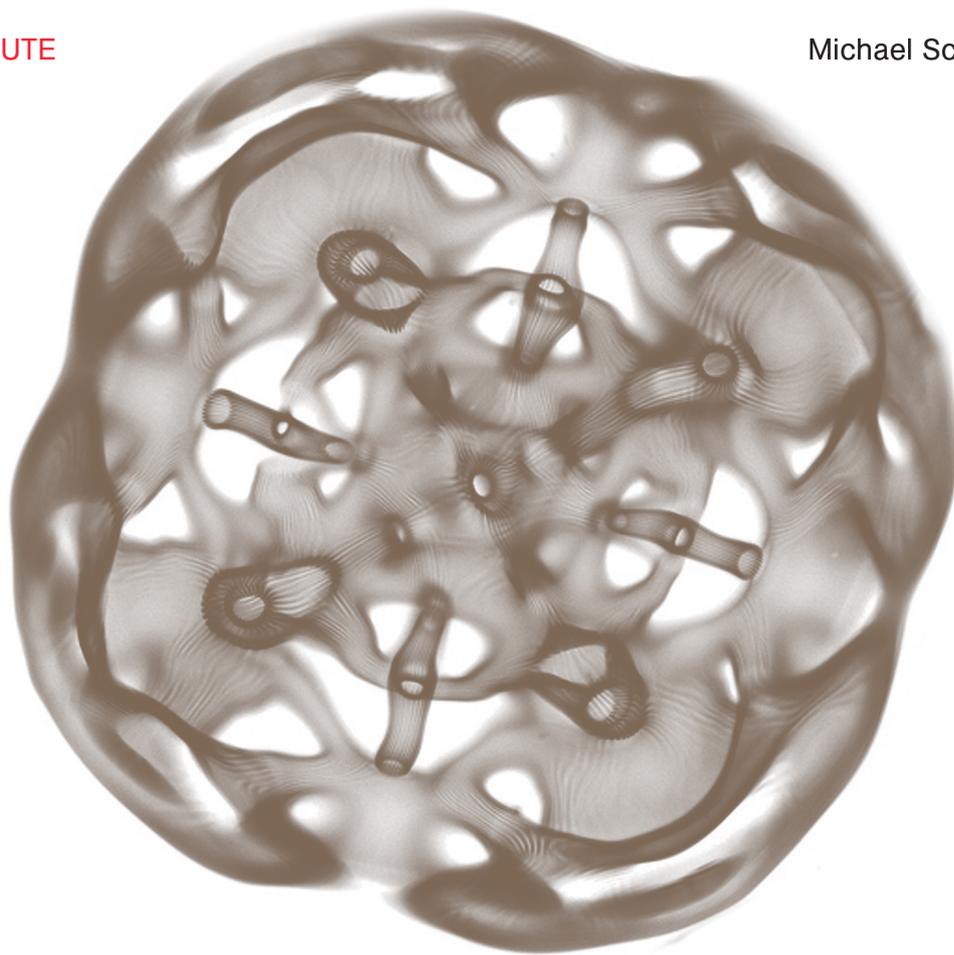


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# Experimental Systems Future Knowledge in Artistic Research

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Michael Schwab (ed.)



SERIES

# Experimental Systems

Future Knowledge  
in Artistic Research

Edited by Michael Schwab

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# Artistic Practices and Epistemic Things\*

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What does it mean to present art *as research*? What relationship exists between art—artworks, artistic practices—and the presentation of art as research in an academic context? This demarcation question is a hot item in the debate on the emergent field of artistic research. The debate often concerns issues of institutional or educational politics that are thought to be important for determining whether artistic research can be recognised as a type of academic or scientific research. Prominent issues are the standards needed to assess research by artists, the institutional rights to award third-cycle (doctoral) degrees in the arts, and the criteria to be applied by funding bodies in deciding whether to support research by artists.

Sometimes the focus is on issues from philosophy of science that pertain to artistic research. Do the usual criteria for doing academic research (concerning research questions, methods, and justifications) automatically apply to this new field of research? To what extent and in what respects do artistic research activities differ from those in other types of academic or scientific research? What are the similarities and differences between artistic research and research in the natural sciences, the social sciences, or the humanities?

I will focus here on the fundamental question of the epistemological status of artworks and art practices *as research*. How can things that are fundamentally polysemic—that seem to elude every attempt to tie them down, to define them—still function as vehicles of research? That is, how can they function not just as *objects* of research but also as the entities in which and through which the research takes place—and in which and through which our knowledge, our understanding, and our experience can grow. What is the nature of such an “object of research,” particularly in terms of epistemology? What gives art the ability to generate new knowledge and understandings?

The foundational debate on artistic research needs input from the disciplines that concern themselves with the history, the theory, and the practice of the

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sciences: sociology of science, science and technology studies (STS), historical epistemology.<sup>1</sup> By the same token, the philosophy of science—or more broadly, our understanding of what academia is—can be furthered by the things that take place in the emergent field of artistic research. To help clarify the epistemological status of art in the research process, I shall draw on some recent insights achieved in research in the theory of science, focusing primarily on the work of Hans-Jörg Rheinberger, director of the Max Planck Institute for the History of Science in Berlin. Rheinberger studies the history and epistemology of experimentation in the life sciences, in particular molecular biology. I will argue that Rheinberger’s ideas about the dynamics of experimental scientific practice—and the special status he assigns to “epistemic things” within those dynamics—may help elucidate the status of art within artistic research practices.

Rheinberger’s work may be attributed to the movement in the philosophy of science that seeks to emancipate the “context of discovery” in relation to the “context of justification.” It distances itself from the more empiricist and critical-rationalist notions of science that were in vogue until two decades ago. The goal is not only to understand the dynamics of scientific conduct but also to clarify the epistemology involved—that is, how knowledge is constituted in and through practices.

This “practice turn in contemporary theory” (Schatzki, Knorr Cetina, and von Savigny 2001)—inspired by Edmund Husserl, Martin Heidegger, and phenomenological tradition, as well as by the later work of Ludwig Wittgenstein and the pragmatist tradition—is manifest in a number of fields, including the cognitive sciences (e.g. Noë 2004), science and technology studies (e.g. Latour 1987, 1999; Latour and Woolgar [1979] 1986; Shapin and Schaffer 1985; Knorr Cetina 1999), and the study of social and cultural practices. As the context of discovery becomes liberated, practices and things take the places of theories and mental states. Embodied, situated, and enacted forms of cognition become more important to our understanding of research than world-mind representations and detached modes of rationality and objectivity.

#### EXPERIMENTAL SYSTEMS

What is the epistemological status of art in artistic research? Are artworks or art practices capable of creating, articulating, and embodying knowledge and understanding? And, if so, what kinds of artworks and practices do this (what is the ontological status of art here?) and how do they do it (the methodological status)?

As I have suggested above, work in an entirely different academic research domain—theoretical and historical research on experimental practice in the life sciences—can help clarify these issues.<sup>2</sup> In his study of the history and practice of research in the natural sciences, Hans-Jörg Rheinberger has demonstrated

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- 1 See Rheinberger 2007. Helga Nowotny (2011, xxiii) has highlighted the importance of STS, and in particular of actor-network theory (ANT), for understanding artistic research “in this changing epistemological, institutional, and normative landscape in the bewildering zones of uncertainties.”
  - 2 In some quarters of the art world, the life sciences are a subject of keen interest. I will not be concerned here with crossovers between life sciences and the arts, such as in BioArt, but with the more fundamental question of the very relationship between art and knowledge.

that “experimental systems” are the centre and the motor of modern scientific research. Rheinberger’s historical case studies, extending from the pre-war genetic experiments to present-day molecular biology, show that the dynamics of experimental systems can only be understood as an interplay of machines, preparations, techniques, rudimentary concepts, vague objects, protocols, research notes, and the social and institutional conditions in which these are employed. Experiments are not merely methodological vehicles to test (confirm or reject) knowledge that has already been theoretically grounded or hypothetically postulated, as classical philosophy of science would have it. Experiments are the actual generators of that knowledge—knowledge of which we previously had no knowledge at all. Experimental systems are “machines for making the future,” as Rheinberger (2006a, 25/28<sup>3</sup>) has observed, citing François Jacob, the French biologist and Nobel Prize winner.

Experimental systems are characterised by the interplay and entwinement of “technical objects” and “epistemic things”—the technical conditions under which an experiment takes place and the objects of knowledge whose emergence they enable. The distinction is functional, not material: “Whether an object functions as an epistemic or a technical entity depends on the place or ‘node’ it occupies in the experimental context” (ibid., 27/30).<sup>4</sup> In this way, “epistemic things” may turn into technical objects or instruments, thereby ensuring the relative stability in the experimental system that enables new epistemic things to appear. Systems must be “differentially reproducible,” Rheinberger argues, “if they are to still be arrangements where knowledge can be generated that lies beyond anything we could conceive or anticipate” (Rheinberger 2008, 19:28, my translation).<sup>5</sup> But it also works the other way round. Technical things, if deployed differently, may sacrifice their stability and diffuse into epistemological questions. In molecular biology, for instance, organisms, or other entities such as genes, could sometimes be things we *want to know* (epistemic things) and at other times be objects *through which we can know* (technical objects). Rheinberger speaks in this context of a synchronic intertwinement of the epistemic and the technical, and of a diachronic intertwinement of difference and reproduction.<sup>6</sup>

Rheinberger has deliberately chosen the term “thing” rather than “object” in order to signify the indeterminate, not yet crystallised status of the knowledge object. Epistemic things are “chronically underdetermined” (ibid., 14:30). Experimental systems must be sufficiently open to allow these indistinct things to come into view; enough space must be present to produce what we do not yet know. This openness and room for not-knowing, or not-yet-knowing, cannot be imposed by stern methodological procedures. As Rheinberger points out,

3 Dual page references in texts by Rheinberger refer respectively to the German and the English versions (which may slightly differ).

4 “Ob ein Objekt als epistemisches oder als technisches funktioniert, hängt von dem Platz oder dem Knoten ab, den es im experimentellen Kontext besetzt.”

5 “Experimentalsysteme müssen differentiell reproduzierbar sein, wenn sie Arrangements bleiben sollen in denen Wissen generiert wird, das auch einmal jenseits dessen liegt was man sich hat vorstellen und was man hat antizipieren können.” Cf. Rheinberger (2004, 5).

6 Rheinberger’s ideas have been significantly influenced by the writings of Jacques Derrida (he translated *De la grammatologie* into German) and Gilles Deleuze.

serendipity, intuition, and improvisation are at least as important in laboratory practice as the attempts that are made to stabilise the technical conditions in which experiments take place. That openness also implies “a kind of *subsidiary awareness* that may serve to mitigate the classical notion of dualism of thinking and being (though not entirely transcending it) as a borderline case in a relativistic epistemology” (Rheinberger 2005, 72, my translation, italics added). By “subsidiary awareness” (*nicht-fokale Aufmerksamkeit*) Rheinberger, commenting on Michael Polanyi,<sup>7</sup> is referring to a form of thinking that is obliquely based on tacit knowledge, on implicit understanding that is partly sedimented in the technical apparatus of the experimental system. This form of awareness, Rheinberger says, “would enable us to let our thinking blend into the things, and the things into our thinking, with hybrid forms in the middle that allow neither formalisation nor quantification, and which thereby keep the research moving” (*ibid.*, 72, my translation).<sup>8</sup> Epistemic things are precisely these hybrid forms in which thinking and things are interwoven.

#### ARTISTIC EXPERIMENTS

As I have pointed out elsewhere (Borgdorff 2011, 52–53), an artistic experiment cannot be simply equated with a scientific experiment. In fact, it would often appear that two different meanings of the word “experiment” are being employed. In an essay entitled “Kunst als epistemische Praxis” (Art as Epistemic Practice), Dieter Mersch (2009) has attempted to draw a clear distinction between artistic and scientific experiments. Making reference to artists such as John Cage, Karlheinz Stockhausen, and Joseph Beuys, he argues that artistic experiments are not reproducible, and are in fact usually at variance with such a requirement. Nor do they primarily seek to augment knowledge, but rather to engage in a specific form of “experimental reflexivity” that touches on the foundations of our perception (and not our understanding).

This and other descriptions of artistic experiments portray scientific experiments as method-driven, systematic, repeatable, and universalisable, as rational and causal activities. Yet as research by Rheinberger, Bruno Latour, Karin Knorr Cetina, and others has shown, ordinary laboratory practice, in the context of discovery, is far less method-based than this, and many attributes normally associated with artistic discovery—such as instability, indeterminacy, serendipity, intuition, improvisation, and a measure of “fuzziness”—also apply to scientific laboratory experiments (Rheinberger 2005, 66). Cage’s assertion that it is “simply an action the outcome of which is not foreseen” also describes

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7 “Forschung beruht auf wildem Denken, und wildes Denken setzt stummes Wissen voraus” (Rheinberger 2005, 62, my translation; Research relies on untamed thinking, and untamed thinking assumes tacit knowledge).

8 The full quotation in German is: “...eine Form nicht-fokaler Aufmerksamkeit, von der aus sich das klassische Konzept des Dualismus von Denken und Sein zwar nicht aufheben, aber vielleicht entschärfen lässt als ein erkenntnistheoretischer Grenzfall im Rahmen einer relativistischen Epistemologie. Diese würde es erlauben, das Denken in die Dingen übergehen zu lassen wie die Dinge ins Denken, mit hybriden Bildungen in der Mitte, die sich weder formalisieren noch quantifizieren lassen, und die gerade dadurch das Forschen in Gang halten.”

the scientific experiment (Cage 1959, 69, quoted in Mersch 2009, 43). The similarities are striking, and they invite closer investigation, without automatically giving reason to equate scientific experiments with artistic ones.

The term “experimental system” could give the impression of a fixed structure, whose elements relate with one another in clearly ordered, stable arrangements. In using this term, however, Rheinberger does not have a systems theory in mind, such as that of the German sociologist Niklas Luhmann. He is simply highlighting a loose coherence between the various elements of the experimental system (technical, epistemic, social, institutional elements), in both a synchronic and a diachronic sense.<sup>9</sup> In the historical and philosophical literature on science, the interest in experimental systems arose at the point where the theory-dominated view of scientific research began to make way for ideas centring on practice (cf. Schatzki, Knorr Cetina, and von Savigny 2001; Rheinberger 2004, 2). Now practices generally manifest the same characteristics as Rheinberger’s systems. Practices also show a certain coherence and persistence. The *Oxford English Dictionary* (2013) defines “practice” in one sense as “an established procedure or system.” One can therefore just as well speak of “experimental practices” as of “experimental systems,” not least because Rheinberger also applies his findings on experimental systems to academic practices outside the laboratory, such as interpretation in the humanities, and notably writing.<sup>10</sup> In the literature on the practice turn in thinking about science, practices are not regarded as mere routines guided by rules that are founded on well-ripened, if sometimes tacit, knowledge and skills. They are also recognised as dynamic, creative, constructive, and normative actions (Knorr Cetina 2001, 187; Rouse 2001, 189). In and through practices, knowledge comes into being. Scientific research is therefore anything but static; it is always “science in action” (Latour 1987).

In artistic practices, too, experience and expertise that have sedimented into tacit knowledge form a fertile ground for a dynamic, creative, and constructive process that enables the emergence of the new and the unforeseen. At the same time, artistic practices—even the most conceptual and the most transitory of them—are always technically and materially mediated (see also Borgdorff 2011, 52). Such artistic practices constitute the centre and the motor of research in the arts, just as experimental systems are the centre and motor of scientific research. This will now enable us to sharpen the focus of our question about the epistemological status of art within artistic research.

9 In his online essay “Experimental Systems,” Rheinberger (2004, 4–6) gives a more detailed description of such a system: (a) it is the smallest discrete working unit of research; (b) it must be capable of undergoing “series of differential reproductions”; (c) it is the entity “within which the material signifying units of knowledge are produced”; and (d) if experimental systems merge together or branch out, that can result in “ensembles of such systems, or experimental cultures.”

10 “Das Schreiben, so behaupte ich, ist selbst ein Experimentalsystem. Es ist eine Versuchsanordnung. Es ist nicht nur ein Aufzeichnen von Daten, Tatbeständen oder Ideen. Es ist auch nicht einfach der billige Ersatz für die lebendige Rede. Es ist nicht einfach das transparente Medium der Gedanken. Es gibt ihnen eine materielle Verfassung und zwar eine, die das Entstehen von Neuem ermöglicht” (Rheinberger 2006b, 5, my translation; Writing, I would argue, is an experimental system in its own right. It is the set-up of an experiment. It is not merely the recording of data, facts, or ideas. Nor is it just a cheap substitute for the spoken word. It is not simply the transparent medium of thoughts. It gives them a material substance, and specifically one that enables something new to emerge).

ART WORKS AS EPISTEMIC THINGS

An experimental system thus involves the realisation and articulation of epistemic things that derive their propelling force in the research from their very indeterminacy (we don't know exactly what we don't yet know [Rheinberger 2006b]). Similarly, within artistic practices, artworks are the hybrid objects, situations, or events—the epistemic things—that constitute the driving force in artistic research. To paraphrase Rheinberger (2010, 156), as long as artworks and their concepts remain vague, they generate a productive tension: in reaching out for the unknown, they become tools of research.<sup>11</sup> In the context of artistic research, artworks are the generators of that which we do not yet know. They thereby invite us to think. Artistic research is the articulation of this unfinished thinking.

It is a commonplace to argue that art transforms things and situations and robs them of their unproblematic status. Yet therein lies its epistemic potential. Artistic practices, like experimental systems, are “vehicles for materialising questions” (Rheinberger 2006a, 25/28). Knorr Cetina (2001, 181) ascribes to epistemic things the ability to infinitely unfold: “I want to characterize objects of knowledge (‘epistemic objects’) in terms of a lack in completeness of being that takes away much of the wholeness, solidity, and the thing-like character they have in our everyday conception.” This fundamental incompleteness (Adorno would say “non-identity”) points us towards an “unfolding ontology” (ibid., 182). Artworks as epistemic things can never become fully transparent, and it is this structural lack of completeness that is the fuel and the motor of a creative, constructive practice, in which meanings emerge and realities are constituted.

In the context of artistic research, artworks are epistemic things and events that have not yet been “understood” or “known”—or, to be sure, that resist any such epistemological grip. Art's knowledge potential lies partly in the tacit knowledge embodied within it and partly in its ability to continuously open new perspectives and unfold new realities. I have elsewhere described this “knowing” as pre-reflective and non-conceptual (Borgdorff 2011, 59–61). I would now like to characterise it, with Rheinberger, as a *productive not-yet-knowing* against the backdrop of an ever-receding knowledge horizon.

What is the reality of these epistemic things? What reality is being unfolded here? Rheinberger (1992, 69, my translation): “We might tentatively say that the ‘epistemic thing’ is to scientific activity what a ‘statue’ is to the art of sculpture, a ‘picture’ to the art of painting, a ‘poem’ to the art of poetry. It is the ‘scientific real’ that is engendered by scientific activity.”<sup>12</sup> Research in the arts, then, articulates the “artistic real” as engendered by art practices. In some sense, this

11 “As long as epistemic objects and their concepts remain blurred, they generate a productive tension: they reach out into the unknown and as a result they become research tools” (Rheinberger 2010, 156).

12 “Man könnte versuchsweise sagen, das ‘epistemische Ding’ sei für die wissenschaftliche Tätigkeit das Äquivalent zur ‘Skulptur’ für die Bildhauerei, zum ‘Bild’ für die Malerei, oder zum ‘Gedicht’ für die Poesie. Es ist das in der wissenschaftlichen Aktivität hervorgebrachte ‘Wissenschaftswirkliche.’” Rheinberger has adopted the term “scientific real” from Gaston Bachelard.

artistic real is more real than our everyday reality.<sup>13</sup> And this is exactly where the importance and the urgency of research in the arts lies. The artistic real is an *engendered* reality—a *factum*, something that has been made, not a *datum*, something that was given beforehand (Rheinberger 2008, 22:36). An artistic “fact,” like a scientific, social, or historical fact, is what we make real with our epistemological undertakings.

This does not mean that we must lapse into some kind of relativism, idealism, or crude constructivism: “Experimental scientists,” writes Rheinberger (and I argue that this also applies to artists), “do not read the book of nature, they do not depict reality. But they do not construct reality either. They are not engaged in platonistic exercises, in asymptotic approximations to an always presupposed essence of reality, or in bluntly social constructivist endeavours” (2006a, 282, my translation; cf. English version, 225). The dynamics of both artistic and scientific research lies in the dialectics of revelation and constitution. Artistic and scientific research is about something real, while simultaneously transforming it into what it could be.

The fundamental incompleteness or non-identity of artworks as epistemic things—of art as research—creates room for what is unthought and unexpected. “The endless game of realization of the possibles” (Rheinberger 2006a, 283/225) invites us to dwell at the frontier of what is, and of what we know or can know. The condition of art as research is a condition of contingency. The openness of art is what invites us, again and again, to see things differently.

#### “RESEARCH” AND “PUBLICATION”

At the working meeting entitled “Exposing Practice” (Zurich, 17 June 2011), Hans-Jörg Rheinberger (2011), in response to the discussion about the meaning of the term “artistic research,” drew a distinction between the epistemic and the artistic. Traditionally—that is, in the history of the sciences—the term “research” has been applied to the domain of the scientific and the epistemic, and not to that of the artistic or the arts. The term “artistic research” would seem to conflate the epistemic interest and the artistic interest. Christoph Hoffmann added that “knowledge” should be understood as propositional knowledge, and as such it is tied to epistemological standards and cannot simply be merged with conviction, belief, or aesthetic experience. I have sufficiently treated the latter issue elsewhere (Borgdorff 2011).

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<sup>13</sup> “The particular reality of the scientific real is ... its capacity to drive beyond itself, to give space to unprecedented events. It is exactly in this sense that experimental arrangements are, in a way, ‘more real’ than our good everyday reality. The reality of an epistemic thing explored within an experimental system resides in its resistance, its resilience, its capacity, as a joker and obstacle of practice, to turn around our previsions as well as our imprevisions, in a word, to give birth to unprecedented events” (Rheinberger 2004, 8). Cf. my own observations (Borgdorff 2011, 60): “When we listen to music, look at images, or identify with body movements, we are brought into touch with a reality that precedes any re-presentation in the space of the conceptual. That is the abstractness of all art, even after the long farewell to the aesthetics of early Romanticism. In a certain sense, this reality is more real, and nearer to us, than the reality we try to approach with our epistemological projects. This is the concreteness of all art, even in its most abstract forms and contents.”

At the same time, Rheinberger saw potential for linking the epistemic to the artistic (or the aesthetic). He cautioned against making the distinction between the epistemic and the aesthetic too sharp, as there are gradations, intermediate forms. There could also be mutually incompatible extremes, but in a chain of interactions à la Latour these might eventually be brought together. It may therefore be insufficient to think about the sciences without aspects of the artistic. And, on the other hand, in thinking about the arts one would also consider the epistemic.<sup>14</sup>

Rheinberger was right, of course, to point out that the term “research” is historically associated with the domain of the sciences (although it is also used in other contexts). As for the epistemic, however, there are also historical ties with the artistic, in particular in the tradition of philosophical aesthetics. Moreover, it is quite possible, though perhaps not very common, that the meaning of certain words changes because their usage changes, either now or in the future. Often, in fact, the very history of what is denoted by those words, or at least our interpretation of that history, may change.

A second issue addressed at the meeting was what the word “publication” might mean in the context of artistic research. Hoffmann drew a clear distinction here between research and publication—in other words, between the context of discovery and the context of justification. Scientific and academic publications, including those in the humanities, according to Hoffmann, always involve the presentation of the ultimate findings or results, in the sense of produced facts, which stand at the end of a possibly lengthy research chain.

Ultimate findings, however, can only be conceived of at the extreme—as unreachable limiting cases or as regulative ideas or ideals—for no ultimate research results actually exist, just as no ultimate foundation exists for our knowledge claims. In this sense, every produced and justified fact is a tentative fact, and therefore always part of a continuing discovery, part of a science that is transforming itself.

Contemporary theory of science (and science and technology studies in particular) shows us that it is untenable, and not even defensible, to maintain a strict separation between the context of discovery and the context of justification (and between values and facts). Publications are not terminal stations in a scientific quest; they are always tentative representations of what is surmised. This basically open nature of “publications” is not a shortcoming that we have to live with, rather—in the case of artistic research—it is the starting point. Publications in the sphere of artistic research are better understood as contributions to a discursive field that is constantly in motion. As epistemic things, artworks not only play a constitutive role in a process of discovery that eventually culminates in produced and justified facts. They are not just generators of knowledge. They are also (and I differ here with Rheinberger’s view) that which is generated. This alliance of constitution and realisation, of discovery and justification, may be called, with Latour (1999, 135), *constructivist realism*.

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<sup>14</sup> Based on an audio recording of the working meeting (Rheinberger 2011).

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