

Fearful Modulation: Milieux and Music in the Age of Terraforming

Hayato Takahashi

Originally Published in: *Gendai Shiso* (Seidosha, Vol. 53, No. 8, 2025) in Japanese:

高橋勇人 (2025), 「恐怖をモジュレートする——テラフォーミング時代のミルと音楽」, 『現代思想』2025年6月号 特集＝テラフォーミング-惑星改造の技術と思想-, pp.183-190, 東京: 青土社

Takahashi, Hayato. (2025) "Fearful Modulation: Milieux and Music in the Age of Terraforming." *Gendai Shisō* [Contemporary Thought], vol. 53, no. 7, pp. 183–190. Tokyo: Seidosha.

1. Terraforming Sensibilities through Music

The technology of "terraforming"—making the surface of another planet habitable for humans—is not merely a matter of physical transformation, but a speculative and imaginative act of founding a new Earth. In this endeavour, various factors such as gravity, atmospheric composition, quality of light, and topography—all different from those of Earth—must be "modulated" to suit human conditions for survival. Yet this process entails not only physical and physiological modifications for sustaining life, but also demands cultural, affective, and even psychological recalibrations and reconstructions. It poses the question: how are human perception and sensibility to be domesticated into a new environment?

Sound, in particular, plays a decisive role in this adaptive process. For example, in a terraformed planet, what kind of sonic environment will humans require, and what kinds of music will they seek? Although numerous musical works have thematised life in space, few have speculatively and affectively explored what kind of music would actually *function* in future planetary environments or during interplanetary travel.

For instance, Claire Denis's 2018 film *High Life* features a spacecraft where death row inmates live together, and within it appears a garden designed to mimic Earth's ecosystem. This artificial nature—created by artist Olafur Eliasson—is accompanied by ambient music by British musician Stuart A. Staples. This is not merely background music, but a designed element of an aesthetic that imitates living environments within a sealed space setting.

Another example is the 2022 album *Astro-Darien* by musician and sound theorist Steve Goodman, also known as Kode9. The work imagines a futuristic cultural environment within a spaceship launched as part of Scotland's escape from England, where the vessel mimics the Scottish natural landscape. Contemporary dance music is restructured at the intersection of cultural-political tension and cosmic imagination.

The music in these works does not aim to reproduce the actual sounds that might resonate within a spaceship or a terraformed habitat, but rather reconfigures the aesthetic framework of such artificial environments as sound, forming speculative soundtracks. The methodological concept of "sonic fiction," developed by theorists around Goodman, posits sound's speculative capacity to generate narrative and storyworlds, and functions precisely as a means of accessing these virtual environments through sonic imagination (1). Music anticipates the relation between future environments and sensibilities, and becomes a space for experimenting with the modes of perception and embodiment that might emerge therein.

Using these cultural examples as a guide, this essay attempts to reconsider the functions and imaginative capacities of music in an age when previously uninhabitable spaces are being transformed into habitable ones. The goal is not to view music as something merely *adapted* to the environment, but rather to reframe it as something *involved in shaping* both environment and sensibility.

2. Terraforming and Individuation as Speculative Foundations

To consider future music, we must first outline a philosophical framework linking music and terraforming. Design theorist Jason Parry draws on the concept of the “New Earth” from Deleuze and Guattari’s *What Is Philosophy?*, interpreting terraforming as a mode of thinking open to both human and non-human agencies (2). He traces its lineage through contemporary practices in architecture and fashion. There is no such thing as a space inherently suitable for human life on Earth. Rather, “habitability” only emerges through the complex networks of nonhuman beings—plants, animals, minerals, weather systems. As recent discussions of terraforming increasingly address the construction of specific climates and ecosystems, it becomes clear that one cannot speak of “habitable spaces” without nonhuman presences. Terraforming, then, is not merely an anthropocentric project of environmental engineering; it must be a spatial practice that attends to both human and non-human actors.

This essay aims to interrogate how music is generated and can exist within such a relational framework. Music has always emerged via technological media and changed its form and function according to historical, social, and political contexts. What kind of individuated entity would music become when played in artificially created extraterrestrial habitats? Through what kinds of technical and affective relations would it emerge?

Philosopher of technology Gilbert Simondon, in his theory of individuation, explores how an object (a particular individual entity) becomes individuated through relational processes involving its environment and other individuals. His theory offers two key insights when applied to music as an individuated entity emerging from such interactions.

First, Simondon frames individuation not in terms of an “environment,” but through the concept of *milieu* (3). The term “environment” tends to imply a holistic container that conditions everything within it unidirectionally. By contrast, *milieu*—a term that emphasises dynamic and reciprocal relations between individuals—allows us to reconceive “environment” as something that emerges through these relations. The milieu is not a space that *contains* relations; it is *relation itself* in its unfolding (4).

Second, Simondon highlights the concept of *transindividuality*. Individuals with different characteristics relate to one another to form a specific milieu, but this relationality is always in flux. In *On the Mode of Existence of Technical Objects*, Simondon uses the example of a dam’s turbine: water (a natural object) interacts with the turbine (a technical object) to produce energy (5). The turbine becomes individuated by incorporating water as an external milieu into a technical milieu, thereby generating energy (6). Thus, the turbine, the water, and their interaction instantiate a *transindividual* dynamic. In other words, within this dam as a technical milieu, the entities involved are not only individuals in themselves, but also possess

transindividuality in the sense that their mutual relations give rise to further processes of individuation (7).

This perspective is critical for understanding how music might emerge and operate within the age of terraforming in relation to its milieu. If music exists as an individual entity within a terraformed environment—say, a space colony or spaceship—then we can ask: what other individuals or milieux contribute to its becoming? What role does it play within these wider relational networks?

The framework of *milieu* and *transindividuality* links directly to the dynamics of co-existence between humans and nonhumans in terraforming contexts. If music is created and generated within such systems, what specific relationships does it activate in its surroundings, and how do these relationships in turn shape its own becoming?

3. Music as “Fearful Domestication”

Next, I turn to the affective relationship between music and human beings. In his Cold War-era essay on nuclear war, nuclear criticism, and literature—“*No Apocalypse, Not Now*”—philosopher Jacques Derrida introduced the phrase “fearful domestication .” (8) During the Cold War, nuclear war was imagined as a terrifying force threatening human extinction, and responses to this fear were often expressed through political discourse and literature. Derrida characterises such textual responses—attempts to reduce this apocalyptic terror to something predictable and narratable—as acts of domesticating fear.

In the process of creating habitable environments in outer space, humans inevitably confront the fear of death. Moreover, the political and social anxieties that drive the push toward space colonisation—such as ecological crisis or geopolitical instability—cannot be ignored. While this essay situates music as an individuated entity emerging from ecological relations with its surrounding milieux, fear too has been theorised as an ecological phenomenon.

Urban sociologist Mike Davis, in *Ecology of Fear*, explores how media representations of earthquakes, wildfires, and riots in Los Angeles have been used to stoke fear and justify urban planning strategies and surveillance (9). For Davis, fear is not only a direct response to disasters, but also a product of media, policy, and social relations—a political tool rooted in affect.

In this context, we might say that the imaginary of terraforming is driven by two overlapping kinds of fear: an environmental or ontological fear of the unknown “outside” of human habitats, and an internal or systemic fear rooted in Earth’s sociopolitical structures. In *High Life*, for instance, the prisoners are sent into space without a clear purpose, subjected to experiments—here, fear arises both from the environment and from institutional control. In *Astro-Darien*, the post-Brexit rightward shift of English politics is woven into the narrative of escape and colonisation, producing a future-oriented desire for escape into space fuelled by cultural, historical, and political anxieties.

Thus, the drive toward terraforming and its ethical justification are not merely strategies for survival. They are propelled by the intersection of multiple fears: environmental harshness, institutional violence, and political disorder. The affective result of these intersecting fears—“I can no longer stay here”—becomes the engine of desire for new, terraformed

environments. Fear, rather than being something to eradicate, often functions as a generative emotional energy pushing us toward the future.

Here, the “domestication of fear” echoes Derrida’s idea of rendering terror narratable and thus culturally intelligible. However, this essay also extends the notion in line with Davis’s work: fear is not just a symbolic structure to be deciphered, but a relational, institutional process to which people respond affectively. In this view, the domestication of fear is not a simple elimination, but a sensory recalibration in response to systemic patterns and media representations.

The ecology of fear, then, is not limited to the Earth. It expands across cosmic scales. Terraforming seeks to “remove” these fears by building new environments—but because these fears are structurally embedded in complex relational networks, they cannot simply be erased. Rather, the key lies in learning to coexist with fear: to receive it affectively, to re-attune perception and action around it.

From this perspective, terraforming is not just about negating fear, but involves the cultural translation Derrida suggests and the relational reproduction Davis analyses. It is an affective practice of adjustment.

Here, music emerges as a mode of reconfiguring environments through the auditory sense—as a terraforming of perception itself. Sound has long been used to shape environments: consider, for example, the use of high-frequency deterrent devices in public spaces to prevent loitering by young people, or background music designed to influence mood (muzak) (10).

However, such uses of sound function as top-down tools of control. They aim to exclude particular bodies or emotions, not to restructure or deepen the complex relationships that define space. Instead of interacting with the ecology of fear within a space, they simplify it and externalise it as something to be governed.

In contrast, the kinds of musical practice that interest us here intervene in, and respond to, the ecological configuration of fear within a given space—restructuring the affective circuits that emerge from it. In Simondonian terms, this is music that becomes individuated through its affective connections with a terraformed milieu. Such music does not merely decorate or alter atmosphere. It exists with and through the ecology of fear that propels terraforming, offering an aesthetic response as an individuated entity within future environments.

4. The Generation of Sound and Coexistence in the Future

Building on the preceding discussions, what kinds of music might be created in such envisioned futures? In contemporary practice, we already see examples of musical experimentation that attempt affective engagement with specific milieux.

One notable case, especially in the realm of electronic music, is the modular synthesiser. Since the 1960s, figures such as Robert Moog and Don Buchla have developed modular synthesisers—systems in which discrete, reconfigurable modules are connected via patch cables and controlled through electrical voltage. This technology shifted the focus of composition from melody and instrumental performance to voltage-controlled parameters of synthesis and sonic generation.

A contemporary example worth mentioning is the *SCÍON* module by the Scottish modular synth brand Instruō, developed within the Eurorack format (11). The *SCÍON* converts electrical signals emitted by organic matter into voltages usable by modular systems. For instance, when the module's electrodes are attached to organic substances such as a plant or human body, the minuscule electric fluctuations they emit can be translated into pitch, timbre, and rhythmic patterns via control voltages. This technique delegates the control of synthesis parameters to natural phenomena, allowing environmental activity to shape the music at a fundamental level.

This practice does not simply *use* nature as a resource. It connects plant life to the process of musical generation, creating sound through a relationship of coexistence. Within the network of plant–circuit–sound–listener, music transindividuates not as a fixed artefact, but through interactions among diverse agents within a milieu. The point is not that plants “speak” through sound, but rather that human perception is modulated through contact with the unfamiliar, perhaps even terrifying, presence of the nonhuman.

This resonates strongly with Derrida's notion of “fearful domestication .” By rendering the invisible fluctuations of nature audible through sound, the *SCÍON* allows humans to integrate aspects of the uncontrollable into affective relations. Rather than rejecting the environmental and ecological structures of fear that drive off-Earth habitation, such musical practice opens toward listening, contact, and cohabitation. It enables both technical and sensory modulations beyond the human individual in order to generate sound *with* the surrounding environment, with each specific milieu. Music thus ceases to be a device for manipulating fear and instead becomes a “theatre” of ecological responsiveness born of relations between different milieux (12).

This line of thought also recalls themes in the work of ambient music pioneer Brian Eno. In *Apollo: Atmospheres and Soundtracks* (1983), Eno attempted to render audible the “soundless sounds” of outer space. Similarly, *January 07003: Bell Studies for the Clock of the Long Now* (2003) imagines the tones of fictional future bells, composed from synthetic sound despite lacking any physical acoustic mechanism. These works convey a speculative potential in which music translates spatial and temporal scales so vast they threaten to dwarf human life into something perceptible.

In this way, ambient music—a genre largely shaped by Eno—can be understood as a technique for adjusting sensibility within the artificial environments of space colonies or spacecraft. Contemporary electronic music, too, often integrates environmental sound via field recordings. For instance, Ryuichi Sakamoto's *Out of Noise* (2009) incorporates sounds of melting Arctic glaciers in response to climate change, while upsammy's *Germs in a Population of Buildings* (2023) focuses on the interfaces between natural environments and artificial infrastructures. In these cases, environmental sound is not merely *captured*, but used to reorganise perception by internalising alterity.

In terraformed spaces, then, music should not function as a top-down aesthetic coating to overwrite atmosphere. Rather, its power lies in mediating between fear and perception *in relation* to the environment in which it is generated and played. This is the future we glimpse here: one where music becomes a practice of mediating between human and nonhuman, control and response, fear and coexistence. It is in this interval that the future form of music—a music that terraforms sensibility itself—begins to shimmer.

Footnotes

1. For the definition and practice of sonic fiction, see:
Justin Barton, Steve Goodman, and Maya B. Kronic, eds., *Sonic Faction: Audio Essay as Medium and Method* (Falmouth: Urbanomic Media Ltd., 2024).
2. For example, Jason Parry considers an architectural work inspired by the behaviour of wasps, designed by architect Marco Casagrande, as a philosophical practice of terraforming.
Jason Parry, “Philosophy as Terraforming: Deleuze and Guattari on Designing a New Earth,” *Diacritics* 47, no. 3 (2019): 128–129.
3. In Japanese-language contexts, “milieu” is often translated as “environment (環境: kankyo)”, but in English-language contexts, “milieu” is distinguished from “environment” and retained as is. This paper follows that convention when referring to relational spatiality between individuals.
The term “milieu” here is not limited to natural settings, but is also used in technical and social domains to designate relational fields. For instance, environmental sociologist Jennifer Gabrys analyses citizen science practices that do not belong to any specific nation-state or institutional body as “milieux” formed by citizens—including nonhuman entities.
This concept also resonates with Félix Guattari’s *The Three Ecologies*, where he proposes an ecological perspective that traverses environmental, social, and mental registers. Through this lens, ecology connects mental life, social structures, and technological systems as a single milieu.
Jennifer Gabrys, *Citizens of Worlds: Open-Air Toolkits for Environmental Struggle* (Minneapolis: University of Minnesota Press, 2022).
Félix Guattari, *The Three Ecologies*, trans. Ian Pindar and Paul Sutton (London: Bloomsbury Academic, 2014).
4. For Simondon’s interpretation of milieu in his works referenced here, see:
Victor Petit and Bertrand Guillaume, “We Have Never Been Wild: Towards an Ecology of the Technical Milieu,” in *French Philosophy of Technology: Classical Readings and Contemporary Approaches*, ed. Sacha Loeve, Xavier Guchet, and Bernadette Bensaude Vincent (Cham: Springer, 2018), 88.
5. Gilbert Simondon, *On the Mode of Existence of Technical Objects*, trans. Cecile Malaspina and John Rogove (Minneapolis: Univocal Publishing, 2017), 59.
6. Simondon refers to such points of connection between different milieus as “associated milieux.”
7. Gilbert Simondon, *Individuation in Light of Notions of Form and Information*, trans. Taylor Adkins (Minneapolis: Univocal Publishing, 2020), 178–179.
8. Jacques Derrida, “No Apocalypse, Not Now (Full Speed Ahead, Seven Missiles, Seven Missives),” trans. Catherine Porter and Philip Lewis, *Diacritics* 14, no. 2 (Summer 1984): 23.
The idea of “fearful domestication” is referenced in recent visual media studies as well. For example, architectural historian Issy MacGregor, referencing both Derrida and science fiction author J.G. Ballard—who described mundane texts such as instruction manuals as “invisible literature”—analyses postcards of nuclear power plants produced during the Cold War. She interprets the way these postcards internalise the possibility of nuclear war into networks of media and gift-giving as a form of “domesticated” nuclear fear.

- Issy MacGregor, "Greetings from Atom Town," *The Modernist*, no. 52, "Nuclear" (2024): 29, 32.
9. Mike Davis, *Ecology of Fear: Los Angeles and the Imagination of Disaster* (New York: Metropolitan Books, 1998).
 10. Rowland Atkinson, "Ecology of Sound: The Sonic Order of Urban Space," *Urban Studies* 44, no. 10 (September 2007): 1905–17.
 11. Instruō, "SCÍON," Instruō Modular, accessed 20 April 2025, <https://www.instruomodular.com/product/scion/>.
 12. Simondon does not see individuals as being *born from* relations but as being *relations themselves*, calling this a "theatre of relations." Simondon, *Individuation in Light of Notions of Form and Information*, 50.