

Music and sustainability: organizational cultures towards creative resilience –

A review

Sacha Kagan,* Volker Kirchberg
Institute of Sociology and Cultural Organization,
Leuphana University Lüneburg, Scharnhorststr. 1, 21335 Lüneburg, Germany

*corresponding author – email: kagan@uni.leuphana.de

THIS IS THE “ACCEPTED MANUSCRIPT” VERSION. (Please cite the Publisher Version only.)

Find Publisher Version: doi:10.1016/j.jclepro.2016.05.044

This Article was accepted for publication in: *Journal of Cleaner Production* – Status: in press, accepted manuscript, available online 14 May 2016 (doi link above).

Highlights

- The experience of and practice of music can help advance sustainability.
- Music can also be used to strengthen prejudice and unsustainability.
- Improvisational music-making enhances group cohesion and trains social creativity.
- Music is a resource for organizational resilience and creative resilience.
- Cultures of sustainability require musical experience of aesthetics of complexity.

Abstract

While the potential of creativity and of the arts for societal transformation towards sustainability has gained attention over recent years, a specific focus on music is lacking in sustainability science. What are the specific potentials of music, and why should we care? Collective *musical practice* enhances group cohesion, and musical improvisation trains social creativity, both of which are important resources for organizational resilience. Turning to the *experience* of music on the individual level, cultures of sustainability can be fostered through a musical aesthetics of complexity that opens up to the ambiguities, ambivalences, contradictions and creatively chaotic dimensions of a transformation towards sustainability. However, music is a “double-edged sword” and its emotional power can be deployed instead to strengthen prejudice, simplify worldviews, and restrain creativity. This paper offers the first broad transdisciplinary review of research at the intersection of music and sustainability. It exposes the mechanisms operating at this intersection and highlights key areas where the social experience and practice of music can contribute to the cultural dimension of sustainability in communities, organizations and society.

1 – Introduction

Sustainability, as an issue concerning both science and society, is a search process with a moving

horizon that encompasses an arc of engagements “from complex systems thinking to transformational change” (Wiek et al. 2012, p. 7). It encompasses four dimensions – ecological, social, economic and cultural – whose integration is crucial to a just transformation of human societies (Holz and Stoltenberg 2011). “Sustainability transformations ... require radical, systemic shifts in values and beliefs, patterns of social behavior, and multilevel governance and management regimes” (Olsson et al. 2014). They also require transdisciplinarity to integrate different ways of knowing reality (Nowotny et al. 2001, Nicolescu 2002, Muhar et al. 2013), whereby “in-between spaces emerge from the differences of various knowledge fields and fields of action [and] provide opportunities to link knowledge production and societal transformation” (Vilsmair and Lang 2015, p. 51).

“The crisis we face is first and foremost one of mind, perception, and values” (Orr 2004, p. 27). The global environmental and unsustainability crisis is a crisis of culture (Worster 1993, Brocchi 2008). However, whereas the potential relevance and contribution of art, and especially contemporary visual art, to sustainability transformation have been increasingly discussed in recent years, a focus on music as a tool for shaping sustainable development is hard to find: only 12 hits on Scopus for “music” + “sustainability” in article titles, while “art” + “sustainability” has 63 hits, and 0 compared to 24 hits for “music” + “sustainable development” vs. “art” + “sustainable development”. Nevertheless, a wide range of research has been produced elsewhere that studies music in its social functions, personal and political effects, as well as cultural and ecological impacts. This body of research is virtually untapped by sustainability science – and as yet unaddressed in the *Journal of Cleaner Production* – although it contains findings that are potentially relevant to an investigation of the intersection of music and sustainability. It begs for a review asking: What are the potentials of music for sustainability transformation, and why should we care?

Such an investigation echoes a broader reflection of the ambivalences of culture, the arts and society: Do the arts reflect the structures, behaviour and values of an overarching society (the structuralist perspective); or do the arts shape the structures, behaviour and values of society (the agency perspective)? In sociology, the structuralist perspective on music might have been best explicated by Pierre Bourdieu’s (1979) concept in *Distinction* that habitus determines musical tastes. The agency perspective, radically used by Michel de Certeau in his *Practice of Everyday Life* (1984), has been applied to musical tastes by cultural studies scholars such as Simon Frith (2004). An exploration of relationships between music and sustainability is caught between these poles of structure and agency. Is music – here in its organizational meso-aggregation – a product of dominant (un)sustainable societal structures and processes, or is it a potentially powerful tool that can be used to shift us and our environments towards more sustainable societies and cultures? The question of whether music has such an empowering function is at the core of this paper.

Beyond the authors' own disciplinary points of departure in the sociology of the arts and cultural sociology, this investigation aims to unfold an inter- and transdisciplinary exploratory overview, drawing from existing research insights across the disciplines of sociology, cultural studies, psychology, musicology, philosophy, anthropology and sustainability science. The structure of the paper progresses from the general to the particular. We start with a discussion of the cultural dimension of sustainability, stressing the importance of resilience for human communities to reinvent sustainable futures. We then focus on music as one domain of cultural practices, considering some possible functions of music and music-related practices and experiences that might allow it to contribute to the cultural dimension of sustainability. Finally, we investigate the potential functions

of music within groups of people as a contribution to organizational cultures of sustainability.

2 – Material and methods

In order to investigate the poorly researched intersection of music and sustainability, a genuinely transdisciplinary inquiry is required. The literature review offered in this article combines methodological elements from integrative review (Whittemore and Knafl 2005) at the literature search stage (including a systematic review approach for Section 5 only), meta-ethnography (Noblit and Haare 1988) especially at the stages of analysis and interpretive synthesis, and non-systematic narrative review (Bryman and Bell 2007, p. 104-105) and transdisciplinary literature review (Montuori 2013a) across all stages.

Criticism of systematic literature reviews have pointed out that they have “limited the kinds of questions that can be asked [and] privileged a positivist stance as well as approach” (Major and Savin-Baden 2011, p. 647). Therefore “systematic review should not be automatically accepted as a better way of dealing with the literature” (Bryman and Bell 2007, p. 105). In contrast to systematic reviews that aim for a comprehensive review of literature within one knowledge domain, integrated reviews “target representative (rather than comprehensive) channels of research” and are “appropriate for new subjects where incorporating several theoretical domains is seen as a strategy to developing new conceptual models, research agendas and/or metatheories” (Kohtala 2015, p. 655). We thus combined a systematic keyword-based literature search for a specific domain (for Section 5, as discussed below) and a qualitative selection involving purposive sampling (Suri 2011) of the most “pertinent literature” (Morin 2008b) from a very wide range of knowledge domains. The latter selection was based on a multimodal search combining initial keyword search on “music” and “sustainability” in the JSTOR database and Google Scholar, use of relevant published reviews in specific domains of music-related research, identification of key publications through a transdisciplinary inquiry-based process paying special attention to monographs with high relevance in humanities and social sciences studies of music, then complemented by the exploratory use of search tactics: citations/subjects pearl-growing techniques, berry-picking, and interactive scanning (Booth 2008).

We follow Montuori’s four criteria for a transdisciplinary literature review that “situates the inquirer in an ecology of ideas” (Montuori 2013a, p. 45):

- “inquiry-based rather than discipline-based
- applying systems and complex thought rather than reductive/disjunctive thinking
- integrating rather than eliminating the inquirer from the inquiry
- meta-paradigmatic rather than intra-paradigmatic”

To conduct an inquiry-based review, “we begin with the phenomenon, develop a rich description through a narrative, ask questions, and then learn where we might find relevant information [in order to grasp] the multi-dimensionality of the phenomenon” (p. 46). In “a complexity-based approach ... the focus is not on isolating the single most important variable but in describing a network of interconnected events, individuals and relationships ... It requires a kind of thinking that contextualizes” (p. 47), breaking away from “a discipline-driven way that actually prevents certain subjects from being seen” (p. 48). A transdisciplinary review also requires attention to “the many dimensions or system levels that emerge in the process” (p. 48) and to “the larger ecology in which the topic is embedded” (p. 50).

On these bases, this review article engages with a wide array of disciplines and interdisciplinary research fields that we identified as forming the relevant ecology of ideas: cultural studies on popular music; sociology of music; social psychology of music; ethno and ecomusicology; philosophy (particularly aesthetics and phenomenology); art theory; queer theory; anthropology; especially Ingold's (2000, 2011) anthropology of perception; interdisciplinary studies on creativity; and the emerging field of cultural sustainability; in relationship to the young transdiscipline of sustainability science and to resilience research.¹ The review focuses not only on the meso-sociological level of the organization, but ranges from the individual to the macro-levels and looks for complex interrelationships across levels. The review highlights the most “pertinent research literatures [around the] key question that acts as a central node or attractor” (Montuori 2013a, p. 49).

As Montuori argues that a “transdisciplinary literature review explores how various theoretical frameworks shape our understanding of a topic” (p. 50), we articulate and discuss these theoretical frameworks in Sections 3 and 4. We do so in an interpretative manner, borrowing from the tradition of the narrative review, as we strive towards “generating understanding rather than accumulating knowledge” (Bryman and Bell 2007, p. 104).

Integrating the inquirer into the review requires “self-inquiry” and “knowledge that is embodied and embedded”, whereby “the reviewer is no longer a bystander to the inquiry and to the discourse, but a participant” (p. 51) whose review is a “creative, constructive process”. We reflexively situate our own position with the normativity of sustainability research in Section 3.1. *We* also use the first person plural in writing this review and pay particular attention to embodiment and phenomenology (for example in Section 4.2).

The meta-paradigmatic quality of the review comes from being “concerned with [one’s] epistemological stance” (Montuori 2013a, p. 52), “an understanding of the philosophy of social science”, and “the way that different perspectives are woven together” (p. 53) through an integrative review article.

Our review article, especially in Section 4, includes elements of interpretive synthesis and its analytical approach borrows from meta-ethnography as it “refers not to developing overarching generalizations but, rather, translations of qualitative studies into one another” (Noblit and Haare 1988, p. 25) – with the extra challenge of seeking interpretive translations across various knowledge domains as part of a transdisciplinary inquiry.

While our transdisciplinary review insights are woven together in Sections 3 and 4, Section 5 includes a systematic interdisciplinary review of a narrower range of empirical research concerned especially with music in organizations (also discussed in German in Enger 2014): studies on music and group cohesion together with studies on music and social creativity, with keyword searches through the databases Web of Science and JSTOR and using the search engine Google Scholar to identify the main players in the field and then proceed to snowballing.

In Cooper’s 1988 taxonomy of literature reviews, this review is characterized by a *focus* on findings and theories (but not on the methods in the reviewed literature); the *goals* of integration; a critical examination of existing work; identification of central issues at a new intersection of diverse research fields; a normative *perspective* (rejecting neutrality claims); a mixed representative and pivotal (but not exhaustive) *coverage* in Sections 3 and 4 and an exhaustive coverage with selective

¹ Given the extremely diverse range of disciplines and knowledge domains under consideration in this review, we do not conduct a systematic quality evaluation.

citation in Section 5; a conceptual *organization* and an *intended audience* of general researchers and decision-makers engaged for sustainability transformation – such as those constituting the readership of the *Journal of Cleaner Production*.

3 – Sustainability and Culture: Cultural Sustainability and Cultures of Sustainability

The realization that sustainability cannot be conceived of without a cultural dimension and the argument that sustainability transformation requires wide-ranging cultural transformations is not particularly new (Hawkes 2001; Brocchi 2008; Kagan 2011, 2012; Holz and Stoltenberg 2011), and a range of academic and policy discourses on culture and sustainability have developed over the past few decades (cf. Duxbury and Jeannotte 2010, Dessein et al. 2015).

3.1 Normative frameworks on the cultural dimension of sustainability

Far from reaching a consensual set of definitions, the different approaches to the cultural dimension of sustainability in scientific publications reflect diverging normative frameworks. According to a recent review by Soini and Birkeland (2014) based on a systematic discourse analysis of peer-reviewed articles including the term “cultural sustainability” in the period 1997-2011, four main divergent frameworks dominate discourses and influence the normative directionality attributed to the cultural dimension of sustainability:

- The *conservative* framework stresses the continuity of culture and emphasizes the intrinsic value of cultural heritage. A liberal-conservative variation places greater emphasis on the further development of collective identities through a dynamic view of cultural heritage under the slogan of “cultural vitality”.
- The *neoliberal* considers culture not as an intrinsic goal but as an instrumental asset for achieving a “sustainable” economic development.
- The *communitarian* stresses the rights and values of different cultural groups and emphasizes the values of place (locality) and of cultural and social diversity. This perspective considers the cultural dimension in close connection with the social dimension of sustainability.
- The *environmentalist* primarily conceives of the cultural dimension in terms of human-nature interfaces that overcome dualistic representations of nature and culture. Within this perspective, Soini and Birkeland identify a discourse of “eco-cultural resilience”, which stresses the tight interconnection of local ecological and cultural processes, and a discourse of “eco-cultural civilization”, which emphasizes culture as a system of values, principles and beliefs, stressing the need for a “cultural transformation” brought about by education, the arts and other cultural instruments leading to radical changes in “human capacities for understanding and human knowledge production itself” (Soini and Birkeland 2014, p. 219).

Rather than perpetuate the myth of a value-neutral science, sustainability researchers should reflexively address their own normative perspectives. Therefore, in relation to the discursive and ideological contexts identified by Soini and Birkeland, and identifying ourselves as transdisciplinary researchers reflectively considering our own normative situatedness (following Haraway’s 1988 concept of situated knowing), we recognize that while our own perspective integrates elements from other frameworks it is mainly characterized by the discourse of eco-

cultural civilization.

We reject the static and/or hierarchical conceptions of culture from conservatism, as well as the purely instrumental economic perspective of neoliberalism. But we also reject a purely instrumentalist environmentalist approach to culture. Our discourse encompasses a range that includes both a recognition of the intrinsic value of cultural vitality (which according to Soini and Birkeland, would be a liberal-conservative orientation) and diversity (which they would label as communitarian), a (supposedly environmentalist) strong focus on the instrumental value of resilience for sustainability, and an explicit focus on social justice with some level of equality connecting cultural sustainability to social sustainability (which could be identified as related to socialism, or more accurately in our case to the newly emerging discourse of “convivialism” – cf. *Les Convivialistes* 2013). Furthermore, our general epistemic framework, geared towards complexity (Morin 2008a), transdisciplinarity (Nicolescu 2002) and agonistics (Mouffe 2013), allows us to conceive of a transdisciplinary normative discourse which reconciles and integrates several elements from the normative frameworks identified by Soini and Birkeland, without numbing the productive tensions between them. Finally, in line with one of Soini and Birkeland's interpretations of the “eco-cultural civilization” discourse, we consider culture to be “not only an instrument but a necessary foundation for meeting the overall aim of sustainable development” (Soini and Birkeland 2014, p. 221). The following discussion of the cultural dimension of sustainability and of its functions of music will now unfold this normative framing.

3.2 Resilience and sustainable human communities

Sustainability researchers in general and researchers working on the cultural dimension of sustainability in particular often point to the importance of fostering “resilience” to enable communities to face the perilous effects of crises stemming from unsustainable development (Tidball and Krasny 2007, Hopkins 2008, Ziehl 2012, Dieleman 2013). Considered from the normative perspective of sustainability, resilience is a capacity to evolve through crises. It is neither resistance nor adaptation, but involves some elements of both, without losing sight of the ethical goals of sustainability – such as those set out in the *Manifeste Convivialiste* (Les Convivialistes 2013).

The concept of resilience comes from the historical study of how natural and social systems have managed (or not) to survive by evolving in the face of changing contexts (Folke et al. 2002, 2010). The species, ecosystems and societies that have been able to survive extreme crises, and to evolve through these crises, share three characteristics:

- *Redundancy*: having multiple pathways to doing similar things (Holling 1973, Folke 2006). Efficiently organized societies will generally have less redundancy, thereby threatening their resilience.
- *Diversity*: having diverse options available, e.g. multiple ways to see the world and express ourselves or multiple ways to learn from experience and transmit knowledge (Ernstson et al. 2010).
- *Self-organization*: grass-roots levels gaining the capacity to self-organize and self-determine their responses to crises. This goes against the expectation that a top-down helping hand will always provide assistance and direction and against the expectation that market mechanisms (“the invisible hand”) will solve world problems (John and Kagan 2014). Following the

normative perspectives of sustainability and convivialism, as discussed above in Section 3.1, self-organization can be further characterized as self-governance under conditions of social justice (cf. Sørensen and Triantafillou 2009, Benz 2010).

If we understand resilience and if we learn one thing from the insights of research on qualitative complexity (Morin 2008a), it should be that we must depart from the cybernetic illusion of complete control. Resilience as the ability to survive in the long term by transforming oneself in relationship to one's environments underlines the necessity of learning from the unexpected. *Our main position* at this point is that the key characteristics of sustainability-oriented resilience (redundancy, diversity and self-organization or self-governance) require the flourishing of spaces where imagination, experimentation and challenging experiences open up futures-oriented questions and perspectives (Dieleman 2012). Resilience requires that human communities nurture their creativity. In this sense we will speak of "creative resilience".

3.3 Cultural sustainability and cultures of sustainability

The cultural dimension of sustainability transformation goes beyond narrowly instrumental uses of cultural productions and artistic/arts-based practices. It is not reducible to seeing the arts as a vehicle for sustainability communication or to implementing the sustainable management of music festivals. Rather, it has the broader and more encompassing objective of a communal or organizational transformation that applies culture (in this case, music) in production and consumption towards the normative orientation of sustainability.

Our conceptualization of culture and sustainability combines two correlated orientations:

1) The relationship between culture and sustainability includes the recognition of *cultural sustainability* as a crosscutting dimension of sustainability (understood as a civilizational orientation): an integral characterization, beyond purely economic or natural-scientific conceptualizations (Hawkes 2001, UCLG 2004). This includes the vitality of cultural and artistic expressions in their diversity, allowing a rich cultural life, and guarding against cultural homogenization (for example, under the pretext of "efficiency"). A rich and evolving cultural life is as important to the sustainable development of human societies as a rich and evolving biosphere, an economy that meets human needs, and a society that is just and equitable for diverse social groups. In the philosophy of sustainability, all these things should be seen as equally important goals. Therefore, we define cultural sustainability as the value for human organizations, communities and societies of preserving and advancing cultural life, including cultural heritage, cultural vitality, creative human practices, and cultural diversity. Cultural sustainability has value for its own sake and not only as a means towards other dimensions of sustainability.

2) The relationship between culture and sustainability also involves "culture", in the sense of a set of worldviews, value systems, and a symbolic universe, in an even more fundamental way: We, and several other researchers around the world, call this *cultures of sustainability* (Worts 2006, Nadarajah 2007, Brocchi 2008, Kagan 2010). What we mean by this expression is that there will not be a shift of civilization towards sustainability without a fundamental shift in contemporary culture away from a hyper-consumption oriented, hyper-industrialised, hyper-modern culture and towards a culture infused with an understanding of and a respect for life in all its complexity; a culture empowering people to change their lives in order to re-invent another, more sustainable "good life" that is inclusive of human groups until now oppressed or disadvantaged. Cultures of

sustainability call forth the development of certain ethical values (Burford et al. 2013), as well as the enrichment and diversification of our skills, competences, capabilities, reflexivities and ways of knowing reality so that we may be, together, more creative and more sensible in re-inventing our futures (Dieleman 2008, Kagan 2011, Ernstman et al. 2012, Shrivastava 2012, Ernstman and Wals 2013). Creativity is required because “we need to learn to deal with complexity and uncertainty rather than learning a predetermined ‘sustainable’ set of values and behaviors” (Sandri 2013, p. 767). Cultures of sustainability allow human groups to better orient themselves towards the four dimensions of sustainability.

4 – Musical Cultures of Sustainability

How is music relevant to a cultural transformation process aiming to enhance the resilience of human communities? With few exceptions the intersection of music and sustainability has received only little attention so far (e.g. Titon 2009 in a special issue of an ethnomusicological journal). In the following pages, we set out to consider a wide range of both actual and potential functions of music and music-related practices and experiences. We then narrow down our focus to musical practices in communities and, in Section 5, within individual organizations.

4.1 Music in cultural sustainability and musical cultures of sustainability

In terms of cultural sustainability, a heterogeneous musical landscape growing from the musical practices of local communities as a historically rooted yet also living and evolving cultural heritage contributes to cultural diversity. Such diversity is characterized by a variety of musical styles and genres as well as different ways of partaking in musical practices. Long-time representatives of this orientation come from the field of cultural studies, although they do not use the phrasing of “cultural sustainability” for their targeted analysis of musical tastes. For instance, Paul Willis (1978) analyses musical tastes as a tool of self-identity construction for motor-bike boys and hippies in the “profane culture” in the 1950s and 1960s, and Simon Frith takes “popular music seriously” (the title of his 2007 collection of essays) in describing popular music as a product of continuous negotiation, dispute and agreement among consuming actors who, by those processes, create their worlds (Frith 2007).

In terms of cultures of sustainability, music also bears potential in several ways. Musical experience can sometimes turn into an experience of synaesthesia, the overlapping and merging of sense perceptions. Music rarely offers its listeners a disconnected and purely aural experience, but instead allows them to partake in a multi-sensorial experience involving kinaesthetic contagion through performance (Leigh Foster 2008).² The degree to which music promotes “contagion through performance” depends on several parameters, including whether an actual performing musician is involved and whether the listener is already culturally acquainted with the musical patterns (associating them subconsciously via mirror neurons to familiar musical genres and styles). This multi-sensorial experience enables the listener to shape the meaning of artistic symbols such as music according to her or his desires – strengthening the empowerment objective of sustainability.

Music can also have strong participatory qualities. Thomas Turino (2008) emphasizes that

² Leigh Foster (2008) discussed dance performance, but the argument of kinaesthetic contagion is valid across music and dance.

participatory music-making depends on contributions by all participants – whether aural or dance contributions (p. 37). In truly participatory music, he claims, nobody in the circle can refrain from participating, and joining in is encouraged by musical means such as rhythmic repetition creating a social synchrony (p. 41). He contrasts participatory music-making to presentational music-making where virtuosity and soloing is common.³ According to Turino, participatory music-making eschews these presentations of solo competency and outstanding musical skills (pp. 48, 59). Turino emphasizes the function of especially participatory music for creating social cohesion (community and collective identity) among even the most diverse people.

In Turino's (2008, 2009) dichotomization, with a sliding scale from concrete participatory music at the one end to abstract "studio audio art" at the other, we recognize similarities to a completely different field of our environment, the use and appropriation of urban spaces. Lefebvre (1991) describes the use of urban spaces as concrete (everyday and physically perceived), as abstract (hegemonically determined), or as imaginative (liberating). These attributes can also be used for Turino's music typology. The most sustainable type, participatory music-making, is appropriated concretely and physically by live listeners-participants becoming musicians themselves in the same manner as Lefebvre describes it for imaginative or representational spaces. On the other hand, studio audio art is highly abstract (putting a barrier between musicians and listeners) – as are the abstract spaces in urban environments, being only (if at all) used as spaces of representation of a remote elite, and thus lacking a culture of sustainability.

According to Turino (2008), the social embeddedness of music in macro-politics and micro-communications can be explained by referring to Charles Peirce's distinction of a sign in icon, index and symbol. If the sign closely resembles its meaning the sign is *iconic*. If the sign is assigned a certain meaning by powerful institutions like mass media and advertising campaigns, the sign is *indexical*. And if the sign does not require an obvious or forced resemblance to a meaning but is linguistically based and socially agreed upon it is *symbolic*. Especially iconic and indexical signs have powerful influential effects: "Iconic and indexical signs are signs *of* our perceptions, imagination, and experiences, whereas symbols are more abstract signs *about* things as generalities" (p. 13). The interplay and the antagonisms among these three types of signs are at the forefront of Torino's interpretation of the power of music for participation. These semiotics of music have a different impact on the emotional, physical and rational self; they integrate them but they also differentiate them (p. 15). Musical performances take effect "at the levels of sense, feeling, and physical reaction, integrating all these aspects of the self. For those deeply engaged in listening, dancing, or playing music ... word based thought may be suspended entirely" (p. 16).

If, for instance, musical production is only referred to as an economic resource, then this is a purely indexical reality with an ideological purpose "*without taking into account the much larger circuits of life which they are part*", referring to Gregory Bateson who stressed that these "circuits of life" and our "psychic wholeness" are essential for the survival of the living system (p. 16).

The kinaesthetic contagiousness of music and dance performance reveals the fundamental importance of movement to the experience of life. Autopoietic rhythmic movement – that is, movement involving self-production of the living/cognisant (Maturana and Varela 1980) through difference in repetition (Lefebvre 2004) – is radically constitutive of the worlds-making of living organisms. Being alive is, according to Tim Ingold (2011), a process of becoming, a movement of

³ This kind of dichotomy had been already theorized as a distinction between *Umgangs-* and *Darbietungsmusik* (everyday and performance music) by Besseler (1959).

wayfaring.

4.2 Perceptual engagement and shared aliveness

We need to ponder here for a moment Ingold's understanding of sensory perception and the experience of the world. Discussing Susanne Langer's music aesthetics, Ingold posits “that feeling is a mode of active, perceptual engagement, a way of being literally 'in touch' with the world ... *art gives form to human feeling*; it is the shape that is taken by our perception of the world, guided as it is by the specific orientations, dispositions and sensibilities that we have acquired through having had things pointed out or shown to us in the course of our sensory education” (Ingold 2000, p. 23). Following Leoš Janáček, Ingold argues that “we should cease thinking of the sounds of speech merely as vehicles of symbolic communication, as serving to give outward expression to inner states such as beliefs, propositions or emotions ... When you yell in anger, the yell *is* your anger, it is not a vehicle that *carries* your anger” (p. 24). Ingold considers that at the foundation of any knowledge or ethical system that is to work in practice is the need for intuition, a “sentient ecology” (following David Anderson), a “knowledge ... based in feeling, consisting in the skills, sensitivities and orientations that have developed through long experience of conducting one's life in a particular environment. ... These skills ... provide the necessary grounding for any systems of science or ethics that would treat the environment as an *object* of its concern. Sentient ecology is thus both pre-objective and pre-ethical” (p. 25).

Furthermore, Ingold insists that perception should not be conceived of apart from movement. “Both humans and non-humans, I would contend, conduct themselves skilfully in and through their surroundings, deploying capacities of attention and response that have been developmentally embodied through practice and experience. [James] Gibson insisted that perception is the achievement not of a mind in a body, but of the whole organism as it moves about in its environment, and that what it perceives are not things as such but what they afford for the pursuance of its current activity” (Ingold 2011, p. 11). However, Ingold marks a difference from the eco-psychology of Gibson: “We need a different understanding of movement: not a casting about the hard surfaces of a world in which everything is already laid out, but an issuing along with things in the very processes of their generation; not the trans-*port* (carrying across) of completed being, but the *pro-duction* (bringing forth) of perpetual becoming. ... To be sentient ... is to open up to a world, to yield to its embrace, and to resonate in one's inner being to its illuminations and reverberations. Bathed in light, submerged in sound and rapt in feeling, the sentient body, at once both perceiver and producer, traces the paths of the world's becoming in the very course of contributing to its ongoing renewal” (p. 12).

This depiction of the sentient body may, at first, sound like an apology of contemplative reception, grounding a certain kind of high art musical aesthetics – as exemplified in the typically contemplative reception of live performances of classical music since the 19th century (cf. Abbing 2009). Even though the aesthetics of a contemplative reception of classical music does perform these qualities depicted by Ingold and can constitute one way to increase a certain affection towards sustainability, our claim here is not to support a bias towards high art music. On the contrary, we also recognise, in the tradition of cultural studies (as discussed in Section 4.1), the value of an aesthetics marked by an active and even aggressive overtness towards popular music, as likewise related to the sentient body depicted by Ingold. More generally, we consider that a sentient body can resonate in musical experience both inwardly and outwardly, contemplatively and aggressively,

and especially *should* resonate to the aesthetic space of tension formed by these opposites rather than cast away one of the two poles – an aesthetics of *coincidentia oppositorum*. Our rejection of binary dichotomies and their replacement by a general understanding of harmony through contradictions will be further elaborated in Section 4.3.

Ingold's anthropological reflection brought him to echo Deleuze and Guattari's understanding of life as “lines of becoming” or “lines of flight”: “Wayfaring is the fundamental mode by which living beings inhabit the earth. Every such being has, accordingly, to be imagined as the line of its own movement or – more realistically – as a bundle of lines” (Ingold 2011, pp. 12-13). In turn, Deleuze and Guattari, when they introduced their perspectives on rhizomes and lines of flight, resorted to the performance of a pianist, evoking shifting musical movements and rhythms that defy reductionist definition: “When Glenn Gould speeds up the performance of a piece, he is not just displaying virtuosity, he is transforming the musical points into lines, he is making the whole piece proliferate” (Deleuze and Guattari 1987, p. 9).

As pointed out by a reviewer of Ingold's *Being Alive*: “In this world there is no possibility of true disconnection, just our own blindness and forgetting. The beauty of Ingold’s conception of what it is to be alive is that he makes us see again; he makes us remember not only what the world is to us, but what we are to the world” (Blackie 2012). One condition for the unfolding of cultures of sustainability is to depart from that “blindness and forgetting” or, in other words, to depart from an “anaesthetic state” (Welsch 1990 cited in Brocchi 2012). When musical experience contributes to an aesthetic rather than anaesthetic state, music becomes a tool to stimulate a sustainability-sensitive phenomenological process. Such a process engages the self both in the formation of elements of identity and in their deconstruction, disruption and re-assembly – or, in the terminology of queer theoreticians, it engages the self in processes of identification and disidentification (Butler 1993, Muñoz 1999).

Musical experience offers humans a possible channel to acknowledge their link to their shared aliveness, as invoked by Ingold. Music may provide an entry point to an animistic phenomenology in the sense of David Abram (1996) and to an empirically subjectivist experience of the ecologies of human and non-human systems where subject-based processes are not subsumed under dead-matter based conceptions (Weber 2013; see also Jones 2013 on biophilia, and for a musical multi-sensorial interpretation, Björk 2013). However, music may also be employed for the opposite ends, to numb and manipulate, to suffocate judgement and disempower its listeners – we will come back to this consideration in Section 4.4.

The musical-experiential and sensitizing potential we are referring to involves synaesthetic experiences where the perception and cognitive-emotional processing of what is perceived engage creatively and integratively into a multi-sensorial perception. The recovery and redevelopment of an ability to experience our nature-cultural (urban, rural, and more or less “wild”) environments and their fellow inhabitants is not merely an opening of perception through aesthetic sensibilities awakened by musical percipience. It is also, in the sense of Merleau-Ponty (1969) and Michel de Certeau (1984), opening into the development of a reflexivity upon this experience, bearing the potential for a conquest and expansion of forms of social participation. Sarah Pink's research programme of a “sensory ethnography” highlights possibilities for social scientists to accompany such multi-sensorial engagements within society (Pink 2007, 2008a, 2008b, 2008c, 2008d, 2009, 2012).

4.3 Musical aesthetics of complexity

Theodor Adorno's (2002) critique of the simplicity of popular music was a lament against the ability of the "culture industry" to manipulate the masses into passive quietude, a regression of experience. A taste for the mechanical beats of standardized popular music would prevent people from listening to music that was a symbolic carrier of emancipating meanings (including those promoting cultures of sustainability). It was complex music that encouraged reflection. In contrast to many readings of Adorno, we argue that he did not see the only intellectually challenging music to be "high-brow" music. Even popular music could cultivate listening as an experiential and phenomenological interaction. Music listening should trigger a transformation of experience – in the best sense of fostering sustainable development individually and collectively.

Cultures of sustainability call forth an ecological literacy that requires a sensibility to complexity – or an "aesthetics of complexity" (Kagan 2011). This is a sensibility to the amazing dynamic complexity of the living world surrounding us and of humans as individuals, as a society and as a species: a sensibility to the delicate balance of tensions between relations of competition, antagonism, complementarity and unity (Morin 2008a). It is a sensibility to the productive tensions that make life a constant creative process, ripe with ambiguities, ambivalences and contradictions – a creative chaos or "chaosmosis" (Guattari 1995).

As discussed above in Section 4.2, we see the experiential value of an aesthetic space of tension formed by contradictory poles. We reject simplifying dichotomies that would oppose contemplative reception vs active-aggressive reception (and classical music vs popular music), and instead see these two modes of reception as the poles, in mutual tension, of one ensemble of aesthetic experience. Or as the French comedian Raymond Devos illustrated with his stage performance "Le bout d'un bout", a stick will always have two ends, however hard you try to cut one end off from the other (Devos 1977).

This rejection of dichotomous thinking and its replacement by an understanding of harmony through contradictions reflects a more general transdisciplinary attitude that constitutes a required epistemic ground for cultures of sustainability if they are to allow a complex unity of knowledge (Kagan 2011). Modern discourses are often incapable of holding and valuing, within themselves, ambivalences, self-contradictions and ambiguities. In the philosophy of knowledge, one speaks of a "logic of non-contradiction" that traditionally animates most discourses deemed as "rational". This logic is even considered to be a fundamental axiom of Western philosophy (with a few exceptions such as Heraclitus, Nicholas of Cusa, and in the 20th Century Stéphane Lupasco and Basarab Nicolescu) and therefore has exerted a structuring influence on modern societies, with unsustainable consequences (Nicolescu 2002, 2014). This shuts them out from living complexity. Fortunately, in the Western (or "global North") context, the arts have remained one domain where a "logic of contradiction" is still allowed (see also Eernstman and Wals 2013). One of the contemporary challenges of transdisciplinarity is now to reintegrate this "logic of contradiction" out of its ghettoization in the art worlds and into science and society, provincializing the validity of the "logic of non-contradiction". This enterprise calls for an understanding of the arts through an aesthetics of complexity in the tradition of Heraclitean and Deweyian aesthetics, not the Aristotelian and Kantian tradition in aesthetics (cf. Kagan 2015a) – together with an opening to non-Western philosophies that bring relevant approaches for developing sensibilities to qualitative complexity (cf. Jullien 2009).

Furthermore, an aesthetics of complexity unfolds a critical relation to identity politics. Rather than a

fixed and stabilized identification, a complexity-oriented aesthetics favours an alertness open to the state of aesthetic tension, thanks to recurring processes of disidentification – or following Renate Lorenz (2012) "freaking out" – undermining the disempowering logic of Althusserian interpellation. In this sense, an aesthetics of complexity can be related to the critical political program of queer theory.

Related to processes of identification and disidentification (Butler 1993, Muñoz 1999), a queer theory oriented sociological study of queer popular music practices investigates how musical agency can be involved in processes where the queering of identities opens more democratic spaces for cultural diversity and the blurring of subjectification. Jodie Taylor recently conducted such an empirical music-sociological study of queer music scenes in Brisbane (Australia) and Berlin (Germany). Taylor's analysis stresses that music "does not merely reflect gendered and sexual realities, but contributes to the production of gender and sexual subjectivities" (Taylor 2012, p. 8) and that "queer world-making can occur in and through music" (p. 216), as illustrated by the great variety of musical styles her study describes. Taylor's work articulates how, for queer-cultural activists, "music can facilitate an oppositional space in which to imagine possibilities of living, being and loving outside [of hegemonic culture]" (p. 216). In concrete terms, her cases show instances where music "facilitates a transformative space in which people may feel more at ease to experiment with queer modes of gender and sexual performance ... They are angered by social injustice and attempt to allay the pains of injustice through amusement, pleasure and playfulness, while also remaining critical of the conditions that cause oppression ... using music as a non-violent form of social protest" (p. 218). Taylor even goes as far as to suggestively conclude from her study that "it is not just one particular style of music, but rather music and musical expression themselves, that are apposite to articulations of queerness ... [referring to] music's ineffability – its position outside language ... In other words, music allows us to engage in multiple and more fluid forms of self-representation because music does not represent anything exact" (p. 217). However, music is often associated with sung words and even purely instrumental music is often employed to opposite ends, towards rigid forms of self vs others-representation, and the reinforcement of hegemonic cultures (see Section 4.4).

But let us further consider a musical aesthetics of complexity before peeking over to the "dark side of the tune"... How can the practice or experience of music develop an aesthetics of complexity? Music, and especially multi-instrumental music, offers an aesthetic training in the experience of complexity for the person who stimulates their "musical ear" through musical education. As Edgar Morin once wrote: "The systems sensibility will be like that of the musical ear which perceives 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 1992, p. 139). This is the case for example with symphonic classical music (as Morin's quote explicitly suggests), but such a training that would allow a discerning ear to perceive the complexity beyond a first step of pattern recognition also applies to any other kind of music where multiple patterns interplay – including controversial popular musical productions vilified by some high culture consumers, such as the songs of Rammstein or Eminem.

Our understanding of complexity, following Morin, is not one that equates complexity with intellectual sophistication. On the contrary, complexity is rooted in the processes of life and most strongly expresses itself in the ordinary, the everyday and the experiential. Furthermore, unlike others (e.g. Turino 2009), we do not oppose a complex (and symbolically rich) professionalized

“presentational” music to a simple (iconically and indexically powerful) participatory music. On the contrary, our understanding of complexity – not as virtuoso complication but as the dynamic tension of harmony through contradictions – allows us to consider participatory music (in the sense of Turino) as potentially offering both simplicity (and thus accessibility to less skilled participants) and complexity (thus unfolding further layers to the “musical ear”).

As argued by Chrissie Bausch, musical practice demonstrates several qualities of systems thinking: “A musical work is a system of relationships among components such as rhythm, key, harmony, melody and instrumentation. Peretz and Zatorre describe the systemic nature of even a simple tune, ‘which is defined not by the pitches of its constituent tones, but by the arrangement of the intervals between the pitches’ (p.90). Music trains its students to recognize patterns and anticipate change, both important elements of systems thinking” (Bausch 2012, quoting Peretz and Zatorre 2005). Bausch is however using old-style Shankerian music analysis and ignores the live characteristics of music beyond notations, such as timbre (see Bresler, 2005, who also invites sociologists to adopt “musical lenses” to perceive dimensions of social reality).

One of the best collection of articles related to this approach, published by David Hargreaves et al. (2012), not only describes the mutual beneficial effects of musical imagination and creativity, but also discusses the factors that foster the links between imagination and a complex aesthetic creativity.

The difference between musical practice (both production and listening) and as a holistic system of relations was already discussed by the German physicist Hermann Helmholtz and the musicologist Hugo Riemann in the 19th century (cf. Bessler 1959). In 1863 Helmholtz developed a theory of music that deconstructed music to a system of individual components or “sounds” (in plural) as physical-acoustic stimuli. Riemann immediately criticized this physical definition and in 1874 as a reaction to Helmholtz published a book on “musical logic” that emphasized – besides the physical aspect of sounds – the psychological aspect of a perceiving spirit of sound (in singular). This sound imagination is a holistic and complex sensibility that goes beyond physiological processing to include the phenomenology of phantasy and signifying interpretation (on all sides, composers, musicians and listeners).

This difference between music as sounds and music as sound has been at the forefront of systemic musicology in the last years. Phelps (2003) interprets sounds as auditory stimuli to the somato-sensoric cortex and sound as a result of the interpretation and feeling in the mind, that is, a complex conglomerate of social and individual ascriptions. Even more to the point, Pfliederer (2003) prefers sound to sounds because sound is as composite of tone, tone colour, sound quality, style and tonal sensuality that cannot be reduced to physical traits but has to be understood as a combination of sensual experiences similar to tasting, noticing and feeling; a sound can be hot or cold, sweet or spicy, tough or soft. Sound is an individual experience that is personified based on autobiographic experiences.

Furthermore, the full significance of music can be unfolded only if we see music as a complex “system of relations” involving productions, interpretations, perceptions, with changing social contexts, and not only “pure music” in a musicological sense (Rösing 2004). Interventions at any point in this system may bring durable changes in the meanings of music. Thanks to its non-discursive quality, the “musical product” has a transcendental potential that allows it to be projected upon with diverse and even contradictory emotions, imaginations and ideas (Rösing 2007).

However, not all forms of musical practice and musical education develop an aesthetics of complexity to similar degrees, and music's potential to develop an aesthetics of complexity needs to be further reflected upon in order for it to be integrated in the forming of cultures of sustainability.

4.4 The dark side of the tune

Music is not immune to nefarious uses that work against an aesthetics of complexity. In other words, it can very much be developed as a tool to further unsustainability, especially in the cultural and social dimensions, but also in the environmental and economic dimensions. As briefly pointed out in Section 4.2, music may be employed as an anaesthetic means to numb and manipulate. It can operate as a device to control social behaviour, promoting solidarity within groups while reinforcing hostility towards others, and as an emotive manipulator that influences attitude, motivation and behaviour in unethical ways (Brown and Volgsten 2006). The iconic and indexical powers of music can be harnessed for political purposes. After 1933 the composition of Nazi songs or the paraphrasing of former Communist songs involved a special type of “creative indexing” (Turino 2008, p. 208). “Unisono singing in plain voices and in simple style was emphasized so that all could participate equally without distinguishing those with more musical experience” (p. 201). This is all the more manipulative when the more reflexively interpretative symbolic processes in the experience of music are kept at bay. The hegemonic, imaginary and ideological functions of music are very effective, far more than coercion and suppression, and totalitarian regimes such as Nazism and Stalinism were successfully putting them to use (Turino 2008, pp. 194-208; see also Gramsci 2011). Non-verbal rituals are less prone to counterarguments than verbal expressions. However, it should be noted that the same iconic and indexical powers of music (with simple and repetitive communal-participatory songs) can be harnessed for emancipatory purposes, as in the civil rights movement in the USA (cf. Turino 2008, pp. 210-223). Thus, while the explicit contents and lyrics of songs do matter a great deal, the reduction of musical experience to iconic and indexical signification in a visceral “*communitas*” (eliminating the symbolic level of signification) bears the risk of weakening the pluralist and agonistic values of democracy, as can be seen for example in the contemporary soft totalitarian tendency of consensualism (Mouffe 2013).

As a means for identity building, musical practice and musical experience can be especially deployed to enclose and encapsulate “scenes” from their environment, turning their autopoiesis into a rhetoric of “us vs others” and preventing the emergence of “autoecopoiesis” (Kagan 2011). The deployment of music in the service of oppressive power relations and violent enterprises (including such extreme historical cases as Stalin's musicality) is further discussed by Johnson and Cloonan (2009). They explore how music can accompany, incite and arouse violence, and how it can generate violence, not only in state-controlled settings (e.g. Guantanamo), but also in everyday life (see also the insights from the social psychology of music, as discussed below in Section 4.5). Besides, professional musicians “do not make the best models for creating more sustainable lifeways” as they would develop a selfish obsession with music neglecting “other social activities and people”, according to Pedelty (2012, p. 130).

Johnson and Cloonan (2009) also issue a warning that tempers our own earlier claims (in Section 4.2): “Music is not just an aesthetic or moral terrain, nor just a form of knowledge supplementary to visual modes. It is sound, part of the larger soundscape that constitutes our world, and when it inflicts violence it does so not only by virtue of what it means, but what it then is: noise” (p. 4). This calls our attention to insights from the field of acoustic ecology. The safeguarding of

endangered/marginalized music and soundscapes, and their protection against a soundscape monoculture, which is relevant to the cultural dimension of sustainability, is according to Jeff Todd Titon (2013) also “intimately related to work in environmental sustainability” because human sounds also affect the soundscapes of other species. We share a “sound commons”, a “commonwealth of sound” whereby “all creatures (ourselves included) may communicate in our acoustic niches in the soundscape ... we cannot live if we're prevented from communicating in our sound-worlds”. Titon is referring to acoustic niche theory, according to which each species needs a particular acoustic space of communication in terms of sound frequency, times of day, timbre, etc. “in order to avoid noise interference”.

However, human activities may disturb, disrupt or even destroy these acoustic niches. The extinction of certain species has been related to the acoustic effects of human activities (cf. Krause 2012). Such effects were already noted throughout the 20th century by composers (e.g. Hildegard Westerkamp, John Luther Adams) associated with the *musique concrète* movement, which developed an aesthetic sensibility to whole soundscapes. Following the work of R. Murray Schafer (1980) on noise pollution, these are now studied by acoustic ecology and by soundscape ecology, the “study of the flow of sound in the environment” (Titon 2013).

Recent studies in eco-musicology, an emerging field introducing eco-criticism into musicology (cf. Allen 2011), have pointed to the material and symbolic dimensions of popular music's contribution to environmental unsustainability, e.g. “rock, hip-hop and other energy-intensive musical styles” with aesthetics that often “contradict environmental outlooks” (Pedelty 2012, pp. 4-5). Pedelty also sees a considerable challenge to the shaping of trans-local cultures of sustainability (cf. Jones 2013, p. 158) in the “globally distributed music [which] is often experienced more intimately than music created and performed locally” (Pedelty 2012, p.8) and which “dominates local soundscapes ... Place resonates less and less in popular music. Distant places, mobile lifestyles, and a general sense of placelessness preside over much of the world's musical imagination” (pp. 200-201).

In the context of organizations, the case of IBM offers another example of a nefarious use of music. Over a period of five decades its management attempted to develop a paternalistic organizational culture that would discipline its members against critical reflexivity and, with an evangelical pathos, sacralise the firm's leadership (El Sawad and Korczynski 2007). IBM was not an exception. On the contrary, a review of organizational songs shows a general tendency, especially in the first half of the 20th century, towards a military or folk-musical aesthetics generally oriented to an authoritarian and anti-democratic ethos of allegiance to the organization (Nissley 2002). It should be noted that from the 1950s this tendency gradually lost ground in most organizations. In the 1970s, for example, the management of IBM attempted to destroy the copies of its former songbook in order to “forget” this aspect of its history (El Sawad and Korczynski 2007, pp. 98ff).

Not only musical practice such as singing, but also music-listening can be set up in a variety of ways and contexts to be part of an exploitatively manipulative agency. Tia DeNora and Sophie Belcher studied how, in commercial retail, music “is used to structure in-store conduct” (DeNora and Belcher 2000, p. 80). Their empirical study of the consumers of such music in clothing shops came to the conclusion that “this form of aesthetic reflexivity can be regarded as consisting of the very commodity fetishism critiqued by Marx, a situation wherein the creative and expressive faculties are harnessed to consumption rather than the ‘making’ of material goods and social relations” (p. 96). In other words, music can be harnessed to facilitate an uncritical culture of hyper-consumption, furthering ecological unsustainability.

A recent review of studies conducted in the social psychology of music, confirms these findings: “Studies of the effects of in-store music show that the genre, tempo, and social connotations of the music played in shops and restaurants can influence which products people buy, how quickly they move, and how long they stay” and that these effects mostly operate at a subconscious level, unnoticed by consumers (Rentfrow 2012, p. 404).

Furthermore, good intentions in the deployment of music do not guarantee good results. Careful empirical studies on the roles of music in interactions between groups, affecting in- and outgroup identities and the degrees of conflictual relationships between groups, sketch a very differentiated picture (see e.g. Bergh 2008). A review of these studies by Arild Bergh (2010) warned against naïve assertions about the “power of music” propagated by some authors in the fields of music education and conflict transformation (see also Bergh and Sloboda 2010).

4.5 Music in action

Noting that exposure to music, mostly recorded, is ubiquitous in the contemporary everyday life of North-American and West-European individuals (in the USA in 2007 music was playing on average for more than 15% of waking hours), research in the social psychology of music, as discussed in a review by Rentfrow (2012), investigates the uses of music for emotion regulation, identity development, and social bonding in everyday life. Some of the research results bear particular relevance: “Findings from these studies suggest ... that people use music to regulate their moods and emotions ... that situations can influence the styles of music people choose, which can then affect behaviour in those situations [and] that people use music as a vehicle for self-expression” (Rentfrow 2012, p. 403).

Rentfrow differentiates between two schools of thought in social psychology that shed two different but possibly complementary lights on the motivations and effects of music-listening in the everyday life of contemporary Westerners. Whereas the “media effects model” highlights how exposure to music can have a “direct impact on how people think, feel and behave” (p. 403), the “uses and gratifications model” highlights instead how individuals actively select certain musical contents in order to fulfil specific basic needs. While the former postulates that exposure to music affects people, partly at subconscious levels, “in ways that are congruent with the message of the music” (p. 404), the latter posits that people “are consciously aware of all the reasons why they listen to it” (p. 405). Rentfrow critically relativizes both models because on the one hand “more than two-thirds of the music people hear throughout the day is self-selected” (p. 404), while on the other “individuals are very likely unaware of all the reasons why they listen to or prefer particular types of music” (p. 405).

In order to start “effectively examining both the motives and outcomes of listening to music” (p. 406), he gathered insights from both schools and from further social psychological studies of music consumption:

- A “considerable proportion of the studies” have focused on the “negative effects” of music, such as listening to violent music, which reportedly triggers aggressive feelings and thoughts, or misogynistic music, which reinforces gender stereotypes.
- Further studies have gathered “ample evidence” of the “positive effects” of exposure to music. For example, compared to more neutral music, exposure to music with pro-social

themes increases interpersonal empathy and willingness to help others, and musical contents with positive connotations about particular cultural groups tend to reduce prejudice about these groups.

Both the studies on positive and on negative effects highlight especially the importance of lyrics in influencing emotional responses.

- Rentfrow notes that studies on music-induced emotions “all converge to indicate that music can influence how people feel”, that is, it induces specific emotions and moods in listeners. In everyday situations, music frequently stimulates emotions, most of which are perceived to be positive, such as calm contentment, happiness and interest. These induced emotions are often congruent with the intentions of music producers.
- The research also “indicates that music serves as a symbolic representation of self and that individuals derive a sense of identity from the music they listen to ... Music provides a medium for self-exploration, where individuals are able to reflect on who they are, where they came from, and who they aspire to become” (p. 409). Music plays an important role in the communicative process of identity construction. Other researchers are exploring how such processes enhance individual and community resilience (Brader 2011). Nethsinghe (2013) investigates how such a process can contribute to cultural and social sustainability.
- Further studies tend to show that musical preferences “can actually provide valid information about individuals' personalities, values and beliefs” (Rentfrow 2012, p. 411).

We follow the music sociologists Tia DeNora (2000, 2013) and Antoine Hennion (1993, 2001, 2008), who stress “music in action” as a mediative force of our presence in the world. For them, music does not merely have a mediating, educational function, but rather the function of a cultural intermediary. Their focus is neither on music-listening or production for its own sake, nor on music for an audience of passive recipients, but rather on the systemic values recognised throughout the many social practices relating to music, especially in everyday life. This is about music as a verb, an acting and interacting, not merely an interactive but a “particip-active” process.

Whereas Turino (2008) contends that participatory performances pay no attention to audiences because there are no separations, we would disagree. The interaction of both sides creates a time and place where “social distinctions are stripped away” (p. 14) but without fully doing away with the relative difference between artists and audiences, both being still distinguishable and nurturing each other. Listeners participate in the act of music-making by decoding the musical symbolism in their own ways (on encoding and decoding, see the cultural studies approach following Stuart Hall). Participation can take the obvious form of expressive full body movement, the picking up of music instruments or chanting along just as it can involve the quiet enjoyment of and reflection on music with or even without tapping to the rhythm with your foot. Certainly, there are at least two social groups in live music, the quiet, restrained audience at a classical music concert and the loud, rambunctious crowd at a rock concert, but both of them create their own type of *communitas* (cf. Abbing 2009). Examples for our position – that the distinction between musicians and audiences is blurred without doing away with the difference – are some of the most popular music festivals in Europe, the Roskilde Festival in Denmark and the Fusion Festival in Germany. Using the experiential world concept developed by Ronald Hitzler and his colleagues (cf. Hitzler and Pfadenhauer 2002, Pfadenhauer 2005), Kirchner (2011) revealed the Fusion Festival to be an experiential community of politically, culturally and socially conscious participants (musicians and

audiences likewise). This German sociology school of life-world phenomenology has analysed social interactions and social experience among visitors to music performances, showing that both create a (temporary) social world that fits all the criteria of a *communitas*. Probably Turino, from his ethnomusicological perspective, has less of a sensibility for these popular experience worlds in the global North (which from his view are less participatory); however, musicians and audiences turn these festivals and similar performances into a *communitas* because they regard each other as part of one collective creating the experience. One of the most popular American musicians known for his intelligent live extravaganzas by creating a joint audience-musician experience is Dan Deacon, who regularly improvises music-dance performances with his audience as “group interpretative experiences”.

Rather than following Turino's strict separation of participatory vs presentational live music, we thus choose to follow, alongside DeNora's “music in action” approach, Christopher Small's (1998) concept of “musicking”, which proposes that music is a verb ('to musick') rather than a noun. It is a communicative process transforming social relations rather than merely an object to be produced and consumed. In Small's conception, participatory processes occur at many levels and in many degrees, even in relationship to the use of recorded music.

The issue here is whether these experiential events remain temporary or have a lasting effect. We follow Turino and others in their opinion that music – even and especially after a live experience – always have ongoing repercussions. We are sceptical, however, about Turino's claim that only a totally merged musician-audience entity can reach this objective. Even a classical music audience that does not or only barely moves to live music can achieve a strong relationship with the musicians.

Certain specific forms of collective musical practice show especially strong potential in terms of promoting cultures of sustainability. Above all, research on social creativity and collective creativity stresses the benefits of collective musical improvisation for the expression and development of social creativity (as will be discussed below in Section 5.2.2).

Collective musical practices nurture certain values that in themselves do not necessarily or automatically lead societies towards sustainability, but which can be helpful when integrated within sustainability-oriented worldviews and value systems: cooperation, listening and tuning in to each other, and sharing responsibilities towards common desires.

However, the question remains as to how musical practices relate to questions of sustainability within individual organizations. In the following section, we will now focus on the functions of music within individual human groups, leaving aside a detailed discussion of studies on the functions of music in intergroup interactions (see Bergh 2010 for a review of the latter).

5 – Music and organizational cultures of sustainability

This section examines, firstly, insights from mostly psychological studies on the effect of collective musical practice on group cohesion, compared to other music-related or non-musical cultural practices. Here researchers use a variety of research designs and sample sizes (cf. Enger 2014, pp. 92-94). Secondly, we examine interdisciplinary empirical research on musical improvisation and social creativity, whereby these studies were less systematic and often more qualitative and empirical than the research on group cohesion, and even partly were theoretical and speculative. Furthermore, unlike the psychological research on group cohesion, the research on music

improvisation and social creativity did not attempt to identify single linear causal links, as it uncovered cognitive and social mechanisms with high levels of complexity.

5.1 Organizational cultures, organizational resilience and creativity

The search process of sustainability requires of organizations that they undergo a transformative process whereby they acquire core assumptions focusing on the interdependence between human and ecological systems and affecting the worldviews, values and actions of the organization's members (Linnenluecke and Griffiths 2010). Furthermore, as sustainability is multi-dimensional it also appeals to further core assumptions within an individual organization regarding the pursuit of wealth and the good life, its responsibilities as embedded within social systems, its powers and roles regarding issues of social justice, and the roles of the organization within changing intercultural contexts. These core assumptions, worldviews and values form its organizational culture (Schein 2010).⁴

Organizations have both formal and informal, designed and emergent structures. Whereas its formal, designed structure facilitates routine operations and stable goal-following (assuming the unlikely event that the organization's environment remains unchanging), its informal structure plays an essential role in its creativity and learning capabilities as a living and learning entity (De Geus 1997, Capra 2002). The organizational theory of neo-institutionalism broadly elaborates this analysis of formal vs informal structures in organizations, especially with Meyer and Rowan's concept of "decoupling" (Meyer and Rowan 1977). The informal development of an organization, including the emergence of social changes, occurs within communities of practice (Wenger 1998).

Emergence is nonlinear and so cannot be planned or designed, but it can be facilitated by strengthening communities of practice, cultivating an openness to disruption as part of the organizational culture, inviting disorganization (Jaffee 2001), and furthering organizational learning (Argyris and Schön 1978, Senge 1990). In this process, fostering sustainability-oriented change will depend on challenging existing mental models and synthesizing new ones through creative breakthroughs (Lozano 2014), while tending to the "emotional infrastructure" of organizations (Shrivastava 2012). Schein (2010) stresses two main sets of characteristics of organizational culture that play a role in organizational resilience: internal integration and external adaptation. Whereas the former is strengthened by group cohesion (Enger 2014, pp. 39-46), the latter is made more likely by social creativity (pp. 47-56).

To be responsive to changes in their environments, organizations as active complex systems need to be open to instability, disorganization and uncertainty and to see chaos as a chance for reorganization (Purser and Montuori 1999). This requires the development of social creativity in the organization, that is, not merely the creativity of single individuals within the organization, but as the shared creativity of communities of practice within the organization. Aspects such as cooperative learning, communicative processes in a group, and group creativity belong to this focus (Purser and Montuori 1999 and cf. Paulus and Nijstad 2003, Sawyer 2003).

Social creativity requires a balance of divergent and convergent thinking. The former manifests

⁴ The collective normativity of an "organizational culture" has been outlined by Schein (2010) at three levels: the tangible aspects of an organization (i.e., artifacts, e.g., behavioral rituals, dress, physical features), the beliefs about an organization (i.e., espoused values, e.g. organizational visions and missions), and the taken-for-granted ways of doing and thinking in an organization (i.e., basic assumptions such as best practice).

itself in the capacity to perceive and open up to alternative options/potentialities, whereas the latter manifests itself in the choice and realization of one option (Milliken et al. 2003). Divergent thinking, in turn, is hindered by excessive pressure for conformity in the group (Nemeth and Nemeth-Brown 2003). A combination of mutual trust and openness for dissent and divergence are desirable. This analysis also fits in with the sociological analysis of Richard Sennett, who elaborates on the need for dynamically balanced (negotiated) conflict before real cooperation can take place, not only within organizations but also more generally within societies (Sennett 2012).

One challenge is to find a balance between divergent and convergent processes within a group, allowing a shared emergence of ideas and experiences, as typically occurs in jazz improvisation (Sawyer 2003; see also Faulkner and Becker 2009). Social creativity allows a productive openness to the unexpected that aesthetically develops qualities of self-organization in organizations as complex systems (Barrett 2000) and contributes to the training of an aesthetics of complexity, grounding cultures of sustainability.

But to what extent are researchers of organizations and sustainability aware of the importance of creativity? In addition to our core review focus (discussed in Section 5.2), we did an additional literature search to contextualize our inquiry in the Scopus database (using the keywords “sustainability” or “sustainable development” + “creativity” for the years 2008 to 2015; then eliminating the literature that did not discuss the organizational level). We were curious as to how creativity is approached in the current literature on organizations and sustainability and what role music might play.

We found that some of the literature only pays lip service to “creativity”, for example to its association with double-loop learning for business education (Sroufe and Ramos 2015). In some publications, the importance of creativity for transformation towards sustainability is mentioned in contexts of application as diverse as higher education organizations (Jones 2013, Lozano et al. 2013); small and medium sized companies (Bocken et al. 2014); corporate firms (Wesselink et al. 2015); in connection to key competencies (cf. Wiek et al. 2011) and organizational learning (Lozano 2014); ecodesign (Stables 2009; Shin, Benson and McDonagh 2011; Weiler and Goel 2015); engineering education (Du et al. 2013); methods for decision-making, problem-solving and visioning workshops (Lederwasch 2012, Carlsson et al. 2015); and transformational leadership (Newman-Storen 2014); but most often the literature does not specify the creative processes and the interrelated individual and social levels of creativity and, even though other art forms are sometimes engaged with, ignores music.

We found only two occurrences where the creative process is explicitly discussed (Stables 2009, Lozano 2014) and one occurrence where music is deployed (Widhalm 2012). Stables (2009) highlights the challenge for eco-designers of deploying creative processes while addressing the complexity of sustainability and points out the risk of approaching sustainability superficially if creativity is not combined with developing a “comfort with the complexity” (that is, neither being simplistic, nor drowning the capability for creativity with complex information).

Lozano (2014) discusses creativity at and across the individual, group and organizational levels in connection to organizational learning and the diffusion of innovation. However, his discussion of group creativity remains underdeveloped. He praises creativity as a generator of new ideas and especially new mental models, while it disrupts traditional mental models, and stresses the importance of triple-loop learning and anticipatory learning in order to reap the fruits of creative processes and transform organizations, institutionalizing and consolidating new models.

Widhalm (2011) relates the fundamental creativity of life and autopoiesis to the creative unfolding of individuals and groups through practices that generate the visceral “experience of participating in and being a vibrant living system” (p. 164). She articulates the benefits of the music-based corporeal/dance practice of Biodanza, “a system of facilitated communal movement to music that helps induce heightened sensations of aliveness in engagement with self, others, and the world” (p. 25). This form of dance is based on the concept of *vivencia*, a Spanish word expressing a heightened experience of feeling alive. Biodanza sessions are “carefully designed, progressively paced sequences of guided, creative, relational, nonverbal exercises done with specifically selected pieces of music” (p. 25). Its practitioners speak of “flowing according to an inner music, and dancing according to an inner rhythm, the rhythm and music of life” (p. 26). Widhalm especially stresses the need for a deeply phenomenological “experiential way of knowing [that] underlies all other ways of knowing (the presentational-expressive, propositional-analytical, and practical-skill based)” (p. 42).

Notwithstanding these few exceptions, our search in Scopus revealed an insufficient focus on creativity in the literature (but this may also be due to the limited scope of the Scopus database, which failed to include, among others, Shrivastava and Ivanaj 2011). This echoes a similar critique already raised in the field of education for sustainability (Sandri 2013).

5.2 Research on the effects of music-based interventions within organizations

Research on artistic interventions in organizations have pointed at the genuine potential that artistic practices can bring to organizations in laying the ground for cooperative work, openness to uncertainty, and social innovation (Berthoin Antal and Strauß 2013). Some researchers are focusing more specifically on musical interventions in organizations (Prichard et al. 2007, Nissley 2002), while others have specifically explored how musical practice fulfils functions related to group cohesion and/or to social creativity.

5.2.1 Research on musical practice and group cohesion

Regarding group cohesion, some authors in the field of evolutionary psychology have developed interesting claims according to which the evolutionary function of music is to strengthen group cohesion (Huron 2001, Dunbar 2004).⁵ Huron uses a number of arguments related to the identity-reinforcing function of music, observed neuro-chemical effects in musical practice (e.g. lowered level of testosterone and increased level of oxytocin), as well as observed prosocial interactions through emotional attachment (see also Kirschner and Tomasello 2010). Kirschner and Tomasello discuss several possible explanations for the observed effects, such as induction of positive mood, mutual mimesis, synchronization and harmonization through singing, which lower barriers between the self and others (cf. also Wiltermuth and Heath 2009, Dunbar et al. 2012). Especially a shared intentionality produces positive emotions and reinforces the sense of community. Recent research in the field of auditory cognitive neuroscience also hints at the role of collective singing in the creation of joint perspectives, though the coupling and regulation of respiration and heart rates (Vickhoff et al. 2013).

Reviewing the empirical research results regarding the effect of collective musical practice on group cohesion, compared to other music-related or non-musical cultural practices, Enger summed up the following relationships (2014, pp. 91-105):

5 Unfortunately, we lack the space to address controversies over evolutionary theories.

Table 1: Effects of music on group cohesion are compared to other cultural activities (from Enger 2014).

Aspects of group cohesion	Effects of group musical practice compared to:			
	asynchronous musical practice	listening to music	cultural activity (poetry/prayer)	watching a film
Trust	marginally higher (2)	marginally higher (1)	significantly higher (1)	significantly higher (1)
Togetherness	significantly higher (2 & 2)*	---	---	significantly higher (2)
Cooperation	significantly higher (2 & 2)*	significantly higher (1 & 2) marginally higher (1)	marginally higher (1) significantly higher (3)	significantly higher (1)
Readiness to help others	---	---	significantly higher (3)	---
Release of endorphins	---	significantly higher (4)	significantly higher (4)	significantly higher (4)
Communication	---	---	significantly higher (3 & 3)**	---

1) Anshel and Kipper (1988); 2) Wiltermuth and Heath (2009); 3) Kirschner and Tomasello (2010); 4) Dunbar et al. (2012)

* Multiple mentions because of different experiments

** Multiple mentions because of different tests

Most analysed elements – such as the levels of trust in the group, the feeling of togetherness, the readiness to help others, the release of endorphins which brings euphoric effects (as well as empathy and social commitment) – are highest for groups who practiced singing or instrumental music together, as compared to the other cultural activities (often including music-listening). Given the small number of available studies however, caution is advised on generalizing their conclusions. Because of the lack of longitudinal studies (only short-term effects were studied) and the very small size of test groups (generally 2 to 3 persons per group), no conclusive evidence is available from these studies regarding the long-term effects of musical practice on group cohesion.

5.2.2 Research on musical improvisational practice and social creativity

Regarding social creativity, researchers have focused their attention especially on musical improvisation. Improvisation allows the individual musician both to take on different roles and to influence the development of music. It involves social interaction by the improvising musicians with each other as well as with the audience. Improvisation also stimulates a constant alertness to innovation and variation. Enger reviews research, which is less systematic and empirical than the research on group cohesion, and highlights three potential areas where musical improvisation bears the potential to develop social creativity: by stimulating divergent thinking, affecting convergent thinking, and supporting the interaction between divergent and convergent processes (pp. 106-124).

The practice of improvisation can enhance the feeling of safety and group identification, facilitating the expression of divergent opinions. Regular improvisation may stimulate divergent thought processes (Montuori 2003, Purser and Montuori 1999, Barron 1995). The self-organised participatory character of group improvisation can train the integration of different perspectives in group processes (Borgo 2007). Several of the qualities of group musical practice mentioned above (in Section 5.2.1) in the discussion of group cohesion (including trust in the group, empathy and readiness to help others) should also beneficially affect social creativity by allowing a safe environment in which divergent, creative processes can better unfold. This is especially relevant for group improvisation: “Many improvising musicians and actors speak of the importance of group flow or developing a ‘group mind’ during performance. This requires, at the very least, cultivating a sense of trust among group members. According to some, it also involves reaching a certain egoless state in which the actions of individuals and the group perfectly harmonize” (Borgo 2007, p. 184). Furthermore, Montuori considers improvisation as a characteristically creative process which actively seeks destabilizing phenomena and views order and disorder as related phenomena – thereby performing what Kagan (2011) characterizes as an aesthetics of complexity (see Section 4.3). “At the interstices of order and disorder, law-like and random, as the embodiment of lived complexity, we find improvisation” (Montuori 2013b). Improvisers collectively learn to build upon surprise and uncertainty: “Improvisers not only welcome but they worship the sound of surprise. They revere the uncertainties of new techniques, new conceptions and new performance occasions, groupings and venues. During performance, improvisers also must revere the process of exploring and negotiating uncertainties together” (Borgo 2007, p. 14).

One empirical study compares the development of creative thinking among children exposed to different kinds of music education over six months and discovers that music education including the practice of improvisation scored largely better than music education without improvisation, both overall and very highly on specific dimensions of creative thinking (flexibility, originality and musical syntax). Furthermore, all children who practiced improvisation experienced increased levels of creative thinking, whereas some of the children who practiced non-improvisational music saw their levels of creative thinking deteriorate (Koutsoupidou and Hargreaves 2009). Some empirical research from cognitive scientists confirms that improvisation stimulates “neuro-cognitive reorganization processes”, or de-focused, associative thinking (Dietrich and Kanso 2010, Limb and Braun 2008, Liu et al. 2012). Besides these individual effects, improvised music also stimulates divergent thinking at a collective level by fostering the establishment of a democratic space of participation, where hierarchies are weakened (Sawyer 2003, Montuori 2003, Borgo 2007). At the same time each is drawn to pay attention to the other: “Jazz is democratic music, and all musicians should have the freedom to express themselves. But at the same time, players depend on one another and have to rein in their individual freedom for the good of the group” (Sawyer 2006, p. 236). Improvisation instantiates a constant process of negotiation where partakers actively listen to each other, anticipate each other's intentions, and react to one another (Barrett 2000, p. 240, Sawyer 2003, p. 44; see also Faulkner and Becker 2009).

Through these qualities, musical improvisation belongs to the kinds of artistic practices that develop polyarchic polity conventions, in other words a practised basic-democratic culture, which itself constitutes a necessary political dimension of cultures of sustainability (Kagan 2011, pp. 429-460) as well as self-organization as an element of resilience. Musical improvisational practice fosters an acute sensibility to harmony in tensions and in contradictions, not only as an aesthetic experience of complexity but also as a political practice of such a (dis)harmony of tensions. It thereby exercises

the practice of a polyarchic polity within art-participation, that is, a basically anti-totalitarian democratic culture, where “agonistic” relationships (Mouffe 2013) enter into a dynamic balanced relationship with convivial relationships (Kagan 2015b).

Redundancy and diversity, two other elements of resilience, are also enacted in, for example, a well-functioning improvising jazz ensemble: “There is a redundancy of functions in good jazz bands, as musicians can alternate solos and back-up roles ... They are able to control and coordinate their own musical behaviour, alternating between passages that are tightly written for ensembles and freer improvisations on shared themes, suggesting there is a shared understanding of goals, mutual respect along with an optimal level of autonomy, variety and feedback. Members in a jazz ensemble are able to both lead and follow” (Purser and Montuori 1999, p. 345). Borgo compares this practice of self-organization, where participants dynamically take on a variety of roles, to swarm intelligence: “Improvising music hinges on one's ability to synchronize intention and action and to maintain a keen awareness of, sensitivity to, and connection with the evolving group dynamics and experiences ... During the most complex and dense passages of collective improvisation, a swarmlike quality also emerges, in which individual parts may be moving in very different directions and yet the musical whole develops with a collective purpose” (Borgo 2007, p. 9).

Improvising music groups have to develop nonverbal communication processes in which some of the ideas from individual members are selected, further developed and modified by the other members: “When a performer introduces a new creative entailment, the entire group of performers collectively determines whether the entailment will be accepted into the emergent, ongoing performance. They collectively have the option of accepting the innovation (by working with it, building on it, making it ‘their own’), rejecting the innovation (by continuing the performance as if it had never occurred), or partially accepting the innovation (by selecting one aspect of it to build on, and ignoring the rest). This evaluative decision is a group effort, and cannot be identified clearly with any specific moment in time, nor with any single individual” (Sawyer 2003, p. 92). These qualities train convergent thinking as a creative group.

Furthermore, according to Sawyer (2003, pp. 173-174), collective music improvisation develops a practice of permanent parallel processing of both divergent and convergent thinking processes, making it an exemplary creative group practice. Both within the individual mind and within the group of musicians, the generation of ideas and the evaluation of ideas co-occur. Evaluation comes immediately, and both processes take place part consciously and part subconsciously.

6 – Conclusion

In this sustainability-oriented transdisciplinary review, we gathered literature from a wide range of disciplines to explore the under-researched intersection of music and sustainability. The insights we gained clearly reveal a potential of music for sustainability transformation. This potential is however largely untapped by the sustainability community: Music as experience has phenomenological qualities that may stimulate biophilia. Music can enhance the creative resilience of individuals, communities and organizations. Shared musical experiences are powerful channels of identity formation or disidentification. Collective musical practices nurture values that can be helpful when integrated within sustainability-oriented worldviews: cooperation, listening and tuning in to each other, and sharing responsibilities towards common desires. Music as a complex social

and aesthetic system can stimulate an aesthetics of complexity, encouraging openness to the ambiguities, ambivalences, contradictions and creatively chaotic dimensions of reality, rather than levelling them into a coherent logical system. This aesthetic quality can shed the fear of uncertainties that limits our creative openness to sustainability transformation. Shared musical practice enhances group cohesion. Musical improvisation enhances social creativity – a key quality for sustainability transformation in organizations.

However, the experience and practice of music can also be put to significantly harmful ends. It is crucial to guard against manipulation through music for commercial, political and ideological purposes and to be aware of how music's emotional power can contribute to exclusionary attitudes.

There are currently only a few sustainability experts seriously engaging with creativity. Even fewer are aware of music's potential. Participatory music has been applied in a sustainability project aiming to support the diffusion of new agricultural knowledge in Chennai (India) by “creating new songs” (Walcott 2016). In this project musical experience even opened ontological and spiritual levels – pointing to the transcendental dimension of music.

We encourage more sustainability programs to engage with music. One of the insights in our review calls for musical experiences that mix iconic, indexical and symbolic powers of signification, while also balancing accessibility to experiential participation and sensibility to an aesthetics of complexity. Moreover, further empirical analyses would help differentiate the participatory modes and added values of music for sustainability learning, as has already been done for performative methods in theatre by Heras and Tàbara (2014).

Sustainability advocates should however avoid the pitfall of flattening the musical experience of complexity into sustainability propaganda: “Nothing is more boring than music made solely for the purpose of achieving some simple, tangible effect” (Pedelty 2012, p. 203).

Acknowledgements

We thank Ms Linda Anne Engelhardt who as the chairperson of the board of trustees of the classical music festival Hitzacker (Germany) invited us to contribute to a one-day symposium on music and sustainability in July 2013. We thank two anonymous reviewers for their comments on an early draft of this text presented at the “1st ARTEM Organizational Creativity International Conference” in Nancy, France, as well as the conference participants for their feedback. We thank two anonymous reviewers at the *Journal of Cleaner Production* as well as chief editor Rodrigo Lozano for their comments on the original manuscript.

Reference list

- Abbing, H., 2009. From high to new art [Van hoge naar nieuwe kunst]. Historische Uitgeverij, Groningen.
- Abram, D., 1996. *The Spell of the Sensuous*. Random House, New York.
- Adorno, T. W., 2002. *Essays on Music*. University of California Press, Berkeley.
- Allen, A.S., 2011. Ecomusicology: Ecocriticism and Musicology. *Journal of the American Musicological Society*. 64 (2), 391–394.
- Anshel, A., Kipper, D. A., 1988. The influence of group singing on trust and cooperation. *Journal of Music Therapy*. XXV (3), 145–155.
- Argyris, C., Schön, D., 1978. *Organizational learning: A theory of action perspective*. Addison Wesley, Reading.
- Barrett, F. J., 2000. Cultivating an Aesthetics of Unfolding: Jazz Improvisation as a Self-Organizing Team, in: Hopfl, S., Linstead, H. J. (Eds.), *The Aesthetics of Organizations*. Sage, London, pp. 228–245.
- Barron, F., 1995. *No rootless flower. An ecology of creativity*. Hampton Press, Cresskill, N.J.
- Bausch, C., 2012. Sonatas for Sustainability: How musical training imparts important qualities and skills for sustainability. *The Sustainability Review*. 3 (3).
- Benz, A., 2010. *Governance - Governing in complex regulating systems [Governance - Regieren in komplexen Regelsystemen]*. VS Verlag für Sozialwissenschaften, Wiesbaden.
- Bergh, A., 2008. Everlasting love: The sustainability of top-down vs bottom-up approaches to music and conflict transformation, in: Kagan, S., Kirchberg, V. (Eds.), *Sustainability: A new frontier for the arts and cultures*. VAS, Frankfurt am Main, pp. 351–380.
- Bergh, A., 2010. *I'd like to teach the world to sing: Music and conflict transformation*. Unpublished Doctoral Dissertation. University of Exeter, Exeter.
- Bergh, A., Sloboda, J., 2010. Music and Art in Conflict Transformation: A Review. *Music & Arts in Action*. 2 (2), 2–17. Available online at: <http://musicandartsinaction.net/index.php/maia/article/view/conflicttransformation> ; Last Accessed: February 18 2015.
- Berthoin Antal, A., Strauß, A., 2013. *Artistic interventions in organisations: Finding evidence of values-added*. Creative Clash Report. WZB, Berlin.
- Besseler, H., 1959. *Musical Listening in the Modern Age [Das musikalische Hören der Neuzeit]*. Akademie-Verlag, Berlin.
- Björk, 2013. *Biophilia [Android phone application]*. Available online at: <https://play.google.com/store/apps/details?id=com.bjork.biophilia&hl=en> ; Last Accessed: February 11 2016.
- Blackie, S., 2012. Book review: *Being Alive*, by Tim Ingold. *The Earthlines Review*. June 3 2012. Available online at: <https://earthlinesmagazine.wordpress.com/2012/06/03/book-review-being-alive-by-tim-ingold/> ; Last Accessed: July 30 2015.
- Bocken, N.M.P., Farracho, M., Bosworth, R., Kemp, R., 2014. The front-end of eco-innovation for eco-innovative small and medium sized companies. *Journal of Engineering and Technology Management*. 31 (1), 43–57.
- Booth, A., 2008. Using Evidence in Practice – Unpacking your literature search toolbox: on search styles and tactics. *Health Information and Libraries Journal*. 25, 313–317.
- Borgo, D., 2007. *Sync or swarm. Improvising music in a complex age*. Continuum, New York.
- Bourdieu, P., 1979. *Distinction: A Social Critique of the Judgement of Taste [La Distinction: Critique sociale du jugement]*. Minuit, Paris.
- Brader, E. (Ed.), 2011. *Songs of Resilience (Meaningful Music Making for Life)*. Cambridge Scholars Publishing, Newcastle upon Tyne.
- Bresler, L., 2005. What musicianship can teach educational research. *Music Education Research*. 7 (2), 169–183.
- Brocchi, D., 2008. The Cultural Dimension of Sustainability, in: Kagan, S., Kirchberg, V. (Eds.), *Sustainability: A new frontier for the arts and cultures*. VAS, Frankfurt am Main, pp. 26–58.
- Brocchi, D., 2012. On the ambivalence of art for a transition to sustainability. Panel contribution at the conference “Radius of Art: Creative politicization of the public sphere - Cultural potential forces for social transformation”. Heinrich Böll Stiftung, Berlin. Available at: https://www.boell.de/sites/default/files/assets/boell.de/images/download_de/Speech_Davide_Brocchi_fin.pdf ; Last Accessed February 20 2015.
- Brown, S., Volgsten, U., 2006. *Music and manipulation : on the social uses and social control of music*. Berghahn Books, New York, Oxford.
- Bryman, A., Bell, E., 2007. *Business research methods*. Oxford University Press, Oxford.
- Burford, G., Hoover, E., Velasco, I., Janoušková, S., Jimenez, A., Piggot, G., Podger, D., Harder, M. K., 2013. Bringing the “Missing Pillar” into Sustainable Development Goals: Towards Intersubjective Values-Based Indicators. *Sustainability*. 5(7), 3035–3059.
- Butler, J., 1993. *Bodies That Matter: On the Discursive Limits of “Sex.”* Routledge, New York City, NY.
- Capra, F., 2002. *The Hidden Connections: A Science for Sustainable Living*. Random House, New York City, NY.
- Carlsson, A., Hjelm, O., Baas, L., Eklund, M., Krook, J., Lindahl, M., Sakao, T., 2015. Sustainability Jam Sessions for vision creation and problem solving. *Journal of Cleaner Production*. 98, 29–35.
- Cooper, H., 1988. *Synthesizing Research: A Guide for Literature Reviews*. Sage, Thousand Oaks, CA.

- De Certeau, M., 1984. *The Practice of Everyday Life*. University of California Press, Berkeley.
- De Geus, A., 1997. *The Living Company*. Harvard Business School Press.
- Deleuze, G., Guattari, F., 1987. *A thousand plateaus: Capitalism and schizophrenia*. University of Minnesota, Rochester.
- DeNora, T., 2000. *Music in Everyday Life*. Cambridge University Press, Cambridge.
- DeNora, T., 2013. *Music Asylums: Wellbeing Through Music in Everyday Life*. Ashgate, Farnham.
- DeNora, T., Belcher, S., 2000. "When you're trying something on you picture yourself in a place where they are playing this kind of music" – musically sponsored agency in the British clothing retail sector. *Sociological Review*, 48 (1), 80–110.
- Dessein, J., Soini, K., Fairclough, G., Horlings, L. (Eds.), 2015. *Culture in, for and as Sustainable Development: Conclusions from the COST Action IS1007 Investigating Cultural Sustainability*. University of Jyväskylä, Jyväskylä.
- Devos, R., 1977. *The tip of a bit [Le bout d'un bout – stage performance]*. Audio recording available at http://youtu.be/p_0aG63Ik7o ; Last Accessed: February 19 2015.
- Dieleman, H., 2008. Sustainability, Art and Reflexivity: why artists and designers may become key change agents in sustainability, in: Kagan, S., Kirchberg, V. (Eds.), *Sustainability: a new frontier for the arts and cultures*. VAS, Frankfurt am Main, pp. 108–146.
- Dieleman, H., 2012. Transdisciplinary Artful Doing in Spaces of Experimentation and Imagination. *Transdisciplinary Journal of Engineering and Science*. 3, 44–57.
- Dieleman, H., 2013. Organizational learning for resilient cities, through realizing eco-cultural innovations. *Journal of Cleaner Production*. 50, 171–180.
- Dietrich, A., Kanso, R., 2010. A review of EEG, ERP, and neuroimaging studies of creativity and insight. *Psychological Bulletin*. 136 (5), 822–848.
- Du, X., Su, L. Liu, J., 2013. Developing sustainability curricula using the PBL method in a Chinese context. *Journal of Cleaner Production*. 61, 80–88.
- Dunbar, R., 2004. Language, music and laughter in evolutionary perspective, in: Griebel, D. K., Oller, U. (Eds.), *Evolution of communication systems. A comparative approach*. MIT Press, Cambridge, Mass, pp. 257–274.
- Dunbar, R., Kastakis, K., Mac Donald, I., Barra, V., 2012. Performance of music elevates pain threshold and positive affect: Implications for the evolutionary function of music. *Evolutionary Psychology*. 10 (4), 688–702.
- Duxbury, N., Jeannotte, M. S., 2010. *Culture, Sustainability, and Communities: exploring the myths*. Working paper no. 353. Oficina do CES, Universidade de Coimbra, Coimbra.
- Eernstman, N., Van Boeckel, J., Sacks, S., Myers, M., 2012. Inviting the unforeseen: A dialogue about art, learning and sustainability, in: Wals, A.E.J., Corcoran, P.B. (Eds.), *Learning for Sustainability in Times of Accelerating Change*. Wageningen Academic Publishers, Wageningen, pp. 201–212.
- Eernstman, N., Wals, A.E.J., 2013. Locative meaning-making: An arts-based approach to learning for sustainable development. *Sustainability*. 5 (4), pp. 1645–1660.
- El-Sawad, A., Korczynski, M., 2007. Management and Music: The Exceptional Case of the IBM Songbook. *Group & Organization Management*. 32 (1), 79–108.
- Enger, J., 2014. Possibilities to Support Sustainability in Organizations through Collective Music-Making [Möglichkeiten der Förderung von Nachhaltigkeit in Organisationen durch gemeinsames Musizieren]. *Cultura21*, Berlin.
- Ernstson, H., van der Leeuw, S.E., Redman, C.L., Meffert, D.J., Davis, G., Alfsen, C., Elmqvist, T., 2010. Urban Transitions: On Urban Resilience and Human-Dominated Ecosystems. *AMBIO: A Journal of the Human Environment*. 39 (8), 531–545.
- Faulkner, R. F., Becker, H. S., 2009. *"Do You Know...?" the Jazz Repertoire in Action*. University of Chicago Press, Chicago.
- Folke, C., 2006. Resilience: The Emergence of a Perspective for Social–ecological Systems Analyses. *Global Environmental Change*. 16 (3), 253–267.
- Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C.S., Walker, B., 2002. Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations. *AMBIO: A Journal of the Human Environment*. 31 (5), 437–440.
- Folke, C., Carpenter S., Walker, B.H., Scheffer, M., Chapin, T., Rockström, J., 2010. Resilience Thinking: Integrating Resilience, Adaptability and Transformability. *Ecology and Society*. 15.
- Frith, S., 2004. *Popular Music: Music and Identity*, Routledge, London.
- Frith, S., 2007. *Taking Popular Music Seriously. Selected Essays*. Ashgate, Farnham.
- Gramsci, A., 2011. *Prison Notebooks (Volumes 1, 2 & 3)*. Columbia University Press, New York City, NY.
- Guattari, F., 1995. *Chaosmosis: An Ethico-aesthetic Paradigm*. Indiana University Press, Bloomington, IN.
- Haraway, D., 1988. Situated Knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*. 14 (3), 575–599.
- Hargreaves, D., Miell, D., MacDonald, R., 2012. *Musical Imaginations. Multidisciplinary perspectives on creativity, performance and perception*, Ashgate, Farnham.
- Hawkes, J., 2001. *The fourth pillar of sustainability: culture's essential role in public planning*. Common Ground Publishing, Champaign, Illinois.
- Hennion, A., 1993. *Musical Passion – A Sociology of Mediation [La Passion musicale. Une sociologie de la médiation]*.

Métailié, Paris.

- Hennion, A., 2001. Music Lovers. Taste as Performance. *Theory, Culture, Society*. 18 (5), 1–22.
- Hennion, A., 2008. Listen! Music & Arts in Action. 1 (1), 36–45. Available online: <http://www.musicandartsinaction.net/index.php/maia/article/view/listen> ; Last Accessed: February 18 2015.
- Heras, M., Tàbara, J.D., 2014. Let's play transformations! Performative methods for sustainability. *Sustainability Science*. 9, 379–398.
- Hitzler, R., Pfadenhauer, M., 2002. Existential strategies: The making of community and politics in the techno/rave scene, in: Kotarba, J.A., Johnson, J.M. (Eds.), *Postmodern existential sociology*. AltaMira Press, Walnut Creek, California, pp. 87–101.
- Holling, C.S., 1973. Resilience and Stability of Ecological Systems. *Annual Review of Ecology and Systematics*. 4 (1), 1–23.
- Holz, V., Stoltenberg, U., 2011. On the Way to a Sustainable Development Using a Cultural Perspective [Mit dem kulturellen Blick auf den Weg zu einer nachhaltigen Entwicklung], in: Sorgo, G. (Ed.): *The Invisible Dimension: Education for Sustainable Development in the Cultural Process [Die unsichtbare Dimension. Bildung für nachhaltige Entwicklung im kulturellen Prozess]*. forum exkurse, Wien, pp. 15–34.
- Hopkins, R., 2008. *The Transition Handbook: From Oil Dependency to Local Resilience*. Totness: Green Books.
- Huron, D., 2001. Is music an evolutionary adaptation? *Annals of the New York Academy of Science*. 930 (June), 43–61.
- Ingold, T., 2000. *The perception of the environment: essays on livelihood, dwelling and skill*. Routledge, London.
- Ingold, T., 2011. *Being Alive: Essays on Movement, Knowledge and Description*. Routledge, London.
- Jaffee, D., 2001. *Organization Theory: Tension and Change*. McGraw-Hill, New York City, NY.
- John, B., Kagan, S., 2014. Extreme Climate Events as Opportunities for Radical Open Citizenship. *Open Citizenship*, 5 (1), 60–75.
- Johnson, B., Cloonan, M., 2009. *Dark Side of the Tune: Popular Music and Violence*. Ashgate, Farnham.
- Jones, D.R., 2013. 'The Biophilic University': a de-familiarizing organizational metaphor for ecological sustainability? *Journal of Cleaner Production*. 48, 148–165.
- Jullien, F., 2009. *The silent transformations [Les transformations silencieuses]*. Editions Grasset & Fasquelle, Paris.
- Kagan, S., 2010. Cultures of Sustainability and the aesthetics of the pattern that connects. *Futures: The journal of policy, planning and futures studies*. 42 (10), 1094–1101. DOI: 10.1016/j.futures.2010.08.009.
- Kagan, S., 2011. *Art and sustainability. Connecting patterns for a culture of complexity*. transcript Verlag, Bielefeld.
- Kagan, S., 2012. *Towards Global (Environ)Mental Change: Transformative Art and Cultures of Sustainability*. Heinrich Böll Foundation, Berlin.
- Kagan, S., 2015a. Complexity as experience: The contribution of aesthetics to cultures of sustainability', in: Crouch, C., Kaye, N., Crouch, J. (Eds.), *An introduction to sustainability and aesthetics: the arts and design for the environment*. BrownWalker Press, Boca Raton, pp 25–32.
- Kagan, S., 2015b. Convivialism as Art and Complexity as Experience [Konvivialismus als Kunst und Komplexität als Erfahrung], in: Adloff, F., Heins, V. M., (Eds.), *Convivialism – a debate [Konvivialismus – eine Debatte]*. transcript Verlag, Bielefeld, pp. 165–177.
- Kirchner, B., 2011. *Event Communities. The Fusion Festival and Its Visitors [Eventgemeinschaften. Das Fusion Festival und seine Besucher]*. VS, Wiesbaden.
- Kirschner, S., Tomasello, M., 2010. Joint music-making promotes prosocial behavior in 4-year-old children. *Evolution and Human Behavior*. 31 (5), 354–364.
- Kohtala, C., 2015. Addressing sustainability in research on distributed production: an integrated literature review. *Journal of Cleaner Production*. 106, 654–668
- Koutsoupidou, T., Hargreaves, D. J., 2009. An experimental study of the effects of improvisation on the development of children's creative thinking in music. *Psychology of Music*. 37 (3), 251–278.
- Krause, B., 2012. *The Great Animal Orchestra: Finding the Origins of Music in the World's Wild Places*. Little, Brown and Company, New York.
- Lederwasch, A., 2012. Scenario Art: A New Futures Method that Uses Art to Support Decision-Making for Sustainable Development. *Journal of Futures Studies*. 17(1), 25–40.
- Lefebvre, H., 1991. *The Production of Space*. Blackwell Publishers, Oxford, Cambridge.
- Lefebvre, H., 2004. *Rhythmanalysis: Space, time and everyday life*. Continuum, London.
- Leigh Foster, S., 2008. Movement's contagion: the kinesthetic impact of performance, in: Davis, T. C. (Ed.), *The Cambridge Companion to Performance Studies*. Cambridge University Press, Cambridge, pp. 46–59.
- Les Convivialistes (2013). *Convivialist Manifesto: Declaration of Interdependence [Manifeste Convivialiste: Déclaration d'interdépendance]*. Le bord de l'eau, Lormont.
- Limb, C. J., Braun, A. R., 2008. Neural Substrates of Spontaneous Musical Performance: An fMRI Study of Jazz Improvisation. *PLoS ONE*. 3 (2), e1679. Available online at: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0001679> ; Last Accessed: February 18 2015.
- Linnenluecke, M. K., Griffiths, A., 2010. Corporate Sustainability and Organizational Culture. *Journal of World Business*. 45 (4), 357–366.
- Liu, S., Chow, H. M., Xu, Y., Erkkinen, M. G., Swett, K. E., Eagle, M. W., Rizik-Baer, D. A., Braun, A.R., 2012. Neural Correlates of Lyrical Improvisation: An fMRI Study of Freestyle Rap. *Scientific Reports*. 2, Article 834, 1–

- Lorenz, R., 2012. *Queer Art: A Freak Theory*. transcript Verlag, Bielefeld.
- Lozano, R., 2014. Creativity and Organizational Learning as Means to Foster Sustainability. *Sustainable Development*. 22. 205–216.
- Lozano, R., Lukman, R., Lozano, F.J., Huisingsh, D., Lambrechts, W., 2013. Declarations for sustainability in higher education: becoming better leaders, through addressing the university system. *Journal of Cleaner Production*. 48, 10–19.
- Major, C.H., Savin-Baden, M., 2011. Integration of qualitative evidence: towards construction of academic knowledge in social science and professional fields. *Qualitative Research*. 11(6), 645–663.
- Maturana, H., Varela, F., 1980. *Autopoiesis and Cognition*. D. Reidel, Boston.
- Merleau-Ponty, M., 1969. *The Prose of the World [La prose du monde]*. Editions Gallimard, Paris.
- Meyer, J. W., Rowan, B., 1977. Institutionalized Organizations: Formal Structure as Myth and Ceremony. *American Journal of Sociology*. 83, 340–63.
- Milliken, F. J., Bartel, C. A., Kurtzberg, T. R., 2003. Diversity and Creativity in Work Groups: A Dynamic Perspective on the Affective and Cognitive Processes That Link Diversity and Performance, in: Nijstad, P. B., Paulus, B. A. (Eds.). *Group creativity*, pp. 32–62. New York, Oxford: Oxford University Press.
- Montuori, A., 2003. The Complexity of Improvisation and the Improvisation of Complexity: Social Science, Art and Creativity. *Human Relations*. 56 (2), 237–255. Available online at: http://www.academia.edu/168670/The_Complexity_of_Improvisation_and_the_Improvisation_of_Complexity ; Last Accessed: February 18 2015.
- Montuori, A., 2013a. The Complexity of Transdisciplinary Literature Reviews. *Complicity: An International Journal of Complexity and Education*. 10 (1/2), 45–55.
- Montuori, A., 2013b. Transdisciplinary Reflections: The Sound of Surprise. *Integral Leadership Review*. 07.01.2013. Available online at: <http://integrallleadershipreview.com/8089-transdisciplinary-reflections-theseound-of-surprise/> ; Last Accessed: February 18 2015.
- Morin, E., 1992. *Method. towards a study of humankind [volume 1]*. Peter Lang, Bern.
- Morin, E., 2008a. *Method [La méthode – 6 volumes]*. Seuil, Paris.
- Morin, E., 2008b. The reform of thought, transdisciplinarity, and the reform of the university, in: Nicolescu, B. (Ed.), *Transdisciplinarity. Theory and practice*. Hampton Press, Cresskill, NJ, pp. 23–32.
- Mouffe, C., 2013. *Agonistics: thinking the world politically*. Verso, London.
- Muñoz, J. E., 1999. *Disidentifications: Queers of Color and the Performance of Politics*. University of Minnesota Press, Minneapolis, MN.
- Muhar, A., Visser, J., van Breda, J., 2013. Experiences from establishing structured inter- and transdisciplinary doctoral programs in sustainability: a comparison of two cases in South Africa and Austria. *Journal of Cleaner Production*. 61, 122–129.
- Nadarajah, M., 2007. Culture of sustainability: Multicultural reality and sustainable localism – A case study of Penang (George Town), Malaysia, in: Nadarajah, M., Yamamoto, A.T. (Eds.), *Urban crisis: culture and the sustainability of cities*. United Nations University Press, Tokyo, pp. 107–132.
- Nemeth, C. J., Nemeth-Brown B., 2003. Better than Individuals? The Potential Benefits of Dissent and Diversity for Group Creativity, in: Nijstad, P. B., Paulus, B. A. (Eds.), *Group creativity*. Oxford University Press, New York, Oxford, pp. 63–84.
- Nethsinghe, N., 2013. Safeguarding musical traditions and cultural heritage: The utilisation of community music making as a recourse for cultural and social sustainability. *The International Journal of Sustainability in Economic, Social and Cultural Context*. 8 (1), 29–38.
- Newman-Storen, R., 2014. Leadership in Sustainability: Creating an Interface between Creativity and Leadership Theory in Dealing with “Wicked Problems”. *Sustainability*. 6, 5955–5967.
- Nicolescu, B., 2002. *Manifesto of Transdisciplinarity*. State University of New York Press, Albany.
- Nicolescu, B., 2014. *From Modernity to Cosmodernity*. State University of New York Press, Albany.
- Nissley, N., 2002. Tuning-In to Organizational Song as Aesthetic Discourse. *Culture and Organization*. 8 (1), 51–68.
- Noblit, G.W., Hare, R.D., 1988. *Meta-ethnography: Synthesizing Qualitative Studies*. Sage, Newbury Park, CA.
- Nowotny, H., Scott, P., Gibbons, M., 2001. *Re-thinking Science: Knowledge and the Public in an Age of Uncertainty*. Polity Press, Cambridge.
- Olsson, P., Galaz, V., Boonstra, W.J., 2014. Sustainability transformations: a resilience perspective. *Ecology and Society*. 19 (4), 1.
- Orr, D.W., 2004. *Earth in Mind: On Education, Environment, and the Human Prospect*. Island Press, Washington, DC.
- Paulus, P. B., Nijstad, B. A. (Eds.), 2003. *Group creativity*. Oxford University Press, New York, Oxford.
- Pedelty, M., 2012. *Ecomusicology: Rock, Folk, and the Environment*. Temple University Press, Philadelphia, PA.
- Peretz, I., Zatorre, R. J., 2005. Brain Organization for Music Processing. *Annual Review of Psychology*. 56, 89–114.
- Pfadenhauer, M., 2005. Ethnography of scenes. Towards a sociological life-world analysis of (post-traditional) community-building. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*. 6 (3).
- Pfleiderer, M., 2003. Sound. Notes To a Popular Notion [Sound. Anmerkungen zu einem populären Begriff], in: Phelps, T., van Appen, R. (Eds.), *Pop Sounds. Sound Textures in Pop and Rock Music [Pop Sounds. Klangtexturen in der Pop- und Rockmusik]*. transcript Verlag, Bielefeld, pp. 19–29.

- Phelps, T., 2003. Pop Sounds so and Pop Sound so and so [Pop Sounds so und Pop Sound so und so], in: Phelps, T., van Appen, R. (Eds.), *Pop Sounds. Sound Textures in Pop and Rock Music* [Pop Sounds. Klangtexturen in der Pop- und Rockmusik]. transcript Verlag, Bielefeld, pp. 11–18.
- Pink, S., 2007. Walking with video. *Visual Studies*. 22 (3), 240–252.
- Pink, S., 2008a. Sense and sustainability: the case of the Slow City movement. *Local Environment*. 13 (2), 95–106.
- Pink, S., 2008b. An urban tour: the sensory sociality of ethnographic place-making. *Ethnography*. 9 (2), 175–96.
- Pink, S., 2008c. Re-thinking contemporary activism: from community to emplaced sociality. *Ethnos* 73 (2), 163–88.
- Pink, S., 2008d. Mobilising visual ethnography: making routes, making place and making images. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*. 9 (3).
- Pink, S., 2009. *Doing Sensory Ethnography*. Sage, London.
- Pink, S., 2012. *Situating Everyday Life: Practices and Places*. Sage, London.
- Prichard, C., Korczynski, M., Elmes, M., 2007. Music at Work: An Introduction. *Group & Organization Management*. 32 (1), 4–21.
- Purser, R. E., Montuori, A., 1999. Organizing as if Creativity Really Mattered, in: Purser, R. E., Montuori, A. (Eds.), *Social creativity*, vol. 2. Hampton Press, Cresskill, N.J, pp. 311–357.
- Rentfrow, P. J., 2012. The Role of Music in Everyday Life: Current Directions in the Social Psychology of Music. *Social and Personality Psychology Compass*. 6 (5), 402–416.
- Rösing, H., 2004. 9/11: How Political Can Music Be? [9/11: Wie politisch kann Musik sein?], in: Helms, D. (Ed.), 9/11 – The world's all out of tune. transcript Verlag, Bielefeld, pp. 155–168.
- Rösing, H., 2007. On a Complex System Of Relations: Politics And Music – Political Music [Über ein komplexes Beziehungssystem: Politik und Musik – politische Musik]. *Musikforum*. 2007 (4), 18–20.
- Sandri, O.J., 2013. Exploring the role and value of creativity in education for sustainability. *Environmental Education Research*. 19 (6), 765–778.
- Sawyer, R. K., 2003. Group creativity. Music, theater, collaboration. L. Erlbaum Associates, Mahwah, N.J.
- Sawyer, R. K., 2006. *Explaining creativity. The science of human innovation*. Oxford University Press, Oxford, New York.
- Schafer, R. M., 1980. *The Tuning of the World*. University of Pennsylvania Press, Philadelphia.
- Schein, E. H., 2010. *Organizational culture and leadership* (4th ed.). Jossey-Bass, San Francisco.
- Senge, P.M., 1990. *The Fifth Discipline: The Art and Practice of The Learning Organization*. Random House, London.
- Sennett, R., 2012. *Together: The Rituals, Pleasures and Politics of Cooperation*. Yale University Press, New Haven.
- Shin, C., Benson, E., McDonagh, D., 2011. Emotional eco-modernism: Is using bamboo really enough? *Proceedings of E and PDE 2011, the 13th International Conference on Engineering and Product Design Education*. 354–359.
- Shrivastava, P., 2012. Enterprise Sustainability 2.0: Aesthetics of Sustainability, in: Bansal, P., Hoffman, A.J. (Eds.), *The Oxford Handbook of Business and the Natural Environment*. Oxford University Press, Oxford, New York, pp. 630–638.
- Shrivastava, P., Ivanaj, S., 2011. Transdisciplinary Art, Technology, and Management for Sustainable Enterprise. *Transdisciplinary Journal of Engineering & Science*. 2, 81–92.
- Small, C., 1998. *Musicking: The meanings of performing and listening*. Wesleyan University Press, Middletown, CT.
- Soini, K., Birkeland, I., 2014. Exploring the scientific discourse on cultural sustainability. *Geoforum*. 51, 213–223.
- Sørensen, E., Triantafyllou, P., 2009. *The Politics of Self-Governance*. Ashgate, Farnham.
- Sroufe, R., Ramos, D.P., 2015. Leveraging Collaborative, Thematic Problem-Based Learning to Integrate Curricula. *Decision Sciences Journal of Innovative Education*. 13 (2), 151–176.
- Stables, K., 2009. Educating for environmental sustainability and educating for creativity: actively compatible or missed opportunities? *Int J Technol Des Educ*. 19, 199–219.
- Suri, H., 2011. Purposeful Sampling in Qualitative Research Synthesis. *Qualitative Research Journal*. 11 (2), 63–75.
- Taylor, J., 2012. *Playing it Queer: Popular Music, Identity and Queer World-making*. Peter Lang, Bern.
- Tidball, K.G., Krasny, M.E., 2007. From risk to resilience: What role for community greening and civic ecology in cities?, in: Wals, A. (Ed.), *Social learning towards a sustainable world*. Wageningen Academic Press, Wageningen, pp. 149–164.
- Titon, J. F., 2009. Economy, Ecology, and Music: An Introduction. *The World of Music*. 51 (1), 5–15.
- Titon, J. F., 2013. A Sound Commons for All Living Creatures. *Smithsonian Folkways Magazine*. Fall/Winter 2012.
- Turino, T., 2008. *Music as Social Life – The Politics of Participation*. University of Chicago Press, Chicago.
- Turino, T., 2009. Four Fields of Music-making and Sustainable Living. *The World of Music*. 51 (1), 95–118.
- United Cities and Local Governments (UCLG), 2004. *Agenda 21 for culture*. UCLG, Barcelona. Available online at: <http://www.agenda21culture.net/> ; Last Accessed: October 20 2015.
- Vickhoff, B., Malmgren, H., Åström, R., Nyberg, G., Ekström, S.-R., Engwall, M., Snygg, J., Nilsson, M., Jörnsten, R., 2013. Music structure determines heart rate variability of singers. *Frontiers in Psychology*. 4 (334). doi: 10.3389/fpsyg.2013.00334
- Vilsmaier, U., Lang, D.J., 2015. Making a difference by marking the difference: constituting in-between spaces for sustainability learning. *Current Opinion in Environmental Sustainability*. 16, 51–55.
- Walcott, S.J., 2016. The Role of Music in the Transition Towards a Culture of Sustainability. *Empowering Sustainability International Journal*. 3 (1), 1–19.
- Weber, A., 2013. *Enlivenment: Towards a fundamental shift in the concepts of nature, culture and politics*. Heinrich

Böll Stiftung, Berlin.

- Weiler, C., Goel, A.K., 2015. From Mitochondria to Water Harvesting: A Case Study In Biologically Inspired Design. *IEEE Potentials*. 43 (2), 38–43.
- Welsch, W., 1990. *Aesthetic Thinking [Ästhetisches Denken]*. Reclam, Stuttgart.
- Wenger, E., 1998. *Communities of Practice*. Cambridge University Press, Cambridge.
- Wesselink, R., Blok, V., van Leur, S., Lans, T., Dentoni, D., 2015. Individual competencies for managers engaged in corporate sustainable management practices. *Journal of Cleaner Production*. 106, 497–506.
- Whittemore, R., Knafl, K., 2005. The integrative review: updated methodology. *Journal of Advanced Nursing*. 52 (5), 546–553.
- Widhalm, B., 2011. Nature as guide for vibrant learning – a living systems framework for academic learning experience design toward a thriving sustainable world. Unpublished Doctoral Dissertation. California Institute of Integral Studies, San Francisco, CA. Available online at: <http://pqdtopen.proquest.com/doc/915749561.html?FMT=ABS> ; Last Accessed: January 10 2015.
- Widhalm, B., 2012. Teaching living systems awareness as a change agent skill for a vibrant sustainable world. 56th Annual Meeting of the International Society for the Systems Sciences 2012, ISSS 2012: Service Systems, Natural Systems. 478–493.
- Wiek, A., Withycombe, L., Redman, C. L., 2011. Key competencies in sustainability: a reference framework for academic program development. *Sustainability Science*. 6, 203–218.
- Wiek, A., Ness, B., Schweizer-Ries, P., Brand, F.S., Farioli, F., 2012. From complex systems analysis to transformational change: a comparative appraisal of sustainability science projects. *Sustainability Science*, 7 (Supplement 1), 5–24.
- Willis, P., 1978. *Profane Culture*. Routledge & Kegan Paul, London.
- Wiltermuth, S., Heath, C., 2009. Synchrony and Cooperation. *Psychological Science*. 20 (1), 1–5.
- Worster, D., 1993. *The Wealth of Nature: Environmental History and the Ecological Imagination*. Oxford University Press, New York.
- Worts, D., 2006. Fostering a Culture of Sustainability. *Museums & Social Issues*. 1(2), 151–172.
- Ziehl, M., 2012. Urban Subsistence. The Gängeviertel as a Prototype of Sustainable Urban Development Policies [Urbane Subsistenz. Das Gängeviertel als Prototyp einer nachhaltigen Stadtentwicklungspolitik], in: Gängeviertel e.V. (Ed.), *More Than a Quarter: Views and Intentions From the Hamburg Gängeviertel [Mehr als ein Viertel: Ansichten und Absichten aus dem Hamburger Gängeviertel]*. Assoziation A, Hamburg.