Experimental Cultures and Epistemic Spaces in Artistic Research

Andrew Newman, National Institute for Experimental Arts, University of New South Wales, Sydney, Australia
Email: andrew@anewman.net
Matthias Tarasiewicz, Artistic Technology Research, University of Applied Arts, Vienna, Austria
Email: matthias.tarasiewicz@uni-ak.ac.at

Abstract

In this paper we use developments in the history of science to demonstrate the significance of experimental cultures and epistemic spaces within artistic research as an experimental system. We propose that 'artistic products' are process artefacts, which are of epistemic nature (epistemic-aesthetic things). We suggest that artistic research provides a unique opportunity to integrate diverse epistemic practices that currently exist outside traditional institutional frameworks to develop new hypotheses-generating experimental cultures.

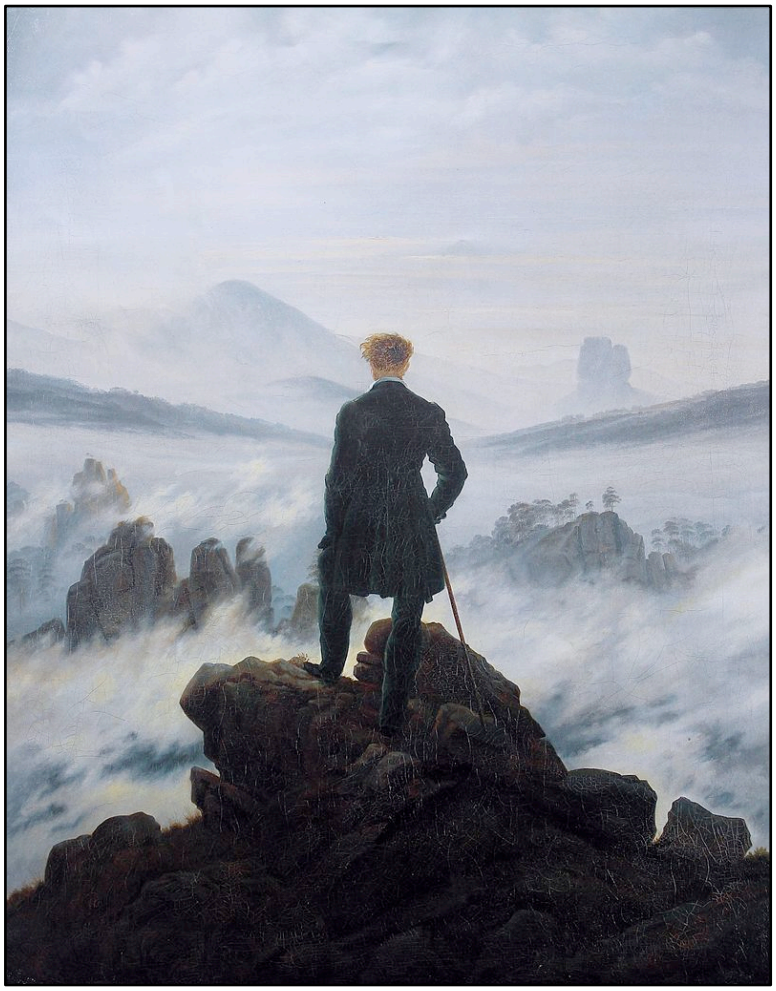
Keywords: artistic research, experimental system, experimental cultures, history of science, research cultures, experimental arts, epistemology.

Artistic practice relishes its amorphous existence. It has been possessed with an avant-garde mentality of being beyond boundaries. Attempts to install boundaries have often been met with fierce resistance, and it is feared that the reconfiguration of artistic practice as a type of research is such an attempt. This can largely be reduced to a misunderstanding on the artist's behalf of what constitutes research, and more significantly, a misconception of the scientist, who is commonly regarded as the quintessential researcher, as an oppositional archetype to the artist. The argument that scientists discover what already exists, while artists create what does not exist, is built on a bastardized Cartesian dualism that positions culture as independent from nature. Culture is produced by biological organisms, and is manifested within the physical realm from things that already exist. Sounds engineered within a musical composition are not metaphysical incarnations conjured by an artist alchemist who is possessed of a creative spirit gifted by some omnipotent being. The arrangement of these sounds is indebted to an accumulated history of technological experimentation, a millennia of manipulation of the world, from the vibrating flesh in our throats to the tonal variations of differing air pockets in sea shells. The musical systems that have emerged over time, such as the standardised twelve-tone equal temperament, are language systems that have been developed and tampered with to describe the world, by the world. The data sets, theorems, vowels and nouns featured in the bound, shredded sheets of trees that are described as scientific papers are not so dissimilar from the musical manuscripts of Mozart.

There is the parable of the theoretical physicist Heisenberg sitting at the piano and playing Beethoven's last sonata, *Opus 111*, for some peers. After the performance he reportedly said, "If I had never lived, someone else would probably have formulated the principle of determinacy. If Beethoven had never lived, no one would have written Opus 111" [1]. However, by extending Donald Brook's concept of "art as memetic innovation" [2] we can understand that had Beethoven not lived, *Opus 111* in its exact form may never have existed, yet something very much like it would have been produced. Beethoven was not born in a vacuum, but inhabited a cultural moment, and his musical compositions were an extension of the accumulated cultural and technological knowledge that had preceded him. It is interesting to note that Heisenberg, when questioned over the accuracy of the account, replied that he could not remember if it was *Opus 111* that he had played on that particular occasion [3]. Another unborn composer and another unwritten sonata could have substituted; the sacred aura instilled around *Opus 111* is irrelevant.

The myth of the artistic genius wandering alone beyond boundaries hinders the possibility of recognising artistic practice as a form of research, favouring the artist as Caspar David Friedrich's *Wanderer above the Sea of Fog* (Fig. 1) over Isaac Newton's "dwarf standing on the shoulders of giants" [4]. However, although the scientist and the artist inhabit separate epistemological communities and produce different kinds of knowledge, they are both researchers.

Fig. 1. Caspar David Friedrich, *The Wanderer above the Sea of Fog*, 1818, oil on canvas



Artistic Things and Scientific Things

Hans-Jörg Rheinberger's description of the sciences as a "permanent process of reorientation and reshuffling of the boundaries of what is thought to be known and what is beyond imagination" [5] could equally be applied to artistic practice. This "process" can be more suitably used to describe what *research* is rather than what *the sciences* do. It is this miscalculation of what scientists do and what artists do that problematises the configuration of artistic practice as research. The ideas that 'artists create things' and 'scientists discover things' are not mutually exclusive; scientists must also create to discover. As Rheinberger has described, scientific things "are not simply hidden things to be brought to light through sophisticated manipulations" [6].

Hans-Jörg Rheinberger also outlines the similarity between 'scientific things' ('Wissenschaftsdinge') and 'artistic things' ('Kunstdinge') by observing the "processual character of their coming into being", and their "similar innovative moments" [7]. After the *practice turn* or *processual turn*, not only did scientific research change, but with it experimental art practices. Scientific practice became performative, even playful, if we look at descriptions of historical epistemology. Falko Schmieder sees a parallel with the new avant-gardes of the twentieth century, which can be described as 'experimental cultures' [8].

The emerging crisis of reflection on scientific knowledge within the natural sciences, particularly in the field of physics, began in the beginning of the twentieth century with the development of quantum science and Albert Einstein's theory of relativity [9]. The two critical thinkers discussed by Rheinberger are Ludwik Fleck and Gaston Bachelard. Both were "outsiders in the eyes of their contemporaries, belonging to no definite tradition" [10], and were postulating the experimental and technical character of modern science, as well as its social character.

Historical epistemology (exemplified by the writings of Gaston Bachelard and Georges Canguilhem, among others) reconfigured the development of scientific thought through various social and material preconditions that were historically determined, significantly shaping the way (scientific) research was undertaken and understood. Ludwik Fleck acknowledged this shift in thinking with the term 'experiment': "every experimental researcher knows how little a single experiment proves and enforces. There is always the need of a system of experiments ..." [11]. He goes on to argue that if an experiment were clear from the beginning, there would be no purpose in undertaking it. In the 1970s, Rheinberger pursued Fleck's ideas extensively to demonstrate that "Experimental systems ... are systems of manipulation designed to give unknown answers to questions which themselves we are not yet able clearly to ask" [12].

Experimental Systems in Artistic Research

Rheinberger described the 'experimental system' as "a basic unit of experimental activity combining local, technical, instrumental, institutional, social, and epistemic aspects" [13]. By looking at the research practices of (experimental) natural sciences in the laboratory, he suggested that the idea of the experiment as validating/invalidating clearly defined hypotheses is plainly wrong (also referring to Fleck). The actual process of research is much more chaotic and unplanned than communicated, with linearity and stringency mostly constructed afterwards.

Henk Borgdorff, in his discussion of Rheinberger's experimental systems in artistic research, poses the question of the epistemological status of art practices. He asks if "artworks are capable of creating, articulating, embodying knowledge and understanding", and further "if so, what kind of artworks and practices do this?" [14] If we accept artistic research as experimental community, any artistic output could be understood as 'process artefacts' [15], which are in this context epistemic things (hypotheses) generated out of the larger context of the experimental system. Borgdorff has previously demonstrated that "researchers employ experimental and hermeneutical methods that reveal and articulate the tacit knowledge that is situated and embodied in specific artworks and artistic processes." [16] Yet beyond these processes and products, we need to also recognise and understand the social character of artistic research, and of the artistic/academic communities in which a specific output is created and placed, in 'thought collectives' and 'thought styles' as Ludwik Fleck described [17]. In this context, we have to not only think of the process of knowledge generation in the lab/artist's studio, but to extend the viewpoint from experimental systems to experimental cultures and epistemic spaces.

The role of technology in research practice

Gaston Bachelard demanded that we look more closely at what happens in the laboratory, since not every scientific practice can be seen as the same. He challenged philosophers of science to "familiarize themselves with the laboratories and workshops of science, and especially with the history of science as the epistemological laboratory par excellence" [9]. Historical epistemology emerged from Bachelard's concept of 'realization' – 'technological realism' through which the constitution of modern scientific thought is mediated by instruments.

Thomas Kuhn was "favoring concept-driven research as a paradigm over tool-driven research" [18], but is "non-tool driven research" even possible in the current technology-driven society? 'Phenomenotechnique' (the term was coined by Gaston Bachelard to describe the relationship between scientific thinking and technology in modern science) is integral to the understanding of not only the concept of historical epistemology [19], but also how technology shapes our way of thinking, and how we generate new knowledge. Rheinberger focuses on the "material, instruments, arrangements ..." that are to be considered when thinking about the "uncertainty principle of aesthetic things" [20]. What he describes as the process of "tapping in the dark" (tâtonnement) is determined by the technology (or technique) used, where "the new comes into being" [20]. According to Bachelard's 'phenomenotechnique' – in which instruments are to be understood as materialised theories, products of technique [21] - "The electric bulb is an object of scientific thought … an example of an abstract-concrete object." [22]

Simon Werrett, in his essay 'The Techniques of Innovation', suggested that "art, invention, experiment, media or technology have always been related ... dependent on local, historical circumstances" [23]. By constituting that "there is nothing inherent in actions to designate them as artistic or scientific" he indicates that the "process of social negotiation, in which techniques emerge, stabilise and then endure as media, art or experiments", but still "always remain

open to change and reinterpretation, or reinsertion into novel arenas" [23]. He states that these experiments in art and technology "have been ongoing since the Renaissance, though much of the map of their various forms and relations remain to be explored" [23].

Ludwik Fleck acknowledges that "patterns of knowledge are patterns of culture" [24]. Epistemic things generated within experiments in art and technology will intrinsically cause patterns of knowledge to develop, and therefore patterns of culture. This can be observed within media art practices, where auxiliary 'thought collectives' emerge around those who work with and develop specific tools and techniques. Artistic research as experimental culture has the unique capacity of an 'antidiscipline discipline' to foster and integrate these 'thought collectives' with their special 'styles of thought'.

Experimental Cultures and Epistemic Spaces

As Simon Penny has noted, the emergence of these technological cultural forms always involves diverse communities of toolmakers, and their "particular contributions and motivations are seldom noted, except in specialised studies" [25], [26]. Often such cultures, are, as Penny calls them, 'renegades' or 'eccentrics', producing their tools outside of institutions. They are creators of "visionary technologies", that are "by definition, ahead of the technological-industrial curve" [25]. One of the aims of our project *Artistic Technology Research* is to insert these production cultures into the domain of institutions of art and higher education, whilst also displaying their efforts in the context of contemporary research and artistic production. The initiative *Coded Cultures* [27], while reflecting on critical potential in diverse (technological / artistic) subcultures [28], also examined what the intersections of contemporary art, technology, media and research could bring to the domain of 'artistic research' and other transdisciplinary practices. This initiative was initially intended as a festival including hacker-, maker- and artistic contexts.

The framework of artistic research not only offers artists the opportunity to "explore areas of reality and knowledge they weren't necessarily 'entitled' to explore" [29], but fosters the ability to question methods and 'usual' processes of knowledge generation. We are asking for a strong interdisciplinary practice, which various academic and artistic fields could participate in and benefit from. Artistic research understood as experimental culture needs to take into account the design of experimental systems, which can only be successful if they offer "epistemic things enough room to evolve" [30]. Extending this thought, epistemic spaces such as project configurations [31] that are not only present in laboratories, but also in distributed locations (see the concept of 'macro-epistemics' [32]), are to be kept vivid and active. By exploring these experimental cultures and epistemic spaces, artistic research promises to incorporate the avant-garde mentality that has historically been associated with artistic practice, and to continue to challenge both the perceived boundaries of knowledge and the imagination.

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