Flux in the Anthropocene: An Overview

By Scott Deal

Ring the bells that still can ring
Forget your perfect offering
There is a crack, a crack in everything
That's how the light gets in

(From "Anthem", by Leonard Cohen)

The Anthropocene, the current epoch named for humanity's impact on earth systems, is characterized by some of the most pressing issues of our time, including global warming, biodiversity loss, mass pollution, water shortages, and more. Human activities, principally through emissions of greenhouse gases, have "unequivocally caused global warming, with global temperatures exceeding 1.1°C above 1850-1900" (United Nations IPCC, 2023). Global expansions in farming, fishing, construction, mining, and more is creating a crisis of biodiversity where more, than one million species are threatened with extinction (Tolleson, 2019). Fresh water resources are overburdened as overconsumption, pollution, and the depletion of groundwater threaten entire geographic regions. From mountain tops to ocean bottoms, the world is awash in plastic. As a result of these conditions, the Anthropocene has brought "an environmental phase shift, where formerly resilient eco-systems have been pushed into altered states" (Kelly, J. M. et al., 2018). This shift points to a state of "flux", the title word for this edition of Array. Throughout the world, this flux conjures a zeitgeist of uncertainty. Princeton scholar Richard Falk states that "for a long time we got along without worrying about the caring capacity of the earth, and now we are terrified by the limits that we are exceeding." (Rimona et al., 2021) But there is also room for hope, which is where expressive aesthetics come into play. Our turbulent world is the starting point for creative observation, absorption, and articulation, a process the authors in this edition of Array have aptly engaged. Their writings reflect personal explorations into paths of inquiry, resulting in unique forms of musical art that provide a basis for insight and reflection regarding our time in this world.

As a foundation of musical activity, the process of listening is a broad topic in these articles. Paulo C.

Chagas cites listening as the fundamental construct of *Sound Imaginations: Listening Cultures and Audiovisual Immersion*, writing of his motivation to "investigate sound phenomenon from the point of view of listening." He recorded environments in Brazil, California, and Russia, asking how "people hear the acoustic environment in its totality of nature and human cultural sound". Several writers describe their listening experiences as beginning with recordings from scientific remote devices. In *Aural Snapshots of Patagonia: An Acoustic Survey in Sub-Antarctic Chile*, Garrison Gerard writes of documenting the acoustic environment of Yendegaia National Park in Chile, an extremely remote natural setting that the Chilean government opened to the public by creating a road to access it. With plans to create a musical work from the recordings, the effort will publically call attention to the stark reality of a disappearing aural landscape. Amanda Stuart accessed original audio samples from the Canadian Array for Realtime Investigations of Magnetic Activity (CARISMA) to create her work *Magnetosphere*. In *Six Seasons*, *Composition Inspired by Ocean Sounds From the Arctic*, Zalles Ballivian describes a project employing hydrophones placed on the seafloor of the Chukchi Sea, 300 meters deep, to capture "the sounds of sea ice, marine mammals, and the underwater environment". Other writers pursue less conventional modes of listening. In her article *Indigeneity and Computer Music in the Anthropocene*, Chieh Huang writes of listening beyond the audible spectrum into a realm of sensations. "Vibrational sensations, not just audibility, lie at the core of all music". This world of vibrations not perceived by the human ear is particularly well suited for the technological capabilities of the computer music genre, and its exploration is an emerging creative territory.

In the natural world, devoid of any recording devices, the listening experience is a unique, non-repeatable moment. In *Glacial Music: Katie Paterson's Langjökull, Snæfellsjökull, Solheimajökull (2007)*, author Alexander Rehding describes how Paterson exploited this factor by recording the sounds of the three glaciers and then pressing the audio into phonograph records made from ice of same glaciers. When the ice records are played on a phono-

graph, it melts and the "recorded sound irrecoverably disappears". Highlighting temporality in this fashion recalls artists such as Andy Goldsworthy and Robert Smithson, whose works of natural materials deteriorate over time. Listening concepts are not limited to the experience itself but extend to aurally-based tools. In *Diverse Instrument Symphonic Ensembles as a Strategy for Sustainable Innovation*, Jason Palamara advocates for computer-based ensembles that use sustainable and recycled devices as musical instruments. His idea of a "Diverse Instrument Symphonic Ensemble (DISEnsemble)" seeks "increasingly environmentally neutral solutions to the task/problem of forward-looking musical innovation". In *Networks of (tele)presence: tuning in to the environment through the INTIMAL App©*, Ximena Alarcón Díaz describes a hybrid telematic mobile sonic environment she created that invites people to experience relational listening by collectively engaging "their sense of place and sense of presence across distant locations"…as a "negotiation between sensing place in a physical location, and, simultaneously, sensing presence and telepresence across distant locations".

When harnessing scientific data and field recordings for expression, how do composers shape empirical content into a musical work? What is to make of the sometimes-inevitable compromises that arise? How do emerging tools/techniques affect the musical direction and aesthetics of computer-based music? These and other questions provide valuable insight into the nature of environmentally based electroacoustic process. In *Currents: A Weather Data Sonification Project*, Andy Jarema writes of struggling how to best communicate a database from the National Oceanic and Atmospheric Administration (NOAA), eventually settling upon a combination of visual graphs, field recordings, and synthesized sounds. He also wrestled with mapping graphs to the audible hearing range, making decisions that "forced me to confront the boundaries between scientific accuracy and creative artistry, ultimately helping to shape my narrative intentions and clarify the messaging behind the piece". Stuart describes utilizing a 2-minute sample of Orca and Ross Seal calls that she transformed through various audio processes into 61 different sounds to create an imaginary

world with visuals of her paintings. Ballavian's project relied upon the creative activity of live musicians, in this case, the Mivos Quartet, to make choices regarding recorded data from the sea-submerged hydrophones. They were presented with a "living score" of the sounds and were asked to then "create for themselves a dictionary of techniques that can be invoked in response to various stimuli."

What are the conceptual intents of environmental creators, and what are the outcomes they seek from their audiences? Some hope to influence people to action. Palamara seeks to inspire sustainability, perhaps triggering "a global movement towards environmental awareness and action". Ballivian believes "we have a responsibility to faithfully present these sounds in an effort to sway public opinion and affect human behavior". Stuart seeks to "draw attention to these endangered soundscapes, combining scientific data and artistic perspectives to highlight the need to preserve these sounds - and what they represent - before it's too late". Jarema wonders "what we artists have to offer in terms of making people feel something different about the alarming climate data presented to us by the scientific community." However, other intentions come into play. Alarcón Díaz expresses hope that users of her application explore awareness through walking, to "awake a sense of agency, which might help us to become part of the individual and collective possibilities that emerge…a listening opportunity to become part of the Earth's resonance in its transition". Huang purposes to express connections to her indigenous Atayal culture, its teachings, and through those concepts, to bring others into a deeper connection to their own environments. She invites listeners to consider music as a bridge to cultural underpinnings of those who create it. Listeners are "ethically obliged to immerse themselves in the cultural context in which the composition was created, to be conscious of the diverse relationships it embodies, and to acknowledge that the interpretation extends beyond a mere musical performance". Paulo C. Chagas believes "that the fundamental purpose of his audiovisual installation is to "promote connectivity as an essential feature of human experience".

Creatively engaging others with important ideas is one of the most salient aspects of the arts. While the number of artists within these pages is small, they reflect a vast global community striving to connect with the environment and with those around them. In a world possessing the greatest interconnectivity in history, the need for art to fulfill this function is greater than ever. Computer music-media is what we do well, and when it is focused on the environment, our work certainly impacts society's perception of the world. The Anthropocene has brought threatening issues to bear. There is uncertainty, but there is hope.

Therefore, we ring the bells.

References

Kelly, J. M. et al. (2018). *Rivers of the Anthropocene.* Oakland: University of California Press, 2018, DOI: 10.1525/luminos.43.

Rimona A., et. al. (2021). "Ecocide/ Speciesism: Revisiting Interdependence in the Anthropocene." Online panel discussion at Earth Day Art Model Festival. www.earthday artmodel.org/index-2021.html (last access Dec 1, 2023).

Tolleson, Jeff (2019). "Humans are Driving One Million species to Extinction." *Nature* 569: 171. DOI: 10.1038/d41586-019-01448-4.

United Nations IPCC, (2023). "Summary for Policymakers." In: H. Lee and J. Romero (eds.). *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, Geneva, pp. 1-34, DOI: 10.59327/IPCC/AR6-9789291 691647.001.