

## Research Article

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# Thinking with Susanne Langer: Sonar Entanglements with the Non-human

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**Abstract:** An aesthetic and epistemological departure from ocular centrism has occurred in the wake of current technological evolutions and the posthuman turn. The sonic exploration of the more-than-human takes artists and philosophers beyond anthropomorphism to reveal the hidden patterning of life forms and yet-unfathomed universes. The conflation of nature(s) with culture(s) is one shift that takes place when thinking with sounds and rhythm and studying our environments. On an ontological level, a reordering of subject and object occurs when encountering the reciprocal relationship of *sounding*. What if culture is actually nature? How does technology connect with botany, and what does it mean to engage the environment with the expanded tactility of the ear? This essay observes current inter-species practices in sound art by revisiting philosopher Susanne Langer’s theory of an embodied and embedded mind. Her “new key” in philosophy emphasizes music as a *dynamic sound-pattern* to conceptualize a semiology of artistic forms that renders human *feeling* in regard to non-human antecedents. This serves as a tool to trace the pre-conceptual substrata of mind, leading us through process-oriented studies of nature and psychophysical affect. Thinking with Langer involves the interconnection of natural systems, behavioural patterns, and human expression, which emerges in art.

**Keywords:** media archaeology, sound art, nature-cultures, concept of mind, Susanne Langer, Ioana Vreme Moser

## Introduction

No matter how complex, profound and fecund a work of art – or even the whole realm of art – may be, it is incomparably simpler than life. So the theory of art is really a prolegomenon to the much greater undertaking of constructing a concept of mind adequate to the living actuality.

(Susanne Langer, *Mind: An Essay on Human Feeling*, 1967)

The idea of thinking with the more-than-human increases in its popularity as the posthuman condition collides with the SARS-CoV-2 pandemic. It seems as if the transcendental ideals of Enlightenment and its monomania with Man – in light of noticeable climatic changes and a viral defiance – dissipate in the face of new and technologically expanded organs that engage our world by means of the arts. No longer do we simply reason *about* objects, we invent cartographies that involve us in their becoming. What sounds like a Deleuzian’s dream-come-true, in fact entails great disorientation and even some guilt, as we come to find humanity’s new outlines to be intricate fabrics of complicit relations that genuinely exploit living and non-living resources. *Art as Representation* perpetuates the ideal of mankind blissfully detached from nature.

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To bring our notion of artistic form – meaning the kind of human articulation that has been artificially excluded from the messiness of life – back to an original sensitivity for the vibrancy and multiplicity of nature(s) may reconcile our fragmented selves and lend momentum to the emergence of co-creative ontologies with the non-human.

Particular attention to the concatenation of artistic form with forms in nature was given by American philosopher Susanne K. Langer (1895–1985), who developed a philosophy of art from mathematics and formal logic. Her turn from the application of formal languages to the study of perception had its roots in process philosophy, as the 1926 doctoral student from Radcliffe University, Harvard’s sister school for female students, graduated under the guidance of Alfred N. Whitehead to perforate what she called, “the phenomenology of Meaning.”<sup>1</sup> From her initial analysis of logical forms and a critique on a purely positivist understanding of the *Meaning of Meaning*, she set out to research how “*rationality arises as an elaboration of feeling*.”<sup>2</sup> In the following, I will illuminate core aspects of Langer’s thought, which – I argue – exemplify a practice of thinking of music as a web of dynamic sounding patterns. This essay shows how Langer’s “new key” in philosophy can resonate with current generations of artists who turn to sound art and music(s) as a primary means of expression and as a method for exploring living actuality. I develop and connect her “new key” to a current approach by a media artist, who seeks the interlacing of non-human life and technology through experimental electronic art. The sound artist Ioana Vreme Moser infuses culture and nature with electric life by rewiring and extending their functions. Her cross-media sculptures (made of everyday items and enhanced by electrical circuits) lead us to question our perception of the familiar. While excavating lost and found memories, she examines the undercurrents of *feeling*, out of which the mind is woven. Particular attention will be given to Vreme Moser’s archaeological work of media and mind, which has recently taken the direction of investigating non-human form. Her outdoor installation *Arboreal Receptors* (2021)<sup>3</sup> renders audible the receptiveness of trees to electromagnetic waves (Figure 1).

## 1 Natura culturans

For many artists in the field of Electronic Arts, electro acoustics, and new music(s), the merging of living forms with music has always been an intriguing possibility – to distort the musical harmonies so deeply ingrained in classical tradition and its idealistic view on Nature. To be sure, these forms have taken root in humanity’s mind and allowed us to rise out of the deep seas of pure sensual influx and emotion onto islands that offer a hint of structure and a flicker of coherency to our overwhelming reality. But the twentieth century avant-gardes – just like philosopher Susanne Langer – felt challenged to question the various constraining regimes that only sought *truth* in reductionistic and simplified ways, for example, proportion and the harmonic scale. The weaving of anthropomorphic tunes with pseudo-metaphysical insight was found to be easily deceived by emotion and therefore prone to manipulation and bias. Musicians and artists, however, are not metaphysicians without an ability to abstract, to reverse Carnap’s famous attack on a misguided metaphysics.<sup>4</sup> They apply a different kind of abstraction and incorporate whatever comes into ear’s reach to speculate on the yet-*unfathomed*.

The earliest material shift in the arts from *music* to *sounds*, experienced by the avant-gardes, drew attention to the rumbling, bustling, and squealing of modern bodies and machines. What followed this acceleration was the introduction of silence as “music,” which opened up space for imagination – perhaps

<sup>1</sup> Langer, “A Logical Analysis of Meaning,” 3.

<sup>2</sup> Langer, *Problems of Art*, 124.

<sup>3</sup> Vreme Moser, Ioana. *Arboreal Receptors*. 2021. Sound installation commissioned for “SONAR PARK entanglements” by IMA Institute of Media Archaeology, St. Pölten, Austria. Link: <https://www.ioanavrememoser.com/arborealreceptors>

<sup>4</sup> Cf. Carnap, “The Elimination of Metaphysics Through Logical Analysis of Language,” 80.



**Figure 1:** *Arboreal Receptors* (2021), Ioana Vreme Moser. © Maximilian Pramatarov. Courtesy of IMA Institute of Media Archaeology.

also grief for the excessive violence humanity had witnessed in this century. In any case, attention was drawn to the sounds usually “surrounding” the musical performance. The vibrant cacophony of the world penetrated music more and more, finally claiming its own right to be recognized, and sowing the seeds of a referential shift to everyday noises. The advancement of recording techniques made it possible to (re)play and delay sonified time and to capture the external buzzing and chirping recorded by the tape machines. Sounds turned into objects that could be strung together like beads. Technology became a medium and a means for artists to integrate with their surroundings. The embracing of electro acoustics surpassed the limits of human performance and led to the sprawling of more varied musical repertoires. Reciprocally, between the external and internal acoustic ambient, the phenomenon of sound showed how the ear itself was capable of producing tones in psycho-acoustics. Simultaneously, something new and “concrete” was born from the undulating, enigmatic drones created entirely by the electromagnetic fields that enclose electronic equipment.<sup>5</sup> *Feeling* seems to naturally merge with – and amplify through – technology.

From an electrified vitalism via attempts to annihilate authorship, to a melding of expanded bodies and electronic devices, these avant-gardes were able to broadcast imperceptible undercurrents, bringing them above the limen of sensual perception to resonate in our flesh and bone. They perforated anthropomorphic contours and expanded music’s limits. The experience of this vibrating matter relies on the delicate tympanum that is tenderly stimulated by the ossicles, or – for both the deaf and the hearing – the embodied mind, which is now able to resonate with the growing repertoire of newly introduced sounds. In a Derridian sense, sound challenged and “tympanized” music (French: *tympaniser*, “to criticize,” “to ridicule publicly”) by eroding noted form and persistently pursuing the *other*.<sup>6</sup> Sound is a passageway for the synthesis of the self with the outside world.

<sup>5</sup> This paragraph travels through the history of sound at warp speed and references 20th century avant-gardists Edgard Varèse, John Cage, Pierre Schaeffer, Beatriz Ferreyra, Tony Conrad, Maryanne Amacher, and Éliane Radigue. This is but one glimpse into the rich pallet of avant-garde music that embraced new technologies, and the permeating of their materials, styles, and ideas.

<sup>6</sup> Derrida, *Margins of Philosophy*, x–xii.

The idea of technology as some sort of organic form has challenged the nature-culture divide ever since *modern times* prompted the *mythical mind* to disentangle from its roots in synthesizing natural phenomena. A careful observer of this transition, Ernst Cassirer, emphasizes the progressive distancing of the human from nature by means of technology in *Form and Technology* (1930). Cassirer, who set out to compile the grammars of myth, language, and epistemology in a phenomenology of mind,<sup>7</sup> conjectured that automated mechanisms were imitating and replacing nature. The illusion of organic form, which had previously been engrained in the mythical mind and had found its representation in cultural acts of magical compulsion and superstition, was now brought into question by the use of new technologies and the mechanical evolution of tools:

Human beings no longer attempt to make reality amenable to their desires with various methods of magic and enchantment. They take it as an independent and characteristic “structure.” In this way, nature has ceased to be an amorphous material that yields to every metamorphosis and, in the end, allows itself to be forced into any gestalt through the power of magical words and images. *In place of magical compulsion, the “discovery” of nature emerges, which is contained in all technological activity, no matter how simple and primitive the application of the tool may be.*<sup>8</sup>

A *new world-mood*, as Cassirer continues, announces itself against the mythical-religious worldview, giving way to “a turning point in knowledge.”<sup>9</sup> Cassirer’s observations of how technology incorporates itself into the human ambit expound upon his earlier analysis of myth in the development of the subject, and emphasize the formative powers of *action* in the process of objectifying the world.<sup>10</sup> The idea of *Nature* divided from the mythical sphere is conceptualized as being a product of this (inter)action with and sculpting of the world. Cassirer’s noted cultural–technological turn unlocks the human realm of formerly intangible and mystical phenomena in detached and isolated objects. It lends a new perspective and the ability for analysis and scientific insight. Yet it holds the danger of humanity dissociating from what we originally are, and what we originally *feel*.<sup>11</sup>

The reason I approach Susanne Langer’s discussion through Cassirer is because she – besides continuing Whitehead, her “great teacher and friend”<sup>12</sup> – also draws upon what Cassirer had initiated with his *Philosophy of Symbolic Forms* (1923–1929), to whom she devoted her second book, attempting a semiology of the arts in *Feeling and Form* (1953). Cassirer, having fled from Germany in 1933 and, prior to this, having been publicly stripped apart in his dispute with Heidegger, is only recently receiving more attention for his very broad analyses of humanity’s knowledge systems. He belongs, with Whitehead and Bergson, to a generation of post-Enlightenment critics, who refused to place *reason* too far away from the *pathological* (ref. *aisthêsis*). Similar to his polymath study on symbolization in three volumes, Langer continued a theory of artistic expression, animal-mythical and ritual form, and mathematics in her trilogy *Mind* (1967–1982). At its core lies her hypothesis that artistic and cultural forms herald a semantic of pre-scientific knowledge equally shaped by human and non-human entities. Expression in art mediates modes of abstraction which differ inherently from scientific formalism (discursive form), and which constitute the prerequisites for the higher mental activity that yields cognition. The artist, according to Langer, deals with *presentational abstraction*,<sup>13</sup> a concept that had already emerged in *Philosophy in a New Key* (1942) and runs through the whole body of her work. Here, she introduces “the art symbol as presentational form” to the semantic toolkit to unlock the yet-unlogicized areas of life; respectively, myth, ritual, and the arts, which – in

<sup>7</sup> Cassirer, “The Philosophy of Symbolic Forms,” Vol. 1. “Language,” 1923, Vol. 2. “Myth,” 1925, Vol. 3. “Phenomenology of Knowledge,” 1929.

<sup>8</sup> Cassirer, “Form and Technology,” 29 [italics added].

<sup>9</sup> *Ibid.*, 30.

<sup>10</sup> “It is not mere meditation but action which constitutes the center from which man undertakes the spiritual organization of reality. It is here that a separation begins to take place between the spheres of the objective and subjective, between the world of the I and the world of things.” Cassirer, *The Philosophy of Symbolic Forms*, 157.

<sup>11</sup> Cf. Cassirer, “Form and Technology,” 34–5.

<sup>12</sup> Langer, *Philosophy in a New Key*, dedication note.

<sup>13</sup> Langer, *Mind I*, 156.



addition to language<sup>14</sup> – nurture the conceptual substrata of mind. “Our merest sense-experience is a process of formulation,” as Langer points out, reasoning that sensory organs are themselves receptacles of meaning.<sup>15</sup> In a nutshell, Langer’s quest is for the *carnal rhetoric* of the arts, and her hypotheses regarding the general symbol–object relation are very unconventional. Symbolic functions are, in her terms, not representative, but *analogous* of the meanings they convey.<sup>16</sup> This approach seems to be the root of a general misreading of her philosophy and the particular bewilderment of her philosophical contemporaries.<sup>17</sup> Unlike discursive form, presentational abstraction cannot be generalized and put into a unifying technical formula.<sup>18</sup> It “involves a constant play of formulative, abstractive and projective acts based on a disconcerting variety of principles,”<sup>19</sup> as it conveys a sense of embodied and carnal meaning. Amongst its various possible manifestations, Langer points out two central characteristics in presentational abstraction. One – alluding to a similar resonance in John Locke – suggests its main substance (ref. *substantia*) to be that of primary illusions, which transform subjectively known realities into objective semblances. She then implies a further, “secondary” illusion, which is a more subtle order of abstraction, like the isolating of phenomena, the rendering of sensuous metaphors, and methods that transcend meaning.<sup>20</sup> Art makes virtually perceptible what we usually cannot recognize. Artistic form, therefore, has epistemological import. In order to achieve this, those forms that are symbolic of feeling must appear to us as *living*. And this is where one can speculate whether artistic expression might actually emerge from non-human antecedents, as Langer states:

If feeling is a culmination of vital process, any articulated image of it must have the semblance of that vital process rising from deep, general organic activities to intense and concerted acts, such as we perceive directly in their psychical phases as impacts or felt actions. Every artistic form reflects the dynamism that is constantly building up the life of feeling. It is this same dynamism that records itself in organic forms; growth is its most characteristic process, and is the source of almost all familiar living shape.<sup>21</sup>

This understanding of the sensual interlacing of vital organic and artistic processes will lead her to develop an ontology of feeling that is based in co-creative processes. With its pillars in process thought, an epistemology from cultural form and the urge to ground these speculations in empirical research – from this triangle of thinkers: Whitehead, Cassirer, Langer – emerges a proto-biosemiotical approach, which offers a nexus for media artistic and theoretical activity. Both a continuer and contender of her mentors, the

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**14** Langer’s early analysis of discursive and presentational form develops the properties of the art symbol as being distinct from language. She substantiates that the ability to render reality symbolically is the keynote of language, however, her anthropological culturalism – in continuation of Cassirer – also recognizes patterns that run in parallel to discursive formulation. The root of symbolization is but a “mere *sense of significance* attached to certain objects.” Langer, *Philosophy in a New Key*, 89.

**15** Cf. Langer, *Philosophy in a New Key*, 72.

**16** Langer’s chapter on “The Logic of Signs and Symbols” stresses the difference between the triangular sign-function (subject, sign, and object) and the more “complex affair” of *denotation* in the symbol-function, which is four-termed. The meaning of a symbol consists of subject, symbol, conception, and object, and is therefore radically different from sign-meaning (*signification*), whereas the latter understanding (as signs) is commonly applied to symbols. Langer, *Philosophy in a New Key*, 52.

**17** A 1982 paper revisits the formative and devastating critique of *Philosophy in a New Key* by logical positivist Ernest Nagel and refutes his conclusions as a misrepresentation of Langer’s ideas. Nagel, followed by a chain of discrediting philosophers, simply did not want to understand her conception of presentational symbols. For Langer, art is not iconic of feeling, but analogous, or *isomorphic* of feeling. Nagel’s criticism reveals itself as a contemptuous misrepresentation and misapplication of Langer’s nuanced conception of symbols. In her sense, the art symbol only bears a ‘closeness’ to the feeling it conveys. It reflects its morphology. Cf. Varela and Ferrara, “The Nagel Critique and Langer’s Critical Response,” 101–4.

**18** Presentational abstraction “has no technical formula which carries the entire pattern from one level of abstractness to another, as progressive generalization of propositions does when it is exercised simultaneously on all the terms or all the constituent relations of a given order in a system. It has, in fact, no series of successive levels of abstractness to be reached by all elements in the complex of a symbolic projection at the same time. For purposes of logical analysis, art is unsystematic.” Langer, *Mind I*, 156.

**19** Langer, *Mind I*, 156.

**20** Langer, at this point, leaves this list open to addition by, “perhaps others [abstractions] for which one could invent suggestive names.” In current academic turning to artist-based-research, Langer’s theory of art can give valuable incitements to conceptualize artistic processes. Cf. Langer, *Mind I*, 157.

**21** Langer, *Mind I*, 199.

significance of music as *dynamic sound-patterns*<sup>22</sup> – the generative idea of a virtual counterpart to the fabric of living form in a *musical matrix* – is the core element of Langer’s *thinking with feeling*, as we will see next.

## 2 The musical matrix – securing feeling as wavelengths and vibrations

What humans urge to *feel*, according to Cassirer, is signified by a sense of embeddedness in life-rhythms and natural cycles, acts of physical involvement with objects – an archaic feeling of an embodied creativity utterly in service of vital activity.<sup>23</sup> At this primordial stage, and sedimented in the substrata of the modern mind, the rise of technology confronts humanity with an internal Promethean discord – torn between embracing this emancipation and the fear of losing its spiritual and non-human idols.<sup>24</sup> In light of our post-colonial responsibility and the rehabilitation of the plethora of exploited and suppressed indigenous cultures, Cassirer’s anthropological observations should not be reviewed uncritically. The demons in a text need to be confronted; however, the central question here does not concern the implicit or explicit intent with which he conducted his analysis of human cults and cultures, but rather, which further conclusions it may lead us to – those that are reflective of a Eurocentric worldview. Again, paraphrasing Derrida, *we may take our thoughts beyond those inscribed in the philosopher’s ear*,<sup>25</sup> and see in Cassirer an advocate for a shared humanity. Continued by Langer, Cassirer’s non-privileging treatment of all possible human expression fuses with her sense of the scope of non-human agents, which grounds this argument for art in support of *nature culturing*.

What is *felt*, for Langer, is formed by an intra-organic matrix of intensities, an interplay of *impacts* and *autogenic actions*. The verbal noun *feeling* does not treat its outcome as a product – as a simple category of emotions, symptoms, or disturbances – but makes an entity out of this intricate bodily process. Langer returns cognition to the flesh, as feelings come in phases whereby impressions gradually build, as they shape, alternate, and decay. This constitutes what eventually emerges as Mind. Whatever it is we are impinged by, it is entangled with our flesh, bone, skin, and nervous tissue.<sup>26</sup>

As if extracted from this moving influx of stimuli, *feeling*, in Langer’s sense, performs an *adjective shift* in the dichotomy of subject and object, the perceiver and the perceived, whose relationship, she emphasizes, is not simply a given.<sup>27</sup> In her sense, “subjective” and “objective” “denote functional properties,”<sup>28</sup> as what is now meant by “subjective” is whatever is felt as action, and by “objective” whatever is felt as impact. Their relationship in the felt process is reciprocal and constantly alternating. Langer’s ontology of nature-culture is grounded in active and reactive entities that make way for systemic changes. By means of her shift in *feeling*, the transcendental belief in the “exceptionalism” of mind is shattered, as she reasons:

Feeling stands, in fact, in the midst of that vast biological field which lies between the lowliest organic activities and the rise of mind. It is not an adjunct to natural events, but a turning point in them. There must have been several such turning points in the evolution of our world: the rise of life on earth, perhaps the beginning of irreversible speciation, the first true animal form, the first shadows of a “psychical phase” in some very active animal, and the first genuinely symbolic

<sup>22</sup> At the core of Langer’s highly abstracted sense of music lies a reference to music critic Eduard Hanslick (1824–1904). Both reject the idea that music represents feelings or emotions, and Hanslick’s claim that “The essence of music is sound and motion” (*The Beautiful in Music*, 1891, 67) falls on fertile ground for a philosopher who seeks a purely logical standpoint on music and regards its function as a form of carnal rhetoric. Langer translates his “tönend bewegte Formen” to “dynamic sound-patterns.” Langer, *Philosophy in a New Key*, 182.

<sup>23</sup> Cf. Cassirer, “Form and Technology,” 40.

<sup>24</sup> *Ibid.*, 34.

<sup>25</sup> Derrida, *Margins of Philosophy*, xi.

<sup>26</sup> Langer, *Mind I*, 7–9.

<sup>27</sup> Cf. *Ibid.*, 13.

<sup>28</sup> *Ibid.*

utterances, speech, which marked the advent of man. It is with the dawn of feeling that the domain of biology yields the less extensive, but still inestimably great domain of psychology.<sup>29</sup>

In the midst of the current SARS-CoV2 pandemic, we are again experiencing such a turning point, whose outcome we can only speculate. Epidemics have always had noticeable and unnoticeable impacts on social, economic, cultural, and scientific developments, and – in the case of the latter imperceptible effects – have taken part in adding to the human genome, hence actively shaping human evolution. Feeling, in Langer’s philosophy, is framed as a stimulus for evolutionary change, which goes far beyond a classic sense of subjectivity and emotive theory, and is not merely bound to questions of aesthetics. Her theory tackles the reach and interchanges of mind, and presumably served as a blueprint for an Enactivist view of cognition.<sup>30</sup> Zoonotic agents are but one protagonist in the vibrant matrix of living matter. In *Mind I*, Langer encompasses the human and non-human, living and non-living processes from which our environments are composed. The “borderline cases” like the virus lead her to emphasize the tendency of imperfection in categories, as “‘Life’ is obviously not easy to define.”<sup>31</sup> Yet these organisms, which on their own exhibit no life, are capable of having a severe impact when they are introduced to the living structure of an organism. Living actuality comprises more than meets the eye. Which other realities, then, lie below the threshold of human sense perception? And how do they interact with *feeling*?

In the same vein, biology finds it difficult to apply categories and taxonomic principles to borderline animate and inanimate entities, and some genres of artistic expression – outside canonical contexts – are often intentionally elusive. Many hybrid art forms do not pass the sacred walls of representation in museums – and are even distorted when they are – due to their inability to be contextualized by corresponding concepts. Yet it cannot be said that these works have no value simply because the concepts fail. The beauty in musical subcultures, for example, is that they cater without formal constraints to their respective scenes by literally seeding new expressions and expanding their artistic vocabulary. These new concepts may eventually trickle down into more public domains of meaning, but the musical matrix is firstly presentational and made up of the vital activities that involve its direct circle. One can extract from Langer, an idea of music that is not necessarily bound to virtuosity or canonical value, but its genuine quality as an illusion of vital import. Music is a logical expression of *feeling*.<sup>32</sup> Whether or not it is effective depends on the receptivity and agency of the beholder.

Langer establishes the concept of a musical matrix in her book *Feeling and Form* (1953) as the intermediate step between her theory of art as symbolic form (presentational abstraction) and her ontology of feeling in a philosophy of mind. Langer adapted her basic conception of symbolization from Whitehead’s theory of perception, as described in *Symbolism: Its Meaning and Effect* (1927). As close as their conceptions are, which I will illustrate shortly, I claim that Langer did not only set out to continue a semiology from process thought, but to expand its metaphysics, whereby the idea of *expressiveness* and *denotation* are key. Carnap’s critique of metaphysics resonated with Langer,<sup>33</sup> but to her the decision was not either-or, but rather, to apply both approaches to unlock the secret mentality of organisms and to understand the interacting ambient. Whereas logicians were confined by whatever language would express and whatever the experiment would answer, Langer sought those realms that, though inaccessible to Positivism, were

<sup>29</sup> Ibid., 13–4.

<sup>30</sup> Langer researcher Adrienne Dengerink Chaplin notes in her book *The Philosophy of Susanne Langer* (2019) how the “unsung” philosopher Langer (Damasio, *The Feeling of What Happens*, 287) is noticeably present in research on neuroscience and biology, especially in George Lakoff and Mark Johnson’s theory of embodied cognition. She almost casually mentions that “there is not much in Johnson’s book that had not already been said before by Langer,” 246.

<sup>31</sup> Langer, *Mind I*, 258.

<sup>32</sup> Cf. Langer, *Philosophy in a New Key*, 176.

<sup>33</sup> Recapitulating Carnap’s *Philosophy and Logical Syntax* (1934), she notes, “In their criticism of metaphysical propositions, namely that such propositions are usually pseudo-answers to pseudo-questions, these logicians have my full assent [...]. The center of philosophical interest has shifted once more, as it has shifted several times in the past. That does not mean, however, that rational people should now renounce metaphysics. [...] Metaphysics is not itself a science with fixed presuppositions, but progresses from problem to problem rather than from premise to consequence.” Langer, *Philosophy in a New Key*, 68–9.

rendered in what Whitehead coined as *symbolic reference* comprising *presentational immediacy* and *causal efficacy*.<sup>34</sup> Perhaps in response to Carnap's critique that "metaphysicians are musicians without musical ability," Langer introduced a semiological divide of the levels of abstraction. Instead of treating the ineffable as a pseudo-symbolic structure to express the "symptoms of the inner life, like tears and laughter, crooning, or profanity,"<sup>35</sup> the idea of the *dynamic patterns* of feeling unfolded in her philosophy inside a musical matrix.

*Presentational abstraction* and *presentational immediacy* both yield a carnal knowledge built from the mutual interactions of organisms and their environments. They are formative of abstractions such as formal languages, which let us (however, only by means of what Whitehead terms *causal efficacy*) catch a glimpse of possibly eternal patterns. Both of these levels of perception feed from *direct experience*, which all living forms possess. Now, Whitehead critiques the bifurcation of Nature by regarding causal inference as secondary to presentational immediacy in the intuitive and demonstrative nature of sense data. The fallacy of misplaced concreteness lies in mistaking (logical) inference as superordinate to feeling. Beneath scientific inquiry always lies an invisible undercurrent that may impact and distort our insights. What we think we know suddenly gets turned upside down. The purpose of science is to understand the volatility of knowledge, and its mission is to continuously question one's beliefs. Whitehead's ontology of events freed the concept of feeling for Langer's philosophical inquiry of mind. The musical undercurrent in Whitehead's feeling (also highlighted in *Process and Reality* (1929)) as vector space "secured by pulses of emotion, which in the coordinate division of occasions appear as wave-lengths and vibrations,"<sup>36</sup> – *vector-feeling* – becomes Langer's idea of the musical matrix as a vital patterning that resembles organic intensities. Given her consistent inclusion of *living actuality* in her undertaking to construct a concept of mind,<sup>37</sup> it seems as if she attempted, from the start, to fuse both presentational immediacy and causal efficacy in presentational abstraction.

Although the musical matrix seems to be discarded in Langer's late philosophy of mind, the whole of her argument in *Mind I* is permeated with cross-references to musical form that highlight her phenomenology of feeling. Hence music conceived as the virtual matrix of intensities is the epitome of the vibrant matter of living actuality. Out of this hypothesis, and equipped with the term "feeling," which makes a phase out of the felt process,<sup>38</sup> emerge the concepts *vital import*, *act*, *individuation*, and *involvement*, which denote Langer's ontology of thinking-feeling<sup>39</sup> in movement and rhythms.

The preconceptual symbolization process emerges from the vital import of stimuli that impinge on an organism as a rhythm of tensions and resolutions, and continuously "prepare a new event by the ending of a previous one."<sup>40</sup> From this idea, Langer defines the *act*-model as the sub-entity in a felt phase. The act is the smallest entity in her theory. It is a complex of tensions that culminate in a centre of excitement and it constitutes four phases: initiation, acceleration, consummation, and cadence. Similar to a parabolic curve,<sup>41</sup> to use Langer's metaphor, it builds exponentially until its moment of fulfilment, then gradually decreases. In a way, this liquifies the felt impressions that enter our bodies, leaving some acts as perceived physically and as having significant mental phases, whereas other acts only occur undetected (albeit not

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<sup>34</sup> Whitehead notes, "Of the two distinct perceptive modes, one mode "objectifies" actual things under the guise of presentational immediacy, and the other mode [...] "objectifies" them under the guise of causal efficacy. The synthetic activity whereby these two modes are fused into one perception is what I have called "symbolic reference." [...] [T]he result of symbolic reference is what the actual world is for us, as that datum in our experience productive of feelings, emotions, satisfactions, actions, and finally as the topic for conscious recognition when our mentality intervenes with its conceptual analysis." Whitehead, *Symbolism*, 18–9.

<sup>35</sup> Langer, *Philosophy in a New Key*, 67.

<sup>36</sup> Whitehead, *Process and Reality*, 163.

<sup>37</sup> Langer, *Mind I*, 98–9.

<sup>38</sup> *Ibid.*, 21.

<sup>39</sup> This term is appropriated from the Langerian philosopher Brian Massumi in *Semblance and Event*, Cambridge, MA: The MIT Press, 2011.

<sup>40</sup> Langer, *Feeling and Form*, 126.

<sup>41</sup> Langer, *Mind I*, 324.



unrecorded) in the periphery of the flesh. This new *matter of feeling* composes impressions from *res cogitans* (mind) and *res extensa* (body). From microscopical entities to macroscopical movement, the flow and influx of feeling organizes fundamentally in movements of *individuation* and *involvement*, respectively, creating synthesis. These two movements rise out of life's rhythmic motions and connect the vibrating sensation of feeling with the elementary and self-perpetuating movements of nature.

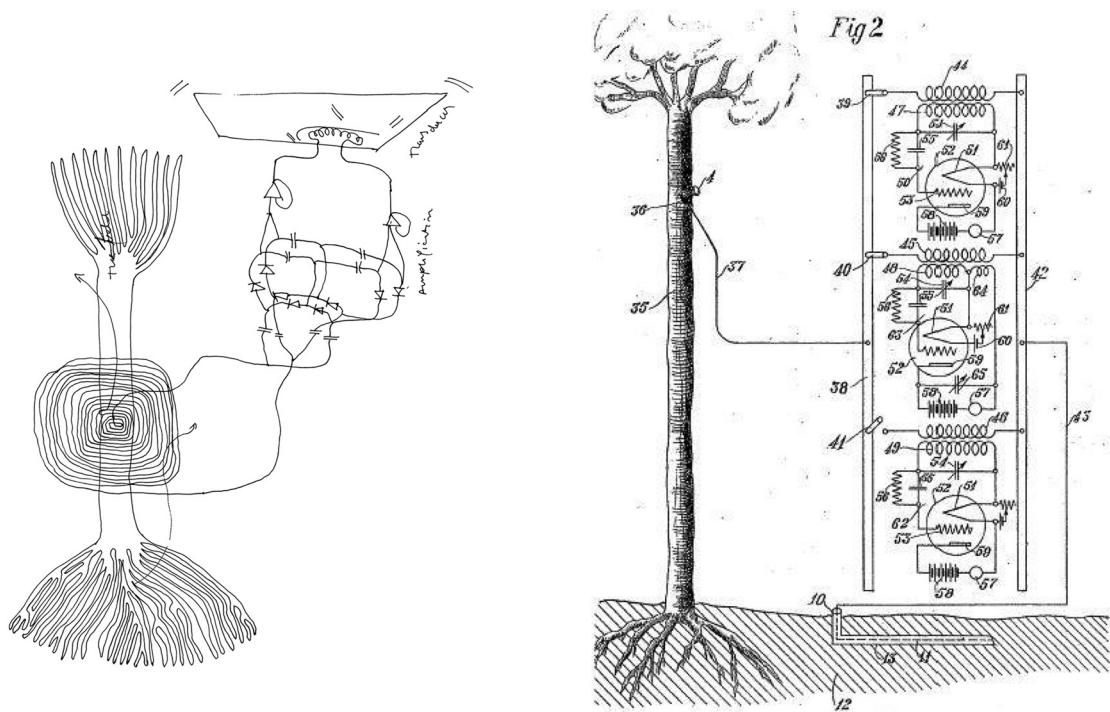
The sharp edges of formal languages have lost their place in the pulsating, crawling, dripping, and shivering of stimulated tissue. Mind emerges through dynamic movements and patterning into the vital processes occurrent in organisms.

### 3 Wood Wide Web – the sound of nature culturing

Media artists like Ioana Vreme Moser continue explorations in the margins of nature-cultures. Her material essentially consists of streams of energy and data, the perception of which diffracts formally and sensually in the various spectrums of wavelengths. The semblance of organic form in technology (pointed out in Cassirer's *Form and Technik* (1930)) seems to materialize in the analogue and digital systems of generated sound synthesis that structurally allude to biological processes, joining musical composition with the intention of connecting with organic form. These systems leave behind anthropomorphism and scout the experience of more-than-human sonar environments, meaning non-human, but also inanimate, technical, and purely speculative, or incorporeal entities. These hidden alliances with biology, chemistry, and physics continue what one could call a *Cybernetics of the Other*, where the concepts of feedback, systemic structure, and organization processes that mimic natural ones are used to draw connections to *feeling*. The digital understanding of matter as energy charged with information – identity being only one form of information – makes it possible to modify and exchange pieces of information with other pieces, and to produce instances that blur the borders between the self and the external world through resonance, together producing yet-unheard realities (Figure 2).



**Figure 2:** *Arboreal Receptors* (2021) installation view, Ioana Vreme Moser. © Maximilian Pramatarov. Courtesy of IMA Institute of Media Archaeology.



**Figure 3:** Left: Ioana Vreme Moser, diagram for *Arboreal Receptors* (2021), right: George O. Squier, technical drawing for patent no. US1549032A, *Tree Telephony and Telegraphy*, 1919.

How far does this electrically expanding tympanic membrane reach? Might it even jump species? Could trees be ears, and is there a yet-unknown *arboreal reality*?

To those generations that came after the 1989 revolutions, the tale of ears in trees may be remotely remembered as a sedimented paranoia very common to post-Soviet countries. Indeed, there exists a jelly-like fungus that grows from trees and surprisingly mimics the human ear.<sup>42</sup> However, the actual ability of trees as receivers is still given little attention by the broad population. For Berlin-based media artist Ioana Vreme Moser, born in 1994 in Timișoara, Romania, the tale of ears in trees will have resonated with her knowledge of the (remaining) fears of boundless surveillance in formerly Communist regimes. Yet the idea of regarding trees as natural antennae had actually been pioneered by US military officer and engineer George O. Squier – incidentally also the inventor of Muzak – which not only puts an interesting geopolitical counterpoise on the stretch of eavesdropping methods, but also indicates how ideologies have appropriated sound technologies for purposes of control.

Squier discovered in 1919 the ability for transmission and reception in living plants (Figure 3).<sup>43</sup> His technology, which could be thought of as an eccentric DIY solution for early military communication, was frequently rediscovered over the course of a century. In the 1970s, the US military excavated the possibility of low-fi transmission technology for military manoeuvres in the jungle,<sup>44</sup> presumably the Vietcong.

<sup>42</sup> *Auricularia auricula-judae* (wood ear or jelly ear), edible shelf fungi that grows worldwide. Its astounding resemblance to the human ear has given this species its Latin name “ear of Judas” in reference to the biblical tale of Judas Iscariot, who hanged himself from an elder tree after he betrayed Jesus.

<sup>43</sup> “I have recently discovered that living vegetable organisms generally are adapted for transmission and reception of radio or high frequency oscillations [...],” Squier notes, and envisions “It would seem that living vegetation may play a more important part in electrical phenomena that has been generally supposed. [...] the earth’s surface is already generously provided with efficient antennae, which we have but to utilize for communications, [...]” Squier, “Tree Telephony and Telegraphy.” US1549032A, 1.

<sup>44</sup> Ikrath, et al. “Trees Performing Radio Antennas,” 137–40.

But this idea was also utilized – inversely – as a method to investigate the degree to which forests are exposed to radio frequencies and electromagnetic resonance (RF-EMF) and how it affects them. Ecologists and conservationists adapted the technique of amplifying the resonances in trees by placing toroidal coils around their trunks to listen with the trees to the electromagnetic activity around them. This observation remains current in scientific research done on electro smog,<sup>45</sup> where the potentially eavesdropping tree antennas now serve to protect our environment. However, in the vastness of virally trending fake-news, the *treetenna* is also picked up by rather obscure 5G activists and conspiracy theorists (Figure 4).<sup>46</sup> The currency of esoteric conspiracy theories regarding electronic resonance and microwave technology seem to suggest that the mythical mind and its metaphysical longings, as Cassirer described them in 1930, have indeed never completely disappeared. Instead, they were submerged and transformed, only to rear their heads again in different places.

Tree collectives themselves, also known as *Wood Wide Web*, are part of a natural communication system that exchanges nutrients and water and can send distress signals through an underground network of roots and symbiotic organisms in the mycorrhiza. One could conceptualize this kind of communication system under what Whitehead termed *causal efficacy*, as a very basic level of perception (vital stimulus and response) in organisms, which is key to his post-enlightenment critique of nature's bifurcation.<sup>47</sup> The forest trees have evolved a cooperative environment based on a rudimentary collective-like intelligence. Its primary goal is to maintain the conditions that ensure its existence. The factual impact of RF-EMF on trees is still under research, but studies do show that in areas near mobile-phone antennas, trees develop abnormalities in trunks, leaves, and branches almost immediately after exposure. It is speculated that it is not RF-EMF that affects the trees directly, but the RF-EMF induced resonances emitted from its corpus, which then interfere with and disturb the living underground network of mycorrhiza.<sup>48</sup>

Now surfacing in Ioana Vreme Moser's *Arboreal Receptors* (2021), the reappropriation of trees as antennae is taken up by the sound artist, who makes the phenomenon of vegetal resonance audible to the artistic ear. Through the resonating of metal sculptures that translate aerial transmissions into percussive sounds and humming vibrations, listening to the storms of radio-electromagnetic disturbances becomes an interface for a *feeling* that is co-created by the beholder and the transmitting tree.

Built from a basic self-propelling circuit, thin toroidal coils, which produce a magnetic field, are wrapped around the trunk. They intercept the surrounding field fluctuations in the tree as aerial. Powered by solar panels, the installation feeds from the occurring radiation captured by the coils and oscillates in the material of the resonating metal sculptures and the sound funnel. While the *treetennas* harvest the radio frequencies, radar signals, radiation of cellular towers, and all sorts of microwave (and perhaps other) signals, the circuitry filters the waves into audible resonances and amplifies them as a mechanical movement that is transmitted onto the metal shields. As sculptural instruments adapted for nature, the electronic garments are applied gently on each tree in a group. Once placed in the arboreal collective, the sculptures sonify the invisible impact taken up by the trees with various noises and percussive rhythms. The two spheres of human and non-human interchange by means of rudimentary electronics, which seem to have come from nature itself, and broadcast the information of what is felt by the tree.

<sup>45</sup> Cucurachi, et al. "A Review of the Ecological Effects of Radiofrequency Electromagnetic Fields (RF-EMF)." The estimations given here note yet-unsystematic scientific research of the RF-EMF impact on trees. However, this field within the environmental sciences might further evolve in coming years.

<sup>46</sup> The artist's scrapbook contains a Xerox copy of a diagram published in 1992. According to its author, Wolfgang Volkrodt – environmentalist, inventor and former head of development for Siemens AG – the 1990s forest dieback in central Europe was not caused by acid rain and air pollution alone, but in fact mainly by electro smog. Volkrodt, Wolfgang, "Der Wald stirbt ungebremst weiter," Der Gesundheitsberater, March 1992. Accessed through the obscure activist web site iddd.de.

<sup>47</sup> In Whitehead's sense, causal efficacy is a foundational mode, as "the experience dominating the primitive living organisms, which have a sense for the fate from which they have emerged, and for the fate towards which they go – the organisms which advance and retreat but hardly differentiate any immediate display. It is a heavy, primitive experience." Whitehead, *Symbolism*, 44.

<sup>48</sup> Waldmann-Selsam, et al. "Radiofrequency Radiation Injures Trees Around Mobile Phone Base Stations."

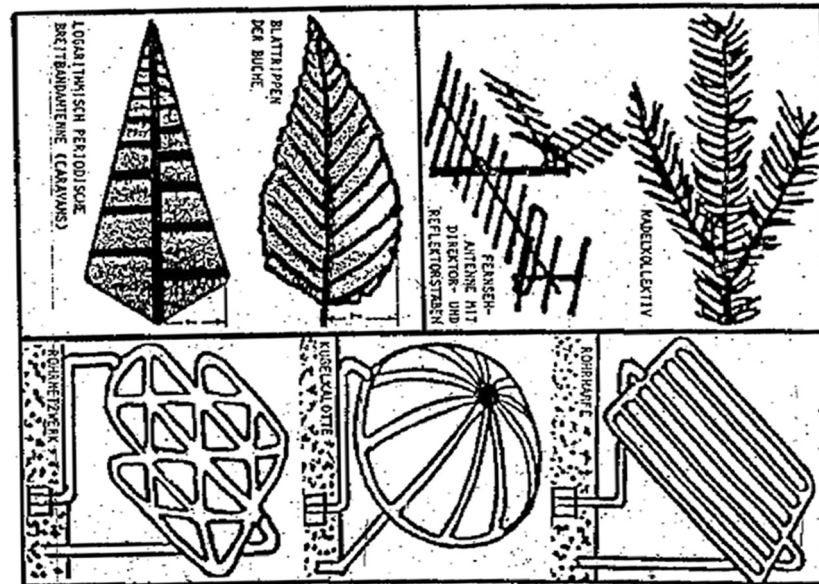


Figure 4: Found footage from artist repository shows the analogy between plant-based structures and antennas.

Technology, here, is not dominating the non-human environment, but enhancing and expressing its ability to receive stimulation from sources beyond the wind, sun, and water.

What the “unsung philosopher” Susanne Langer outlined in her eco-phenomenological treatise on feeling is enacted by an arboreal reality, as we hear each tree individuated from its Wood Wide Web and how it might be perceived by its respective tree-collective. By tapping into its resonances of non-anthropomorphic patterns and involving them with what is inscribed in our ears, the limits of epistemological inquiry are re-rendered. Whether or not the incorporeal entities of RF-EMF permanently surrounding us are harmful to certain species, Vreme Moser’s *arboreal reality* invites us to a joint resonating matrix with those that are commonly unheard of.

As the metal sculptures resonate in irregular patterns each time radiation is intercepted, we get an idea of which environmental impacts trees are involuntarily exposed to. The presentational immediacy in the vegetable species is transformed in its presentational abstraction by the hand of the artist, meeting the perceiver and the perceived halfway. The clinking patterns and the pitch of drone-like humming become the epitome of the inconceivable yet ever-expanding technological fabrics that weave us into complicit relations of exploitation – a truth deeply disturbing to the metaphysical undercurrents of the scrapped mythical mind. Haunted by the irrational, this media archaeological excavation shows that it is not a *flat Earth* we live on, but barely a *half Earth* we can fully understand.

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