

Rituals of art and science to decompartment(mental)ize knowledge

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Abstract

We here explore the potential of rituals in order to more fully comprehend the subjective mechanisms of listening, leading to a broader understanding of phenomenal consciousness (why and how do I know that *I* am experiencing something?). The originality of the project resides in the blending of phenomenology, cognitive science, the sonic arts, and rituals studies. Rituals are explored in the context of a practice-led methodology between an artist and a cognitive scientist in order to decompartmentalize and possibly decolonize knowledge, namely shifting away from a purely Western techno-scientific perspective in order to embrace a plural vision involving indigenous epistemology. In this project, the sonic arts include music and sound in the arts, and focus specifically on the very act of listening. Rituals constitute structures for the lives of communities and societies, which we address more deeply from the perspective of sonic and cognitive research, so as to understand their roles and the epistemology emerging from them.

Keywords

Rituals, Sonic Arts, Cognitive Science, Hallucination, Mental Imagery, Visuals, Art Based Research, Practice-led Research, Art and Science Research, Interdisciplinarity.

Introduction

Little is known about the mechanisms of listening or on the finesse of sonic imagination as related to sonic phenomena. Nancy proposes that ‘it is always in the belly that we –man or woman– end up listening or start listening. The ear opens into the sonorous cave that we then become’ [1]. The earliest common memory of space among human beings might indeed possibly be the womb. Similarly, Schulze proposes materializing listening and rendering our senses corporeal [2]. Listening, the senses and the body should help in achieving a broader understanding of the structures of the self. According to Zahavi, ‘many scientists regard questions pertaining to the nature of phenomenal consciousness, the structure of the first-person perspective, and the status of the self to be among the few remaining major unsolved problems of modern science’ [3]. Focused listening induces mental imagery and it may then, as for visual mental imagery, include the whole body and involve the motor system [4; 5, 6; 7; 8; 9]. Listening (as opposed to

hearing) requires attention to and engagement within an environment, and relies on subjectivity and (self-)consciousness. In effect, ‘[mental] imagery not only engages the motor system, but also affects the body, much as can actual perceptual experience’ [10]. Dedicated listening is an active experience; it addresses the questions of the structure of the first-person perspective, makes room for a novel philosophy of combined auditory perception and sonic imagination [11; 12; 13], and requires engagement with an aural architecture [14] as perceived atmosphere, which necessarily involves the whole body. As for Massumi who relies ‘on the irreducibly bodily and autonomic nature of affect’ [15], the morphological quality and immersive potential of aural architectures, namely imagined and subjective architecture triggered by sound as atmospheres, unavoidably affect the body of the listener. Prinz even highlights the crucial idea that ‘conscious experience is not restricted to what is in my head but includes the environment around me, then the richness of experience is not an illusion’ [16]. Sonic imagination may widen understanding of the mechanisms of listening. Pauline Oliveros specifically proposed sound imagining in her sonic meditations [17]. However, the term ‘imagination’ too often relates to the visual aspect, and a new vocabulary needs to be developed for the sonic counterpart. Oliveros chose the term ‘auralization’, underlining that ‘[y]ou might begin to notice how your attention changes when you use auditory terms instead of visual terms to speak about sound’ [18]. Sonic imagination and auralization thus lead to the development of a new dimension in listening.

A combination of academic fields, artistic and scientific approaches (Western, and non-Western) of the experience of the self has already been expressed in technoetic and moist media [19], anthropology [20], the combination of neuroscience and suprasensory perception [21], and first-person accounts of the shamanistic perspective [22]. Blanke and Dieguez stress that ‘approaches and traditions often considered as outside the reach of science, such as (...) shamanism, mysticism, religious rituals, and the use of mind-altering drugs, the study of altered states of bodily consciousness holds the potential to offer important scientific insights about the brain processes involved in creating our everyday experience of the self’ [23]. For instance, the combination of EEG measurements within

Ayahuasca rituals was investigated for the first time in April 2019 by a team of scientists [24]. Such an approach is still in its infancy, but already raises many questions, including ethical ones, and might benefit from insights from the field of the humanities, as is proposed here. Watson-Jones et al. call for a combination of cognitive science and anthropology ‘to understand how individuals in diverse cultures incorporate both natural and supernatural explanations for events’ [25] and, as stated by Astuti and Bloch, ‘anthropologists and psychologists are willing to look both ways and learn to respect, speak, and read each other’s language’ [26]. Rituals, defined by Tambiah as ‘patterned and ordered sequences of words and acts, often expressed in multiple media’ [27], are central here. For Schilbrack, ‘in the study of rituals, then, phenomenology can provide a dialogical partner for those approaches that treat ritual as cultural inscription and do not take into account the materiality of the lived body’ [28]. This research needs to be addressed now, because the field and the literature of sound studies have grown considerably in the last decades, yet little is as yet known of the mechanisms of listening and of the finesse of the sonic imagination.

Research Methodology and Approach

The scope of this paper as related to the project shall also provide new data for cognition and perception in the context of art, phenomenal consciousness, artificial intelligence, and augmented and mixed realities. Such pervasive fields are now mostly approached from a techno-scientific and Western perspective. Humanities, art, and indigenous epistemology and knowledge, which ‘is generated from careful observation of the ecosystem and natural phenomena, observed by many people for millennia’ [29], introduce new questions, and new responses. They thus enrich research by providing a pluralist, widely encompassing vision; and by including indigenous perspectives in A.I., it may even widen perspectives and lead instead to Extended Intelligence (E.I) [30], Extended Reality (E.R.), and Extended Self (E.S.). The innovative aspects of the interdisciplinary project move beyond the state-of-the art and push it further by proposing a unique combination of fields, such as ritual studies, anthropology, phenomenology, cognitive science, and the sonic arts. Such an approach allows for the mechanisms of listening and questions about phenomenal consciousness to be addressed from a sonic perspective by fusing theoretical writing with sonic artworks as research-creation. It also counterbalances a dominant visual, Western, techno-scientific perspective.

Our approach for decompartmentalizing knowledge, namely by creating bridges, emphasizing on the interdisciplinarity nature generated by art and science collaboration, and looking outside well established Western academic methodologies, focuses on the rituals involved within such collaboration through a nomad lab as mobile and multi-sited ethnography [31]. The focus resides on

fieldwork, phenomenology, cognitive science and research-creation. More specifically, at the intersection of sonic arts and cognitive neuroscience, we explore how a scientific experimental approach can take place within the venue where the artwork is installed. The focus resides in the research process and is not limited by an outcome defined in advance. The artistic research process combines our experience in the sonic arts and our scientific expertise in the cognitive neuroscience of perception to explore the mutual interactions between visual and auditory stimulations for the mental elaboration of illusory or hallucinatory precepts. In the visual domain, illusions (when you perceive an object but you misperceive one or more of its properties) have traditionally fascinated the audience and have been extensively studied by the Gestalt and in psychophysics as a tool to understand perception. Hallucinations (when you have an experience as of an object but there is no object that you actually perceive) on the contrary are associated with a form of dementia, often mistaken for psychiatric delusions or delirium. In contrast, our approach is based on recent accounts on the psychological mechanisms of hallucinations [32] and debates on their phenomenological foundations [33] suggesting that the boundary between illusion and hallucination might not be so strict, the neural mechanisms of hallucinations sharing with illusions the need for the brain to interpret perceptually insufficient information, to ‘find meaning in noise’. Pareidolia (when you perceive an object in place of others) are examples of the intermediate between an optical illusion and a hallucination. Interestingly, although they are common (e.g. seeing a human face in the shape of clouds), they have only recently been linked to the evaluation of hallucinatory tendencies [34]. Visual illusions and hallucinations thus take place in a continuum of visual misperceptions, and we believe this space can be explored artistically and creatively, avoiding the common association made between hallucination and either drug use or mental illness. In practice, we explore the possibility to trigger the true experience of perceiving nonexistent objects or complex scenes (i.e. the actual conscious sensation of having perceived) by combining specifically composed sonic and visual stimuli.

The implementation of this process and the physical setup supporting it could take various forms, from the projection of visuals during a concert to the construction of a semi-permanent multimedia installation. In all cases, the objective is to accompany the audience to reach a state of dedicated listening, leading to a focused attention to the experienced sensations and perceptions, in order to magnify mental imagery. To leave room for such ‘auralization’ [35], visuals should therefore not entirely capture the attention of the audience. We explore ways to merge or alternate the stimuli (e.g. presenting visuals at first as an invitation for mental imagery), and specifically address the role of rituals for reaching this goal.

Merging rituals of art and science

The artwork is an electroacoustic musical composition developed during an artistic residency at the Helvetic Circle in Genoa, Italy. The central element of the composition is the organ situated in the church above the residence. The work was conceived in the present moment without a written score, and after long walks in the surrounding nature. The church contains an intrinsic architectural sonic spatial identity. The recordings of the organ and its reverberations in the architectural space were then sampled, reworked, and implemented into a software allowing live manipulation in order to be played in any future concert venue. The addition of these sonic spaces, those initially recorded, those of the future concert venues, and those present in the mental imagery of the listener during the concert, shall lead to a sonic moiré, a polyphony of spaces. The conceptual idea of the sonic moiré is an auditory perception of several layers of space and comparable to that which emerges visually from Marcel Duchamp's rotoreliefs. Such perception exists between the work and the spectator, and here between the work and the listener. The sonic moiré changes according to the typologies of each concert venue, and its ultimate goal is to produce an illusion of cinematic experience for the mind of the listener. Moreover, for the first concert involving the current experimental setup described below, a pianist was presented with a graphic score of the composition, on the base of which she developed a live composition on a prepared piano along live electronics and the sampled organ.

Performance outline

For the first public performance of *The Room Above*, the rituals from the scenic arts and from the experimental laboratory work in cognitive sciences were combined and balanced to satisfy the expectations of the audience attending a concert, while triggering their curiosity and priming them to the encountering of mental imagery. On the one hand, the scenography and the succession of events followed the classic ritual for attending a concert; finding your seats, waiting for the lights to dim, applauding the performers as they get on stage, etc. On the other hand, the visuals displayed on a large projection screen at the back of the scene (11 x 7m, see Fig.1) provided information related to another ritual; spectators are addressed as participants to a psychophysical experimentation. First, a welcome screen presented the objectives of this research and informed attendees that they will be asked to fill a questionnaire at the end. Second, an ethical statement was presented to remind them that their participation is on a voluntary basis and that “This study is undertaken in accordance with the ethical standards as defined in the Declaration of Helsinki”, as per the requirements for conducting behavioral research on humans. As the concert started, each musical movement was then introduced with a title displayed on screen, as it would be for an experimental bloc in the laboratory. A final acknowledgement screen was then shown at the end of the

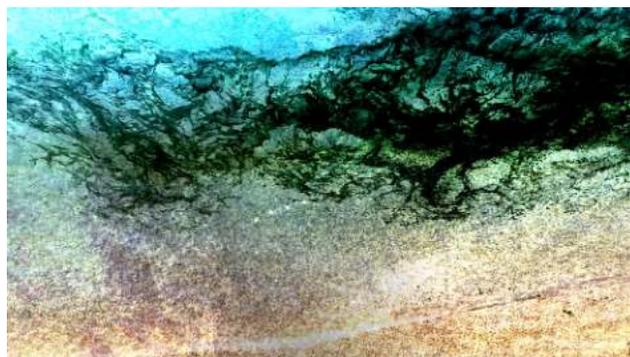


Figure 1. Concert settings for the pilot experiment (top) and screenshots of the visuals for the three musical movements/ experimental blocs.

experiment and invited participants to fill a questionnaire (QR-code linked to an online form they can fill on a mobile phone).

of the mind linked to listening and perception mechanisms by integrating the scientific lab into the artwork, and by combining the methodology of art research with science research in order to develop novel routes for original questions and answers.

Here, we report how the merging of rituals from the sonic arts and from experimental psychology could already provide space for extending the audience's expectations and encouraging an active role from the 'participants' attending a music concert. In appearance, both rituals were distinct, relying on different mediums. This complementarity, together with the attention drawn upon visual perception and mental imagery, are intended to lead the spectators to exercise their ability to explore deeper their perceptual abilities. The voluntary interruption of the visuals in the middle of a musical movement then leaves them with a purely sonic experience, and with an absence that their mind would spontaneously compensate for. More refinements are needed to better orchestrate this process (precise timing, improved communication about experimental research, raising expectations before the show, etc.), but preliminary observations provided encouraging results.

The overall ambition of this art and science collaboration is to decompartmentalize these two approaches of the study of the conscious (and active) experience of perception. The scientific and technological innovation associated with the realization of the project will then be valorized by the sharing of open source software and hardware, and by linking it back to neuroscience research, may it be by offering new perspectives on how to conduct studies on a large audience, or by providing insightful data on rich and unique experiences. In that sense, the rituals of experimental science would, in a way comparable to the rituals for knowledge acquisition in indigenous cultures, get re-appropriated by the general public.

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Luca Forcucci, artist, scholar and guest professor, observes the perceptive properties of the first person experience through art installations, electroacoustic compositions, videos, photography and writing. His research investigates mental imagery of sonic architectures. The artworks have received numerous prizes and are held worldwide. Forcucci's nomad research lab, UBQTLAB.ORG, produces talks and podcasts. He is chair of Laser Nomad, as part of the LASER series of Leonardo / ISATS. He achieved a PhD in Sonic Arts at De Montfort University.

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