

Imagination, Perceptual Engagement, and Sound Mediation

Thinking Technologically-Produced Sound Through Simondon's Concept of the Image

Gabriel Paiuk

Published in *Kunstlicht Tijdschrift*, issue Vol. 38, 2017, 4 - 'Mediated Imaginations: Technologies Touching Upon Art.' Ed. by Bas de Boer, Sam Edens and Jonne Hoek Pages 38-45

Kunstlicht is an academic journal for visual art, visual culture and architecture. The journal is affiliated with the Art and Culture department of the Vrije Universiteit Amsterdam, but operates from an independent foundation. *Kunstlicht* is a publication of Stichting Kunstlicht. www.tijdschriftkunstlicht.nl

Abstract

Applying French philosopher Gilbert Simondon's concept of image to the domain of the sonorous, this article aims to tackle how imagination is constitutional in our grasp of sound, and how this grasp is informed by the protocols and affordances of technological tools of sound reproduction and manipulation. Simondon proposes a notion of imagination that, rather than referring to the capacity of a subjective consciousness, designates a series of processes within which the image emerges. The image is conceived as the product of an activity, a node in a circuit of processes of anticipation, reception, recollection, and invention which articulate the interaction of an agent and its medium. Conceiving the sound image through this model emphasizes how perceptual instances of sound take shape within modes of engagement, articulated through the affordances of technologies of audio manipulation that we use on a daily basis. By applying this notion, this article aims to address technology within the realm of artistic practice not as a tool to expand the *palette* of possibilities of our imagination, but as inherent in the conditions of our grasp of the sonorous. By elaborating on my sound installation *Focus*, I aim to outline a practice that exposes the way imagination is entwined with imprints of technologies and particular circumstances of sound mediation.

IMAGINATION, PERCEPTUAL ENGAGEMENT, AND SOUND MEDIATION

THINKING TECHNOLOGICALLY-PRODUCED SOUND
THROUGH SIMONDON'S CONCEPT OF THE IMAGE

Gabriel Paiuk

Imagination is usually understood as the capacity of a subject to produce sensorial instances detached from a perceived reality. This presupposes a sharp differentiation between images originating *in the world* and images created *in the mind*, regardless of whether these images belong to the visual, auditory or other sensorial domains. This distinction is contested in the work of French philosopher Gilbert Simondon, who holds that imagination and perception are not fully independent, but rather entwined instances of a common process pertaining to 'the relationship between the individual and that which surrounds it'.¹

In his book *Imagination et invention*, Simondon remarks that imagination is a 'precious' notion as it 'expresses an activity that forms them [mental images] and the existence of a function that employs them'.² Rather than the faculty of a subjective consciousness, imagination designates an operation where images emerge within a recurrent cycle of anticipation, reception, remembrance, and invention. For Simondon, the image, rather than a stable sensorial impression, is a mutable node at the point of articulation of a number of processes unfolding within the engagement of an organism and its environment.³

Following this perspective, the current article aims to tackle the way images emerge in the domain of the auditory, particularly attending to how affordances of technological tools play a role in this emergence. As the image is conceived as an instance of the interaction between an agent and its milieu, the technological operations and associated protocols embedded in such interaction take part in the way the image is constituted. My sound installation *Focus* tackles the way in which the sensorial coalescence of the sonorous is articulated with technological instances of sound reproduction (fig. 1). *Focus* sets up a space where imprints of the technical process of reproducing sound are brought to the fore. It aims to expose the listener to the way sensorial instances of sound are informed by the ways we engage with the products of audio technologies.⁴

The purpose of this article is to problematize the way the image is constituted within an artistic practice involving technological means. Rather than attesting to the role of technology as a tool for expanding the possibilities of imagination conceived as the capacity

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Emmanuel Alloa, 'Prégnances du Devenir: Simondon et les Images' in: *Critique* 816 (2015/5), p. 357.

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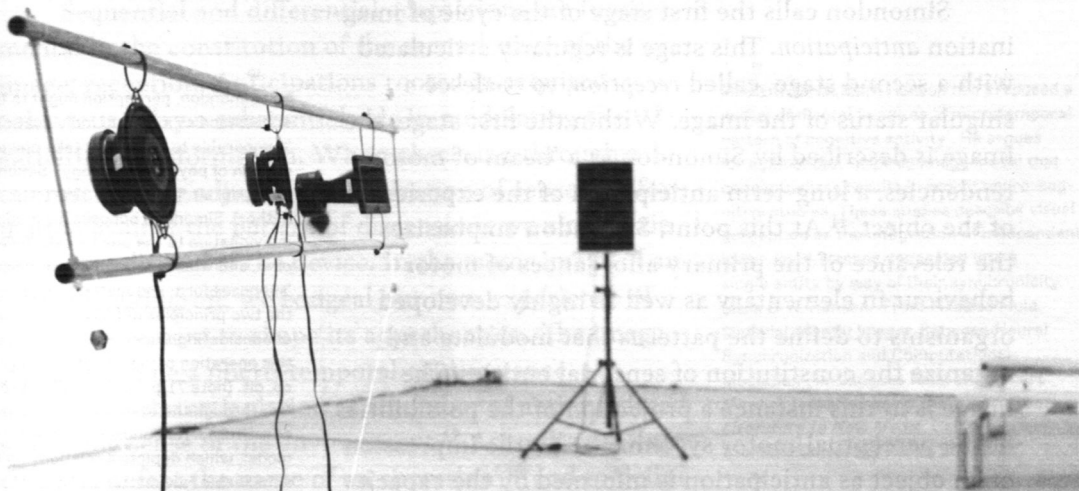
Gilbert Simondon, *Imagination et invention (1965-1966)*, Chatou, Éditions de la Transparence, 2008, p. 7 (trans. by author)

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It is relevant to note that the articulation of organism and environment appears in texts such as *Imagination et invention*, but should be considered within the scope of Simondon's philosophy of individuation as a transitory circumstance. When accounted for in its full implications (outside of the scope of this article), the differentiation between an organism and its environment is to be considered as a mere instance of individuation. For Simondon the 'limits' between an organism and its environment are always in a process of transformation, and should not be conceived as definitive.

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An in-progress documentation of this work can be found on: <https://www.researchcatalogue.net/view/381556/381557>. In 2015, *A Study in Focus* was presented at W139 in Amsterdam, the Netherlands.



↑ fig. 1 Gabriel Paiuk, *A Study in Focus*, W139, Amsterdam, February 2015.

of an imagining consciousness, this article aims to address the way uses and protocols of technology are embedded in the way imagination operates as a process of image creation.

Operational Images

Within the first two stages of the cycle of imagination as defined by Simondon, the emergence of images is necessarily intertwined with the unfolding of perception.⁵ As an essentially mutable instance, the image is continuously informed by perception, while it simultaneously becomes a support for its unfolding. For Simondon the main problem concerning the nature of perception concerns the question of how the subject is 'able to separate objects rather than perceiving a confused continuum.'⁶ In addressing this issue, Simondon conceives perception as a ceaseless constitution of forms aimed at the resolution of a problem posed by the interaction of an agent and its environment. Rather than 'an activity of caching forms from [the] outside world',⁷ perception is 'the solution of a conflict, the discovery of a compatibility, the invention of a form'.⁸ As such, perception not only 'manages to achieve a segregation of units', but it is also 'simultaneously the discovery of a polarity of those units. [...] The unit is perceived when a re-orientation of the perceptual field can be accomplished. [...] To perceive an animal is to discover its cephalocaudal axis and its orientation. To perceive a tree is to see in it the axis that goes from the roots to the tip of the branches'.⁹ The invention of this form necessarily renders a degree of organization of the sensible. Perception is defined as a continuous process of formation and re-formation yielding specifically individuated instances.¹⁰

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'Image alone is as obscure as perception without the help of the image'. Simondon 2008, op. cit. (note 2), p. 80 (trans. by author).

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Gilbert Simondon, *L'individuation a la Lumiere des Notions de Forme et D'information*. Grenoble: Éditions Jérôme Millon, 2005, p. 233 (trans. by author).

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Giovanni Carrozzini, 'How to Invent a Form: An Inquiry into Gilbert Simondon's Philosophy of Perception', in: Alessandro Sarti, Federico Montanari and Francesco Galafaro (eds) *Morphogenesis and Individuation*, Springer International Publishing Switzerland 2015, p. 41.

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Simondon 2005, op. cit. (note 6), p. 236 (trans. by author).

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Ibid., p. 236 (trans. by author).

Simondon calls the first stage of the cycle of imagination *anticipation*. This stage is regularly articulated with a second stage, called *reception*, to coalesce a singular status of the image. Within the first stage, the image is described by Simondon as a 'beam of motor tendencies, a long-term anticipation of the experience of the object'.¹¹ At this point, Simondon emphasizes the relevance of the primary affordances of motor behaviour in elementary as well as highly developed organisms to define the patterns that modulate and organize the constitution of sensorial entities. The image is in this instance a projection of the possibilities of the perceptual/motor system. The tactile impression of an object as anticipation is informed by the capacity to grasp, which is itself informed by the shape and behaviour of the extremities or membranes of the given organism. The anticipatory stage is informed by one's capacity to locate oneself in relation to an environment: our scale in relation to a door, a compound of distances as possibilities of movement, and/or our capacity to grasp a particular volume.¹²

This anticipatory stage is entangled with a second receptive stage in which the image is constituted as a support of the perceptual process: 'the intra-perceptive image [...] operates at the core of the perceptive field'.¹³ Simondon gives the example of a hunting bee, for whom

[a] certain decision-making process in relation to the medium cannot wait until information is complete [...]
 [Thus] it is necessary to take action, adopt a certain activity and approach the situation, which is a truly operational inference [...] its behaviour can be considered motor-perceptive, as it is constituted by successive waves of information gathering [...] at the moment of completion, each stage that precedes it is founded on a perceptual sketch that is precisely the image.¹⁴

Within the performance of a specific task that establishes a vector for the 'gathering' of information, the image, rather than 'a substitute of an incomplete or failing perception',¹⁵ congeals a series of sensorial elements that enable the unfolding of perception. According to Simondon, '[i]n progressive perceptual-motor behaviours, the role of intra-perceptive images is primordial': they are at the basis of the perception that emerges only at the end of the activity.¹⁶

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For Simondon, perception ought to be understood as a case of individuation 'comparable to those that take place in the domain of physics or biology'. Simondon 2008, op. cit. (note 2), p. 235 (trans. by author). Simondon opposes his model of individuation to the one he calls *hylemorphic*, and which, dating back to Aristotle, 'supposes form and matter conceived as the two principles of individuation, instead of considering the internal dynamics of this operation of individuation', Carrozzini, op. cit. (note 7), p. 35. Simondon explains this through the example of how a brick is constituted. He opposes the *hylemorphic* model, which depicts a relationship between a malleable raw matter and a mold and is fundamentally insufficient to explain the physical emergence of the brick, to a model which attests to the relationships of physical forces and chemical processes which take place in the transformation that render this new entity. 'This clay is not indeterminate matter. Extracted from marshy soil, it is "dried out, ground into powder, immersed in water, kneaded for a long time": it has already been formed. Its molecular properties determine its quality, porosity and density'. Pascal Chabot, *The Philosophy of Simondon. Between Technology and Individuation*, New York: Bloomsbury, 2003, p. 76. In Simondon's terms it does not make sense to talk about unformed (malleable) matter that is being *molded*, as matter is always (already) formed, constituted by a multiplicity of forms in a constant process of transformation and adaptation: forming and re-forming. The individuated object or instance is thus a 'vestige' of a process.

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Simondon 2008, op. cit. (note 2), p. 3 (trans. by author).

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'The image becomes a mode of reception of information arising on a medium and a scheme of responses to those stimuli; in the perceptive-motor experience, images becomes directly and effectively functional; they become organized and stabilized in groupings internally correlated following the dimensions of relation between organism and medium'. Simondon 2008, op. cit. (note 2), p. 19 (trans. by author).

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Gilbert Simondon, *Cours sur la Perception*. Chatou: Les Éditions de La Transparence, 2006, p. 237 (trans. by author).

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Simondon 2008, op. cit. (note 2), p. 65 (trans. by author).

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Alloa 2015, op. cit. (note 1), p. 368.

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Gilbert Simondon 2008, op. cit. (note 2), pp. 65-66 (trans. by author).

Sequential and differential adaptations are fundamental in the constitution of the second stage of the image: reception. Anticipations rooted in acquired behaviours play a substantial role in modulating the gathering of information. When observing through a microscope, we adjust the organization of sensory information against the *pattern* of dimensions we already tie to the conditions of the device. In the *motor* image of an airplane taking-off, we congeal our own experience of bodily movement to shape its apprehension. The image turns out to be a micro-temporal circumstance, an instance in the articulation of a number of actions aimed at making sense of the environment.¹⁷ Accordingly, '[a]n image is in fact the name of an operation',¹⁸ and to define it as *operational* means to account for how it is shaped by the capability to gather particular input to anticipate, know, reconstruct, or reconfigure a possible relationship to our surroundings.¹⁹

Sound Images and Technological Affordances

Following Simondon's argument that 'all senses have their own image',²⁰ it is relevant to explore how an autonomous notion of sound image can be considered, without the need of being defined by a bond to the visual.²¹ The notion of sound image is not new, and traces of it can be found in diverse contexts.²² A sound image entails the congealing of a sequence of sensory elements into a single entity. The sound of the closing of a door is made out of a sequence of rapid pieces of sonorous information that are coalesced into a single entity, prompted by the infinitesimal succession of frictions between material elements and their resonances in the body and adjacent spaces of the door: 'To materialise sound is to make corporeal artefacts from durational flux. To hear space is to derive a spatiality from a temporal event'.²³ The perceptual articulation of sound entails 'a code of transformation of the object, a formula of potentialities that allows foreseeing the transformations of signals received as a function of the environment and the action undertaken'.²⁴ The conditions of engagement of the perceptual agent are fundamental for the way the image is constituted as a gathering of impressions. This affects the way we perceive a sound as *transforming* while retaining its identity (the upwards sliding *sound* of an airplane ascending) or as *becoming* another sound (a step between two musical notes). The

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Media theorist Mark Hansen has proposed a notion of mental image as 'a microtemporal pattern of cognitive activity'. He argues for a Simondon-inspired image model that conceptualizes results in recent neuro-cognitive studies. These studies describe visual perception as the integration of independent lower-level-strands congealed into a single entity by way of their synchronicity. Mark B. N. Hansen, 'From Fixed to Fluid. Material-Mental Images Between Neural Synchronization and Computational Mediation', in: Jacques Kalip and Robert Mitchell (eds) *Releasing the Image, from Literature to New Media*. California: Stanford University Press, 2011, p. 87.

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Andrea Bardin, *Epistemology and Political Philosophy in Gilbert Simondon. Individuation, Technics, Social Systems*, London: Springer 2015, p. 147.

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The notion of operational (or operative) images has several antecedents. One of its most prominent is its inception by Czech-German filmmaker Harun Farocki in his work *Eye/Machine* (2000-2003). On its most concrete level the term alludes in his work to images rendered by computational procedures in their quest towards accomplishing a specific task (such as those produced by automated vision machines for the reorientation of missiles), in this case the images are only temporary circumstances that yield an pre-existing information necessary for the accomplishment of a procedure. The concept is used in this text in a broader way, alluding to the way the image is always emerging as a sensorial coalescence occurring within the engagement of an agent in the midst of accomplishing a particular task. As has been mentioned, such wider scope was also hinted by Farocki himself, see Volker Pantenburg, 'Working images: Harun Farocki and the operational image' in: Jens Eder and Charlotte Klonk *Image Operations: Visual Media and Political Conflict*, Manchester: University Press (2016).

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Gilbert Simondon 2008, op. cit. (note 2), p. 15 (trans. by author).

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Simondon refers as well, for example, to *tactile* images 'which bring about the possibility to evoke matter, sand, dust, or earth of such or such consistency'. Several variants have been used to apply the notion of image to the domain of sound: sonic, acoustic, sonorous or auditory images. This article will use the term sound image as a general term disregarding the different nuances each of these particular terms would entail. G. Simondon 2008, op. cit. (note 2), p. 117 (trans. by author).

question of what constitutes a *single sound* is thus problematic because sound perception entails a resolution, the configuration of 'a polarity' (an order) that binds sensory elements in a particular way.

At this point, sound technologies and their circulation become relevant as they alter the ways we discern elements and establish models and agents that take part in the formation process. For example, we can observe how the hissing sound of historical recording and reproduction devices became a feature in the realm of audio-visual broadcasts, by ascribing to this particular sound the value of testimony. As sound scholar Stan Link points out: 'The types of noises born with recording were both the difference and connection between an original and its reproduction'.²⁵ The ever-frequent appearance of the hiss of the recording and amplification apparatus at the beginning of films or other audio-visual examples, especially in pre-digital technology, gave this sound a diegetic value. Even though this 'hiss' fundamentally belonged to the artefactual domain of audio technology, it singlehandedly pointed towards the agency of the recording medium: when we heard that noise, we knew the sound we were hearing belonged to a *real* (recorded) environment, and thus the *action* had started. This technical regime provided the sound with an impression of perspective that would not have been inherent to such sound without it. Furthermore, the discernment of the qualities of this peculiar spectral content as a separate entity was enhanced by its ubiquitous appearance.

It is revealing that the notion of sound image, although with varying degrees of linkage to the visual, has proliferated in literature concerned with electroacoustic music theory and sound technology in recent decades.²⁶ The process of agglomerating sound traces as sensorial entities is tied to the agency of tools, and the apparatus of sound recording, synthesis, and manipulation has inscribed particular aptitudes of sound manipulation in the cultural milieu.

Sound recording and manipulation technologies afford the possibility to easily 'cut', duplicate or juxtapose very complex and many-layered sound entities. The ubiquitous *sample*, which can place a recording of a complex and layered environmental field as a seconds-long segment within a different sonorous context (or, for instance, a fragment of an old jazz record within the context of hip-hop music) sets up an operation which binds together disparate qualities into what becomes a single mnemonic entity. Due to its sheer repeatability and circulation, the operability of this 'cut' becomes the *framer* of this entity. The use of the notion of sound

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Simondon himself refers in his book to nineteenth century neurologist Jean-Martin Charcot (responsible for developing an epistemology of acoustic phenomena). A purely sound-grounded notion of image can also be found in the use Ferdinand de Saussure proposes for this component of the linguistic sign: 'The latter [sound-image (*image acoustique*)] is the material sound, a purely physical thing, the psychological imprint of the sound, the impression that it makes on our senses' (Ferdinand de Saussure, *Course in General Linguistics*, New York: Philosophical Library 1959, p. 66). In more recent sensory studies the notion has surfaced frequently although discussions on a more fundamental function of the term have been usually deferred. French philosopher Jean-Luc Nancy claims that '[it is evident that] sound creates its own images' Jean-Luc Nancy, 'The Image: Mimesis and Methexis' [Spanish version] in: *Escritura e Imágen*, Vol. 2, México (2006), pp. 7-22.

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Raviv Ganchrow, 'Hear and There: Notes on the Materiality of Sound' in: *OASE Journal for Architecture* 78 (2009), p. 71.

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Gilbert Simondon 2008, op. cit., (note 2), p. 77 (trans. by author).

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Stan Link, 'The Work of Reproduction in the Mechanical Aging of an Art: Listening to Noise' in: *Computer Music Journal*, 25: 1 (Spring, 2001), pp. 34-47 (p.34).

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See: Suk-Jun Kim, 'Imaginal Listening: A Quaternary Framework for Listening to Electroacoustic Music and Phenomena of Sound-Images' in: *Organised Sound* Vol. 15:1 (2010), pp. 43-53; Francois Bayle, 'Image-of-sound, or i-sound: Metaphor/ metaform' in: *Contemporary Music Review* 4 (1989), pp. 165-170; Michael Filimowicz, Jack Stockholm (2010) 'Towards a Phenomenology of the Acoustic Image' in: *Organised Sound*, 15:1 (2010), pp. 5-12; Daniel Barreiro, 'Sonic Image and Acousmatic Listening' in: *Organised Sound*, 15:1 (2010), pp. 35-42.

image becomes a useful alternative to consider the individuation of sonorous entities which contrasts the notion of *sound object*, itself more apt to account for sound instances following the model of classically conceived musical figures. Considering Simondon's hint for reassessing the image as an operation of coalescence of sensorial input rather than as a fixed content, it becomes relevant to ask how audio technology plays a role in the articulation of the sound image.

Within my sound installation *Focus*, sound components mainly originate from field recordings carried out in anonymous urban environments, as well as from artefacts of recording and reproduction devices. Nonetheless, the emphasis of the work lies not on a representation of heard acoustic spaces, but on an enhancement of the traces of technologies present in the construction of sonorous impressions. In *Focus*, sound is emitted through diverse loudspeaker types and loudspeaker constellations whose couplings produce distinct impressions of acoustic spaces. The installation invites the visitor to walk through these constellations, prompting an awareness of our everyday, media-infused auditory realm and the embodied impact of the sound emitted by the loudspeakers. These forms of awareness are stimulated by the different patterns of acoustic excitation, the scale of the miniature loudspeakers in relation to the moving body, and the reminiscence of cinematic spaces, among other factors. The way these constellations build different re-enactments of acoustic spaces problematizes the assumed transparency of the medium, as it exposes how the qualities inherent in the process of technological sound production inhabit our engagement with ubiquitous media.

Perceptual Thresholds

The main operation in *Focus* is to set up thresholds to be discovered by the listeners as they slowly explore the room. These thresholds arise at those points in which a small alteration in the sonorous environment yields a discrete, fundamental change in the way the sound image is constituted. Such changes are brought about by the superimposition of registers originating in practices of sound reproduction, memories of acoustic circumstances proper to broadcasting media, and the physical imprint of sound emitting devices. At these threshold points a discrete change occurs in the way the impression is congealed as a perceptual entity: at one point sound is construed as a vague impression of an ample space where the action of distant machinery is heard; while at an adjacent point, a slight change in the imprint of another loudspeaker renders a fundamentally different *type* of sound image: that of the physical impression of sound emanating from a material device.

The main axis in *Focus* becomes the ambiguity between those possible instances: the re-enactment of perceived spaces through impressions of distance, locational marks, reflection patterns and reverberation ratios on the one hand, and what is grasped as an inherent aspect of the sound reproduction apparatus itself. The outcome of the loudspeaker can be perceived, for example, as a memory of reproduction patterns ('the hiss'), or it can leap into the embodied tingling of the ear membrane produced by the subtle play of

acoustic interference patterns. A sound image emerges in the particular relationship between the listener and their surroundings, modulated by the traces and protocols of sound mediation technologies.

This modulation of the emergence of the sound image by technological imprints can be exemplified using the following comparison. If we move from an acoustic location to another, e.g., from the inside of an ominously ample cave to a significantly smaller one, a decrease in the amplitude level (volume) of the lower areas of the frequency spectrum of sound occurs. This is produced by the fact that the lower frequency soundwaves are enhanced by the resonance capabilities of the bigger chamber, while they lose intensity on the smaller one. The resulting alteration in the frequency spectrum of the perceived sound, when moving from the space with the reduced lower frequency range to the one with the more prominent lower range, renders an auditory impression of *depth*, and in the case of an opposite movement, of a *lack* of depth.

In the documentary *A Century of Sound*, an instructive short film from the 1950s is reproduced that shows a TV anchor displaying to the general public the effects of low-, high- and band-pass frequency filter devices.²⁷ This short film was aimed to train and familiarize the listeners with the latest technologies of sound reproduction used in broadcast and cinema. When applying the high-pass filter to a recording of a music excerpt which produces an effect similar to the one referred in traversing from the bigger to the smaller cave, a diminution of the intensity of the lower part of the frequency spectrum is produced, prompting the anchor to remark that we perceive a 'lack of depth' in the resulting sound. The interesting point is that, after a couple of times of repeating the operation of application of the filter, this *depth effect* is completely gone.

One could say that the resulting sound image in this last case is completely different than the one produced by the transition from one cave to another. Even though the 'spectral' characteristic is the same, our perceptual engagement with the environment has now been modulated by the affordance of this technical operation, rather than by the activation of an embodied memory of a change in the qualities of a physical location. While in the first instance the impression of sound was coalesced by the register of room volumes, the naturalization of a technologically-yielded frequency filter eliminated from the sound any sort of volumetric impression. Drawing on Simondon's notion, we could say that the image is constituted differently in both cases since each case implies a different engagement between the perceptual agent and its environment.

Conclusion

In considering imagination, Simondon shifts the emphasis away from the figure of a detached subjective consciousness that autonomously produces mental entities, towards a model in which imagination is an aspect of the entwinement of agent and environment. Through this shift, Simondon reveals how the image is

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The History of Sound in Motion Pictures:
The Sound of Movies 1933-1975 - UCLA Film
& Television Archive.

always produced, rooted on the particular mode in which this engagement of an agent of any kind (human, animal, material) and its environment takes place. Seen from this perspective, technologies can be understood as partaking in the production of (sound) images, since they enhance or allow particular compounds or segregations that constitute these images. Rather than conceiving technology as a supplement, this perspective attends to the 'force of cognitive and more broadly, cultural transformation intrinsic to tools, machines and technical assemblages'.²⁸

Rather than attesting to the way images 'unseen' or 'unheard of' are created by the uses of technology, I have tried to make tangible how modes of engaging with our surroundings—themselves informed by protocols and material conditions of technology—produce sensorial entities. Imagination, rather than an activity located on a singular subjective consciousness becomes the locus of a series of interactions and articulations developed materially and collectively. Within this realm, artistic practice can be thus conceived as an endeavour that critically addresses and touches on the sensory articulations through which we make sense of our engagement with reality.

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Andrea Bardin and Giovanni Menegalle, 'Introduction to Simondon', in: *Radical Philosophy*, RP189 (Jan/Feb 2015). Accessed through: <https://www.radicalphilosophy.com/article/introduction-to-simondon>, on 22 September 2017.

Gabriel Paiuk is a composer and sound artist, faculty staff member at the Institute of Sonology, Royal Conservatory of The Hague, and PhD Candidate at the Leiden University Academy of Creative and Performing Arts.