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 of an imagining consciousness, this article aims to address the ways 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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3 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.
4 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.
9 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’. 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. 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. 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.

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’, 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;’

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. Accordingly, ‘[a]n image is in fact the name of an operation’, 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.

Sound Images and Technological Affordances
Following Simondon’s argument that ‘all senses have their own image’, 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. The notion of sound image is not new, and traces of it can be found in diverse contexts. 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.’ 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.’ 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
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, as 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 bends together disparate qualities into what becomes a single mnemonic entity. Due to its sheer repeatability binds together disparate qualities into what becomes a single mnemonic entity. Due to its sheer repeatability binds sensory elements in a particular way.

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. 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 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’.

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