

Artistic research and climate science: transdisciplinary learning and spaces of possibilities

Sacha Kagan

Abstract

Taking a wider view, departing from the specific case of the Hamburg exchange between artists and climate scientists, this comment envisages some radical potential for the collaboration of artists and climate scientists: moving beyond the traditional boundaries of social systems, artistic research and climate science may engage in a shared transdisciplinary learning process. They may communicate with the rest of society by engaging with others to develop ‘spaces of possibilities’, thus nurturing the creative resilience of communities.

My comment aims to critically reframe some of the discourses and interpretations that emerged from the exchange between Hamburg climate researchers and their visiting artist researchers, as far as I could witness them at the final event organised in late 2014 at the University of Fine Arts (HFBK). I will base my arguments on the following premises:

1. Art worlds, although they have been largely constrained in the modern era by a self-oriented, autopoietic logic (as analysed in different ways by Pierre Bourdieu regarding the art “field”, Howard Becker regarding “art worlds”, and Niklas Luhmann regarding art as a “social system”), are however not doomed to follow a path-dependency complying with this logic [Kagan, 2011].
2. ‘Wicked problems’ such as climate change require more than merely interdisciplinary research maintaining an *illusio* of value-neutral knowledge — they require transdisciplinary practice, with explicitly undertaken elements of ethical and aesthetic reflexivity [Kagan, 2014a]

My discourse situates itself in the complexity theory of Edgar Morin and the epistemology of transdisciplinarity of Basarab Nicolescu. Rather than with boundaries between autopoietic social systems, enclosed from the inside in a Luhmannian fashion, it engages with generative borders across autoecopoietic complex ecologies [Kagan, 2011]. This perspective will serve as my premise, i.e. I will not expose it in much further details here.

To suggest this alternative framing, I will generally discuss spaces of possibilities opened up by the meeting of artistic research and climate science rather than directly address the specific artistic research and exchanges that occurred in Hamburg over the course of 2014.

Inter- and trans-disciplinarity in science and in art

Artists (as well as other creative cultural practitioners) can engage with climate change in multiple ways. Thanks to the multiple forms of reflexivity that they develop [Dieleman, 2008, p. 108–146], artists can engage with issues by bringing together all or some of the following elements: a critical analysis; a questioning perspective that does not rush for direct straightforward solutions to problems; an exploration of potentially unconventional perspectives; an appeal to imaginative possibilities and especially subversive imagination; a hands-on approach to experimentation which is not limited to linear logico-deductive processes and instead explores the potentials of metaphorical, associative and abductive patterns of thought; a heightened and dedicated attention to sensory, aesthetic and phenomenological dimensions of learning; and a capacity to overcome the misleading separation of subject and object as well as the myth of value-free discourse. Armed with these potential qualities, artists are therefore not served well when invited to “art meets science” exchanges, if their roles are pre-set as those of mere illustrators, disseminators, communicators or propagandists of an already fixed body of knowledge. From what I could glean from the Hamburg project, this first pitfall was successfully avoided, thanks (among other things) to the (epistemological) openness expressed by several of the researchers and artists involved.

Artful inquiry holds the chance to participate in a larger project of transdisciplinarity, an expanded rationality that integrates different learning processes and different ways of knowing affecting different “levels of reality”. At this point, a clarification of terms (following Nicolescu’s definitions) is necessary, to counter the widespread confusion in the use of the terms multi- inter- and transdisciplinarity, across universities and art schools.

- *Multidisciplinarity* highlights common areas by juxtaposing the perspectives offered by different disciplines. This leaves the disciplinary work of researchers and artists (and their epistemologies) largely unaffected.
- *Interdisciplinarity* involves practices where, thanks to inspiring exchanges, researchers from one discipline borrow and adapt methods and metaphors inspired from other disciplines, within a wider shared social system (e.g. science). This is the case in academia, but is also the case, in parallel, in art worlds where “interdisciplinarity” also functions as a descriptor for practices crossing artistic disciplines. Interdisciplinarity brings many changes in the work of researchers or artists, and is practiced widely nowadays. This practice may “irritate” (in a Luhmannian sense, i.e. disturb according to an inner selectivity) the own discipline.
- *Transdisciplinarity* (TD) is an extra dimension of research and action, whereby different modes of knowing, from outside of science (or outside of art), are engaged with, on eye level. This is a wholly different kind of research practice, which complements disciplinary and interdisciplinary research and offers a wider integrative framework.

TD is not a unified practice, and several ‘philosophies’ of transdisciplinarity are currently competing, or even sometimes ignoring each other, generating diverse “transdisciplinary research cultures” [Kagan, 2014a]. For some, TD is mainly about researching with practitioners (as part of the constitution of a new field of “sustainability science”), and constitutes largely a mild form of participatory action-research (PAR) where the sustainability scientists retain relatively more hold on ethical and normative goals than does a typical PAR-researcher (even though its advocates would not describe their approach in this way). For others, TD is some kind of vague extension of the humanities, or of the typically German notion of “Kulturwissenschaften” (sciences of culture), through its many “turns”, with some strong elements from authors such as Foucault and Deleuze (and more generally a poststructuralist flair).

Numerous other approaches to TD exist, which I will not, here and now, attempt to mention exhaustively. I will rather focus on what interests me in the context of artistic research and climate science: TD as it was advocated originally from the 1980s onwards in France, especially by quantum physicist Basarab Nicolescu and sociologist and philosopher Edgar Morin; TD as a unity in complexity of knowledge, integrating different ways of knowing, without simplifying them into one meta-discipline. This TD both rejects a unitary “theory of everything” and welcomes a complex unity of knowledge.

Disciplinary scientific theories and discourses are generally incapable of holding, within themselves, ambivalences, self-contradictions and ambiguities. In the philosophy of science, one speaks about a “logic of non-contradiction” which traditionally animates disciplinary scientific discourses. (Even the Frankfurt School dialectics did not really escape this logic, although Adorno came close to that goal in some of his considerations on the logic of dialectics [Adorno, 1976].) This logic is even considered as a fundamental axiom of western philosophy (with a few exceptions such as Heraclitus, Nicholas of Cusa, and in the 20th Century Stéphane Lupasco) and therefore has exerted a structuring influence on most modern scientific discourses [Nicolescu, 2002; Nicolescu, 2014]. This shuts them out from living complexity.

A transdisciplinary approach (after Morin and Nicolescu), however, requires approaches to qualitative complexity (some of which I will further discuss below) and to generalized complexity. One general approach to complexity is Nicolescu’s, who posits the existence of different levels of reality, and of “included thirds” across these levels, allowing the development of discourses that allow a ‘logic of contradiction’ across levels of reality (while maintaining the logic of non-contradiction within levels of reality) — for example across the two levels of quantum physics and macrophysical reality [Nicolescu, 2002; Nicolescu, 2014].

This radical project of transdisciplinarity, although it constitutes a marginal and vulnerable movement within academia, often vigorously rejected by disciplinary habits, is slowly gaining ground. In parallel, within contemporary art worlds, a diversity of groups and networks are working with expanded definitions of art (following the re-definitions of art proposed by Allan Kaprow, Joseph Beuys, interventionist collectives such as *Wochenklausur* and most recently the *Laboratory of Insurrectionary Imagination*, among others). Over recent decades, a growing number of artists have learned to work in interdisciplinary teams (beyond merely

arts and creative industries-related disciplines), and a small but increasing number of practitioners are emerging whose pluri- and cross-disciplinary trainings (in the arts, natural sciences, social sciences and/or humanities) allow them to reach out for new hybrid forms of research, learning and exchange. For some of these researchers, the very question of pinning down the process, so as to label it as either art or science or activism, has become an obsolete concern.

Mutual learning goals, across climate science and artistic research

Which mutual gains should artists and climate scientists expect, from inter- and transdisciplinary collaborations? Mutual residencies, of artists in research centres, and of scientists in art centres, allow an exploration of mutual interests and reaching for some degree of interdisciplinarity. But what about going further and deeper? What would either side gain from a sustained mutual engagement in longer-term inter- and transdisciplinary collaborations? (I am discussing these gains below, merely in hypothetical and generalised terms, because I did not conduct any empirical study to test any of these in the specific case of the Hamburg project in 2014.)

Some of these gains would accrue to the climate scientists (across the natural science and social science dimensions of climate research): the scientists could learn from, and then integrate in their own inter- and transdisciplinary levels of research, artistic knowing as a productive way to deal with qualitative complexity. By qualitative complexity, I especially mean, after Morin, a complexity involving the meta-stable and dynamic relation between relations of competition, complementarity, antagonism and unity, to which the arts can offer a specific aesthetic access. Morin used the metaphor of “musical ear” which can “perceive the competitions, symbioses, interferences, overlaps of themes in one same symphonic stream, where the brutal mind will only recognize one single theme surrounded by noise” [Morin, 2008].

Furthering Morin’s metaphor, I explored how artists may develop “aesthetics of complexity” [Kagan, 2011]. Artistic learning and knowing bears the quality to keep open the ambiguities, ambivalences, contradictions and creatively chaotic dimensions of reality, rather than levelling them into a coherent logical system or even a dialectic system. Besides, artistic doing is an integrated process with a high degree of iterative loops, with telescoping and intuitive, serendipitous and transversal processes of thinking in and through action. These are helpful for both imaginative and experimental work at the science-society nexus (e.g. for the so-called “Reallabor” (laboratory of reality) experiments that are much discussed in German sustainability science nowadays).

Artistic research, as a form of ‘Kulturwissenschaft’ investigating the symbolic dimensions of our ways of perceiving and interpreting the world, is then both useful for the science-society nexus and for the self-reflexive epistemological awareness of scientists about the subconscious, symbolic, and cultural backgrounds of their own work. Artistic intervention in society, as it is practiced by some artists (see e.g. ecological art as discussed below, social sculpture, and intervention art), is potentially developing an “entrepreneurship in conventions” [Kagan, 2008; Kagan, 2011], i.e. a strategic set of cultural disruptions and invitations affecting change in social conventions regulating beliefs and behaviour at the micro and meso-social

levels. These kinds of practices develop qualities which are severely lacking in many heavy-handed interventionist attempts by scientists in society.

Some relevant characteristics of artistic practice, of potential interest to climate scientists, are among those listed by the Chicago-based artist Frances Whitehead in a one-page brief, which she entitled "What do artists know?": "Artists compose *and* perform, initiate *and* carry-thru, design *and* execute. This creates a relatively tight feedback loop in their process [...] artists are trained to initiate, re-direct the brief, and consider their intentionality. [They develop an a]cute cognizance of individual responsibility for the meanings, ramifications and consequences of their work [as well as an u]nderstanding of the language of cultural values and how they are embodied and represented [...] And m]any are skilled in pattern and system recognition" [Whitehead, 2006].

The contributions from artistic research are thus especially helpful to climate research, when integrated in inter- and transdisciplinary research, to both (1) paradigmatically move away from the cybernetic illusion of control and instead embrace chaos and complexity; and (2) to better deal, as transdisciplinary sustainability scientists, with non-knowing, with wicked problems, and with the imperative of building up resilience in society, in the face of increasingly frequent extreme climatic events.

But now, what can artists gain from this exchange, apart from the satisfaction of helping others? The artists have the opportunity to learn from natural and social scientists different methods and perspectives gained from specific systematic procedures, and then integrate them into their own inter- and transdisciplinary levels of research: these include insights forming an ecological literacy, e.g. regarding the existence of real limits in the Earth System, as well as the connections and complex dynamic relations between different systems. Such literacy is of interest to any artist aiming to work on ecological issues. They also include sociological and social-psychological literacy: this can be helpful for example in art projects with participatory character, or insightful for any artist who is neither content with staying in an ivory tower removed from audiences and other addressees, nor content with believing in curatorial discourses about the ways in which different people experience and interpret their encounters with works of art. The artists may also gain an understanding of some of the different contemporary scientific approaches to dealing with complexity (as in the case of "complex adaptive systems" for example). They may also learn, with enough time and efforts, specific systematic processes of self-reflection, criticism, validation/falsification of their own research which is a common currency of most scientific work.

To sum up, this learning process will give the artists further insights supporting them in developing their own versions of aesthetics of complexity. One especially relevant example, when looking at the possibilities of artistic research in its encounter with the civilisational issue of climate change, is the redefinition of artistic practice which emerged in the 1970s and more recently gained strength among an international, self-selected artistic circle of recognition (counting over a hundred members), named the 'ecoart network' (founded in 1999, whereby 'ecoart' stands for 'ecological art') [Ecoartnetwork]. Ecoart network artists self-define their work as [Ecoartnetwork]: "work[ing] across disciplines and within communities to:

- Focus attention on the web of interrelationships in our environment — to the physical, biological, cultural, political, and historical aspects of ecological systems;
- Create artworks that employ natural materials, or engage with environmental forces such as wind, water, or sunlight;
- Reclaim, restore, and remediate damaged environments;
- Inform the public about ecological dynamics and the environmental problems we face;
- Re-envision ecological relationships, creatively proposing new possibilities for co-existence, sustainability, and healing.”

Looking at the projects conducted over the past four decades by artists both in and outside this specific group, such as Helen and Newton Harrison, Mierle Laderman Ukeles, Patricia Johanson, Lynne Hull, Aviva Rahmani, David Haley, Tim Collins and Reiko Goto, Mel Chin, Lillian Ball, Frances Whitehead or Brandon Ballengée (to name only a few among the better-known artists), I characterised the practice of ecological art as a potentially transdisciplinary practice with salient characteristics [Kagan, 2014b]:

- As already noted early on by art historian and critic Suzi Gablik [1991], these are connective practices (nurturing connective aesthetics) rather than artistic practices entrenched in oppositional approaches, and these are practices that beyond deconstructive criticality within the boundaries of art worlds (as is common in much contemporary art) also engage in reconstructive experimentation at the borders of art and life, or even at the heart of everyday life.
- Their practitioners subject themselves to specific ethical responsibilities with regards to human and non-human communities, especially regarding the concrete effects of their practices.
- They strive to shape shared spaces for people and other species, or at least advocate for such spaces known as “commons”; and strive as well to share creativity as a cultural commons. Rather than playing the traditional role of the artist as a hero of independence, they invent for themselves new roles as interpreters of interdependence.
- Ideally, they navigate across, and connect together, different scales of space, time and systems, from ego- to eco-systems. In doing so, they explore the fabric of life’s complexity, in its ecological and social ramifications.

Such a redefinition of artistic practice, which brings together with artistic qualities, the qualities of transdisciplinary research and of activism, also brings a challenge to art criticism. It highlights the need for an ecological critique in art, which neither indulges in simplistic nature-loving platitudes, nor in self-indulgent art-world oriented discourses. It also implies the need for ecological, political and sociological literacy in art criticism, which are most often still non-existent in that field, resulting in the imposition of largely inadequate aesthetic quality criteria because art critics do not properly understand several dimensions of the work they are evaluating.

Shaping spaces of possibilities

A shared concern of many climate scientists and artists is how to communicate with the rest of society. The combined potential of a transdisciplinary collaboration of artists and scientists, as discussed here, should be translated into the development of “spaces of possibilities” as spaces of challenging experience, imagination and experimentation [Dieleman, 2012; Kagan, 2012]. In order to engage non-academics and people who are not part of the cultural elites already visiting art institutions, these spaces should not be established within strongholds of universities, institutional art spaces or activist headquarters. They should instead be located in institutionally still undetermined spaces, where creative experiments and the everyday life of local inhabitants may come together, functioning as emergent open commons. One example of such a space in Hamburg in recent years is the ‘Gängeviertel’ [Kirchberg and Kagan, 2013]. In spaces of possibilities, local communities who are neither scientists nor artists or activists, are given the opportunity to engage, together with activists, artists and academics, in creative, experiential and serendipitous ways, with questions relating climate change to the everyday and to their own experience, shaping not just individual but also shared desires for potential futures.

Sustainable development requires a build-up of resilience, and resilience, under unpredictable conditions related to climate change, will require great levels of creativity, both at individual and at collective levels. The goal of spaces of possibilities is not to cultivate the creativity of a “creative class” as human capital for the current economic development of the city [Kagan and Hahn, 2011]. It is to develop the creative potential of local communities for resilience, developing diverse, redundant and self-organised response-abilities. In the probable scenarios of severe climate change and failure of mitigation strategies, civil society would be compelled to draw from its self-organisation rather than relying on increasingly unstable established structures. The maturation of preparedness for community resilience towards such scenarios “requires opening up spaces of experimentation, where learning opportunities empower [...] citizens, already ahead of a regime shift” [John and Kagan, 2014, p. 71]. My question to the artists and climate scientists I met in Hamburg in late 2014 at the closure of their exchange project, was thus, how do they intend to proceed further into transdisciplinary mutual learning processes, and will they aim to contribute to the emergence of needed spaces of possibilities?

References

- Ecoartnetwork. URL: <http://www.ecoartnetwork.org>.
- Adorno, T. (1976). ‘On the Logic of the Social Sciences’. In: *The Positivist Dispute in German Sociology*. Ed. by T. Adorno, H. Albert, R. Dahrendorf, J. Habermas and K. Popper. London, U.K.: Heinemann, pp. 105–122.
- Dieleman, H. (2008). ‘Sustainability, art and reflexivity: why artists and designers may become key change agents in sustainability’. In: *Sustainability: a new frontier for the arts and cultures*. Ed. by S. Kagan and V. Kirchberg. Frankfurt am Main, Germany: Verlag für Akademische Schriften, pp. 108–146.
- (2012). ‘Transdisciplinary Artful Doing in Spaces of Experimentation and Imagination’. *Transdisciplinary Journal of Engineering and Science* 3, pp. 44–57.
- Gablik, S. (1991). *The Reenchantment of Art*. London, U.K.: Thames and Hudson.
- John, B. and Kagan, S. (2014). ‘Extreme climate events as opportunities for radical open citizenship’. *Open Citizenship* 5 (1), pp. 60–75.

- Kagan, S. (2008). 'Art effectuating social change: Double Entrepreneurship in Conventions'. In: *Sustainability: a new frontier for the arts and cultures*. Ed. by S. Kagan and V. Kirchberg. Frankfurt am Main, Germany: Verlag für Akademische Schriften, pp. 147–193.
- (2011). *Art and Sustainability: connecting patterns for a culture of complexity*. Bielefeld, Germany: Transcript Verlag.
- (2012). *Toward Global (Environ)Mental Change: Transformative Art and Cultures of Sustainability*. Berlin, Germany: Heinrich Boell Stiftung.
- (2014a). 'Cultures of sustainability: transdisciplinary research cultures'. In: *Cultures of Sustainability in the Age of Climate Crisis*. keynote at the international Symposium. (Faculty of Arts and Sciences, Telemark University College, Bø, Norway, 13th–15th May 2014). URL: <http://radix.hit.no/cultures-of-sustainability-in-the-age-of-climate-crisis/transdisciplinary-research-cultures> (visited on 31st January 2015).
- (2014b). 'The practice of ecological art'. *Plastik 4*. URL: <http://art-science.univ-paris1.fr/plastik/document.php?id=866> (visited on 31st January 2015).
- Kagan, S. and Hahn, J. (2011). 'Creative Cities and (Un)Sustainability: from Creative Class to Sustainable Creative Cities'. *Culture and Local Governance / Culture et gou-vernance locale* 3 (1–2), pp. 11–27. URL: <https://uottawa.scholarsportal.info/ojs/index.php/clg-cgl/article/view/182>.
- Kirchberg, V. and Kagan, S. (2013). 'The roles of artists in the emergence of creative sustainable cities: theoretical clues and empirical illustrations'. *City, Culture and Society* 4 (3), pp. 137–152.
- Morin, E. (2008). *La méthode*. Paris, France: Seuil.
- Nicolescu, B. (2002). *Manifesto of Transdisciplinarity*. Albany, U.S.A.: State University of New York Press.
- (2014). *From Modernity to Cosmodernity*. Albany, U.S.A.: State University of New York Press.
- Whitehead, F. (2006). 'What do artists know?' URL: <http://embeddedartistproject.com/whatdoartistsknow.html> (visited on 31st January 2015).

Author

Sacha Kagan, Dr. phil. Associate Researcher, Institute of Sociology and Cultural Organization (ISCO), Leuphana University, Lüneburg (Germany). Coordinator, Cultura21 International.
Interim Vice-Chair of the European Sociological Association's Research Network Sociology of the Arts. Member of the ecoartnetwork. His research and activities focus on the transdisciplinary area of arts and cultures of sustainability.
Websites: <http://www.leuphana.de/sacha-kagan.html>;
<http://sachakagan.wordpress.com>.
E-mail: kagan@uni.leuphana.de.

How to cite

Kagan, S. (2015). 'Artistic research and climate science: transdisciplinary learning and spaces of possibilities'. *JCOM* 14 (01), C07.



This article is licensed under the terms of the Creative Commons Attribution - NonCommercial - NoDerivativeWorks 4.0 License.

ISSN 1824 – 2049. Published by SISSA Medialab. <http://jcom.sissa.it/>.