we want to present and discuss a mode of articulating results of research in music education that uses processed video material as key statement. The Analytical Short Film (Wallbaum 2018) consists of a short video of three minutes length accompanied by a tabular presentation that highlights the specific research-related aspects of each scene in a textual form. In this way, the benefits of visual material are present in the final stage of scientific research while reducing its ambiguity by an accompanying text. After presenting the main theoretical ideas of the concept, we want to show two contemporary examples and discuss the idea in the plenum.

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