

ORPHEUS

Transpositions

Aesthetico-Epistemic Operators
in Artistic Research

INSTITUTE

Edited by Michael Schwab

SERIES

The background of the cover features a complex, abstract geometric structure composed of thin, dark lines. These lines intersect at various points, creating a series of overlapping triangles and polygons. The lines extend across the entire page, with some forming a central, more defined shape that resembles a stylized, multi-faceted object or a network of connections. The overall effect is one of dynamic, interconnectedness and spatial complexity.

Transpositions:
Aesthetico-Epistemic Operators in Artistic Research

TRANSPOSITIONS: AESTHETICO- EPISTEMIC OPERATORS IN ARTISTIC RESEARCH

Edited by Michael Schwab

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Introduction

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While notions of transposition have emerged in different disciplines and fields of study, there seems to be something particular about how the artistic appropriation of the term articulates the movement of research. Rather than repeating basic definitions of the concept as it is used, for instance, in music, where it refers to a change of the key of a composition, or in linear algebra, where the term denotes the switching of rows and columns in a matrix, the authors of this book speculate what kind of transpositional operations may be implied as research develops. While it is impossible to compare the diverse approaches collected here to find a single new definition of the notion, there seems to be sufficient agreement that the kinds of transposition, which are of interest in the context of artistic research, operate outside registers of representation, resemblance, or mimesis. Since these notions suggest a functional identity between two things, for instance, a score and a performance or a sitter and his or her portrait, the change of position that a transposition affords cannot be so potent that it disturbs this identity. Conversely, if the change of position affects what something is—that is, if an identity does not underlie a difference but may emerge from it—a new non-representational, transpositional logic is required in which something at its previous position is not easily reconciled with what appears at its new position, altered as it is by the move. We may also express this by saying that the logic of representation is singular, remaining the same across different instances, while the logic of transposition is multiple, needing to be transposed from instance to instance. The positional specificity that is part of transpositionality—whether in space, time, or otherwise determined—thus explains why it has been so difficult to approach transpositional operations philosophically, and why artistic research, which is sensitive to the specifics of what is at hand, may present new options not only for a bottom-up rather than top-down approach but also for an approach for which there is no “up,” only positions that result from movement.

Such transpositional operations require a particular emphasis on the differential aspects of the relationships enacted between positions. To do so, a number of chapters refer to quantum mechanics, for example, through notions of entanglement as discussed by Karen Barad (2007), while others emphasise literary devices, such as analogy or metaphor to show that language has always had the ability to create relationships with the unknown, working with it rather than against it. Hence, a number of the book’s authors suggest that transpositional operations may even be fundamental to the formation of meaning despite the difficulty of assessing their epistemic importance. A focus on the

multiple logic of transposition complicates our *episteme*, allowing more complex phenomena to emerge that cannot be traced formally. The methodologies, epistemologies, and aesthetics that have been developed under the umbrella of “artistic research,” in particular under transdisciplinary conditions, may offer relevant resources in order to productively engage such complications.

At its limits this leads to more radical understandings of existent definitions of “transposition,” suspending given orders in favour of orders emergent from materially situated, concrete operations at hand in a practice lending a more speculative dimension to an otherwise merely functional concept. This book accepts the resulting radicalisation of the concept of “transposition,” and by carrying “artistic research” in its subtitle suggests that artistic research may be a context in which seemingly functional concepts can gain a new lease of life as new potentials become emphasised.

Such work on concepts is not without a precursor. In my previous book in this series, *Experimental Systems: Future Knowledge in Artistic Research* (Schwab 2013a), for instance, I proposed a more coherent use of Hans-Jörg Rheinberger’s term “experimental system” in the context of artistic research, made possible by Rheinberger’s work to complicate everyday notions of “experimental system” as they are used by practitioners and not observers (Rheinberger 1997, 19). Practitioners, according to this assumption, use concepts differently—not as foundations for a theory to be confirmed, but as operational “scarcely imaginable basic concepts” (Rheinberger, *ibid.*, here quoting Freud) that drive knowledge for as long as they are productive. Such practitioners’ concepts have the potential to exceed their status as “technical objects” and become “epistemic things.” While the former are needed in a research environment to create stable conditions, the latter are what is epistemically underdetermined and, thus, able to develop into future knowledge. As Rheinberger suggests, a certain amount of deconstructive labour is needed not so much to deploy such concepts as those practitioners do but to articulate them together with their characteristic fuzziness or “epistemic noise,” as Cecile Malaspina (2014), one of the authors of the present volume, might describe it.

The same is true, to introduce a second example, of Catherine Malabou’s work on the brain, where with “plasticity” she comes across a concept central to neuroscience—“we run into this word in every neurology department of every medical school and of every university hospital” (Malabou 2008, 4). Yet, despite the ubiquity of the concept, she argues that through a confusion with notions of “flexibility” it had not been realised that “the brain is not already made” (*ibid.*, 7) and that not only neuroscience but all aspects of culture are part of a process of formation outside which nothing is given. Like “experimental system,” “plasticity” may be a concept readily used to describe the crucial, productive part of a system that awaits complication. As such concepts are taken on, new potentials are realised not determined by what we believe them to mean. This includes new possibilities for action—now, however, not in control of a phenomenon but deeply implied.

As these examples from non-artistic disciplines illustrate, when referring to the relevance of artistic research for such operations, the suggestion is not

that they can only be made from within the field of artistic research; rather, today something “artistic” seems to be needed in other areas of research in order to realise the complicated relationships we have with knowledge objects. Hence, as research moves into the field of art, what changes are not the operations themselves but their point of origin. When both Rheinberger and Malabou need historically established concepts to work from, foregrounding deconstructive approaches while keeping a certain degree of distance, artistic researchers seem to have the luxury to jump right in simply appropriating or inventing concepts whose plasticity can be supplied by artistically staging them as epistemic things. If they work, new understanding will be gained; if they fail to work, we may encounter forced acting, incoherent scripts, and pointless monologues. In the absence of deeper historical grounding, there is no other choice but to take this risk. It may be those kinds of characteristics that the development towards artistic research has brought to the table of knowledge production in general.

Moreover, rather than appealing to a history or even a discipline of “artistic research” to legitimise research with more or less unspecified context, in this respect, too, the game can be turned on its head, for “artistic research” may not be a thing of the past on which we build but a question of the future: how can a project keep open the concept of “artistic research” while confirming its relevance? A transposition, then, describes not only an operation used within artistic research but also an operation *with* artistic research—that is, “artistic research” emergent as transposition of a project, as speculation on how else knowledge can be gained and what notions of knowledge and perhaps even art are suitable to capture a project’s achievements.

Rather than collecting chapters that confirm a certain definition of “transposition,” I invited the authors of this book—drawn from a wide artistic and conceptual background but still invested in artistic research—to respond to a moment of practice, which the book proposal exemplified with reference to Robert Smithson’s *Non-Sites*, but for which other contemporary art examples could also have been used. In retrospect, the degree to which Smithson has all but disappeared from this book was initially surprising to me but later understood as confirmation of how much the authors made the concept their own providing their own historical examples or presenting their own practice. I am grateful for that.

Smithson’s *Non-Sites*, a body of work realised in 1968–69, consists of (1) installations of rock or soil samples displayed in containers reminiscent of his earlier sculptures informed by crystallography (e.g., *A Nonsite, Pine Barrens, New Jersey*, 1968 or *A Nonsite, Franklin, New Jersey*, 1968) or between mirrors not unlike his *Mirror Displacements* (e.g., *Nonsite—Essen Soil and Mirrors*, 1969), (2) a photograph or a map of the site from where the samples were collected, and (3) textual elements that explain relationships between site and non-site, such as: “Each subdivision of the *Nonsite* contains sand from the *site* shown on the map. Tours between the *Nonsite* and the *site* are possible. The red dot on the map is the place where the sand was collected” (Smithson 1996, 364). My book proposal

suggested that these relationships are transpositional, an interpretation also based on Smithson's "A Provisional Theory of Non-Sites" from which the above quotation is taken.

In this short, posthumously published text written at the time when the Pine Barrens *Non-Site* was made, Smithson refers to a map, plan, or diagram as a "logical picture" [that] differs from a natural or realistic picture in that it rarely looks like the thing it stands for. It is a two-dimensional *analogy* or *metaphor*—"A is Z" (Smithson 1996, 364). Accordingly, *Non-Sites* are three-dimensional logical pictures in which resemblance is replaced by "an entirely 'new sense of metaphor' free of natural or realistic expressive content." They are points of entry that allow for a "fictitious trip" to the site inside a "vast metaphor" in order to make aesthetic discoveries impossible if naturalistic resemblance was not drained allowing for "abstract," that is, logical, representation.

Here, then, we have all the ingredients required for the radical type of transposition I mentioned above: two positions (site/gallery) between which a logic ("vast metaphor") is installed allowing for a move from the one to the other by structures of difference and not identity. The site as it moves from its "actual" position to the gallery has to change should it remain "the site." Smithson expresses this change as negation (the site becomes non-site as its position is moved to the gallery), while transposition may not always need to proceed in opposites to work: had Smithson's site moved, say, halfway between Pine Barrens to the Dwan Gallery on Fifty-Seventh Street in New York City where the piece was originally shown—so somewhere in or around Marlboro Township, NJ, as I estimate it from Google Maps—it may have still been a non-site, albeit a non-site with presumably different characteristics allowing for different "trips" and different discoveries.

From an orthodox perspective these more extreme transpositions may be dubious since seen from afar it looks like anything could be a non-site/transposition given that little in it resembled its original appearance—as if a photograph taken of a house showed a tree, or a cow, or a bag . . . and we'd be fine with it. For contemporary art, though, hinted at here with reference to Smithson, "anything goes" is not a threat but a liberation, but only if the specificity of a particular transposition is respected: while *in theory* all could be possible, *in practice*, we are given very concrete propositions understandable in their transpositionality only from within a concrete logic spread out across the transposition. This logic is immanent and not transferable—only perhaps as its transposition into a new piece.

Putting forward Smithson's *Non-Sites* as an example suggests that such transpositional operations are at least relevant for contemporary art, although it would require further research to establish precisely how relevant they are. Personally, I would speculate that notions implied by contemporary art, such as "post-medium" or "post-conceptual" require at least some degree of transpositionality to work, since in both cases contemporary art aspires to exceed external frames of reference (medium/concept) while operating according to a more complex, often open logic.

Introduction

Hence, the example of Smithson also helps explain the qualifier “aesthetico-epistemic” for transpositional operations highlighted in the book title. “Aesthetic” here suggests neither particular modes of expression or perception nor criteria concerning the value of art but constellations of materials within the concrete that beyond their conceptual constitutions need to be apprehended aesthetically. At the same time, given that the logic is also specific, the apprehension necessary to access what is at hand also has an epistemological dimension since each transposition will teach us in its specific way how identity and hence knowledge can be achieved across a difference not already breached by resemblance. Thus, in transpositions of the kind alluded to here, the aesthetic and the epistemological imply and need each other for the transposition to take shape and “work.”

When looking at the literature that employs notions of transposition, it is clear there is one person, Rosi Braidotti, who has developed the epistemological implications of the notion more than anybody else. I am immensely grateful that Braidotti and her publisher allowed us to reprint the prologue to her book *Transpositions* (Braidotti 2006, 1–10) in which she defines her use of the term. While the text mentions “the creative” at crucial moments, being focused on questions of ethics and politics, it does not discuss artistic processes of creation under conditions of contemporaneity, although it is implied. The need for creative moments, though, may support my argument from above that artistic modes may no longer be limited to the arts and that artistic (research) expertise may hence matter to developments in non-artistic fields, or, at least, political action. For the purpose of the project presented here, I would like to emphasise one sentence in particular, which reads: “Transposition is a scientific theory that stresses the experience of creative insight in engendering other, alternative ways of knowing” (Braidotti 2006, 6; see also page 27 of Braidotti’s chapter in the present book). I hope that this book can contribute to such a theory—whatever “theory” may mean under conditions of embodiment—and also that it renders visible the relationships between a developing notion of “artistic research” and the wider political as well as philosophical field.

In “Abandoning Art in the Name of Art: Transpositional Logic in Artistic Research,” Esa Kirkkopelto proposes that in working with transpositions from art to non-art, artistic research is able to critically engage with art practices whose artistic status often goes unchallenged in orthodox art-making. In effect, there can be no critical practice or artistic research if the identity of art is not challenged beyond avant-gardist or non-art contexts, which historically have only questioned art in order to reconfirm it. According to Kirkkopelto, with artistic research an artistic space external to art has been created that allows bringing into view the very concept of art and the power it exerts on its practitioners. At the same time, once the identity of art is challenged and with it the orientation it gives to makers, new relationships become possible based on affinities rather than the recognition of stable identities used in the process. Hence, transpositions must be “methodological hypotheses,” that is, not-

instrumentalisable, open-ended processes of transformation that affect the very practices themselves and, hence, reality outside art/non-art dichotomies.

Annette Arlander suggests a link between Karen Barad's work on entanglements and intra-actions and notions of transposition in her chapter, "Calling the Dragon, Holding Hands with Junipers: Transpositions in Practice." Rather than looking at a transposition to take place between two stable entities, Arlander proposes with Barad that transpositions are generative of the objects they appear to be operating on. As if to test this understanding, Arlander presents an extensive description of *Animal Years*, a large body of research consisting of twelve year-long projects between 2002 and 2014 performed and filmed in various locations across the globe. She recounts how the research evolved through transpositions often in relation to accidental occurrences—how, for instance, changes in some aspects (e.g., day/night) result in other aspects changing (e.g., camera position) so that a play of "equivalences" could emerge and with it a new kind of identity from which the various projects could retrospectively be seen as variations. The chapter finishes with a discussion of the challenges that working with transpositions pose, insofar as what seems formally easy may also become hard in practice, a sign that the movement of transpositions has its own fragile logic outside anybody's control.

In her chapter "Aberrant Likenesses," Lucia D'Errico asks how in the context of Western notated music resemblance can be produced through non-resembling means, for instance, when a performer performs a musical score. As she describes, depending on transpositional approaches to performance, it can become possible to play a piece not by remembering but by forgetting it. While remembering proceeds by formal relationships of resemblance, forgetting allows one to be "excited by the original piece but not directed towards it." Forgetting requires remembering—and hence the skills of the musicians—but only as a prerequisite; it does not lead to "better" performances but to living relationships between performer and score through the possibility that performers may approach a piece from unusual, "aberrant" angles not anticipated by the composer but part of the potentials that the score nevertheless holds. This leads ultimately to the insight that there is no "original sense" in a composition to be performed but almost a duty of the performer to engage with the proliferation of all the composition's possible senses.

In "Work of Art as Analyst as Work of Art," Laura González proposes yet another language in which notions of interpretation can be disrupted. She imagines a work of art not as being on the couch of an analyst who masters the encounter leading to the eventual understanding of the work, but rather as though we are on the couch and the work of art is doing its work as it "evenly hovers' its attention on us," as González says quoting Freud. She argues that this position gives back to art its characteristic mystery, which is under threat in its normal position as the object of analysis, making the transposition of the complete setting necessary, as was perhaps anticipated by Freud himself in front of a work of art—in his case, the Acropolis. In front of the work, he learns to question the knowledge he has of himself. Accordingly, a transposition is also an epistemological undoing that creates a space for questions rather than

answers, which sits in contrasts to the Lacanian conceptualisation of the “universality” perhaps prolonging ideas of mastery rather than those of the more radical kinds of knowledges that art might bring and that psychoanalysis seems only ever able to imagine in a continuous deferral of an analysis’s ending.

Leif Dahlberg sets out to trace transpositional operations in Pierre Huyghe and Philippe Parreno’s project *Annlee* (1999–2003) in a chapter entitled “Annlee; or, Transposition as Artistic Device.” Dahlberg proposes to interpret the work guided by Huyghe’s own account of his interest in “topological transformation”—that is, by a “deformation of the same” rather than a translation of something into something else. Devices used include metaphor, metonym, and metalepsis, understood here as the *mise-en-abyme* of elements of speech, creating a reality effect for the fictional displacement. Dahlberg, like Viktor Shklovsky, sees the purpose of such transpositions as a defamiliarisation of the material that allows us to see for ourselves rather than recognise what we should be seeing. In other words, there are epistemological implications in transpositional aesthetics of the kind employed by Huyghe and Parreno lending contemporary art a specific purpose. However, as exemplified by the question of Annlee’s location after the project was terminated by the artists, the material itself rather than remaining a comparatively simple point of reference—be it the manga figure of Annlee, the moon landings, or Jules Verne’s novel *Journey to the Centre of the Earth*—becomes increasingly complex and alive.

Tor-Finn Malum Fitje looks at metaphors employed in the sciences. In his chapter, “Transposing the Unseen: The Metaphors of Modern Physics,” he argues that science deploys metaphors, and hence transpositions, even when it seemingly operates with information. Malum Fitje follows Aristotle’s definition of metaphors, as devices to approach something that is less known through what is better known. This is particularly important when concepts are lacking rather than being less familiar, such as when metaphors in cutting-edge science occupy the places of emergent knowledge over time, becoming the reality physicists work with rather than a reality “out there” that they aim to represent. As Malum Fitje suggests, quantum mechanics may be one consequence from such use of transpositions as it accepts that observer and observed are implied and observation is, as a consequence, limited. Highlighting the creative act in science through the invention of metaphors, Malum Fitje argues for a closer proximity between artistic and scientific research keeping in mind that by accepting transpositionality as a basic operation of knowledge, while we may be able to understand something better, we are never able to understand it completely.

In “Staging Collisions: On Behaviour” David Pirrò also makes reference to quantum mechanics highlighting diffraction, that is, the bending of light waves at the corners of a slit, as characteristics both of transpositions and of his text, which is likewise conceived as doing something to the object that it is seemingly about. As in physics, where light after the slit experiment could be seen neither as a particle nor as a wave alone, transpositions, too, change what they are meant to describe. As the title of the chapter suggests, Pirrò conceives of transpositions both in science and in art as “staged collisions,” that is, as a

differential and, more importantly, relational setting resulting in a coherent behaviour of a system and its elements. Rather than being a tool for analysis, transpositions complexify their object allowing us to understand something by keeping “intact the phenomenon without breaking it apart and therefore neutralising the interactions between its parts,” as he says. As analysis is suspended, compound states become possible that resist integration even in terms of the operations that led to them, which as Pirrò suggests would need themselves to be complexified. Hence, ultimately, due to their inherent complexity, transpositions are deemed incomparable.

Hanns Holger Rutz defines transpositions quite specifically in his chapter, “Algorithms under Reconfiguration,” as the change that reconfigurations of an algorithmic object effect on a qualitative level. For this to make sense, algorithms need to be understood not as functional objects that are created to perform certain operations but as elements in experimental configurations in flux. Once transpositions are experienced it becomes possible to return to the reconfigurations to better understand moments of change. Rutz explains this using examples from his own artistic practice around the concepts of rhythm, growth, and shrinkage as well as representation. One aspect that becomes apparent is that there is no meaningful separation between “the computer” and other non-technical sites of algorithmic practice; another aspect lies in the disappearance of subject and object positions in the act of writing itself. However, while reconfigurations may be gradual, their effect on the transpositional level of quality is discontinuous, suggesting concerns not dissimilar to the effects that lend quantum mechanics its name.

In his chapter, “Speculations on Transpositional Photography,” Birk Weiberg describes a shift he sees in recent photographic practice away from representational registers of translation to modes of transposition. Departing from Alfredo Cramerotti’s notion of “aesthetic journalism,” which aims at complicating our relationships to documentary photography by questioning their status as documents and hence our possibility to bear witness, Weiberg does not so much focus on the untold story that aesthetic journalism may be said to convey but the transpositional means by which it operates. These operations happen in the first instance not in a photograph but *with* a photograph as it becomes part of a site-specific installation in the medium of art. It is the relation of such a new site to an initial site that dominates what information a photograph may carry; as explained with the help of Steve McQueen’s film *Western Deep*, this allows virtually abstract images to maintain documentary relationships. However, this also folds back on more conventional photographs, where temporal relationships that place a motive always in the past may be replaced by spatial relationships that a viewer or audience enters. To Weiberg, however, such transpositional operations within aesthetic photography have already been replaced by a new generation of artists who seek not so much transpositional relationships between specific places but to engage the specificity of transpositions themselves. This has, as Weiberg suggests, deeply temporal implications.

Using examples by Marcel Duchamp and Roland Barthes, in my own chapter, “Transpositionality and Artistic Research,” I propose to understand transpos-

itions as differential constructs that may but need not “decay” into representation, that is, conventional forms of knowledge. In fact, I argue that certain types of art and artistic research tend towards a continuing suspension of representation proposing new and more complex epistemic objects that, while exceeding conceptual understanding, can still be grasped aesthetically through further transpositions. However, while historicisation, like representation, may be based on transpositions, I contend that transpositions need neither history nor representation to be of value for artistic research. Thus, the chapter speculates that, as a particular kind of “science,” artistic research has the tendency towards the concrete for which it requires transpositional operations. Both Duchamp and Barthes hinted at this direction: the latter by wondering about an “impossible science of the unique being,” the former through his involvement with pataphysics.

Hans-Jörg Rheinberger, already mentioned at the beginning of this introduction, believes that all forms of scientific practice rely on transpositions. In his chapter, “Transpositions: From Traces through Data to Models and Simulations,” he focuses on the experimental sciences and here in particular on a transpositional trajectory in which phenomena are successively recontextualised to become epistemically available. Each transpositional step adds its own qualities: when phenomena are transposed into traces, they first become scientifically available; when traces are coded in and as data, the scientific objects can be stored as well as retrieved and hence made durable; when they are transposed into models, “tentative wholes” can be formed. Hence models allow for relations between data, which is, however, only possible for the price of simplifications counteracted to some degree by the differential combination of different models and their different data sets. At this last stage, through simulations, in contemporary science, models can be rendered active and hence not only rely on but also produce data themselves. Here, Rheinberger argues, a new space opens up, which, not resting on experimental data, may require new kinds of experimental systems.

In her chapter, simply called “Transposition,” Cecile Malaspina uses a quotation by French historian of philosophy Emile Brehier, who places the notion of transposition at the heart of the Platonic enterprise, and, therefore, at the core of the unfolding history of philosophy. This suggests not only how deep the work of transposition runs but also how ubiquitous transposition is and therefore how potentially transparent as it becomes a *sine qua non* for philosophical method. By transparency, Malaspina means the potentially implicit “belief that a structuring principle can be extended indefinitely over positive (experienced) and speculative (metaphysical) reality,” promising to englobe all possible epistemological and ontological domains. However, the fact that transpositions jump between and hence also connect different domains suggests a generative capacity not along a line of simple repetition of form but along one of formal or informal (metaphorical) permutation. The question is whether transposition can vary in its “degree of freedom” to operate formally as well as informally and what levels of complexity it either enables or stifles in thought.

Rather than directly discussing the concept of transposition, Paulo de Assis focuses his chapter, “Transduction and Ensembles of Transducers: Relaying Flows of Intensities in Performance,” on Gilbert Simondon’s key concept of transduction, which he considers to be a broader phenomenon that includes transposition as one of its particular modes of occurrence. Although the notion has technological origins, de Assis applies the concept to art and music performance not only to better describe what happens during a performative situation but also to liberate music performance from formalisms and subjectivisms of various kinds, and to refocus music-making on the radical here-and-now of the continuous relay of “flows of intensities.” What are at stake are ultimately processes of permanent individuation, that is, how something becomes something else without ever becoming a “being.” While Deleuze and Guattari develop their concept of *heccéité* from Duns Scotus’s *haecceitas* and from Simondon’s notion of *eccéité*, de Assis uses his analysis of transduction to postulate “micro-haecceities,” a concept more suitable to what happens during performance. Different to *heccéité*, “micro haecceities . . . do not suggest (stable) contemplation, but rather rash and metastable actions,” thus implying not only the body of the performer but also all other human and non-human actants that come together in fast-evolving transductive processes, which only look like homogenous experiences from the outside.

With “transmutation” Dieter Mersch proposes yet another notion relevant to processes of transposition. In “Alchemistic Transpositions: On Artistic Practices of Transmutation and Transition” he highlights not only that art qua *poiēsis* has a particular investment in such practices but also, by stressing alchemy, that there are alternative modes of thinking at play that cannot simply be reduced to a functional apparatus. Taking Adorno’s understanding of “constellation” as a starting point, Mersch suggests that the basic operation of transposition is not synthesis but a coming together and apart of sense and non-sense before we can speak of signification. The before and after of this operation are connected by an act that cannot be grasped by structural analysis; rather, it is artistic thought that is invested in the always specific play of difference aimed at reflexivity. It is through the transposition of differences that art in an “event of situating” is able to induce reflexivity, “another thought,” and, hence, new knowledges. According to Mersch, this reflexivity cannot be a reflection on art by the artists or an audience, but must be the self-reflection of art itself where the new constellation performs, evidences, or exposed something that could otherwise not be had.

In “Ineffable Dispositions,” Mika Elo looks at what he calls the “artistic research syndrome” through the wider perspective of shifting cultural techniques as analysed by Sybille Krämer and Horst Bredekamp. Rather than understanding “syndrome” as expressing pathologies, Elo uses it to emphasise that there is no single symptom and that each analysis and, hence, diagnoses can give only a partial view. Focusing on writing as transpositional activity and referring to Walter Benjamin, Elo seeks a “magical” mode of writing for artistic research that does not instrumentalise art remaining sensitive to a medium’s

workings; precisely, that it does not communicate something through something else, but that it, being its own medium, operates without mediation, making writing valuable as transpositional activity. Such “magical writing” aligns writing with art; however, it does so not to make all media ultimately the same, but so that their multiplicity first allows for the possibility of sense. Sense is, thus, necessarily distributed “across . . . local arrangements with relational particularity” and hence enacted transpositionally. For this to become possible, artistic research should be seen as a *dispositif* rather than a discipline with a heightened attention on the consistency of transpositional operations rather than the form they take.

Expanding on Giorgio Agamben’s work, in her chapter, “Without Remainder or Residue: Example, Making Use, Transposition,” Yve Lomax reflects on the power of examples to connect to one another before a rule emerges that is then taken to presuppose the examples. Lomax sees the move from example to example as transposition, which, however, cannot be the rule to which examples conform, but, rather, must be part of the very constitution of examples outside the dichotomy of the particular and the general. Hence the transpositional movement from example to example displaces the rule and highlights the importance of the particular for the act of thinking. When a particular is taken as an example it is transformed and first made intelligible, ultimately allowing artistic research “to make an exposition of that which is reached without presupposition.” Thus, transpositions bring particulars together by a movement across and through them rather than by claiming a place or a position at which they are to be assembled. Lomax speculates that such movement could amount to a “paradigmatic method” in contrast to methods based on a hypothesis and, hence, presupposition. Such a method could describe a new ethics where examples are not instrumentally used and appropriated, and where “use” in transpositions becomes a question of emergence and relation rather than ownership.

When I conceived of this book I did not quite realise the network of concepts, projects, and people that it would eventually join. In hindsight, as I try to tease some of this apart I realise that the book—beyond developing the notion of “transposition”—also embodies part of a very personal journey, which in itself can be thought of as transpositional.

It is probably fair to say that most junctures were accidental and very little planned, supporting the open status of the notion of “transposition.” When I started my doctorate at the Royal College of Art in London (2002–8) I had very little idea about the potential that “artistic research” could bring to my thinking and doing far beyond my practice as an artist as it is usually understood. I am very happy that Yve Lomax agreed to contribute a chapter; Yve has had a massive effect on how my research and in particular its articulation developed at the time.

When I first discussed the notion of “exposition” at the University of the Arts in Berne with Florian Dombos and later, while the Society for Artistic Research was founded, with Henk Borgdorff, I did not realise how much of the notion was

a reflection on my previous experiences, but also a programme that I seemed to have set for myself. Florian and Henk, both in their different ways, were crucial for getting off the ground the *Journal for Artistic Research* (JAR), whose editor-in-chief I still am. While for some establishing a peer-reviewed journal may simply signal that artistic research has caught up with widely accepted standards of scientific publishing, when thinking of it as transposition, the intellectual project may be grasped more clearly: what are artistically acceptable forms of (self-) instituting¹ practice as research?

From today's vantage point I can see that our work on issues of articulation enabled a complete rethinking of how art might work. Together with Henk, I published *The Exposition of Artistic Research: Publishing Art in Academia* (2014), in an attempt to further develop the potential of expositiveness, the conceptual backbone of the journal (Schwab 2011). I have had the pleasure to work with Annette Arlander and Mika Elo, who both contributed chapters to this book, for the journal since the very beginning. In fact, I had met Mika for the first time during an exhibition that Florian curated together with Ellen Blumenstein during the 2008 Berlin conference "Figurations of Knowledge," organised by the European branch of the Society for Literature, Science, and Art, where I was quick in asking Mika for a copy of his paper. It is through Mika that I have come to know and respect Esa Kirkkopelto's work, which I see as very pertinent to questions of exposition. Through an invitation by Geoff Cox, I was also able to expand my work on expositiveness further as part of my teaching for the Transart Institute in 2014. It is through this connection that I got to know Laura González, who was happy to contribute a chapter to the book. In effect, if the notion of exposition was necessary to establish the institutional transposition of artistic practice into research for which JAR stands, to my mind, the discussions in these and other networks also led to a conceptual transposition of the very notion of exposition, which appears now to have always been grounded in what today I would call transpositiveness.

It is also thanks to Florian that in 2009 I travelled to the Sensuous Knowledge 6 conference in Bergen, where I met for the first time Peter Dejans, the director of the Orpheus Institute. In fact, during the conference, Florian also introduced me to Gerhard Eckel, whom he had worked with at the Fraunhofer Institute, but I did not realise until later how well our practices would complement each other. Peter invited me to become a research fellow at the Orpheus Institute, where I met Paulo de Assis, who also contributed a chapter, and where a little later I met Gerhard again, who was visiting from the University of Music and Performing Arts Graz; together with David Pirrò, another author of this book, we made *Rebody*, an audio-visual work that has ever since acted as a point of reference in our collaborations. However, it was the Orpheus Institute's research focus on "artistic experimentation" that exerted the most dynamics, since it formed the basis for my close work with Paulo in his major research project MusicExperiment21 funded by the European Research Council. Lucia

1 On the question of "institution" and artistic research, see in particular Esa Kirkkopelto's text "Artistic Research as Institutional Practice" (Kirkkopelto 2015).

D’Errico, who also added a chapter, has been contributing invaluable to Paulo’s project as a doctoral researcher. The research focus as well as the preparations for Paulo’s project made me start to engage with Hans-Jörg Rheinberger’s work on experimental systems, eventually leading to *Experimental Systems: Future Knowledge in Artistic Research* (2013a), my previous volume in the Orpheus Institute Series. I am really happy that Hans-Jörg also contributed a chapter to this book, since to me it confirms how practices of experimentation and transposition are connected. However, within the trajectory that I propose here, the concept of “experimental system” does not have the same transpositional status as, for example, “exposition”: the important role science plays in Hans-Jörg’s conception of the representational space has posed too great a problem (cf. Schwab 2013a, Introduction). Still, in hindsight, linking experiment and exposition seems inevitable, preventing artistic articulations from being (mis-) understood as (passive) modes of communication.

I didn’t quite realise at the time to what degree notions of transposition were implied in my understanding of experimental systems and their graph-ematicity in particular, but partly as result of my work for MusicExperiment21 and inspired by our work on *Rebody*, Gerhard and I managed to receive funding from the Austrian Science Fund for a new project, Transpositions: Artistic Data Exploration, in which David was also involved; David has since joined forces with Hanns Holger Rutz, who also added a chapter here, for their new project Algorithms That Matter. I was actually already in contact with Hanns Holger, since he was one of the first to refer to the *Experimental Systems* book in his own research. Having had the opportunity through the Transpositions project to further develop my work as a post-conceptual visual artist, it is now clear to me that had our work on the notion of transposition remained only conceptual, we would probably not have been able to sufficiently develop the relevance of transpositionality for artistic practice. Drawings, such as the one on the cover of this book, are the only way I can think of transpositions, a fact Gerhard reminded me about when he pointed out that it was in my artist’s book *Paris* (Schwab 2008, 2nd ed. 2013b), which was commissioned and edited by Yve, in which I first conceived of my drawings as “photography . . . transposed” (Schwab 2013b, 11). In this context I should probably mention that as far as visual imagination is concerned, to me, “transposition” is closely related to “figure,” a term that had been guiding my visual practice² before “transposition” allowed me to better conceive how a figure operates (as opposed to what it is).

I first met Cecile Malaspina at the Royal College of Art, but really got to appreciate her research during a study day in Ghent as part of MusicExperiment21, which was one of the reasons for asking her to get involved in the research event DA TA Rush at the Angewandte Innovation Lab, which was part of the Transpositions project but where Paulo and Lucia also joined with their performances of *Rasch*¹⁵⁻²². In the context of the project’s final conference in

² See my article “Dessiner le trans-corps” (English: “Drawing the Trans-body”) for a short summary and explanation (Schwab 2015). For the artistic outcomes of the Transpositions project see <https://www.researchcatalogue.net/view/94538/94539> as well as the catalogue of the project at <https://www.researchcatalogue.net/view/94538/453134>.

Stockholm, both Leif Dahlberg and Tor-Finn Malum Fitje got involved, each adding a chapter.

In the meantime, I had continued to work with Florian in the context of the Zurich University of Arts, to which he had moved, on the theme of research articulations, in particular in an electronic context. As part of a research group that Florian set up in Zurich, I met Birk Weiberg, who also contributed a chapter, as well as Dieter Mersch, with whom Florian actually shares an office. In the last years, Dieter's work has strongly influenced the development of philosophies of artistic research.

I see all this work as part of a growing network of people and concerns centred around the task of artistic research. Still, and this is part of my own self-critique, I don't think that this work has yet sufficiently developed beyond its own disciplinary confines. When researching notions of transposition I was astonished, first, by how little research there was and, second, that with Rosi Braidotti I found a thinker whose work is highly pertinent to the field, but where the discourses do not sufficiently overlap. This is to say that the field as a whole and my own work in particular have so far failed to realise their proper political potential outside a struggle for or against art. I am grateful that she was willing to give permission to reprint the introduction to her book. Personally, it serves me as a reminder of work to come.

Apart from being as transparent as possible about the author list of this book and the fact that it does *not* represent a distanced view on what is going on in the field, I list all these connections—some long-standing, some very fresh; some deep, some less so—to suggest the essential situatedness of research practice also on a very personal level. When delivering chapters for books, we often don't reflect on how much help we have received in getting to where we find ourselves having ended up. Thank you to everybody on this list and to those who I haven't managed to squeeze in.

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Transformations^{*}

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We who dwell in post-industrial societies live in a world that is not only geno-centric (Fausto-Sterling 2000, 235), but also lucratively and unjustly so. In this chapter, I want to address the ethical temperature or fibre of our era, also known as the technologically driven historical phase of advanced capitalism. The project is motivated by the concern that the desire for social justice and progressive transformation that is one of the salient manifestations of our ethical consciousness, seems to be dwindling today. Times are definitely no longer a-changing.

Nothing expresses this cultural climate better than the media's insistence on celebrating, with insuppressible glee, "the end of ideologies." For the last thirty years I have sat through regular waves of celebration of the multiple deaths of every available "ideology." So much so, that I am almost tempted to define ideologies as movements that never cease to end. When will a new one actually start? The emphatic reiteration of the decline of "ideology" finds its latest incarnation in the 1989 fall of the Berlin Wall. It translates into a one-way political model, namely that all programmes of change have exhausted their historical function, especially Marxism, communism, socialism, and feminism. Hence people can now relax and carry on with the normal task of minding their own business. A hasty and fallacious historical dismissal of social reformism and critical radicalism results in the reassertion of the banality of self-interest, as a lesser and necessary evil: this moral apathy constitutive of the neoconservative political liberalism in our era.

Donna Haraway (1997, 90) stresses the quasi-monopoly exercised upon our cultures by "the status of biotechnology in the transition from the economics and the biologies of the Cold War era to the New World Order's secular theology of enhanced competitiveness and ineluctable market forces." Alain Touraine (2001) describes this phenomenon as "la pensée unique,"¹ that is to say a de facto hegemony of a neo-liberal orthodoxy that denies "the existence of autonomous social actors capable of influencing political decision-making" (ibid., 1). Arguing forcefully that globalisation has not dissolved our collective capacity for political action, and wary of any facile rejection of globalisation per se, Touraine calls for renewed social criticism. Resistance is needed against the new master narratives, which entail American hegemony of the world markets and the specific brand of USA-based fundamentalism, which targets the

^{*} This chapter was first published in Rosi Braidotti, *Transpositions: On Nomadic Ethics* (Cambridge: Polity Press, 2006). Reproduced with minor emendations with kind permission of the author and publisher.

¹ "The one-way thought."

Islamic world under the cover of the “clash of civilizations.” Cultural identities and global capital are the key terms of the current political economy and they need to be turned into active spaces of resistance.

Paradoxes, however, multiply all along the way. Post-industrial culture triumphantly asserts the end of ideology defined as the desire for social justice and attempts to fulfil a conservative’s favourite fantasy of an immutable and unmovable “human nature,” allegedly best catered for by advanced capitalist services (Fukuyama 2002). This same culture, however, simultaneously frustrates the very conservative dreams it so perversely aroused. Contemporary society is in fact fascinated to the point of obsession by all that is “new.” It pursues change with maniacal faith in its beneficial side effects. It disrupts the very social fabric and the modes of exchange and interaction that were established by industrial culture. The much-celebrated phenomenon of globalisation and of its technologies accomplishes a magician’s trick: it combines the euphoric celebration of *new* technologies, *new* economy, *new* lifestyles, *new* generations of both human and technological gadgets, *new* wars and *new* weapons with the complete social rejection of change and transformation. In a totally schizophrenic double pull the consumerist and socially enhanced faith in the *new* is supposed not only to fit in with, but also actively to induce the rejection of in-depth changes. The potentially innovative, deterritorialising impact of the new technologies is hampered and turned down by the reassertion of the gravitational pull of old and established values.

Issues related to technology, more specifically to biotechnologies, are consequently central to my concerns. The convergence between information and communication technologies on the one hand, and biotechnologies and genetic engineering on the other, is one of the major social manifestations of the current status of the subjects in advanced, post-industrial societies, situated as they are in a state of dispersion and fragmentation.

Times of fast changes, such as those of the so-called advanced societies reveal the paradox of continuing archaism on the one hand and hyper-modernism on the other. In some ways, the defining feature of our days is the high level of anxiety, exhilaration, fear, or optimism. They are directly related to the speed and range of the social changes themselves, which in turn are a function of the availability and access to the new technologies. Genetics and biotechnologies are making people nervous about their DNA and their organic capital. Anxiety runs more and more to the surface of things. In such a context, politics can be described not merely as the government of the polis, but also in terms of the management of insecurity. The ongoing changes are currently packaged in modes of social representation that alternate between the euphoric and the apocalyptic. This is in keeping with a manic-depressive logic that cannot fail to affect also the scholarship that deals with contemporary techno-cultures. Studies of technology swing from utopianism to gloom while in mainstream culture negative modes of representing the technological artefact as potentially threatening monstrous others recycle classical gothic themes (Braidotti 2002).

The political climate of this historical context can be best summed up in terms of capitalism as schizophrenia. Deleuze and Guattari (1994) analysed this double pull in contemporary cultures as a conflict between, on the one hand, the rising demands for subjective singularities, or autonomy and, on the other hand, the conservative reterritorialisation of desires for the purpose of commercial profit. This is reflected in the schizoid paradox of the compulsive consumerism of mass culture, where all the emphasis falls on the quest for “personalised” or “itemised,” custom-made specifications and commodities. This achieves a disastrous dual effect; it reasserts individualism as the unquestionably desirable standard, while it reduces it to brand names and to logos. It also pushes commercial profit-making to the innermost boundaries of subjectivity itself, making “I shop therefore I am” the leading refrain of our times. This is one of the reasons for the contemporary mix of archaic attachment to “safe” notions—and the fear of losing them on the one hand, and the euphoric celebration of technological innovation on the other.

Keith Ansell Pearson (1997) argues that grand narratives have come back into fashion, and that they tend to stress the inhuman character of the current evolution of the human species, through interface with the intelligent machines. “A new mythology of the machine is emerging and finds expression in current claims that technology is simply the pursuit of life by means other than life” (Ansell Pearson 1997, 202). He adds that such a vision is both philosophically and politically naive as it rests on a simplistic model of biotechnological evolution. Such grand narratives reflect “the dynamics of contemporary hyper-colonialist capitalism” (ibid., 303), one that conflates change with novelty, speed with simple acceleration, and sells “entropic modernization in its most imperialist guise.” A hierarchical fantasy of vertical perfectibility and technologically mediated quest for immortality and for disciplined and acquiescent subjects has gained widespread currency. In opposition to this master narrative, which corresponds to what Donna Haraway (1991) calls “the informatics of domination,” I want to stress the relevance of a materialist, nomadic philosophy of becoming, as an alternative conceptual framework, in the service of a sustainable future. These cartographies raise also an important set of ethical questions. On the analytic front: what means do social and cultural critics have at their disposal to make sense of and account for the structural paradoxes of a historical era? On the more normative front, the question is, what are our hopes of finding adequate ways of expressing empowering alternatives and of having them socially enacted? How does this consumerist and socially enhanced emphasis on the *new* fit in with the rejection of in-depth changes? How do they join forces in reiterating old and established viewpoints? What are our hopes of finding adequate ways of handling them?

Amid such cacophony of conflicting fears and desires, punctuated by public exposures of emotions in the “intimate public sphere” (Berlant 1997), it is important to focus seriously on the notion of political passions, and to stress a rigorous vision of affectivity. Nomadic subjectivity involves a materialist approach to affectivity and a non-essentialist brand of vitalism. These constitute a concrete answer to the contemporary flair for alternatively nostalgia or

euphoria for commercialised emotions. This project consists in transposing the ethical implications of nomadic subjectivity. The subject of postmodernity is caught between humanistic expectations of decency and dignity and the growing evidence of a post-human universe of ruthless power-relations mediated by technology. I wish to reposition the subject amid the return of “new” master narratives that aim at restoring traditional, unitary visions of the self in the new-liberal model, so as to be able to passionately pursue the quest for alternatives. I will concede from the outset that the non-unitary subject is ever prone to pressures that pull him or her in many potentially contradictory directions at once: nothing is played out in advance. Nomadic subjectivity is a contested space of mutations that follow no technological directives and no moral imperatives—but what kind of ethics is possible for such a subject?

Non-unitary subjectivity here means a nomadic, dispersed, fragmented vision, which is nonetheless functional, coherent, and accountable, mostly because it is embedded and embodied. *Transpositions* (Braidotti 2006) deals with the implications of this vision in terms of accountability—ethical and political agency. In the book I explored the possibility of a system of ethical values that, far from requiring a steady and unified vision of the subject, rests on a non-unitary, nomadic or rhizomatic view. The notion of “sustainability” is the central point of reference here. What conditions are the most conducive to cultivating and sustaining the desire for change and in-depth transformation of the dominant, unitary vision of human subjectivity, while avoiding the twin pitfalls of relativism and of nihilistic self-dissipation?

ABOUT TRANSPOSITIONS

The term “transpositions” has a double source of inspiration: from music and from genetics. It indicates an intertextual, cross-boundary, or transversal transfer, in the sense of a leap from one code, field, or axis into another, not merely in the quantitative mode of plural multiplications, but rather in the qualitative sense of complex multiplicities. It is not just a matter of weaving together different strands, variations on a theme (textual or musical), but rather of playing the positivity of difference as a specific theme of its own. As a term in music, transposition indicates variations and shifts of scale in a discontinuous but harmonious pattern. It is thus created as an in-between space of zigzagging and of crossing: nonlinear, but not chaotic; nomadic, yet accountable and committed; creative but also cognitively valid; discursive and also materially embedded—it is coherent without falling into instrumental rationality.

Evelyn Fox Keller (1983), in her brilliant study of the life and work of Barbara McClintock, argues that “transposition” refers to processes of genetic mutation, or the transferral of genetic information, that occur in a nonlinear manner, which is nonetheless neither random nor arbitrary. This is set in opposition to the mainstream scientific vision that tends to define the gene as a steady entity that transmits fixed units of heredity in an autonomous and self-sufficient manner and genetic variation as random events. Transposable moves appear to proceed by leaps and bounds, but are not deprived of their logic, or coherence.

Central to transpositions is the notion of material embodiment; in the case of genetics, McClintock highlights the decisive role played by the organism in framing and affecting the rate and the frequency of the mutations. Transpositions occur by a carefully regulated dissociation of the bonds that would normally maintain cohesiveness between the genes, which are laid out in a linear manner on the chromosome. McClintock shows that as a result of the dissociative impact, a mutation occurs that splits the chromosome into two detached segments. The rate of the mutation of these “jumping genes” is internally determined by the elements of the cell itself, and thus is not pre-written in the gene. The notion of transposition emphasises the flexibility of the genome. This implies that the key to understanding genetics is the process itself, the sequence of the organised system. This can be traced a posteriori as the effect of the dissociative shifts or leaps, but these controlling agents remain immanent to the process itself and are contingent upon the rearrangements of the elements. In other words, genetics information is contained in the sequence of the elements, which in turn means that the function and the organisation of the genetic elements are mutable and interdependent.²

Consequently, as Hilary Rose (2008, 65) put it ever so wittily: “DNA, far from being the stable macho molecule of the 1962 Watson-Crick prize story, becomes a structure of complex dynamic equilibrium.” Nobody and no particle of matter is independent and self-propelled, in nature as in the social. Ultimately, genetic changes are under the control of the organisms, which, under the influence of environmental factors, are capable of influencing the reprogramming of the genetic sequence itself.

As if it were capable of “learning from experience,” the organism defined as the host environment of the genetic sequence, plays an interactive and determining role in the transmission of genetic information. Haraway (1997, 142) sums it up brilliantly: “A gene is not a thing, much less a master molecule, or a self-contained code. Instead, the term ‘gene’ signifies a mode of durable action where many actors, human and non-human meet.”

Transposition is a scientific theory that stresses the experience of creative insight in engendering other, alternative ways of knowing. McClintock and Keller do not alienate scientific methods, but rather use them to demonstrate—albeit a posteriori—what they knew already. Resting on the assumption of a fundamental and necessary unity between subject and object, the theory of transpositions offers a contemplative and creative stance that respects the visible and hidden complexities of the very phenomena it attempts to study. This makes it a paradigmatic model for scientific knowledge as a whole, particularly feminist epistemologies, notably the critique of dualistic splits. It also shows affinity with spiritual practices like Buddhism, not in a mystical mood but in a cognitive mode.

Multiple and complex, transpositions occur on many levels at once. *Transpositions* (2006) applies, expands and develops the ethical and polit-

² I thank my sister Giovanna for these insights into contemporary genetics. See also her unpublished manuscript *The Sentience Paradox*.

ical implications of some of the arguments exposed as cartographies in *Metamorphoses* (2002). The relationship between the two books is neither linear, as in cause and effect, nor does it fall on the fundamental-applied distinction; they are inter-linked, while each maintains its singular profile. Their interconnection is a transposition, that is to say a creative leap that produces a prolific in-between space.

The term “transposition” refers to mobility and cross-referencing between disciplines and discursive levels. I rely on transposable notions that drift nomadically among different texts—including those I authored myself—while producing their own specific effects. Transposable concepts are “nomadic notions” that weave a web connecting philosophy to social realities, theoretical speculations to concrete plans, concepts to imaginative figurations. Transdisciplinary in structure, transposable concepts link biotechnology to ethics and connect them both with social and political philosophy. Moreover, I inject feminism, anti-racism, and human rights as an extra booster of theoretical energy and then let nomadic flows of becoming run loose through them all.

Furthermore, the notion of transposition describes the connection between the text and its social and historical context, in the material and discursive sense of the term. The passion that animates this text is a concern for my historical situation, in so-called advanced, post-industrial cultures at the start of the third millennium. A kind of *amor fati* motivates me, not as fatalism, but rather in the pragmatic mode of the cartographer. I am after modes of representation and forms of accountability that are adequate to the complexities of the real-life world I am living in. I want to think about what and where I live—not in a flight away from the embodied and embedded locations that I happen to inhabit. In *Metamorphoses* I argued that, if you do not like complexities you couldn't possibly feel at home in the third millennium. *Transpositions* enacts this notion by proposing creative links and zigzagging interconnections between discursive communities that are too often kept apart from each other. To name but a few significant ones: biotechnologies and ethics and political agency; the omnipresence of a state of crisis on the one hand and the possibility of sustainable futures on the other; the practice of nomadic politics of difference versus technological monoculture; the creative potential of hybrid subjectivity, in opposition to new and more virulent forms of ethnically fixed identities; cartographic accounts of locations and normative stances. Ultimately: post-structuralism and ethical norms or values.

More specifically, I transpose nomadically from philosophical theory to ethical practice. Loyal to the feminist politics of locations, I remain committed to the task of providing politically informed maps of the present, convinced of the usefulness of a situated approach as a critical tool to achieve an enlarged sense of objectivity and a more empowering grasp of the social. Politically, a cartographic method based on the politics of locations results in the recognition that not one single central strategy of resistance is possible (Grewal and Kaplan 1994; Patton 2000; Massumi 1992). A heterogeneous style of politics is needed instead, based on centrelessness. As a corollary, this implies a variety of possible political strategies and the non-dogmatic acceptance of poten-

tially contradictory positions. A scattered, web-like system is now operational, that defies and defeats any pretence at avant-garde leadership by any group. Resistance being as global as power, it is centreless and just as nonlinear: contemporary politics is rhizomic.

It is possible to track the zigzagging transpositions of multiple differences across the global landscape of a mediated world. The concrete socio-economic conditions of advanced capitalism, the so-called global economy, with its flows of commodities and the mobility of goods, is one of the factors responsible for the collapse of mono-centred systems and of binary modes of opposition between centre and periphery. The poly-centred, multiple, and complex political economy of late postmodernity is nomadic in the sense that it promotes the fluid circulation of capital and of commodities. In this respect, it favours the proliferation of differences, but only within the strictly commercial logic of profit. My nomadic vision of subjectivity on the other hand, is strictly non-profit (Braidotti 1994, 2002). It aims to provide a rigorous account both of the mobile subject positions that are available in late postmodernity and of modes of resistance and alternatives to the profit-minded values of today. I rely on transposable notions to account adequately for the fast-moving processes of change and for the overlapping complexities of place and time.

In *Transpositions* I investigate the creative force of transpositions in the framework of new power relations and explore its potential as the grounds for a new political ontology. Such a creative move takes the form of a qualitative leap. It does not entrust the mechanistic determinism of the genes and memes (*pace* Dawkins 1976). Nor does it rely on the reassuring linearity of a divinely ordained evolutionary teleology (*pace* Teilhard de Chardin 1959). It is rather the case that this qualitative or creative leap takes the form of a change of culture: a transformation not only of our schemes of thought but also of our ways of inhabiting the world. Such a radical change, rooted in the immanent structure of the subject, requires a lucid understanding of the topology and ethnology of the interconnections that link us to our social and organic environment. In other words, it is an eco-philosophy of belonging and of transformations.

TRANSFORMATIVE ETHICS

An ethics of sustainability, based on these interconnections will consequently shape up as the main structure of my argument. This transformative ethics includes a critical or reactive and an affirmative or active phase. On the critical side, the issue at stake is the critique of tradition—that is, which forces, aspirations, or conditions are likely to propel us out of the inert repetition of established habits of thought and self-representation. On the affirmative side, the issue is how can we cultivate the political desire for change or transformation, for actively willing and yearning for positive and creative changes? How can we link the issue of desire as a structural force that entails both ethical and erotic elements, with the question of socio-political forces and power-relations?

My passion for transformations may lead to a seemingly hasty dismissal of attachment to traditional values. In defence of the desire for change or trans-

formation, I want to argue that the force of habit is indeed little more than inertia, that is to say a reactive type of affect. “Habits” are a socially enforced and thereby “legal” type of addiction. They are cumulated toxins that by sheer uncreative repetition engender forms of behaviour that can be socially accepted as “normal” or even “natural.” The undue credit that is granted to the accumulation of habits lends exaggerated authority to past experiences. *Transpositions* (2006) addresses the question of which forces, desires, or aspirations are likely to propel us out of traditional habits, so that one is actually yearning for changes in a positive and creative manner. This leads to the classical political question, what makes people want to change? How do you motivate them to change? How can we account for the political desire for transformation to occur? How can we link the issue of desire—its structure, which entails both erotic and political elements—with sustainable ethics?

This approach calls for a style that adequately expresses the process in a nonlinear manner. A philosophical style is a way of shifting the very foundations of the corporate identity of philosophy. Against the traditional definition of this discipline in terms of cognitive mastery and normative power, they call for a radical scrambling of its codes. The catalogue of alternative modes of postulating self–other interaction is broad: the placenta as a non-dialectical dyad; the figuration of the parasite; the cloned animal; the leaping gene; hybrid complexity, diasporic displacements, and cosmological resonance. These figurations are steps towards a nonlinear rendition of the subject in its deep structures. It is a kind of trans-position, a way of revisiting, reclaiming, and relocating a crucial shift in the process of becoming subjects.

Transposing is a gesture neither of metaphorical assimilation nor of metonymic association. It is a style, in the sense of a form of conceptual creativity, like a sliding door, a choreographed slippage, a drifting away that follows a trajectory that can be traced a posteriori and thus be made accountable. Like a weather map, genetic printing or digital tracking, an account can be made of what will have been—in the first instance—a fluid flowing of becoming.

Transposing between the cartographic and the normative, I ask: “So what, then?” What if the subject is “trans,” or in transit, that is to say no longer one, whole, unified, and in control, but rather fluid, in-process, and hybrid? What are the ethical and political implications of a non-unitary vision of the human subject? How does this vision express and reflect the complexities and contradictions of contemporary culture and cultural politics? This is in some ways the philosophical question par excellence: it provokes and thus invites serious questioning, while injecting into the debate a healthy dose of debunking. I shall do my best to follow this thread while giving ample space in my work to a more normative dimension of thought in terms of the ethics of sustainability. This rigor in both intent and content will not prevent my flair for paradoxes from striking healthy blows to the philosopher’s *esprit de sérieux*. This talent is needed more than ever, for these are strange times indeed, and strange things are happening.

Transformations

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Abandoning Art in the Name of Art:

Transpositional Logic in Artistic Research

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The aim of this essay is to imagine how transposition could be conceived of as a method of artistic research practice. The topic is speculative. It models processes before they are explicitly tried out. In other words, I consider transposition here to be a methodological hypothesis. Given that the intended use of the model is as both a heuristic and an analytical tool for planning and assessing concrete research projects, it is based not on practical examples but on descriptions of certain generally recognisable features in different kinds of practices, insofar as they coincide with artistic practices. As in speculative realism, the aim is to understand the logic of the real regardless of a human viewpoint. In my previous writings, I have analysed how artistic research can be seen as a continuation of institutional critique (Kirkkopelto 2015). Here I will consider how research in the arts relates to its avant-gardist legacy, and especially to the tendencies that today are considered “anti-art” (McEvelley 2005) or “nonart” (Kaprow 2003).

As Peter Bürger and many others after him have analysed, avant-garde art was born as a contestation of the gap reigning between the prevailing art institutions of bourgeois society and “the praxis of life” (Bürger 1984, 49–50; Foster 1996, 8–15). The “anti-” in “anti-art” meant simultaneously a protest “against” the dominant system and an attempt to make art in a totally different way, by introducing alternative models of art-making that resigned from the values and objectives of bourgeois modernism. Within the field of the visual arts, this happened first in Dadaism, as opposed to in cubism, and second in conceptual art and in performance art, as opposed to in abstract expressionism (McEvelley 2005, 37–51). The relation of anti-art to its adversary was from the very beginning a double bind, a fact that makes understandable its later recuperation as a part of the culture industry it was meant to challenge. Whereas, as many have argued, the avant-garde thus failed in its attempt to overcome the difference between art and life, it nevertheless managed worldwide to revolutionise ways of art-making, to the point that our common understanding of contemporary

art is today saturated by ideas born initially among avant-gardists (Bürger 1984, 59; McEvelley 2005, 351).

A classical way to formulate the double bind in question is to focus on the question of representation. One of the major goals of the avant-garde has been to liberate art from representation—from replication and repetition of so-called reality. It is true that many modernists struggled with the same problem in relation to the tradition, but this struggle mainly concerned the contents of works, the way they were or were not permitted to present things, or what kind of things could be used as components of compositions, and so on. In other words, the disagreement within modernism concerned the redefinition of “taste” (see McEvelley 2005, 26), but such arguments did not consider the most basic aesthetic criteria for what could be considered an artwork or how an object of exhibition could be defined. To put it in Jacques Rancière’s terms, either the shift from “representative” to “aesthetic regime” did not finally succeed, or the aesthetic regime itself became occupied and controlled by the markets (Rancière 2004; Tanke 2011). The avant-gardists’ critique of modernism often radicalised the tendencies that were already detectable in the object of their criticism. A modernist artwork that could be considered “non-representational” might remain representational in another sense, namely in relation to its artistic genre. Works represented themselves as works, artists as artists, regardless of how experimental, radical, or iconoclastic the practice that gave them their existence ultimately was. A painting wanted to be a “painting”; a piece of sculpture, a “piece of sculpture”; a movie, a “movie”; a composition, a “composition”; a video, a “video”; an installation, an “installation”; a performance, a “performance”; and so on, repetitively and identically. The same held true for their producers, the “artists.” From the point of view of anti-art, the aspiration of art and artists to again be identified as “art” and “artists” simultaneously fostered anti-art’s extra-artistic appropriation and exploitation: artworks were controlled, marketed, and evaluated as cultural products, and artists were subjected to the same as the producers of artworks. Instead of works serving as the means for people to reach the freedom the works attest by their existence, they become instruments for an opposing purpose. Art has become an integral part of people’s everyday lives in present-day bourgeois societies in the form of commodity culture, entertainment, social media, and subcultures, but not in the emancipatory sense meant by the avant-gardists (Foster 1996, 21).

Today, museums of contemporary art can still be viewed as documenting art’s struggle with itself. This struggle may have been commodified to a certain extent, and it may suffer from a certain exhaustion, but basically it has remained unresolved. “Avant-garde art” or “anti-art” is an oxymoron, which persists as long as something within arts practice resists its cultural appropriation and artists themselves want to escape their cultural positions. Simultaneously, the debate concerning the way art should be transformed continues—should it be transformed according to the logic somehow implicit to artistic practices themselves, or to a logic external to them?

Abandoning Art in the Name of Art

Liberating art from art may sound paradoxical or like a sophism to some ears but, as I would argue here, it has always been a fundamental ethical and personal option among artists. Art-making is something that can constitutively and for good reason be abandoned or sacrificed by those who master it. Attitudes such as “I do not know whether what I am doing is art and I do not care” are recurrent even among practising artists. The latter sentiment could easily be dismissed as merely psychological, but traditionally it is connected to the question of artistic authorship and related debates on ingenuity. What if, as Allan Kaprow (2003, 97–109) has described it, an artist started to see ingenuity everywhere other than in his own or his colleagues’ workings, and what if eventually that started to interest the artist more than his own artistic ambitions? In extreme cases this has amounted to the abandonment of an artistic career altogether. The history of artistic modernism and postmodernism abounds with famous examples of artists who have given up their successfully begun artistic practices. We could begin with Arthur Rimbaud, who apparently set an example for later retirements, such as those of Marcel Duchamp or Hugo Ball (McEvelley 2005, 30, 371). Retirement may also mean the transformation of one’s former artistic practice, as in the case of Alexander Rodchenko, who in the late 1920s abandoned his already quite anti-artistic career as a constructivist to devote himself to photographic documentation of the projects of the young socialist nation, or the case of Lygia Clark, who in the late 1970s changed her artistic practice into a therapeutic one. Every artist knows “former colleagues,” whose fate is not necessarily less important to our topic than those mentioned. If we exclude cases where artistic practice is applied straightforwardly for some extra-artistic social, pedagogical, or commercial purpose, for instance, or where an art practice has been abandoned because of a changed vision of reality, disease, or political oppression, what remains? As Kaprow concluded in 2001, “leaving art *is* the art”. But, as he nevertheless immediately adds, “you must have it to leave it” (Kaprow 2003, xxix). What is that “it” an artist carries with or in him- or herself into the new field when leaving a previous artistic activity behind?

The reason why this question may interest us today particularly, and with a new acuteness, is that it relates directly to the ongoing discussion on artistic research: how are artistic research and its makers (i.e., artist-researchers) to be distinguished from traditional and institutional modes of art-making? When professional artists start to make research in institutional academic settings, respecting at least to some extent the corresponding criteria of knowledge production and entering into an explicit dialogue with non-artistic discourses and disciplines, they clearly abandon something of their former status and practice, whether they admit it or not. Their endeavours are often also motivated by an explicit attempt to transform their practice to make it more “real” and efficient—for instance, socially, politically, or ecologically significant. But they also pay a price for this move, the nature of which is hard to define. This creates an interesting parallel between artistic research and the avant-garde as discussed here. Would it be possible to conceive artistic research as a logical continuation of avant-gardist tendencies of the past century? The institutional context

would not necessarily contradict this continuity, if we suppose, like Hal Foster had suggested, that the post-war “neo-avant-garde” actually institutionalised the “historical avant-garde” and thereby opened it for an institutional critique the latter was lacking (Foster 1996, 20). If it were so, would we be ready and willing to face its consequences for artistic practices in general, which, through research, become articulated and transparent in a historically unparalleled way?

Significantly, the logic of these practices—how does an artist work?—does not necessarily even become conscious, let alone become problematised, before it has been shifted from one (artistic) context to another (non-artistic) context. As I will argue, *performing* this shift is distinctive for artistic research. Here, instead of reasoning dialectically (and paradoxically) with the art and its opposite (which in the next turn can change into “art” as well), I would focus on the actual logic of that shift itself, which from now on I will call *transposition*.

When an artistic procedure, technique, device, or concept is shifted from the arts field in which it was conceived and developed—and where its use has been acknowledged—into another field in which it does not have a similar institutional and practical status, it does not necessarily or automatically lose its capacity to operate in its new surroundings or be assimilated by it. The same shift concerns the practitioner, “the artist” him- or herself, who carries out the transposition and thereby puts his or her institutional identity in play. What is interesting in transposition, and what interests artists who have accomplished it in their works or careers, is the nature of the new kind of afterlife it initiates.

The same principle may, of course, apply also to other human practices. The question of what *artistic* transposition can reveal about such practices nevertheless remains. If we acknowledge, at least hypothetically as we do in this book, that transposition could be considered a specific artistic operation applicable in artistic research, then we first need to consider it according to its most general features in order to distinguish what is particularly “artistic” in it. It is important to understand this if we are planning to abandon art-making, particularly if we want to abandon it properly!

If we consider transposition on a general level, regardless of the practice in question, as an event taking place between two relatively autonomous fields or levels that, at the outset, are mutually independent or indifferent, we might discern in it three temporally and rhythmically subsequent phases: (1) the *state* preceding transposition in which the fields or levels do not influence each other; (2) the *act* of transposition in which an element belonging to one field is suddenly shifted into another without disturbing the previous balance between the two; (3) the *process* of transposition started by the shift, which creates an indirect and asymmetric influence between the fields. An entity or instance belonging to one field has been transposed into another without breaking the barrier between the fields. It may be possible to observe the described dynamics at any level of organisation, but here and henceforth I will delimit my observations to human practices, and artistic practices in particular.

The initiator of the shift needs to be the expert in the initial field. He or she foresees the possibility of transposition in relation to the other field, or recog-

nises it by accident or coincidence. In any case, someone has to prepare this exceptional and unexpected move. Such a move does not necessarily mean a *transgression*, given that in most cases the generic borders are not transcendental; in other words, their violation does not automatically transform or abolish the violator. The borders may be institutionally very regulated, but so are the consequences that follow their violation. From the artistic point of view these kinds of risks are now secondary. What matters in transposition is not to break the limits but to discover new kinds of similarities and continuities, affinities that are *not based on identity*. When this kind of affinity is novel it does not lean on representation but lies in other kinds of similarities, concerning for instance their material, compositional, and medial aspects; in other words, in their way of producing and reproducing their own reality and capacity to encounter and translate other realities. What is of most significance, therefore, is what remains: the new kind of continuity between heterogeneous fields. Transposition constitutes a gesture of *invention* (*in-venere*) with its own rhythm and logic.

However, as the act of transposition has taken place, nothing essential has happened yet. Mere provocation or intervention seldom changes anything. If the transposition is not actively repeated or held up, the transposed entity easily returns to its original field. Thanks to the active maintenance of the transposition the transposed element is charged with energy (i.e., a liberty of action) that makes it operative in its new surroundings. The sustenance of the transposition creates preconditions for a process whose nature is now more transformative: it changes the field as a whole. By the same token, the agency is removed from the person who accomplished the act, the “transposer,” in this case the expert in his or her arts field, to the transposed means, technique, or concept, which henceforth we could call a “transponent” (as opposed, for instance, to a “component,” which a transponent will never turn into).

Within its new field the transponent is at first a stranger, or even an intruder, but there is also something in it that is strangely familiar or *unheimlich*, and therefore also attractive. From the point of view of the transposer this is not, of course, surprising, because the existence of the transponent is based on its potential (and possibly still hidden) affinity with the surrounding field. It may just happen that the transposer alone is aware of this affinity at the beginning of the process. The surrounding field may reject the transponent, but it cannot reject the affinity the latter establishes and communicates, and which therefore already has a foothold in the new terrain. The transponent *persists* not only because of that occasional continuity and similarity but also because the field in which it has its legitimate site and significance (and where it is not considered a transponent) continues to exist. This active exclusion indirectly, and paradoxically, supports and nourishes the persistence of the transponent. The constant tension between belonging and not belonging both protects the transponent against assimilation and provides it with energy. The support remains indirect because it is solely dependent on the activity of the transposer, who has initiated the process by his or her act and has now also become responsible for its continuation. Even though the transponent is a sort of escapee or

renegade in relation to its initial field, to which there may be no return, it does not deny its origin within the new field. It conveys certain essential features, qualities, and energies to the new field without worrying about their ownership or authorship. It is thus a sort of hybrid, but it neither gives itself up to either side nor constitutes their union. It is an agent of change. In relation to its new field it is relatively free and autonomous, but still capable of communication. However, the communication is not informative but transformative. Whatever the transponent “says,” or what is “said about it,” changes the surroundings. Neither is it a medium: it does not translate the events of one field into the events of another. It does not bring messages or represent the fields that it puts in indirect communication.

The changes that follow are unpredictable in many ways, and from the appearance of a transponent one cannot predict what will happen later. In accordance with Deleuzian modal logic (Deleuze 1968, 269–76), which seems the most appropriate here, we could formulate what happens in the following way. The transponent makes features appear from the surrounding field that until that moment had been virtual and latent. If the affinity between the transponent and the surrounding field is based on a real but still virtual affinity, the explication of that affinity, its actualisation, necessarily has a transformative impact on the field.

The only thing the transponent remains dependent on is the transposer who, if he or she is an artist, becomes an *artist-researcher* as the consequence of his or her act. That is unavoidable, given that the consequences of the transpositional act always remain to be seen, explained, and expressed. Explaining and expressing them, in turn, requires measures: repeating, varying, testing, observing, modelling, theorising, argumentation and dissemination, that is, *research*. Without further measures a transposition remains an exceptional incident, which may be significant but the significance is lost in the darkness of history, where it remains to be discovered by some other researcher. Artistic research in many cases can be understood as a transpositional practice: a technique, a device, a point of view, a product, a concept, or an agency removed from the context of one artistic genre into another, or into some extra-artistic practice or mode of knowledge production, to study the consequences of that move. How are the new surroundings affected by the transponent (and, indirectly, the field from which it comes)? What kind of after-effect does the operation have on the initial context, for instance the artistic genre the transponent escapes? Research is carried out by observing these changes and articulating them collectively. It produces knowledge of how different realities are constructed, about the way the different fields interact and penetrate each other implicitly, about the *reality of art*.

As art changes into research in the way described above—in other words, transpositionally—it is not instrumentalised. What happens instead is the transformation of the artistic practices themselves. The artistic processes, methods, devices, and techniques involved in transposition abandon the remnants of the auto-representation of the representative regime, which still today burdens the arts and from which the avant-garde has not succeeded in liberating them

so far. Without appealing to the authority of a particular artistic genre and its acknowledged forms, an artist-researcher as a transposer ventures with his or her invention, the transponent, into a strange realm with the aim of opening and constructing new types of relations with the real. Artist-researchers should not miss their lost art or careers. Essentially, they do know what they are doing. That knowledge, which concerns the reality of art, has never been entirely tacit. It has made itself known at least symptomatically, for instance in artistic protest movements or the individual retirements I discussed above, in the paradoxical attempts to abandon art in the name of art. The problem, if there is one, rather relates to the fact that artist-researchers are not necessarily recognised in their surroundings and they, like all genuine researchers, have to proceed alone. This loneliness is not a mere individual or social fact attributable to a lack of esteem, for instance, but a constituent part of the transpositional logic of artistic research in practice.

Let me conclude by returning to the question I posed at the beginning of this essay: What does *artistic* transposition tell us about transpositional logic in general? Is not a work of art a sort of transponent as well, insofar as it enters our world as if from without, as if from outer space, and insofar as its existence cannot be deduced from its surroundings? It is, of course. To the extent that any object can be presented from an artistic perspective, as an artwork or an artistic component for instance, any object whatsoever can be transposed if it is simply moved to a “wrong” place and thereby “estranged.” But the comparison also reveals the basic difference: artworks cannot help appearing as what they are, whereas artistic transponents make appear what they are not. Their function is in this respect “phenomenotechnical” and comparable to scientific instruments (Bachelard [1934] 2003). When an object is identified as an “artwork” it is always in the “right” place, no matter if it is met in a museum or found in the street, whereas an artistic transponent is always and deliberately where it does not belong. Correlatively, the target of its transformative effect is not in the receiving subject (as in the case of an artwork) but in its surroundings, no matter whether the latter are social or physical.

Since the opening of the aesthetic regime, everyday objects have been included in artworks, or they have been presented as autonomous artworks, but an artistic element becoming a part of our everyday reality without turning into a monument or an instrument seems to be a much longer and more complicated process. Insofar as this process from now on advances in terms of artistic research it no longer operates dialectically in terms of “pro-” or “anti-,” or “art” and “life.” The point here is rather to liberate contemporary art-making from this dialectic characteristic of both art-making and its critique during the modern and postmodern eras. In relation to the debate described above between modernism and the avant-garde, artistic research might today be conceived as a way to liberate the avant-garde from its deadlock—that is, to bring its appropriation to a halt and pursue its agenda by new means. Mere art criticism does not suffice here, but it helps. The reconsideration of the legacy of the avant-garde can be applied for contextualising artistic research historically and liberating it from overtly institutional, artistic, or philosophical closures.

As artistic research liberates art from producing and representing art, it changes our relation to art significantly. Different kinds of logics of artistic production, such as that of transposing, are thus reconceived as processes of reality research, not as representations of reality or reactions to it. This is also why I found it necessary in this essay to try to capture transposition according to its most general and abstract features: *transposition is a method of invention with roots deep in the modal dynamics of the real, which for the very same reason is capable of being addressed in accordance with this method*. It is not that the arts manifest or illustrate the transpositional logic of the real (in which case it would once again become representative of it). On the contrary, and finally, we should perceive transposition as a creative and artistic aspect of the real, as belonging to its innate dynamics at different organisational levels. Correlatively, artistic research as I have written about it in this essay is interested in the reality of art, not in art as part of the given reality and not as its representative.

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Calling the Dragon, Holding Hands with Junipers:

Transpositions in Practice

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Is “transposition” a useful term to describe artistic practices that involve repetition with a difference? In this text I combine ideas by Karen Barad, a series of performances for camera called *Animal Years*, and my wonder at why some practices were easier to relocate and recreate than others to form a testing ground for exploring the notion of transposition in articulating artistic research in practice, albeit after the fact. After a brief summary of some of Barad’s theoretical ideas I will describe the artistic practice in question in fairly concrete terms and end by suggesting that the term “transposition” can be understood and used in two ways, and that the notion of entanglement is helpful in understanding transpositions, at least in that context.

ENTANGLEMENTS, INTRA-ACTIONS, AND AGENTIAL CUTS

Following Karen Barad we can understand entanglements of matter and meaning, of theorising and experimenting, and of the researcher and what is researched as a starting point for the processes involved in artistic research. Barad emphasises that practices of knowing and being are not isolable but mutually implicated, and wants us to study practices of knowing in being. “We don’t obtain knowledge by standing outside the world; we know because we are *of* the world. We are part of the world in its differential becoming” (Barad 2007, 185). For her, separating epistemology from ontology is part of “a metaphysics that assumes an inherent difference between human and nonhuman, subject and object, mind and body, matter and discourse” (ibid.). We need “something like an *ethico-onto-epistem-ology*—an appreciation of the intertwining of ethics, knowing, and being—since each intra-action matters” (ibid.). “Intra-action” is a term coined by Barad to replace the usual term “inter-action,” which presumes that the interacting parts pre-exist the action.¹ Intra-action “*signifies*

¹ For an attempt at understanding the notion of intra-action with regard to performing landscape, see Arlander (2014a).

the mutual constitution of entangled agencies” (Barad 2007, 33, emphasis original). According to her “distinct agencies do not precede, but rather emerge through, their intra-action” and, importantly, “*agencies are only distinct in relation to their mutual entanglement; they don’t exist as individual elements*” (ibid.). This is relevant for the transpositions I will describe later.

With entanglement, however, Barad does not mean “just any old kind of connection, interweaving or enmeshment in a complicated situation” (Barad 2007, 160). Rather, for her the term is linked to the notion of quantum entanglement and to her theory of agential realist ontology; “matter itself entails *entanglements*” (ibid.). The idea of quantum entanglement was developed by the 1930s but gained more attention from the 1990s onwards due to the potential for new technological applications in computing, cryptography, and teleportation (ibid., 386). Barad explains how the entangled state of two systems (say A and B) cannot be understood as a composite system, or a mixture of two independent systems. Rather, the entangled state A and B should be understood as a single entity (ibid., 271). She further contrasts Schrödinger’s notion of entanglement (with the famous cat that is either dead or alive depending on the behaviour of an electron), which is explicitly epistemic (what is entangled is our knowledge of events), and Bohr’s understanding of entanglements in ontological terms (what is entangled are the “components” of phenomena) (ibid., 309).

For the purposes of this text, we need not consider the mystery of quantum entanglements further. Suffice it to say that for Barad, following Bohr, phenomena are the ontological entanglement of objects and agencies of observation. She takes the primary ontological units to be phenomena, rather than independent objects with inherent boundaries and properties. In her thinking, “phenomena do not merely mark the epistemological inseparability of ‘observer’ and ‘observed’; rather *phenomena are the ontological inseparability of intra-acting ‘agencies.’* That is, *phenomena are ontological entanglements*” (Barad 2007, 333, emphasis original). Following this, I propose to understand transpositions—as phenomena—to be ontological entanglements, too. For this, it has to be kept in mind that, according to Barad, entanglements are highly specific configurations, in part because they change with each intra-action; or, rather, that space, time, and matter do not exist prior to the intra-actions that reconstitute the entanglements. In order to study entanglements, the apparatuses must be tuned to the particularities of the entanglements at hand (ibid., 74). The same might be true of transpositions; it does not make sense to speak of them in universal terms.

“Things” are not only produced through intra-actions; following Barad, the boundaries and properties of the parts of the phenomenon become determinate only in the enactment of an “agential cut” that delineates the “measured object” from the “measuring agent.” According to her, a set of material practices “effects an *agential cut* between ‘subject’ and ‘object,’ . . . the agential cut enacts a resolution *within* the phenomenon of the inherent ontological (and semantic) indeterminacy” (Barad 2007, 140, emphasis original); that is, the split into “subject” and “object” is not fixed. There are no subjects and objects given in the world; rather, they are produced through specific intra-actions and cuts of exclu-

sion and inclusion. For Barad “observer” and “observed” are merely two physical systems intra-acting in the marking of an “effect” by a “cause,” and objectivity is a matter of “accountability to marks on bodies.” This means that she does not base objectivity on an inherent ontological separation between subject and object, observer and observed, but on an intra-actively enacted agential separability produced by the apparatus in question. In other words, she tries to move beyond an epistemological conception of objectivity and replace it with an ontological one, which is possible because of her understanding of phenomena as ontological in nature rather than merely epistemological. Separability between subject and object is not inherent or absolute; instead, each time it is intra-actively enacted relative to a specific phenomenon (Barad 2007, 339). Barad takes up Bohr’s view that concepts are physical arrangements (ibid., 54) and claims that “Bohr’s point that apparatuses are productive of the phenomena they measure is not to be understood as some idealist claim that reality is a product of human concepts” (ibid., 334); nor as “a mysterious and unexplained linkage between human concepts and the physical phenomena produced in experiments” (ibid., 335). Rather, she proposes a shift from linguistic concepts to discursive practices with an emphasis on the dynamics of material practices, where “specific dynamic material configurings of the world, *causally* produce specific material phenomena” (ibid., 335, emphasis original). Although Barad’s attempt at developing Bohr’s thinking beyond his humanist bias is sometimes hard to follow, her understanding of an “agential cut” is relevant for artistic research, as the boundaries and properties of the subject and object of research can thus be enacted through specific arrangements in each case.

What is on the other side of the agential cut is not separate from us. Barad (2007, 179) writes: “Cuts cut ‘things’ together and apart. Cuts are not enacted from the outside, nor are they ever enacted once and for all.” Moreover, “Cuts are . . . enacted not by wilful individuals but by the larger material arrangements of which ‘we’ are a ‘part’” (ibid., 178). Due to these cuts of inclusion and exclusion, ethics is not about the right response to a radically exteriorised other, but about responsibility and accountability for the relationalities of becoming of which we are a part (Barad 2007, 393). We are responsible to others with whom we are entangled through the various ontological entanglements that materiality entails. What could this mean in the context of artistic research? Is an artist only one element in the entanglement of various material-discursive practices creating or constituting a work? Are artists nevertheless responsible for the entanglements they do not even know of?

Knowing is not about ideation nor is it the exclusive birthright of humans, Barad claims: knowing is a distributed practice that includes the larger material arrangement, a practice where “a specific engagement of the world becomes differentially intelligible to another part of the world” (Barad 2007, 342). Knowing is a physical practice of engagement. This probably sounds familiar to many artist-researchers, since knowing as a physical practice has been emphasised by scholars as diverse as Conquergood (1999), Bolt (2004), Riley and Hunter (2009), Johnson (2011), and Spatz (2015), to name a few. Barad (2007, 56) further claims, “*experimenting and theorizing are dynamic practices that play a constitutive role*

in the production of objects and subjects and matter and meaning. . . . [They] are not about intervening (from outside) but about intra-acting from within, and as part of, the phenomena produced” (emphasis original). The same could be said of many art practices, where the artist-researcher is literally producing phenomena—artworks or performances—and not only observing them. Indeed, it could also be said about a practice such as performing landscape, which I describe below, where there is no possibility of stepping outside the environment. If scientific practices are specific forms of engagement that make specific phenomena manifest (Barad 2007, 336), artistic practices likewise are specific forms of engagement that make specific phenomena manifest.

As Iris van der Tuin, one of the few theorists to have discussed Barad in the context of “artistic” or what she calls “creative” research, has pointed out, artistic research is perhaps not so different from other types of research. Understanding the onto-epistemological nature of all research practices foregrounds, according to her, the “how-question”: how are research practices enabling or constraining? “How do they open up or buy into the anthropocentric schema of the authoritative scientist objectifying a muted entity with the help of a mediating instrument in a neutral environment?” (van der Tuin 2014, 260). For her, a social-constructivist or what she terms linguisticist approach is equally anthropocentric, and she questions whether artistic research is so different, criticising the claim “that artists produce ‘other’ knowledges from their non-scientific studios” (ibid.). She also argues, however, that “the heightened attention to onto-epistemology, even if not labelled as such, in creative research teaches positivists and linguisticists alike something about their practices”; for her, all research practices are “specific in the terms of the knowledge produced and generic in onto-epistemology” (ibid.). It seems that “how-questions” are particularly important in artistic research, since they can be addressed through practice, and through demonstrations, at least to some extent.

The term “artistic research” is in itself a contested concept, as are “practice-as-research” (Nelson 2013) or “creative arts research” (Barrett and Bolt 2014); for the purposes of this text, “artistic research” can be understood as research where the making of art forms an important part of the process. Artistic research can also be discussed as an interdisciplinary and speculative practice (Arlander 2016a). Here, however, the focus is on examples of one specific practice.

AND WHAT ABOUT TRANSPOSITIONS?

In English the term “transposition” can refer to many things, such as the transfer of genetic material, or more generally to a change in the relative position, order, or sequence of something. A more familiar use of the term is in music, where it means playing music in a different key, for instance to make it higher or lower in pitch; since the intervals remain the same, the melody is recognisable, although the mood might change. The term can also mean to move, to transfer, or to shift over to another place, as with transposing the events in a novel to take place in another time and environment. This meaning of a change

of place or location is especially relevant for the examples I will describe. In the following I use the term “transposition” in two different senses: on the one hand, to refer to an activity, a type of repetition with a difference, where an action, gesture, or entanglement, something resembling a “tune,” is transferred or relocated and transformed in that move; on the other hand, to refer to that something, the “tune,” which emerges in such moves.

At first glance the term “transposition” does not seem easily compatible with Barad’s ideas, if we assume that we have “something,” a “tune,” that is then transposed, rather than created in the transposition. What at first seems counterintuitive, combining the notion of transposition with intra-action and agential separability, is nevertheless possible. Transposition can be understood as a verb: to transpose something presupposes pre-existing “tunes” that can be transferred to other circumstances and be transformed by them. Transposition can also be understood in Barad’s terms, as produced through intra-action, as something emerging through the act of transposing.

Following Barad, the boundaries and properties of the parts of a phenomenon are determined by an agential cut that delineates the “measured object” from the “measuring agent.” For instance, in my practice of performing landscape, the “measuring agent” (the framing apparatus of the camera) produces a split in the “measured object” (the landscape) between what is within and what is outside the frame, between what is part of the image and what is not—a division that did not previously exist in the landscape. This intra-action between equipment and environment involves material-discursive practices like the properties of the lens or my preconceptions of what constitutes a good view, or the light conditions of a site that the camera reacts to, and so on. The “measuring agent” and the “measured object” are produced in each case; the observer can turn into a performer, the camera can be filmed, and so on. The same can be said of the “measuring agent” and the “measured object” in an act of transposition. Sometimes the shifting circumstances act as the “measuring agency” that marks and transforms the “measured object” (the combination of gestures and materials to be transposed). Sometimes “the tune” (the combination of gestures and materials to be transposed) serves as the “measuring agent” that enacts an agential cut in the environmental circumstances to produce “the measured object,” a transformed image.

In any case, we can say that the “something” that is transposed, the “tune,” is actually produced through and in the intra-actions involved. What in the end is included in the “tune” and what is excluded from it, what the components to be transposed and transformed in the act of transposition are, is not given in advance but is enacted in each case. Moreover, the “tune” can be understood as an entanglement of sorts; its components are treated as a single unity and are transformed together. In most cases in my examples, what produces a change of action or gesture is relocation, a change of site, with all the material-discursive practices involved in the shift of circumstances. In the practice described in the following, the key questions are: What is to be transposed? What is repeated with a difference? What is supposed to remain recognisable, what will transform with the context?

ANIMAL YEARS

Animal Years is a series of twelve one-year projects, recorded on video on Harakka Island off the coast of Helsinki, Finland. It is based on the Chinese calendar and its twelve-year cycle, with each year named after a specific animal. I began the project in the Year of the Horse (2002) and finished it in the Year of the Horse (2014). Exploring how to perform landscape today, the project's main purpose was to bring attention to changes in the landscape, the result of the shifting seasons, weather, and climate, and to focus on the environment as well as to document changes in it. Thus, returning to exactly the same spot was important. Through performing a still act or simple action in front of a video camera, the events taking place in the background, in the landscape, can come to the forefront. By repeating a performance at regular intervals over relatively long periods, and condensing the material by editing, the slow happenings indiscernible in real time become visible. Thus the project produced "souvenirs" of what the landscape looked like on the north coast of the Baltic Sea during these years at the beginning of the twenty-first century.

Over the years, the aim of *Animal Years* shifted more and more into making the passing of time visible, which initially was a side effect of the work.² The project focused on seasonal changes resulting from the cyclical nature of our planetary time, based on the movement of the Earth around the Sun and around its own axis. On another level it responded to the logic of a cyclic video loop in an installation context rather than the progressive storyline of a film, for instance. The performances for a static camera on a tripod were repeated once a week for a year in the same place with the same framing of the image, and then condensed by editing to form short videos or multichannel installations. Time passing in the landscape was shown by keeping space, place, and framing constant. Repetition was used to generate material with variations, which could then be put together chronologically, using all the "slices of time" in the order they were created. The shifting conditions, or various accidental occurrences, produced changes around the basic structure of a few initial choices.

Each year I looked for a new perspective on the landscape, a new aspect of the environment, and a new kind of relationship between the human body and the place. These variations from year to year, in contrast to the repetitions taking place within one year, can be understood as transpositions of the basic idea of a weekly visit to the same place. The practice of producing rough "time-lapse" videos was transferred to and repeated in another place, with another scarf, with another pose, action, or gesture each year, while the practice was kept sufficiently similar to form a recognisable series. *Animal Years* was not a pre-conceived series, however; nor was it designed as a research project, although many of the works have served as data or material for research articles. The series evolved in a manner of trial and error and was only named about half-way through the process; the years did not all begin at the Chinese New Year, some weeks were omitted due to travel or weather restrictions and so on, but all years

² In "Performing Landscape for Years" (Arlander 2014b), I discuss the project with regard to various time conceptions.

were nevertheless performed on the same island. My working method utilised the traditions of performance art, video art, and environmental art, moving in the borderland between them.

Animal Years, with each year performed approximately once a week for the duration of a year (according to the Chinese calendar, which begins and ends in January or February) and then edited into video works exhibited the following year, consists of the following: Year of the Horse (2002–3), Year of the Goat (2003–4), Year of the Monkey (2004–5), Year of the Rooster (2005–6), Year of the Dog (2006–7), Year of the Pig (2007–8), Year of the Rat (2008–9), Year of the Ox (2009–10), Year of the Tiger (2010–11), Year of the Rabbit (2011–12), Year of the Dragon (2012–13), and Year of the Snake (2013–14). A second Year of the Horse (2014–15) was added, as a variation once a month, to complete the cycle.

What actions were performed and repeated during all these years? Most were more like non-performances, simple poses, gestures, or actions that could be edited to be continuous. To begin with, I stood with a blue scarf on my shoulders close to the camera, blocking part of the view from the hill on the island, or sat on a rock in the landscape below the hill.³ The second year, I walked with the same blue scarf on my shoulders from south to north (or left to right in the image) past the camera, and once again further away from the camera; I also stood on the shore looking out to sea.⁴ In the third year I sat with a red scarf on my shoulders on a ledge on the north-western shore and also stood on a cliff next to it looking out to sea.⁵ For the fourth year I walked with the same red scarf on my shoulders past the camera from left to right, from south-east towards north-west on the western cliffs of the island, stood with the camera behind me on the cliffs, stood further down on the cliffs, and also sat on the cliffs looking out to sea.⁶ During the fifth year, I sat with a yellowish scarf on my shoulders in a pine tree in the southern part of the island. I lay and sat on a rock under another pine tree on the western shore, with the camera first facing the city in the north and then the sea in the south.⁷

In the sixth year, with a grey shawl across my shoulders, I span around against the city skyline on the north-western cliffs of the island, and sat on the cliffs, first facing south, looking out to sea, and then facing north, looking towards the city; I also sat under the only spruce tree on the island, recorded from three distances.⁸ In the seventh year, with a lilac scarf on my shoulders, I sat on a rock on the northern shore of the island and on another rock farther from the camera, walking up and down the steps to the shore as well as standing in the sea, collecting water in a jar and pouring it back into the sea.⁹ In the eighth year, wearing a rust-coloured scarf, I sat or “rode” on a buoy; sat in a niche in the wall; walked in a circle, tied by a chain to an iron ring on a cliff on the south-eastern

3 In all, sixty-four times, approximately once a week from January 2002 to January 2003.

4 In all, fifty-four times, approximately once a week from March 2003 to March 2004.

5 In all, forty-three times, approximately once a week from 11 April 2004 to 20 March 2005.

6 In all, forty-eight times, approximately once a week from 8 January to 31 December 2005.

7 In all, fifty-four times, once a week from 7 January 2006 to 11 February 2007.

8 Approximately once a week between 6 January 2007 and 3 February 2008.

9 Approximately once a week before sunset between 26 January 2008 and 24 January 2009.

shore; and sat with a piece of wood tied to my shoulders, in a “yoke,” on rocks on the eastern shore.¹⁰ In the ninth year, wrapped in a white shawl, I walked around and lay down on the remains of the stone base of a building at the centre of the island, repeating the action four times to record it from four directions.¹¹

In the tenth year, wrapped in a green scarf, on Sunday afternoons I visited a juniper growing on the south-eastern shore and stood next to a nearby bird shed.¹² In the eleventh year, wearing the same green scarf, I called a dragon by ringing a small ceramic bell on the roof of a bunker in the southern part of the island, facing in four directions, and by waving a green ribbon tied to a stick from the bunker facing north, and from the hill at the other end of the island facing south.¹³ In the twelfth year, finally, wrapped in a pale blue scarf, I sat in a swing attached to an aspen on the western shore, lay in the swing, and sat next to the swing and on a pile of rocks nearby. People visiting or working on the island were invited to swing as well.¹⁴ For the thirteenth year I revisited the site I used during the Year of the Horse 2002, wearing the same dark blue scarf, standing on the hill blocking part of the view, and sitting on the rock on the path, though only once a month this time.¹⁵

Each of these years resulted in several works, all of which are available to view on the website of the Distribution Centre for Finnish Media Art,¹⁶ usually titled with the name of the year with some specification: Year of the Horse,¹⁷ Year of the Goat,¹⁸ Year of the Monkey,¹⁹ Year of the Rooster,²⁰ Year of the Dog,²¹ Year of the Pig,²² Year of the Rat,²³ Year of the Ox,²⁴ Year of the Tiger,²⁵ Year of the

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- 10 Approximately once a week from 25 January 2009 to 6 February 2010.
 - 11 Approximately once a week for a year from 14 February 2010 to 31 January 2011.
 - 12 Approximately once a week between 6 February 2011 and 22 January 2012.
 - 13 Approximately once a week between 4 February 2012 and 3 February 2013.
 - 14 Approximately once a week between 10 February 2013 and 28 January 2014.
 - 15 Between February 2014 and February 2015.
 - 16 http://www.av-arkki.fi/en/artists/annette-arlander_en/.
 - 17 *Year of the Horse (Sitting on a Rock)*, 2003 (12 min. 28 sec.), DV 4:3.
 - 18 *Year of the Goat—Harakka Shore 1–3*, 2004 (40 min.) DV 4:3; *Year of the Goat—Harakka Shore (installation)*, 2004 (13 min. 28 sec.), DV 4:3.
 - 19 *Year of the Monkey 1–2*, 2005 (7 min.), DV 4:3; *Year of the Monkey (installation)*, 2005 (3 min. 40 sec.), DV 4:3; *Year of the Monkey—Tomtebo*, 2005 (22 min.), DV 4:3.
 - 20 *Year of the Rooster (installation)*, 2006 (32 min.), DV 4:3; *Year of the Rooster*, 2006 (31 min.), DV 4:3.
 - 21 *Year of the Dog—Sitting in a Tree*, 2007 (8 min. 10 sec.), DV 4:3; *Shadow of a Pine I, II, III, IV*, 2007 (16 min.), DV 4:3; *Shadow of a Pine I, Shadow of a Pine II*, 2007 (16 min.), DV 4:3.
 - 22 *Year of the Pig—Weather Vane I (short)*, 2008 (23 min.), DV 4:3; *Year of the Pig—Sitting on a Cliff I–II (short)*, 2008 (46 min.), DV 4:3; *Year of the Pig—Installation*, 2008 (82 min.), DV 4:3; *Under the Spruce I–III*, 2008 (28 min.), DV 4:3. Miniature version available on Vimeo: *Year of the Pig—Weather Vane (mini)*, 2008 (4 min. 42 sec.), DV 4:3.
 - 23 *Year of the Rat—Mermaid 1–2*, 2009 (34 min. 33 sec.), DV 4:3; *Year of the Rat—Uphill—Downhill*, 2009 (19 min. 12 sec.), DV 4:3; *Year of the Rat—Dripping (short)*, 2009, (6 min. 47 sec.), DV 4:3.
 - 24 *Year of the Ox—Riding a Buoy*, 2010 (50 min.), HD 16:9; *Year of the Ox—Sitting in the Wall*, 2010 (42 min. 44 sec.), HD 16:9; *Year of the Ox—Walking in Circles*, 2010 (90 min.), HD 16:9; *Year of the Ox—Walking in Circles (short)*, 2010 (19 min. 16 sec.), HD 16:9; *Year of the Ox—In a Yoke 1–2*, 2010 (5 min. 10 sec.), HD 16:9.
 - 25 *Year of the Tiger (long)*, 2012 (87 min.), HD 16:9; *Year of the Tiger*, 2011 (28 min. 19 sec.), HD 16:9; *Year of the Tiger (mini)*, 2012 (6 min. 19 sec.), HD 16:9.

Calling the Dragon, Holding Hands with Junipers

Rabbit,²⁶ Year of the Dragon,²⁷ and Year of the Snake,²⁸ as well as the second Year of the Horse.²⁹ The works from one year were usually shown together in one exhibition, including other works created during that year.

In addition, during two of the years, I performed on Sundays in Kalvola, a place 120 kilometres north of Helsinki, sitting with a red scarf on my shoulders on a birch tree trunk, as well as walking up and down the stairs in the garden (in 2005–6)³⁰ and hanging with a yellowish scarf on my shoulders from an old pine tree and leaning against it (in 2006–7).³¹ These extrapolations, which I have discussed in relation to the idea of autotopography (Arlander 2012a), can also be understood as transpositions. What was transferred or transported to another location (besides the scarf) was not the action but the schedule, the weekly (or monthly) visit throughout a year. Moreover, they repeated the “tune” of the works of that year in some sense (like working with pine trees), and were exhibited together with them.

DAY AND NIGHT OF THE YEAR

Besides documenting the changes in the landscape in a particular place during one year, a day and a night were recorded in the same place each year. The change between an image of one year recorded once a week and an image of a day and night recorded with two- or three-hour intervals, between a big cycle and a small cycle, was often marked by a shift in camera position: narrowing the visual focus as an equivalent of the tightening of the time span. This kind of thinking in equivalencies, although somewhat arbitrary in most cases—a year as a wider shot compared with a day and night as a closer shot—is key to the logic of transposition here. The difference between a smaller cycle and a larger cycle is transposed into the difference between a smaller shot size and a larger shot size.

Transferring the action of the year to a day and night (i.e., sitting on a rock once a week for a year and sitting on that same rock every two hours for a day and night, with the camera closer) involved a transposition; the action of the year always preceded that of the day and night. In the beginning the logic was

26 *Year of the Rabbit—With a Juniper*, 2012 (20 min. 10 sec.), HD 16:9; *Year of the Rabbit—By the Bird Shed*, 2012 (20 min. 10 sec.), HD 16:9. Miniature version available on Vimeo: *Year of the Rabbit—With a Juniper (mini)*, 2012 (6 min. 50 sec.), HD 16:9.

27 *Year of the Dragon Waving (A & B)*, 2013 (50 min. 13 sec.), HD 16:9; *Calling the Dragon (North, East, South & West)*, 2013 (46 min. 50 sec.), HD 16:9; *Calling the Dragon 1–4 (Bell)*, 2013 (6 min. 28 sec.), HD 16:9.

28 *Year of the Snake—Swinging (installation)*, 2014 (36 min. 30 sec.), HD 16:9; *Year of the Snake—By the Swing*, 2014 (50 min. 41 sec.), HD 16:9; *Year of the Snake—Watching the Harbour*, 2014 (55 min. 3 sec.), HD 16:9; *Year of the Snake—Swinging Along (mix)*, 2014 (3 min. 30 sec.), HD 16:9; *Year of the Snake—Swinging Along*, 2014 (26 min. 30 sec.), HD 16:9; *Year of the Snake—In the Swing*, 2014 (16 min. 8 sec.), HD 16:9. Miniature version available on Vimeo: *Year of the Snake (mini)*, 2014 (3 min. 6 sec.), HD 16:9.

29 *Year of the Horse—Calendar 1–2*, 2015 (installation) (11 min. 10 sec.), HD 16:9.

30 In all, forty-eight times, approximately at noon on Sundays between 22 May 2005 and 14 May 2006. *Sitting on a Birch*, 2006 (24 min. 15 sec.), DV 4:3; *Secret Garden 1+2*, 2006 (24 min.), DV 4:3; *Secret Garden 1*, 2006 (24 min.), DV 4:3.

31 Once a month in 2006 with the exception of April, which was made in 2007. *Year of the Dog in Kalvola—Calendar*, 2007 (4 min. 10 sec.), DV 4:3, and *Year of the Dog in Kalvola—Calendar 1–2*, 2007 (4 min. 20 sec.), DV 4:3.

not very clear, however. The day and night on the site and with the action of the Year of the Horse (2002) was performed only during the next Year of the Goat (2003) and named after that,³² the day and night of the goat was performed in the Year of the Monkey (2004),³³ and the day and night of the monkey was performed in the Year of the Rooster (2005). With the day and night of the rooster finally performed during its own year, there were two days and nights for that year.³⁴ The following years the days and nights were recorded during their own year, with the exception of the day and night of the rabbit, which was performed in the Year of the Dragon.³⁵ Five of them used the same framing of the image as the year,³⁶ five were framed in tighter close-up,³⁷ while two were recorded on a different but related site,³⁸ such as the stone base of a smaller building next to the larger one used for the year; a kind of transposition again, this time in spatial scale.

VARIATIONS OF TRANSPOSITIONS

We could think of transpositions taking place during the process of performing, editing, exhibiting, and so on. Also, the choice of several sites and actions for one year could be understood as a transposition. In most cases there was no preconceived “tune” to be transposed; a “tune” can be recognised only with hindsight. Lying on the rocks as the shadow of a pine tree could be seen as a transposition of sitting in a pine tree, with the pine emerging as the “tune.” And sitting under a spruce the following year could be thought of as a transposition of “working with a tree.” Some more obvious transpositions were produced by the mode of recording: In the Year of the Dog, I recorded the same pine tree from two opposite directions, with the city or the sea in the background. In the following Year of the Pig, I recorded myself sitting in two places on the cliffs with the camera in the centre turned in opposite directions, the city and the sea. This shift—from moving the camera and focusing towards the centre to turning the camera on the spot focusing in opposite directions—worked

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- 32 *Day and Night of the Goat—Easter*, 2003 (20–21 April 2003) (6 min. 20 sec.), DV 4:3; and a variation, *Sitting on a Rock (Rock with Text)*, 2003 (20–21 April 2003) (6 min. 20 sec.), DV 4:3.
- 33 *Day and Night of the Monkey (installation)*, 2004 (10–11 April 2004) (13 min. 28 sec.), DV 4:3, and *Day and Night of the Monkey*, 2004 (10–11 April 2004) (13 min. 28 sec.), DV 4:3.
- 34 On the site of the year of the monkey: *Day and Night of the Rooster 1–2*, 2005 (24–25 June 2005) (13 min.), DV 4:3, and *Day and Night of the Rooster (installation)*, 2005 (24–25 June 2005) (1 min. 14 sec.), DV 4:3. On the site of the year of the rooster: *Christmas of the Rooster 1–3 (installation)*, 2006 (25–26 December 2005) (24 min.), DV 4:3; *Christmas of the Rooster—Walk (trailer)*, 2006 (25–26 December 2005) (1 min. 54 sec.), DV 4:3, and *Christmas of the Rooster—Tomten*, 2006 (25–26 December 2005) (18 min. 32 sec.), DV 4:3.
- 35 *Day and Night of the Rabbit—In the Year of the Dragon 1–2*, 2012 (16–17 June 2012) (40 min. 20 sec.), HD 16:9.
- 36 *Christmas of the Rooster, Day and Night of the Pig*, 2008 (22–23 September 2008) (8 min.), DV 4:3; *Day and Night of the Rat—Mermaid*, 2009 (22–23 December 2008) (11 min. 10 sec.), DV 4:3; *Day and Night of the Ox*, 2010 (1–2 May 2009) (14 min. 15 sec.), HD 16:9; and *Day and Night of the Snake—Swinging*, 2014 (6 min. 46 sec.), HD 16:9.
- 37 *Day and Night of the Goat—Easter, Day and Night of the Monkey, Day and Night of the Rooster, Day and Night of the Dog*, 2007 (20–21 October 2006) (4 min.), DV 4:3; and *Day and Night of the Rabbit—In the Year of the Dragon*.
- 38 *Day and Night of the Tiger*, 2011 (24–25 June 2011) (9 min. 44 sec.), HD 16:9; *Day and Night of the Tiger 1–2*, 2011 (24–25 June 2011) (7 min. 43 sec.), HD 16:9; and *Day and Night of the Dragon 1–3*, 2013 (2–3 February 2013) (19 min. 30 sec.), HD 16:9.

like a transposition of the double image. A similar type of transposition from “inward” to “outward,” albeit in four directions rather than two, took place between recording the square stone base of a building from four directions, moving the camera around it, in the Year of the Tiger, and recording the view from the rooftop of the bunker in the Year of the Dragon, by turning the camera in the centre in four directions. Here the act of transposition, of repetition with a difference in a new context, was used as a working tool. With the help of transposition, a “tune” can be found; or, if a “tune” already exists, it can be played with.³⁹

An example of playing with an existing “tune” was the act of returning to the site of the Year of the Horse (2002–3) to repeat the same action with the same scarf again during Year of the Horse (2014–15), albeit with small variations, such as performing once a month rather than weekly, and with different image proportions using a different camera. The most striking transformation was produced by the schedule, and the resulting change in rhythm, rather than by the expected changes in the landscape over twelve years.⁴⁰ Yet another form of transposition took place through the various experiments in swinging together, which I have continued exploring, using the same swing as in the Year of the Snake; here, the combination of actions has changed with each new variation. These experiments were always slightly modified, with the swing and swinging as the “tune.”

We could also interpret the variations produced during the process of editing as transpositions; alternative actions performed in the same place were often separated to be shown side by side in an installation. Likewise, works with varying durations were edited from the same material. Rather than transpositions, however, these variations are better understood as simply versions of the work. The same goes for variations within a work, depending on what we consider the work to be—what is the whole and what is a part? Is *Animal Years* the work, and all the years only parts? Do the various works created in the same year (using the same scarf and related gestures) form a whole, of which the individual works are only parts? If not, then what if the same material was edited into longer or shorter versions, for screening and to be synchronised in an installation, for instance? Or, finally, if one part of the installation version was used as the screening version, would the very same piece become two different works? Sometimes a phase in the working process, an extra experiment, and a version of the work are interchangeable. The main question in most cases is, what is repeated and what is changed; what is maintained to remain as similar as possible, what is transformed or allowed to shift with the circumstances.⁴¹

39 Thank you to the editor, Michael Schwab, for making me aware of this.

40 The working process and the changes that took place I have discussed in a recent article (Arlander 2016b).

41 I have discussed the various repetitions involved in editing and installing in “What Is Repeated, What Is Changing?” (Arlander 2012c, chap. 11.5, 343–49).

“OTHER EXPERIMENTS” AS TRANSPOSITIONS

As an expansion or indeed transposition of each individual year during *Animal Years*, which I performed in one or several places on Harakka Island, I often made experiments in other places as well, using the same scarf and the same or a similar gesture, although mostly without returning to the same place with regular intervals. These “other experiments” were made as variations or repetitions with a difference of the main gesture or theme of that year in alternative circumstances: the basic idea was transposed into a new context, recreating the “tune” of that year, stretching it sometimes beyond recognition. These experiments created outside the island during each year are perhaps the most obvious examples of transpositions in this group of works.

The variations created during the Year of the Rat can serve as a demonstration. One of the starting points for my actions that year was the sculpture *Den Lille Havfrue (The Little Mermaid)* by Edvard Eriksen in Copenhagen and the fairy tale by Hans Christian Andersen that served as its inspiration. It provided the basis for my sitting on a boulder on the shore with bare feet. The works created on the island during the Year of the Rat included other repeated gestures besides the one emulating the little mermaid,⁴² like walking up and down the stairs or pouring water from the sea. The gesture of sitting on a rock wrapped in a lilac scarf, with feet to one side, echoing the fishtail of the mermaid, was nevertheless the one that I transferred to other shores. Sometimes I returned repeatedly to the same place for one or two weeks, as in Tunisia⁴³ or on Cape Verde.⁴⁴ Sometimes I made images enacted in one session, almost like still images, in locations ranging from Jeju Island in Korea to the coast of Norway, sitting not only on rocks and boulders but also in the water or even in snow.⁴⁵ The most fascinating variations involved sitting next to the actual sculpture in Copenhagen, which by accident happened on her ninety-fifth birthday,⁴⁶ and sitting on flat earth next to the water basins in a salt plant.⁴⁷ What emerged as the “tune” to be transposed in these experiments was, besides the lilac scarf that remained the same, the posture of sitting with the feet to the left of the body.⁴⁸

A similar type of physical transposition of a gesture until it reached the limits of recognisability took place when riding a buoy, which was transformed into riding a rock or even a piece of wood,⁴⁹ as discussed in another text (Arlander 2014c) in which I arrived at two observations or claims: first, a gesture cannot

42 *Year of the Rat—Mermaid 1-2*, 2009, two-channel video installation (34 min. 33 sec.), DV 4:3; *Day and Night of the Rat—Mermaid*, 2009 (11 min. 10 sec.), DV 4:3.

43 *On the Mediterranean Shore 1-4*, 2009, four-channel (or two-channel) video installation (10 min.), DV 4:3.

44 *On the Atlantic Shore 1-2*, 2009, two-channel video installation (23 min. 17 sec.), DV 4:3.

45 *Mermaid Variations 1-9*, 2009, three-channel video installation (3 min. 58 sec.), DV 4:3.

46 *The Little Mermaid—95th Birthday*, 2009 (5 min. 10 sec.), DV 4:3.

47 *Sal 1-2*, 2010, two-channel video installation, HD 16:9 (26 min. 17 sec.); and *Sal 1-2*, 2010 (26 min. 17 sec.), HD 16:9.

48 I have discussed working with the idea of the mermaid in the salt plant in detail in Arlander (2012c, chap. 13, 377–95).

49 *Year of the Ox—Riding a Buoy*, 2010 (50 min.), HD 16:9; *Year of the Ox—On Rock and Wood*, 2010 (50 min.), HD 16:9; and *Year of the Ox—Riding a Buoy and Year of the Ox—On Rock and Wood*, 2010, two-channel video installation (50 min.), HD 16:9.

be understood separately from its context or environment; and, second, a gesture will change and transform in reaction to its context or environment. Continuing from that, we could state the obvious: a transposition will require some form of transformation or change in order to be a transposition rather than a simple relocation. During the same Year of the Ox, I tried, for instance, to translate walking in circles chained to a ring on the ground into stretching and circling with the above-ground roots of acacia plants on sand dunes, and the action was indeed transformed.⁵⁰ It is actually questionable whether a viewer would recognise the “tune,” the link between the works, besides the scarf.

One of the gestures I enjoyed most repeating in various versions was standing next to a juniper or “holding hands” with the bush covered by a green scarf. I have discussed the experience of holding on to a juniper and standing next to a bird shed⁵¹ in detail elsewhere (Arlander 2015a, 2015b). These actions performed weekly on the island were relocated to various places that I visited during that year, resulting in works based on either one image with a juniper-like tree or bush⁵² or a series of images with junipers or juniper-like plants in a specific location,⁵³ even in works without anything resembling junipers.⁵⁴ In most of the brief descriptions attached to these works I speak of “spending time with junipers,” if not explicitly “holding hands with junipers.” I performed with junipers in Kalvola, Kökar, Clare Island, Osaka, Seili, and Crete in 2011 and in Ismolás, Rovaniemi, Ibiza, and Ses Salines in 2012, as well as in some other places, although the performances were never edited and published.

In a similar manner, the action of swinging in the Year of the Snake was easy to transfer, simply by hanging the swing from various types of trees, although I often tried to find some form of shore to increase the resemblance to the site on the island. Sometimes only one tree served as the basis for a work,⁵⁵ sometimes a group of related trees were combined in one work;⁵⁶ the variations are named after the locations—Porches, Split, Mugoni, Tiburon—except for the works compiled from images (in silhouette) from Croatia and Sardinia.

Some years, however, I made other experiments, which are not recognisable as transpositions or even variations of the theme of that year, since they followed their own logic, such as the works combined into “The Steaming

50 *Year of the Ox—Walking in Circles*, 2010 (90 min.), HD 16:9; *Year of the Ox—Walking in Circles (short)*, 2010 (19 min. 16 sec.), HD 16:9; *Annual Rings*, 2010 (11 min. 12 sec.), HD 16:9; and *Sketches and Exercises*, 2010 (60 min. 58 sec.), DV 4:3.

51 *Year of the Rabbit—With a Juniper*, 2012 (20 min. 10 sec.), HD 16:9; *Year of the Rabbit—By the Bird Shed*, 2012 (20 min. 10 sec.), HD 16:9; and *Year of the Rabbit—With a Juniper & Year of the Rabbit—By the Bird Shed*, 2012, two-channel video installation (20 min. 10 sec.), HD 16:9.

52 *With a Juniper—Crete*, 2012 (6 min. 54 sec.), HD 16:9; *Holding Hands with a Juniper—Osaka*, 2012 (4 min. 8 sec.), HD 16:9; *Holding Hands with a Juniper—Seili*, 2012 (7 min. 11 sec.), HD 16:9; *Becoming Juniper in Rain*, 2012 (3 min. 52 sec.), HD 16:9.

53 *Holding Hands with Junipers—Ibiza*, 2012 (15 min. 6 sec.), HD 16:9; *Becoming Juniper—Ismolás*, 2012 (19 min. 45 sec.), HD 16:9; *Becoming Juniper—Ses Salines*, 2012 (6 min. 44 sec.), HD 16:9; *Becoming Juniper—Rovaniemi*, 2012 (37 min.), HD 16:9; *Becoming Juniper—Kalvola*, 2012 (16 min. 50 sec.), HD 16:9; *Becoming Juniper—Kökar*, 2012 (30 min. 42 sec.), HD 16:9.

54 *Looking for a Juniper—Claire Island*, 2013 (15 min. 19 sec.), HD 16:9.

55 *Swinging in Porches*, 2014 (2 min. 27 sec.), HD 16:9; *Swinging in Tiburon*, 2014 (12 min. 29 sec.), HD 16:9; *Swinging in Mugoni*, 2014 (11 min. 46 sec.), HD 16:9.

56 *Swinging in Split*, 2014 (4 min. 6 sec.), HD 16:9; *Swinging in Silhouette 1*, 2014 (6 min. 15 sec.), HD 16:9; *Swinging in Silhouette 2*, 2014 (7 min. 21 sec.), HD 16:9.

Earth”⁵⁷ during the Year of the Tiger, which played with volcanic steam. The use of a white scarf coupled with something white in the environment could be seen as a “tune,” although I swapped the rough off-white blanket (used on Harakka) for a soft white shawl to travel with. Some years I did not make experiments with the action of the year anywhere else, no transpositions at all, as was the case with the Year of the Dragon. In what follows I will look at the act of transposition more closely by comparing the difficulty of transposing the practice of calling the dragon with the ease of rerouting the seemingly more site-bound practice of holding on to a juniper.

TO TRANSPOSE OR NOT TO TRANSPOSE?

Why are some practices easily rerouted or re-sited, while others are hard to transpose? Visiting a specific juniper weekly in a specific place in 2011 was easily extended to other junipers in other places or transformed into looking for a juniper in places without such bushes. Calling the dragon from the rooftop of a bunker in 2012, on the contrary, was not easily re-sited, transformed, or transposed, although no specific rootedness prevented migration. Both projects—*Year of the Rabbit with a Juniper* and *Calling the Dragon*—were part of the same series of performances for camera, on Harakka Island off Helsinki, and formed the tenth and the eleventh year of *Animal Years* (2002–14). The basic technique of performing landscape, of visiting the same place once a week, placing the camera on a tripod in the same spot, and using the same framing of the image was used in both projects. As it happened, I also used the same green scarf.

In the Chinese calendar with its cycle of twelve years, each named after a specific animal, the dragon is the only mythical creature, representing creative power and good luck. In European mythology, the dragon is a monster, or an image to indicate the border between the known and the unknown, as in old maps: “Here be dragons.” During the Year of the Dragon, once a week I called the dragon by ringing a small green ceramic bell brought from a temple in Kyoto from the roof of a bunker built after WWII on Harakka Island. The performances were recorded on video and in a blog.⁵⁸ Despite repeated attempts, I never succeeded in calling the dragon anywhere else.

During the Year of the Rabbit I chose a specific element of the landscape to visit, a juniper growing in the south-eastern part of the island; unlike in previous years, I made the performance a public event, on Sundays at three p.m., announcing it on a blog.⁵⁹ In preparation I also posed next to a nearby bird shed on the same occasions. Later I visited many other junipers in other places. These “other experiments” in new contexts retained the scarf, a related gesture, and a sufficiently similar partner (the juniper or something resembling one), although the place, the camera angle, and the time schedule were changed according to circumstances.

⁵⁷ *Vulcano* 1–3, 2011 (8 min. 15 sec.), HD 16:9; *Krysvik* 1–5, 2011 (20 min. 15 sec.), HD 16:9; *Furnas* 1–3, 2011 (10 min. 40 sec.), HD 16:9.

⁵⁸ <http://aa-callingthedragon.blogspot.fi/>.

⁵⁹ <http://aa-katajankanssa.blogspot.fi/>.

During the Year of the Dragon I chose to call the dragon by ringing a bell from the rooftop of an old bunker, and to repeat the action in four directions: first with my left hand, on the right side of the image; then with my right hand, on the left side of the image; and at the end completely invisibly behind the camera in the centre of the image. I also called the dragon by waving a long green ribbon from the rooftop of the bunker and from a nearby hill. Calling the dragon by waving a ribbon could be thought of as a transposition of calling the dragon by ringing a bell; but, although the intention is the same, the form of the action is so different that no recognisable “tune” is created. This time I did not fix the time nor invite any witnesses. The idea of recording the view in four directions with the camera at the centre was as an echo of my action during the Year of the Tiger (2010), when I moved the camera around the square structure of an old stone base of a building to create four perspectives of the same place.⁶⁰

Whereas my focus during the Year of the Rabbit was on exploring contact with a particular element in the landscape, a living creature—that is, a juniper—in a tangible, sensuous way, my performance during the Year of the Dragon was literally linked to the animal of the year, the mythic dragon, and to working with sound. While covering myself with a scarf, standing next to the juniper and holding on to it or “holding hands” with it, resting in the intimate protected space within the scarf, I was focused on the sense of touch and on my breath. At the same time, the sounds of the environment were accentuated, because the scarf blurred my vision. While ringing the bell on the rooftop in the Year of the Dragon I concentrated on listening to the sound of the bell and to potential responses, but also on vision, since from the rooftop I could see far and wide. Whereas the juniper I performed with was concrete, tangible, very much existing and alive, albeit a plant, the dragon I called was an idea, a fantastic animal, a fictional creature, something I tried to imagine or just forgot, while being immersed in the view and the wind.

The sensuous quality of performing with a juniper was easily transposed to other circumstances and I was eager to try to find possible junipers and juniper-like bushes to work with, either by holding on to them or by standing next to them. Every juniper was both a partner and a place, something to encounter and engage with. The dragon, on the contrary, was a slightly scary idea, not something that I really believed in or managed to visualise in a productive way. Paradoxically, my first impulse when trying to find a place to call the dragon on a trip to Malta was not to search for dragons or representations of dragons, as I had planned, but to look for a building or site resembling the bunker, something square I could climb up on. I tried to transpose not only the action but also the site and the idea of four directions. I actually found a tower with a rooftop terrace open in four directions, but the resulting images of my hand with a bell against the sky seemed meaningless and uninteresting.

One reason for the difficulty in transposing the action of calling the dragon was probably that the action was complicated, not one action but a series of

60 For a description and discussion of that work, see Arlander (2012b).

actions repeated in four directions and with both hands—an entanglement of sorts. The action was also unclear; it was part of a complicated combination of actions, images, and circumstances, which could not easily be repeated or recreated, involving helicopters flying over the island repeatedly, associations to the war through the bunker, and other details I am not completely aware of. The entanglement of these components, the “tune,” was both too specific and too general to be easily transferred or relocated as such, and also too complicated to be varied. Or, perhaps, I simply could not decide which elements to keep constant and which to transform or what exactly the entanglement to be transposed would be. Simply ringing the bell in various places did not seem to be enough or to produce enough consistency; it was too easy, an empty gesture. The idea of calling the dragon, whether in four directions or not, was too abstract, although one could expect that an abstract idea would be easy to transpose. Probably one of the main reasons for abandoning the attempt at calling the dragon anywhere other than on the rooftop of the bunker was my fondness for junipers and for spending time with them. I continued this practice on my trips during the Year of the Dragon as well.

In the case of the juniper, the action was simple but the transpositions were many, depending on the site and the plants. What always stayed the same was the gesture of covering my head with the green scarf to form a “juniper-like” figure. The variations differ from standing next to or holding on to a juniper via sitting with or even on a juniper to simply standing in the landscape (in *Looking for a Juniper on Clare Island*). Some of the works include only one still act and resemble still images, such as *Becoming Juniper in Rain*, *Holding Hands with a Juniper—Seili*, and *Holding Hands with a Juniper—Osaka*, where the gesture is extended upwards, holding on to a branch of a tree. *With a Juniper—Crete* includes two images, leaning on a heavily bent juniper, and then standing next to it. Some of the works are compilations of several images without any specific logic except that they are recorded in the same area, such as *Becoming Juniper—Kalvola*, *Becoming Juniper—Kökar*, *Becoming Juniper—Ses Salines*, *Becoming Juniper—Ismolas*, and *Becoming Juniper—Rovaniemi*. In *Holding Hands with Junipers—Ibiza*, the gesture of holding on to the juniper was central. In this case one could ask what exactly was the “tune” or entanglement that was transposed, since the variations were many—simply standing covered with the scarf? And why was that not too “simple,” if ringing a bell was not enough?

As the juniper is a living creature, performing with it differs from standing next to a wooden bird shed, or ringing a ceramic bell to call for an imaginary being. If one of our tasks is to overcome the ingrained habit of thinking in terms of mind–matter dualism or its common extension animate–inanimate dualism, plants (like junipers) seem to be excellent cases to rehearse with. Experientially they are like intermediaries between the world of things and the world of animals (including humans) and are apt to sensitise a human being encountering them as well. Moreover, through their photosynthesis they are the true creators of our world and thus an indispensable ingredient in the performance of life on this planet in its current oxygen-based form.

Calling something that might or might not exist, rather than encountering and engaging with something that is growing there next to you, explains the difference in my experience during these two projects to some extent. It would be tempting to think of the difference with the help of old dichotomies, such as the contrast between approaches in documentary film and fiction film, or the differences between traditional performance art, focused on presentation or “the real,” and theatre, concerned with representation. These dichotomies do not explain, however, why the imaginary, fantastic, and seemingly more immaterial practice was harder to transpose and relocate than the concrete and at least superficially more material and site-specific practice. Perhaps the main reason was the degree of complexity; the simpler action was easier and more rewarding to transpose, while the complicated entanglement was too demanding.

Or, perhaps only my limited sensory apparatus or imagination prevents me from seeing the bird shed, the bell, or the dragon as being alive in the same manner as the junipers. For Barad they would all be part of the performance of the universe in some sense. For her, meaning or intelligibility are not restricted to humans. She consequently refuses to separate discourse and materiality and prefers to speak of material-discursive practices. “Discursive practices are the material conditions for making meaning. . . . [and] meaning is an ongoing performance of the world in its differential intelligibility” (Barad 2007, 335).

On the basis of the examples above, all of which involve some relocation with transformation, the term “transposition” seems to be useful in at least two senses: on the one hand, to describe a tool in artistic decision-making, an action where a “tune” or an entanglement of components is transposed to other circumstances to create new work; and, on the other hand, to describe the “tune,” which emerges as the result of repetitions with a difference, and can often be recognised only with hindsight. The idea of a recognisable “tune” is not always useful, though: transposing a gesture or an action can sometimes be more interesting as a working tool exactly when the “tune” is not supposed to be recognisable. Barad’s notion of entanglement is useful in specifying the rather metaphorical use of the word “tune” I have here used to describe that “something” that is transposed or produced by the act of transposition. The idea that changing some component of an entanglement necessarily leads to changes in the others helps describe some of the variations generated and explain some of the difficulties as well. In the example of calling the dragon, the complexity of the entanglement was less conducive to translocations than the simpler entanglement of scarf and juniper, which invited repetition with a difference and generated a variety of transpositions. What is transposed and what is discarded, what generates further transpositions and what is merely repeated will shift according to the situation and the entanglement at hand. In any case, it seems that (a) working with repetition and relocation invites transpositions and (b) transposition is useful in describing artistic practices that involve repetition with a difference. Whether the term is useful for articulating artistic research practices in a more general sense remains to be explored.

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Aberrant Likenesses:

The Transposition of Resemblances in the Performance of Written Music

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I

In chapter 13 of his book on the painting of Francis Bacon, *Francis Bacon: The Logic of Sensation*, Gilles Deleuze proposes two modalities of analogy in visual art. On the one hand, “analogy” is attained when resemblance is “the producer”; that is, when “the relations between the elements of one thing pass directly into the elements of another thing, which then becomes the image of the first.” On the other hand, when resemblance is “the product . . . it appears abruptly as the result of relations that are completely different from those it is supposed to reproduce: resemblance then emerges as the brutal product of nonresembling means” (Deleuze 2003, 115). The first kind refers, for example, to photography, where the relations of light are directly captured and transferred onto the film to produce an image that points to an original referent, despite all the eventual differences to it. In the second kind, the analogy between the two things is dictated not by a figurative and representational *code* but by a sensible and sensual communality. The fundamental difference between these two relational procedures, and the possibility of enquiring into it also in music performance through a practical artistic approach, is the basis for the reflections contained in this chapter.

Producing a resemblance through nonresembling means has been the watchword of the musical practice I present here as part of my artistic research project. This practice considers the legacy of Western notated art music as a starting point, proposing an approach to the musical past and to written repertoire that radically differs from the traditional performing attitudes named “execution” and “interpretation.”¹ In this chapter, I use the term “transposition” to describe the process of divergence from such a starting point through a practical artistic activity, in search of answers to the following questions: Is it possible to transfer some of the relations that constitute a musical score into

¹ The terms “execution” and “interpretation” are here used mostly in relation to the two conflicting principles in music transmission that are individuated by Igor Stravinsky (2016), as will be explained later. For an exhaustive historical analysis of the terms, see Danuser (2015).

a sounding result that shows no direct correspondence to them? If so, how can we explain the modalities through which the new relations are produced, and what implications follow?

Since the problem of transposition primarily involves the musical form and its internal proportions, this problem is in the first place a compositional one: it can be investigated through the constitution of musical objects whose aesthetic characteristics produce an analogy of the second kind with an existing musical work. Yet, importantly, it opens a meta-reflection on the traditional performance attitudes it departs from. The problem of transposition in music performance is at the same time less clear and more complicated than an equivalent example in visual representation, such as that of Bacon. It is unclear because music is less directly and dominantly representational than painting, especially in the contexts we are dealing with—Western visual art, with its extensive history of representation, and Western cultivated music, with its language so prominently developed into abstract and almost self-contained systems. And it is complicated because, as an allographic art,² the performance of written music encompasses as its premise a moment of mediation between two sides: the “objectual” side of the score and the “eventive” side of the generation of sound and gestures. On the one hand, we cannot venture to claim that music performance “represents”; on the other hand, though, exactly this hiatus lies between the two inextricable and yet idiosyncratic sides of written music, and the appeal for faithfulness that such a hiatus has increasingly entailed throughout its history leads us to think of the practice of performance as at least “mimetic.” As Theodor W. Adorno (2006, 60) underlines, “if notation mimics music, then performance must mimic the written music,” which implies a relationship between the two sides that is remarkably symmetrical to representational processes.

Therefore, the relationship of resemblance that we wish to redefine between a score and its sounding result must take into account not only formal and aesthetic features, but also a performative approach that aims to be radically different from the pre-established relation between composer and interpreter, or score and sound. If the production of resemblance concerns precisely this movement from a score and its performance, then we cannot envision transposition merely as a recompositional practice that produces a purely aesthetic result—for example, the production of a new score that contains in its premises a further need for mediation. For example, instances of the *production* of resemblance in music in the Deleuzian sense cited above can be found in significant works or passages by Salvatore Sciarrino, a composer whose influence is pivotal for the very idea of musical transposition as intended in this chapter. In his *6 capricci* for solo violin (1976), Sciarrino points to the gestural world of Niccolò Paganini's Twenty-Four Caprices without manipulating the musical code of his antecedent in any way: he does not quote Paganini, or insert material derived from Paganini's scores, nor does he try to mimic anything we might

2 For the notion of allographic or non-autographic art, see Goodman ([1968] 1976, 113–15).

designate as “style.” Sciarrino evokes a *memory* of the original caprices—but an uncannily inverted one, as if the act of remembrance paradoxically coincided with the erasure of its object—through a language and a sonic world that is entirely his own. Despite this prominent achievement, a *performer* approaching such a score is faced with a task that is not too dissimilar from playing a score by Paganini: the kind of correspondence between score and sounding result he or she will be after will be largely unchanged. In this sense, transposition is understood here not only as an artistic practice but also as a potential implement of enquiry into the performative operative ways it departs from. More than a methodology to create new musical instantiations, it generates artistic products that can provide an entry point into a modality of thought that not only allows a meta-reflection but also transcends the merely formal and compositional—even merely musical—dimension to enter a broader discourse about representation. The pictorial example of Bacon, read through the reflections of Deleuze, will be employed to help find a terminology for the musical processes here described.

II

Let us proceed to examine a concrete example of transposition, from which we will derive reflections on its operative ways and procedural implications. The departure point is a madrigal written by Nicola Vicentino (1511–c.1576) in 1555, *Madonna il poco dolce*. Transposing it into a new sonic instantiation (Audio track 4.1)³ combined three different phases: a preparatory traditional approach, consisting of reading its score (Vicentino 1990, 20–22) (figure 4.1) and executing it, as well as listening to some existing recordings of it; the recording, editing, and processing of an electronic sample; and a live semi-improvisatory performance by a guitarist—myself—and a violist, to be played live along with the sample.

3 The sound examples included here are being developed in the framework of the research project *Vicentino: A Second Life*—initiated by Bob Gilmore (1961–2015) and now continued by Trio Scordatura—which investigates the legacy of the musical system developed by Nicola Vicentino. The piece was recorded in Ghent, in the Concert Hall of the Orpheus Institute, on 1 October 2014, and was performed by Lucia D’Errico (electric guitar and sample) and Elisabeth Smalt (viola).

Madonna
Ma - don - na, il po - co dol - ce, il po -
Ma - don - na, il po - co dol - ce, il po - co dol -
Ma - don - na, il po - co dol -
Ma - don - na, il po - co dol - ce, il po - co dol -

5
- co dol - ce, Ma - don - na, il po - co dol - ce e il mol - to a -
- ce, Ma - don - na, il po - co dol - ce e il mol -
- ce, Ma - don - na, il po - co dol - ce e il mol - to a
- . . ce, Ma - don - na, il po - co dol - ce e il mol - to a -

10
- mar - o, Il bre - ve ri - so, Il bre - ve ri - so, il trop -
to a - mar - o, Il bre - ve ri - so, Il bre - ve ri - so, il trop -
- mar - o, Il bre - ve ri - so, Il bre - ve ri - so, il
- mar - o, Il bre - ve ri - so, Il bre - ve ri - so, il trop -

Fig. 4.1a-c

Aberrant Likenesses

1
-po lun - go pian - to, il
-po lun - go pian - to, il trop - po lun -
trop - po lun - go pian - to, il trop - po lun -
-po lun - go pian - to,

20
trop - po lun - go pian - to, il trop - po lun - go pian - to,
- go pian - to, il trop - po lun - go
- go pian - to, il trop - po lun - go pian - to,
il trop - po lun - go pian -

25
M'han - no ri - dot - to à tan - to, Che'l pian - ger sem - pre sos - pi -
pian - to, M'han - no ri - dot - to à tan - to, Che'l pian - ger
M'han - no ri - dot - to à tan - to, M'han - no ri - dot - to à tan - to, Che'l
to, M'han - no ri - dot - to à tan - to,

30

- rar, Che'l pian - ger sem - pr'e sos - pi - rar mi'è
sem - pr'e sos - pi - rar, Che'l pian - ger sem - pre e sos - pi - rar mi'è
pian - ger sem - pr'e sos - pi - rar, Che'l pian - ger sem - pr'e sos - pi - rar, mi'è ca -
Che'l pian - ger sem - pr'e sos - pi - rar mi'è ca -

35

ca - ro, Che'l pian - ger sem -
ca - ro, Che'l pian - ger sem - pr'e sos - pi - rar, Che'l pian - ger
- ro, Che'l pian - ger sem - pr'e sos - pi - rar mi'è ca - ro,
- ro, Che'l pian - ger sem - pre e

40

pr'e sos - pi - rar mi'è ca - ro.
sem - pr'e sos - pi - rar mi'è ca - ro.
e sos - pi - rar mi'è ca - ro.
sos - pi - rar mi'è ca - ro.

Throughout these phases, three different angles on the relationship with the original object were expressed: first, in preparation, the work was experienced through the activity of the performer as *listener* and *executant*; second, a new musical sequence of events was devised, which implied a *compositional* and *formal* practice; third, the composition was inscribed, on the one hand, through phonographic fixation and electronic editing and, on the other hand, through devising the parts to be performed live, which therefore required *performative* acts. It is important to note that the second and third angles were carried out at the same time, and not as separate and consequential phases, as happens in notated music: even though the composition/performance consisted of two clearly distinct moments (recording/editing and live improvisation), both were carried out *at the same time* as the compositional and performative operations. The musical composition, that is, was directly inscribed into sound in its making. In other words, we might say that both composition and sound generation were carried out *as* performative practices. The following scheme (table 4.1) summarises the three distinct phases in time and how the three angles are subsumed by them.

Angles	First angle (listening and executing)	Second angle (compositional)	Third angle (performative)
Phases in time			
First phase (preparatory)	Listening to the original piece / executing it in a traditional way	–	–
Second phase (electronic sample)	–	Shaping the sequence of events through recording, editing, and processing	Performing the content of the sample
Third phase (live performance)	–	Shaping the sequence of events through the devising of instructions for live performance	Live improvisation according to the instructions

Table 4.1

If we continue considering Deleuze’s distinction, we can regard the first angle as an observation point on an analogy of the first kind: at the moment the performance is actualised, the original inscription’s (the score’s) relationships pass directly into the new inscription to become its relationships. In painting “there are *figurative givens*. Figuration exists, it is a fact” (Deleuze 2003, 87), it is present in the mind of the painter and in the culturally shared assumptions about *what is seen*, occupying the canvas even before he or she starts painting. As the painter “paints on images that are already there” (Deleuze 2003, 86),

the first angle of relationship with the original musical work coincides with the preparatory listening and executive phase, in which one detects the identity of the *given* from which to depart and which relations are to be redefined between the score and the sounding result. Later, we will consider in more detail what happens in traditional practices of execution and interpretation; but, for the moment, it is enough to consider that in such traditional practices, however great the margin of difference between a score and its sounding rendition, the resemblance between the two sides is still dictated by the maintenance of *internal* proportions—the sounds and gestures constituting the performance will follow a sequence that responds, to a substantial extent, to the distribution of the elements contained in the score.

The second and third angles are significantly intertwined in a performative process that is set up to shape the composition in the course of its making. Through the inscription of sound on mediums capable of fixing it directly in its vibratory status (on the one hand through recording and electronic processing, on the other hand through live improvisation), together with sound's infinitesimal inflections and the accidental and idiosyncratic marks of the performers, and not according to a rationalistic reduction into signs (what happens in notation), the electronic sample is simultaneously a composition *and* its performance, which, therefore, saturates the gap between the design of a musical form and its enactment through the physical and sensual phenomenon of sound. The live gestures of the guitarist and violist followed instructions that were given in person by me and not notated, the aim of which was to react to and intensify the electronic sample: the gap of mediation between notation and sound was eliminated also in this case. The shaping of the musical form therefore did not happen according to a prefigured structure, or to any other rule that we could call "grammatical." In relation to the preparatory phase of execution, which coincides with the first angle of relationship with the musical work—what we have compared to the observation of the figurative given in visual art—the sounds and gestures inscribed in the recording and in the instructions for live improvisation followed a path that reversed not only (as we will see) the formal relations of the composition but also the attitudinal relations of the performers. The phonographic inscription allowed the musician who recorded it (again, myself) to perform it with a sort of absent-minded and oblivious attitude that is largely unrequired from—if not detrimental to—conventional executants and interpreters (remember the part, be aware of its internal relations, play by heart!); but, at the same time, it allowed a process of selection and extremely concentrated *variation*. The medium of electronic recording allows the intertwining of ephemerality and durability—of vagueness and precision. We could also say that the process of transposition introduces an ambiguity between the already mentioned "allographic" nature of music and a new "autographic" version of it, where everything becomes infinitesimal inflection, indissoluble from the imprint of the circumstances of its making. On the one hand, transposition poses itself as a gesture of approach to an existing musical work; on the other hand, it obliterates the sounding result pre-encompassed by it.

The electronic medium catalyses the paradoxical enactment of amnesia in relation to the materials experienced during the preparatory phase of execution: a non-remembrance, or what we might call dis-membrance. The result of transposition does not pass through the manipulation of a code but emerges, partly involuntarily, from a *forgetful memory* of the original piece of music. It is as if the very relation between score and performer underwent recursive causality, where the activity of the performer (I play the piece, I remember it) was mingled with his or her passivity (I am *played by* the piece, I am forgetting it). Whereas the first approach contains the assumption that *it is* possible to remember a piece and to play it—to make the moment of performance consistently coincide with the content of the score—the intervention of passivity brings to the fore an *involuntary* activity, which involves little intellectuality and rationality and happens on the terrains of *sensation*, excited by the original piece but not directed *towards it*. To frame the importance and operational ways of involuntariness in the painting of Bacon, Deleuze has recourse to Marcel Proust:⁴ involuntary memory “couple[s] together two sensations that exist . . . at different levels of the body, and that seize . . . each other like two wrestlers, the present sensation and the past sensation, in order to make something appear that [is] irreducible to either of them, irreducible to the past as well as to the present” (Deleuze 2003, 67).

From the formal point of view, the transposition took into account not only the notational code but also the original composition’s whole capacity to affect the imaginative world of the transposer, through all its levels, importantly including the lyrics and their meaning:

Madonna, il poco dolce, il molto amaro,
 Il breve riso, il troppo lungo pianto
 M’hanno ridotto a tanto
 Che’l pianger sempre e sospirar m’è caro.

My lady, little sweetness, much bitterness,
 The short joy, the too-long weeping
 Reduced me to such a state
 That I am fond of weeping and sighing all the time.
 (Translation mine)

The several repetitions of the word *Madonna* (my lady) and of the sound “m” in the first part of the original madrigal, associated with accents that prolong it before its opening out in the vowels, coalesced with the meaning of the lyrics on unfulfilled love and prolonged torment. The vector of unvented passion and mourning spreads over the whole new sonic object producing a muted choir of human-like voices, occasionally pierced by vowels in the rare moments of climax (part A [Audio track 4.2]). The smothered sound swarms with variations of the harmonic blend, so that the presence of vowel changes is insinuated unobtrusively. The distressing clash of Vicentino’s enharmonic chords with the modern ear’s expectation for just or tempered intonation⁵ is evoked by a blurry

4 The association between Francis Bacon and Marcel Proust was suggested to Deleuze by reading John Russell’s monograph on the painter.

5 Nicola Vicentino developed a tuning system based on thirty-one divisions of the octave in order to combine the three ancient Greek modes—diatonic, chromatic, and enharmonic. His theory is explained in Vicentino (1996), accompanied by compositions, of which the madrigal *Madonna il poco dolce* is part.

and unsettling harmonic environment. The voices follow the profile of the initial chord progression, bending it in glissandos, so that it is lost in a repetition, where it becomes hybridised with other scraps of melody from later parts; subsequently, a ghost of the cadenza at bar 10 takes over and drags all the voices towards the first apex, where the “*a*” of *amaro* also emerges. The next three bars—“*il breve riso*” (the short joy), imitating a swift chuckle in the original—are suppressed (but the hint of laughter will surface later on); in their place, a crater of the unpredicted opens, unrelated to any element of the original score (part B [Audio track 4.3]). This lapse—a sequence of harmonics merged with percussive and whistling sounds—is in its turn a ghost of the preceding part, pointing to the variation of the muted sounds’ harmonic spectrum.

The next vector (carried out in part C [Audio track 4.4]) corresponds to the chromatic ascent beginning at bar 14 and culminating at bar 18. The chromatic progression is matched here with lyrics about prolonged weeping. In the new version, the harmonic profile of the progression is kept, but dilated and blurred in glissandos, and the culmination, which mimics the downbeat of bar 18 and dissolves into the short following chromatic descent, is agitated by a sense of impatience and distress. Another crater follows—a variation on the first—in which the former percussive sounds are reassembled in new patterns (part D [Audio track 4.5]). From its depths, other phantoms surface: the *breve riso* of bars 11–13, rendered through the sound of real laughter that is deprived of direct mimesis through looping, making it mechanical and artificial; the profile of the soprano’s phrases “*il troppo lungo pianto*” (the too-long weeping), bars 19–22, and “*che’l pianger sempre*” (that weeping all the time), bars 22–24, evoked in a whistling tone. Most of the remaining part of the original score is omitted, save for the final cadenza, encapsulated in one single wavering F#.

The gestures—both physical and sonic—of the live performers were in turn dictated by the energetic vectors individuated above, and once more reconfigured the relations inscribed in the sample. In part A, the guitar produces a rattling sound that reacts with the harmonic environment to explode in feedback during part B—the performer faces the amplifier and draws the pickups close to it, modulating the feedback intensity and pitch by regulating the distance and by selecting the harmonic range through a wah-wah pedal. In these gestures, the elements present in the sample are further disguised. The muffled sound “*m*” in part A, bustling with harmonic mobility, becomes the rattling sound of the strings impeded in their free vibration by the insertion of a metal object, and the vowel explosion becomes the loosened and uncontrollable sound of the feedback. The viola intervenes only in the craters (parts B and D), in a way that emphasises the craters’ lack of direction and motivation. The only extensive indications I gave to the performer concerned the harmonic range (high harmonics of the D string); the remaining instructions were aimed at having the performer play with the least possible effort and in non-developing patterns, as if she were an automaton moved by the wind. In part D, the guitar produces small agglomerations of bell-like sounds, processed through wah-wah and reverse delay, to end up in a uniform rhythmic pattern while the viola lingers on a solitary F# harmonic.

III

Transposition, we have stated, is a practice that radically differs from traditional performative approaches such as execution and interpretation, but at the same time accepts them as an inescapable given. The moment of abandonment to what Deleuze (2003, 10–11) calls the “cliché” is a fundamental one, even if its importance is measured by its rejection. Traditional performance is part of transposition only insofar as it lies *outside* it, *before* it—as in the preparatory phase of execution in the example of Vicentino. In this sense, we can suggest that in transposition the original given is regarded as something to be deducted from the musical practice, in the search for an absence *in* music and *of* music, yet one that happens *through* music. The new sonic result does not propose itself as a substitute for traditional practices of music production, or as opposed to them; its gesture effaces the features that we know constitute the musical score, but at the same time it opens the possibility for the work to grow into something other than what it was meant to be in the moment of its original inscription. Reversely, such widening of possibility undermines the very idea that the initial moment of inscription has pre-eminence in the reading of the work—even further, that such a moment can be individuated and comprehended *at all*.

Let us proceed to observe in a bit more detail the possibilities offered by transposition in comparison with those of execution and interpretation. In the process of mimesis of the score, an “executant” endeavours to achieve an unambiguous approach to the work. What is not directly contained in the score can be retraced thanks to the knowledge it is possible to accumulate around it: historical research, music analysis, performance practice treatises, period instruments . . . even if the moment in history when the work was composed was but a few years—or days—ago, the movement towards it is the same all the time. In other words, such a performer removes him- or herself from the *here and now* in order to encounter an experience external to their own, disconnected from it both in time and in space. There is a will to match the moment of the composition’s actualisation with the moment of the performance’s actualisation: from one actualisation to the other, with as little disturbance as possible, so that the image of the work is faithfully reproduced in the sounding result. We can define this relationship of absolute clarity between score and performance with the term “transmission,” utilised significantly by Igor Stravinsky (1947, 122–28) to describe an idealised process of absolute objectivity, where the musician takes care faithfully to convey the composer’s *message* without distorting it with interpretation (figure 4.2).

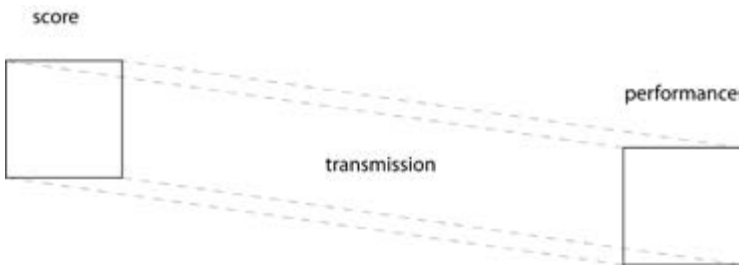


Fig. 4.2

Understandably, not many performers would agree that the task of transmission exhausts the potentialities of their roles. The moment a performance is actualised is the crossroads of an infinity of influential factors, each of which is in turn the result of a multitude of concomitances. However strictly the performer strives to stick to an unimpeded transmission, all sorts of internal and external *disturbances* intervene to twist or compromise it. Sometimes this interference is regarded as a positive contribution to performance, especially with respect to internal disturbance, the intimate world of the interpreter *expressing itself* through the music he or she is playing. Also, the external accumulation of disturbances might be considered positive: the tension conveyed by the audience, the acoustics of the hall reshaping the sound emission in the here and now; even temperature, colours, odours—the whole ecology of the performance-event contributing to its rareness and resonance. We see that there are at least two possible attitudes a performer can have to the complex array of factors influencing the sounding event’s singular moment of actualisation: on the one hand, those who carefully select disturbances so that only the ones enhancing clear transmission enter performance—that is, only the range of information strictly relating to the object in itself; on the other hand, those who welcome a more or less wider range of *other* disturbances, not foreseen in the score, intervening in the still predominant locus of transmission. The latter, who we can call “interpreters,” far from seeking to be as transparent as possible, welcome the fact that communication traverses a high degree of opacity and density, through which the sounding result will become inevitably *hued* or *disturbed* (figure 4.3).

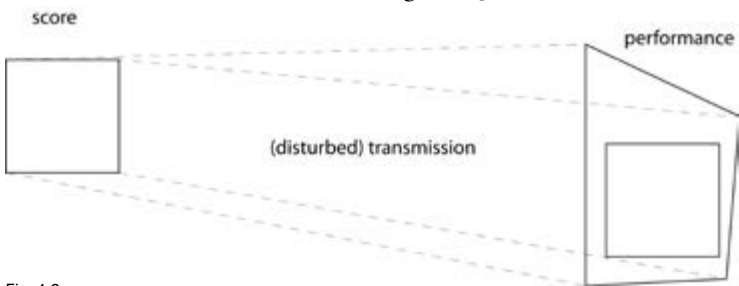


Fig. 4.3

Stravinsky saw the principles of execution and interpretation as conflicting: he was concerned by this interference of the interpretational whim, proposing to assign to the performer the task of an executant. On the contrary, the practice of transposition is an attempt to reach beyond interpretation in a

completely opposite direction, one that—rather than starting from the belief that a musical work contains a message and that the task of the performer is to hand that message over to the audience through a faithful decodification of the properties expressed by the score—explores the possibility of radically changing the status of the sounding result into a *phantasm* of the work, thus underlining the impossibility of an objective approach to written music and positing faithfulness towards such a work as ultimately unattainable.

IV

The main condition for the transpositional process to happen is thus the radical gesture of severing the direct relation of resemblance between the two sides of music-making. Let us consider the chosen score as a point of actualisation and the particular condition of the performing musician as another point of actualisation: before, we had the path of transmission uniting these two. Once this path is interrupted, the two actualisations become totally independent of each other. The externality that derives from this severance sanctions the impossibility of assimilation between score and performance, both in the literal sense (making one similar to the other) and in the metaphorically corporeal one: the straightforwardness of representation is like the healthy functioning of a digestive duct that ensures the score breaks down into absorbable components—which can merge with the functional organs contributing to the constitution of a higher system—and the expulsion of its redundant remainder. In this unproblematic trajectory, representation traces the linearity of *good sense*. If this functional duct is amputated, the indigestible score presents itself before the musician in a state of absolute redundancy, as, in turn, the *Abfall* of another living and performing organism—the activity of the notating composer. This approach shares Carmelo Bene's (2001, my translation) statement that “the destiny of the work of art is not in the work” in its residual and cadaveric state—in the etymological sense of *what falls off* from a pre-existing practice—and radicalises it by proceeding further, envisioning no destiny whatsoever, but only an unnecessary and anti-teleological *fate* for it. Time after time, a piece of music will become what *happens* to it.

Once impeded in transmission, the performer and the score will entertain a relationship of a completely different order. Their reciprocal, good-willed interpenetration being blocked, they will start reverberating with each other at a distance by means of their reciprocal alienness. Incapable of reaching direct resemblance, they will start looking for common ground at another level: “a more profound resemblance, a nonfigurative resemblance for the same form” (Deleuze 2003, 158). In the process of transmission we had direct access from one actualisation (the factual score) to another one (the sounding result of the performance) in which the uncertain traits were mended through the intervention of other pieces of information (the knowledge of, through, and around the piece). The situation of transposition, accepting the inconsistency of a supposed identity of the musical work, and of the performer as well—“the will to lose the will’ comes first” (Deleuze 2003, 92)—is one in which the similarity

between the two elements happens through the reciprocal incitation of multiple and incoherent identities on both sides.

The distance and externality between works and performers allows the latter to displace themselves from the obligation to incarnate through their performances a sounding result based on semblance and meaning: they will try to trawl the respective ranges of potentialities—that of the score, with its innumerable unexpressed doubles, and their own, with the multitude of experiences, both musical and not, that have crossed them, making their existence multifaceted and thoroughly inconsistent—on the lookout for a greatest common divisor between the original score and their extant experiences of it. The glance that is thrown on the score in transposition is always askew, seen from a periphery that refuses to gentrify into a new centre, so that the relation with it changes from isomorphic to *anamorphic*—it carries, that is, a point of view as a constitutive part of the very premise of its inscription. In this anamorphic process, the musician refuses to put him- or herself in the position pre-established for him or her by the composer, but accepts the contamination of the score by an aberrant point of view, which imposes forces of deformation that are closely dependent on the position taken time after time (figure 4.4). Such a musician does not want to offer any reassurance, either to the audience or to composers—be they alive or present only in memory, as forebears towards whom reverence is due.

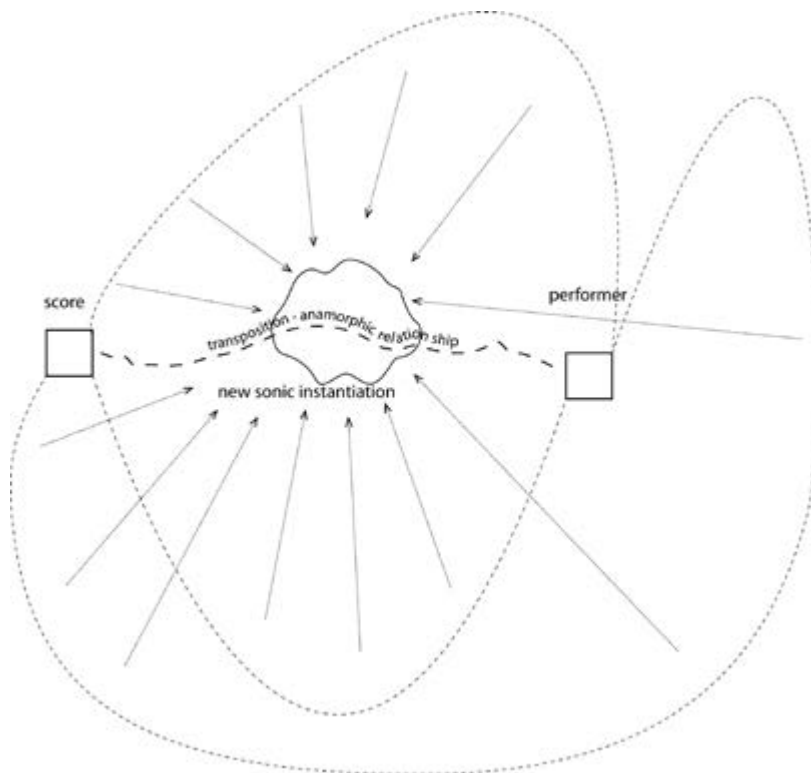


Fig. 4.4

V

In conclusion, the production of a resemblance through nonresembling means opens the possibility of an approach to written music that brings difference to the fore. Performers who venture into this transpositional process accept, together with the irretrievability of the musical past and the impossibility of faithfulness to the musical work, their own capability of transforming the work according to the ever-changing glance they throw on it. Together with the musical work, such performers transform the musical past itself: they are not trying, through philology and fidelity, to become contemporaneous with composers of the past, adapting their changed and changing experience to premises that do not and will never belong to them. Rather, they try to invite composers from the past to be the performers' own contemporaries, to see whether what the composers wrote is transposable into something they are able to apprehend and make a living part of their own experience. History itself is not regarded as a closed shrine, containing secrets to be unveiled with the use of the proper key; instead, it is seen as a predetermined and non-assimilable given, completely alien and external to the present and therefore one to which we can recklessly abandon ourselves to then reject it. Works from the past affect the experience of the performer through unfathomable paths. Thus, with Deleuze (2003, 98), we can define the act of transposition as "always shifting, . . . constantly oscillating between a beforehand and an afterward," while the work of the transposing performer "is shifted back and only comes later, afterward." Refusing to settle into a system, the process of transposition only wants to *observe what happens*, to detect carefully and meticulously the snares of the prefigured, and to discover always-new zones for its avoidance. It has no methodologies, only heuristic and provisional strategies. It is on the run: escaping, but without a new homeland to head to. Its escape is what shapes, time after time, the conditions for its existence, sweeping up past and future in their mutual recombination.

In a similar way, the disavowal of history corresponds to that of knowledge, seen as a positivistic and active force able to retrieve hidden meanings and lead towards a teleological end—a truth content, a sense, or better *the original* sense. Rather, we are proposing the unleashing of double, triple, multiple senses that are virtually contained in the musical work, and largely censored by the idea that such work contains a single message to be discovered. Such proliferation of *senses* can happen only when we renounce the idea that the moment when the composition was inscribed constitutes its ultimate truth and, on the side of the performer, the point at which searchlights of consciousness and knowledge are dimmed.

The result of transposition "recovers and recreates, but does not resemble, the figuration from which it came" (Deleuze 2003, 98): it is a gesture of departure and lingering, of difference and semblance, in the continuous rearrangement of forms at the price of eroding the old ones. In doubling a pre-existing shape, the new sonic instantiations rely on its faint—although oblivious and unarticulated—discernibility, as if through a thicker or thinner transparency that distorts it, yet not completely. As *veilings* of a work, their partial or promised unveiling is inextricably part of them, not in opposition but in never-

ending resonance with and reference to each other. In this gesture, we believe, is the most radical, mysterious, and joyful gesture of culture itself: “culture will only be the veiling or unveiling . . . of the entire body of representation itself; culture is a representation that unfolds representation. As such, culture is a *mystery*” (Kristeva 2000, 90, emphasis added from the original French edition).

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Work of Art as Analyst as Work of Art

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Traditionally, viewers have encountered the work of art as an object in need of analysis. They have examined it with the help of frameworks and critical theories from different disciplines, from the formal to the biographical. This can put the viewer in a position of mastery (Kivland 2005; Lacan 2007), as the *subject-supposed-to-know*. Even if viewers and critics do not describe themselves as masters, or as holding any mastery, this is the position they are placed in, relationally. “However much mastery is denied, there will always be a master put into place, even if that master is no more than an empty signifier, his authority both void and stupid but serving as a guarantee that laws are in place to protect the subject from the invasion of *jouissance*” (Kivland 2005, 25). The knowledge viewers and critics hold, however, is *only* supposed, as I will show through an exploration of Jacques Lacan’s theory of the Four Discourses, which includes that of the master and of the analyst. The position of the supposed-to-know held by the analyst is, as revealed at the end of an analysis, a not-knowing. This does not mean that mastery, the quality by which one believes to be undivided (*ibid.*, 24), is held by the work of art, in the way knowledge is held by the patient at the end of an analysis.

Mastery is tricky and, when applied to the encounter between work of art and viewer, unhelpful. Thus, I propose a turn of this analogy between work and viewer, analyst and patient, reversing the positions and equating viewer and patient. What would happen if, using the clinical setting as a transpositional tool, the artwork were the analyst and we, viewers, lay on the couch as patients? This displaces—or perhaps even erases—the notion of mastery away from the subject: as patient, the viewer is divided and therefore not a master. The work of art is silent, *evenly hovers* its attention on us (Freud [1955] 2001b), as I argue below. While recumbent, in our critique, we free-associate—even if we edit for publication, or exhibition. These two injunctions (to evenly hover attention, to listen without memory or desire; to free associate, to say everything that comes into our head) are part of the social bond of psychoanalysis as described by Lacan. He examined the master–slave relation studied by Hegel, the setting of the university, the question of the hysteric, and capitalism. These are not related to following a discourse on mastery, but are studies of specific social bonds. Yet, despite using examples of works of art to illustrate his theoretical points, Lacan did not define a discourse of the work of art. If the work of art occupies the position the analyst takes in the consulting room, what happens when it offers an interpretation, interrupts its silence to speak to us? This chap-

ter aims to elucidate the missing discourse of the work of art—of art that does its work as art—considering what it means to speak and its potential to profoundly transform each of the elements of this relation.

Usually, in the encounter between the work of art and the viewer, the latter is like the analyst, somebody who is supposed to know or at least have the tools to work it out. This leaves the work of art on the couch. Yet, the history of psychoanalysis contains an interesting example where art and analysis meet and where these roles are reversed: Freud's disturbance of memory on the Acropolis. It is not by chance that, here, an artefact takes the role of disturbing Freud. The work of art is reconfigured as a work that cannot be put on the couch again (and, hence, liberates us from supposed positions of mastery) as it does not occupy the same place in relation to knowledge. The work of art is given back its mystery, its autonomy to do its work as art.

The method by which the argument of this chapter is constructed is through transposition (although this text itself is not a transposition, at least in this form). As will be seen, psychoanalysis itself contains concepts that are related to this operation, notably transference. Yet, these are not the same. Transposition is a moving of a whole unit or system (and not a part) to a new setting. In a sense, it operates more as metaphor (this in the place of that) than metonymy (understanding a part for the whole)—more condensation than displacement, even though it is neither of these exactly.

In a transposition, what is transposed is linked in a particular way. I will use a musical example, as the operation is readily understood in this setting. In my transposition, the old note (the traditional view of the encounter between work of art and viewer) is transposed to a new one (new parameters for the encounter) through psychoanalysis and, in particular, the equations in the Four Discourses. This is the key for the new music, if you want. As the musician playing the score, I, the viewer of the work, will do the transposition, and not the artist—the equivalent of the composer. In the examples I chose to illustrate my transposition, I am only offering an interpretation, in the analytic sense. "An analytic interpretation is the offering of something that breaks into the conscious discourse of the analysand, and which has an effect on that discourse at the level of the unconscious. An interpretation makes unconscious thoughts become conscious, recognised, and articulates something repressed from memory. An interpretation in this sense brings to light what has been left out of the analysand's account of events; it displays the symptom" (Kivland 2005, 3). Kivland points out that, in the encounter between work of art and viewer, it is what is provoked in the viewer by the work of art—anything at all risen by the intersubjective relation of the situation—that constitutes the interpretation. If the interpretation is to have any effect, it needs to be founded on transference (Kivland 2005, 26), more on which later. I use interpretation and transference, as well as free association, *evenly-hovering-attention*, and other concepts, in the overall context of the operation of transposition, as this transposition of the encounter between work of art and viewer is done through psychoanalysis.

My proposed transposition of the work of art is a response to other transpositions (around mastery or transference, for example) and my transposition can,

in turn, also be transposed (transposing this text, transposing the work of art after it lays on the couch). Why transpose? Why use an operation from another field (music perhaps, mathematics too, and others) in a relation between art and analysis? Transposition is a tool that enables something, rather than a context or a discipline. In transposition, art and psychoanalysis are not separate; a transposition is more than its elements. The result is not an impoverished version of each of the elements, or a new element diluted by passing through something. By the binocular vision of transposing art through psychoanalysis, one does not see two added elements, but a new object in three dimensions (Watts 2016).

THE CLINICAL SETTING AND THE WORK OF ART

Eric Laurent (2006), Shoshana Felman (1987), and Naomi Segal (2007), among others, have developed a series of psychoanalytic principles starting from the fact that psychoanalysis is a clinical practice, before a body of theory or a method, as is perhaps more commonly understood. Felman (1987, 57) writes:

Psychoanalysis, in Lacan's view, consists of three interrelated elements, each having an originality of its own:

Psychoanalysis, first and foremost, is a *praxis* (a practical treatment of a patient, the concrete process of an analysis).

Psychoanalysis is a *method*, a technique put to use in the praxis.

Psychoanalysis is a *theory*.

The emphasis on psychoanalysis as practice, and on speech, is particularly relevant to transposition. Not everything can be transposed. To transpose successfully, one needs to find a suitable structure and a constant that will enable all the elements to effect the transposition. As I will show below, both art and psychoanalysis have parallels as practices. Speech in analysis, the utterances—especially those occurring when one is on the couch—form the basis of the material of an analysis, in the same way that art tends to be made *with* something. This materiality is the constant of this transposition.

When one seeks analysis, one is under the illusion that the analyst knows what is happening to us, what the meaning of our symptom is, why we feel the way we do, and, crucially, how to get rid of the annoyance troubling our lives. But anyone who has spoken while lying down on the couch knows that it is the patient who does most of the work. The patient starts the sessions by talking about anything that comes into her or his head, and not by responding to a question posed by the doctor (certainly not one about the patient's mother). The analyst seldom speaks during the session. An analytic couch is never comfortable and, while laying on it, the patient free associates, says everything that comes to mind, difficult or incongruous as this might be. In his essay "On Beginning the Treatment," Sigmund Freud ([1958] 2001a, 135) explains, through an analogy, the therapeutic method he devised: "Act as though, for instance, you were a traveller sitting next to the window of a railway carriage and describing to someone inside the carriage the changing views which you see outside."

The aim of psychoanalytic treatment is to make unconscious conflicts conscious and, in doing so, uncover the defence mechanisms, especially repression, and the compromise formations in the patient's mind. This is done through the analytic hour, a regular time for the analyst and the patient to meet. Freud invented the analytic hour, but not the technique of free association, which he owes to the German philosopher Friedrich Schelling, who also coined the term *unconscious*. Understood to be a tool, similar to a microscope (Appignanesi 2005), the analytic hour—which includes the frame of analysis (the space, the time, the money, the rules of engagement)—has the potential to reveal what is not usually available to the naked eye. The position of the body in the couch, the chair, the room, the silence of the analyst, the regular time, and the money spent contribute to making the workings of the patient's unconscious visible, analysable. In a more social setting this would not appear so clearly, in the same way that microbes are not visible around us without the help of the right instrument. What needs to be revealed is done through speech, which is why it is essential that patients follow the rule of free association especially when they feel that what they have to say is too disagreeable, or if they judge that it is nonsensical or unimportant, irrelevant to what is being looked for, or refers to feelings regarding the person of the analyst—known as transference, a phenomenon I will return to (Freud [1955] 2001b, 238; Bollas 2002).

In psychoanalysis, the most important material is that which, in normal life, is deemed irrelevant or is discarded: dreams, forgettings, bungled or unintended acts, parapraxes (the technical term for slips of the tongue), hesitations, tone. Repetitions, the return of something, also warrant attention in the sessions. Like Freud's insistence on trains, for example. In her *Raisen* books, artist Sharon Kivland (2010, 2011) explores "trains, train journeys, railway-lines, stations, station platforms, railway timetables, ticket collectors and train compartments in the life and works of Sigmund Freud." Kivland, as an artist, used Freud as material. She transposes him, making him a work, and in this new form, puts him back in the position of analyst, active again for the viewer years after his death. In his own texts, Freud straddles both positions, that of analyst (of his patients) and that of patient (of his self-analyses). In the encounter with Freud, as the material for her work, Kivland (the artist and first viewer) is the patient, and her anxieties come through in her books. "Un train peut en cacher un autre" (a train can hide an other), she offers as an epigraph to both volumes. Freud often draws on trains and train journey analogies to explain his theories of the mind, and trains of thought merge through signifier proximity as they would in an analytic session:

An analysis falls into two clearly distinguishable phases. . . . One may bring up as an analogy the two stages of a journey. The first comprises all the necessary preparations, to-day so complicated and hard to effect, before, ticket in hand, one can at last go on to the platform and secure a seat in the train. One then has the right, and the possibility, of travelling into a distant country; but after all these preliminary exertions one is not yet there—indeed, . . . one has to make the journey itself from one station to the other, and this part of the performance may well be compared with the second phase of the analysis. (Freud [1955] 2001a, 152)

What can one make of Freud's returning analogies of trains and travel, mental images of his own work? Is there an unfulfilled wish here? To be understood, a symptom needs an analyst. Analysis is a matter of two and, while the patient speaks, the analyst is a witness, an active listener. She or he *evenly-hovers-attention*, concentrating on the speech of the patient or *analysand*, the term through which Lacan chose to refer to the person on the couch, in order to bind them to the analyst in a semantic relation. Freud ([1955] 2001b, 239) defined this specific orientation of the analyst thus: "Experience soon showed that the attitude which the analytic physician could most advantageously adopt was to surrender himself to his own unconscious mental activity, in a state of *evenly suspended attention*, to avoid so far as possible reflection and the construction of conscious expectations, not to try to fix anything that he heard particularly in his memory, and by these means to catch the drift of the patient's unconscious with his own unconscious."

In an earlier text, Freud ([1958] 2001b, 115–16) recommends to physicians practising psychoanalysis: "To put it in a formula: he must turn his own unconscious like a receptive organ towards the transmitting unconscious of the patient. He must adjust himself to the patient as a telephone receiver is adjusted to the transmitting microphone. Just as the receiver converts back into sound waves the electric oscillations in the telephone line which were set up by sound waves, so the doctor's unconscious is able, from the derivatives of the unconscious which are communicated to him, to reconstruct that unconscious, which has determined the patient's free associations." His way of listening is revolutionary. Evenly-hovering-attention is a state of reverie or meditation allowing the mind to be aware of more than one dimension at once, refusing to make one thing more important than others. It is akin to listening with a certain indifference, but with engagement and interest. Also named *free floating attentiveness*, evenly-hovering-attention requires both this indifference and this engagement. This may seem, at first, to be at cross-purposes. Indifference is required to be able to notice what is in the interstices, what is normally missed, the unconscious in the patient's speech. The analyst becomes a functional organ, registering all levels of what she or he hears. Engagement, interest, and attention are necessary because the listening of the analyst is active, curious. Without this, indifference would turn to distraction and listening would turn to daydreaming. In particular, the analyst needs to be indifferent to the content of the analysand's speech, not giving more emphasis to aspects of the narrative just because they have cultural importance attached to them. This means that, in analysis, the account of someone's death may have the same weight as the purchase of new curtains, for example. As Wilfred Bion (1967) writes, the psychoanalyst engages without memory or desire. Both the analyst's task (to evenly hover attention) and the patient's injunction (to free associate) are impossible demands, delimited by qualities at opposing ends of the spectrum: indifference and engagement, the disorder of what comes into one's head, and the articulated organisation of speech.

The analyst is in the position of the subject-supposed-to-know (*sujet supposé savoir*), and whatever knowledge she or he holds is *only* supposed. Analysis ends

when the patient's unconscious knows this (Dunand 1995). The analysand believes the analyst holds the key to her or his symptom, but the position is only illusory—even though this illusion is what brings the analysand to the consulting room—as knowledge cannot be found in any subject, but, instead, in the intersubjective relation (Evans 1996, 197). Lacan further links the intersubjective nature of analysis to transference: “the phenomenon whereby we unconsciously transfer feelings and attitudes from a person or situation in the past onto a person or situation in the present. The process is at least partly inappropriate to the present. . . . It is the transferring of a relationship, *not* a person. Only an aspect of a relationship, not the entire relationship, is transferred” (Hughes and Kerr 2000, 58–59). In *Seminar XI*, Lacan ([1977] 1981, 232) writes: “As soon as the subject-supposed-to-know exists somewhere . . . there is transference.” In the unfolding of the analytic relation, sometimes the past is not just remembered on the couch, but relived, *transferred*, with the person of the analyst raising feelings in the analysand coming from another time, another setting, and another relation. These refelt emotions are usually strong, experienced as love or hate. The analysand does not simply remember feeling love for her or his mother when speaking, for example, but the figure of the silent analyst might elicit a kind of love transferred to the analyst from the analysand's mother (for the patient does not know the analyst). The analysand re-enacts this love in analysis and may find her- or himself repeating a pattern (she or he might feel protective of this love, or give gifts to the analyst). Transference must be analysed for the work of analysis to take place. Of course, transference will elicit parallel feelings in analysts, as they will tend to act in the position they are put into by analysands. This tendency (called countertransference), however, must be stopped at all costs for the safety of the analysis. This is why analysts have supervision analysis, to deal with their countertransference so it does not interfere with the analysand and the treatment.

Transference is not transposition. In transference, an element (the emotion) is taken from a situation and put into another. Identifying and analysing what is transferred and where it comes from furthers the treatment. Transposition implies a move, a swap or an exchange of something considered whole, of a score or a collection (rather than an element or a note for example). I am considering transference as a part of the clinical setting, and where the transposition is located is in the encounter between viewer and work of art. This transposition takes place through the clinical setting, making the work the analyst and proposing a new encounter between viewer and work.

In this operation, what I don't transpose is this text (although I could and might do, in the future). Transposition is not part of its methodology because, before doing that, clarity is needed when it comes to the encounter between viewer and work and the operation of transposition. Bringing the text into play would mean that the work of art is twice removed from this (critical, but not metacritical) text. One should not be tempted to take a transposition in the text as the one that includes the experience of the work of art. Were I to use the same concept of transposition for both, there is a risk of slippage between one and the other, where speaking about art substitutes an exposure to art, undoing

precisely what a transposed text postulates. Thus, I am reserving transposition to the one encounter, between work and viewer, *through* the clinical setting. Transference, interpretation, evenly-hovering-attention, the subject-supposed-to-know, and free associations are active principles in the analytic relation. So how do the characteristics of the analytic setting apply to the encounter between work of art and viewer?

The relation between analyst and analysand, as I have described it, is not that distant from the one between viewer and work of art, which is why a transposition is possible. In my book *Make Me Yours: How Art Seduces* (González 2016), I write about eight characteristics shared by both practices. Here, I will highlight some of them relevant to transposition. First, the aim of art and analysis can be put in relation to *the impossible*, an “opening to the *misteria*” (Benvenuto 2000, 47) that is unique each time we encounter it. “Freud says that to govern, to educate and to psychoanalyse are impossible. The work of art has this same trajectory of the impossible. This impossibility as no inscription at any level, always insists and repeats itself” (Machado 2000, 42). Psychoanalyst Darian Leader (2002) likens the function of art to that of jokes: a representation of what is impossible to see, while also speaking about the effects of the system that creates it.

Both practices take place in *specific contexts*, the consulting room and the gallery space, for example. These contexts are often governed by institutional conventions. In the case of the consulting room, these include the time and fee of the sessions, carpets, cushions, chair, couch, prints, paintings, books, objects; in the gallery space, white walls, ceiling light, a discreet desk, a fire hose . . . Both Mignon Nixon (2005, 46) and Brian O’Doherty (1999, 13–34) coincide in naming these particular settings the “frame,” which provides the constants in which the process takes place. According to Donald Winnicott (1989, 96–102), this environmental provision, the arrangement of place, is a condition to the work of analysis, essential to the unbinding that needs to be done. In the specificity of these places, the encounters happen. The viewer and the analysand are in the world of an other since works of art and analysts rarely come to one’s home. These spaces, the gallery and the consulting room, are, in the words of psychoanalyst Chris Oakley (2000, 149), “privileged enclosures,” behind closed doors, a space of intimacy.

These privileged enclosures are testimony to an enigmatic encounter, governed by *particular rules of engagement*. In a gallery, the distance between viewer and work is calculated, voices are lowered, behaviour is socially controlled, walking happens at a certain pace. In the consulting room, the positional relation between analyst and analysand is precise, rules about lying down on the couch and not looking at the analyst are observed, talk outside the couch is kept to a minimum. However, within those conventions, there is also space for almost anything to happen. The couch and the physical or virtual floor line of the gallery have an essential role in managing this engagement: they keep analyst and analysand, object and viewer, apart (Nixon 2005, 50), separate, disentangled.

Exploring the theft of Leonardo's *Mona Lisa* from the Louvre, carried out by Vincenzo Peruggia in 1911, and the subsequent queues of people wanting to look at the empty space left by the stolen painting, Darian Leader (2002) illustrates another key characteristic shared by art and analysis: their relation to *distance* and *absence*. He explores what art can give people and its relation to desire. He proposes that, rather than humans being image-capturing devices, it is, in fact, the other way round: images are human-capturing devices, especially in their absence. People seeing the empty space of the *Mona Lisa* did not queue for the sight of the actual painting. Leader plays with the idea of desiring objects, of objects embodying the enigmatic, invasive, and malevolent dimension of the look of the Other, our internalised image of language and the law. To illustrate this, Leader uses the example of masks, especially in the work of Pablo Picasso. Luring and deceiving are, for Leader, intrinsic to the image. What we cannot see, what is lacking from visual reality, is what attracts our look. He illustrates this with examples from Francis Bacon's work, which, for Leader, includes something that resists being turned into an image (a scream, a breath of air). This absence from the field of vision is based around an impossibility rather than a prohibition.

Gaze is an essential managing part of the relation between viewer and work, analysand and analyst. Lacan separated the concept of gaze from that of look, the latter being concerned with the organ of sight and with the subject (Evans 1996, 72). The impossible alignment between them has been studied by Lorens Holm (2002) in his analysis of Albrecht Dürer's third woodcut. For Lacan, gaze is an object that cannot be assimilated or represented. It is fundamentally linked to *objet petit a* (which I will return to below, in the context of Lacan's Four Discourses), the object to which desire is directed, as gaze is how *objet petit a* manifests itself through the scopic drive. Freud's concept of scopophilia, where the act of looking and the experience of being looked at are associated with pleasure, is particularly relevant in the contexts of art and psychoanalysis. Lacan ([1977] 1981, 76–77) also links gaze to satisfaction: "The gaze may contain in itself the *objet a* of the Lacanian algebra where the subject falls, and what specifies the scopic field and engenders the satisfaction proper to it is the fact that, for structural reasons, the fall of the subject always remains unperceived, for it is reduced to zero."

Last, both art and psychoanalysis are *relational practices* focusing on an object, be this the work or the analyst. "Relational," in this context, refers to relatedness, something that enables or constitutes a relation, an encounter. It is, of course, also connected to Nicolas Bourriaud's (2002) concept of relational art, or relational aesthetics, where human relations and their social contexts are at the centre of the work.

To illustrate these parallels, to give them some tangible shape, let us return to the idea of the journey, but through a detour. These strategies—journey and detour—are wonderfully familiar to both the clinical setting and the gallery space. The detour will take us to Athens.

FREUD AND THE ACROPOLIS

“A Disturbance of Memory on the Acropolis” is a letter written by Freud as a seventieth-birthday present to his friend Romain Rolland (Freud [1960] 2001a). In it, Freud explains a curious incident that happened to him many years back, when travelling with his brother. They were going to spend a week in Corfu; while in Trieste, a man they knew invited them to travel to Athens. This caused in Freud a state of depression, a state of *too good to be true*, the cause of which was a rejection of reality. His pleasure of Athens had been disturbed while in Trieste due to guilt, piety at having done better than his father. Freud had a strong childhood yearning to travel and was forty-eight when the incident occurred. Once in Greece, he experienced a strange memory while on the Acropolis: he felt delight at being there but doubted that Athens ever existed. Freud rationalises this thought by admitting that he had certainly read about the Acropolis, and was convinced of the historical reality of the city, but that conviction did not extend into his unconscious. This disturbance of memory represents a double displacement: it shifts him back into his past, away from his relationship to the Acropolis. He argues that his doubt about reality—“what I see here is not real” (Freud [1960] 2001a, 244)—relates to a phenomenon called estrangement, a process bound up with particular decisions made with regard to specific contents. Another version of this sensation is depersonalisation, when a piece of self, instead of a piece of reality, is what has become strange. These phenomena, abnormal in their structure, have two main characteristics: (1) their purpose is one of defence, trying to keep something away from the ego, and (2) they are dependent upon the past, or a falsification of the past.

In *A Disturbance of Memory*, the second volume in her series *Freud on Holiday*, Sharon Kivland (2007) follows the footsteps of Freud during his leisure time. She uses as close a means of transport, itinerary, company (sister and son), and accommodation as possible to the analyst. Like Jorge Luis Borges’s Pierre Menard, Kathy Acker’s *Don Quixote*, Sophie Calle’s *Suite Vénétienne* (as well as many of her other works), and Vito Acconci’s *Following Piece*, her work attempts an impossible task. She sets to follow and rewrite Freud’s piece. “It is time to write up my account: the travel story of the search for a disturbed memory, undertaken so I could write a story about travel, remembering, as I write, a delicious meal in Muggia, sitting in the Caffè degli Specchi in Trieste, seeing Ithaca in the mist, a walk in a lemon grove, coffee and gossip in Athens with an old friend. These are events that could not have been anticipated at the outset, intangible matters” (Kivland 2007, 13). Her search for a disturbed memory echoes the search on the couch. Not only are the impossible and Freud’s interests in psychoanalytic and physical journeys present in the work, the other seven parallels I mentioned above are also manifest: from distance to, and absence of, the master, specific contexts and rules (including those of the book output, which I am reading), to gaze (in the form of postcards sent and received), resistance, and commitment.

She transposes, as much as possible, Freud’s journey: “Finally, we arrived in Athens. It was mid-afternoon. Sigmund and Alexander arrived at a quarter to one” (Kivland 2007, 83). In the missed encounters (for example the gap between

mid-afternoon and a quarter to one), I question what kind of object transposition has created. Here we seem to have a case where transposition does not apply to the shifting position of the artwork. But is it the case? In Kivland's book, her narrative and Freud's are told in parallel; the act of following is real although, at points, one loses the idea of which was the original journey. Yet, while there is a blurring, there is also a reconstitution into a new *thing*. Unlike Robert Smithson's (1968), though, Kivland's transposition is not "A is Z" in relation to Freud but, perhaps, A is a, *Autre* (the big Other of the law, or, here, Freud) is *autre* (the internal other of reflexivity), to continue my own following of Lacan (1991).

Although there is transference, as there always is in the case of an analysis, Kivland goes beyond this only partially, acting to seek a whole that would enable her to understand her material and the transference. So she takes the whole historical journey (at least as much as we can know about it through archives) and transposes it to her present moment, to her and her companion's bodies. In a sense, this is not applied work. She does not visit a city Freud once stood in. Her unit is the journey. She travels, with Freud's plan as a point of entry, from the text, *à la lettre*. The site (of Freud's and Kivland's journeys) and the work itself are anything but devoid of meaning and realistic assumptions. Furthermore, there is another transposition, from clinical setting (as described in Freud's original text) to work of art (Kivland's), and this links to the thought that, perhaps, through the initial transposition, one can arrive at a more general transposition of the work of art away from the couch. One could also go on transposing. Like analysis, the operation is both terminable and interminable (Freud [1964] 2001).

Kivland employs a method of reliving (very close to transference) and, like a detective, she discovers something of herself through Freud, and this is also represented through aesthetic insight, in the text and images, particularly the postcards, in the book. The work is what brings the journey in an inward direction, to reflexivity, as the analyst does.

THE FOUR DISCOURSES

Allow me one last detour, one that will take us to the conclusion of my "work of art as analyst" argument. Lacan's major contribution to the field of psychoanalysis is, arguably, his conceptualisation of *objet petit a*. *Objet petit a* is a complex concept, in flux throughout Lacan's work. This algebraic formula, normally left untranslated, refers to the little other (*autre*, in French), which relates to reflexivity, identification, and the Ego, as opposed to the big Other (A), the radical alterity of language and the law. *Objet petit a* is the cause of desire: not the object to which desire is directed, but that which provokes desire (Fink 1995, 91). *Objet petit a* is *unspecularisable*, it resists symbolisation and has no representation or alterity. *Objet petit a* evolves from earlier formations such as Freud's *das Ding* (Lacan 1992) and Plato's *agalma*, a precious object Alcibiades believed to be hidden in Socrates's body. Desire is paramount to Lacan's thought: in its unconscious form, it is "at the heart of human existence and [is] the central

concern of psychoanalysis” (Evans 1996, 36); *objet petit a* mobilises this force. Paradoxically, *objet petit a* is also the object of anxiety. It is a lack, a void, around which the drives, partial aspects through which desire is realised, circle. As such, obtaining it and satisfying desire is impossible. Attempts, however, are made through partial objects, which stand in for *objet petit a*, as I mentioned above in relation to gaze.

Objet petit a is one of the elements in Lacan’s theory of the Four Discourses, comprising that of the Master, the University, the Analyst, and the Hysteric. They examine different relationships within structures of various social bonds, or situations of power (Lacan 2007). The Four Discourses contain the same elements: a Master Signifier, or a signifier outside the chain of signification (S_1); the barred subject or subject of speech ($\$$); *objet petit a*; and the signifying other, the place from which one speaks or knowledge (represented by S_2). The discourses exemplify a relation between an agent (speaking from a position of truth) and an other (who produces something that is then lost). Lacan played out these relations by creating four positions, which I show in column “o. Structure” in table 5.1. To create the discourses, the four elements above are rotated counter-clockwise from the Master’s Discourse (“1. Master” in table 5.1), to occupy one of the four different positions in the equations. This rotation gives each of the four discourses. Lacan explored these discourses—and hinted at a fifth one, the Discourse of Capitalism, where the agent’s side in the Master’s Discourse is reversed, while the other’s side remains—in Seminar XVII, *The Other Side of Psychoanalysis* (2007).

o. Structure	1. Master	2. University	3. Analyst	4. Hysteric
agent → other	$S_1 \rightarrow S_2$	$S_2 \rightarrow a$	$a \rightarrow \$$	$\$ \rightarrow S_1$
truth // product	$\$ // a$	$S_1 // \$$	$S_2 // S_1$	$a // S_2$

Table 5.1

In the Discourse of the Analyst (under “3. Analyst” in table 5.1), Lacan places *objet petit a* as representing the analyst in the commanding position. Thus, this is how the analysis relationship takes place: the analyst as *objet petit a* (the object at the heart of clinical practice) is in the position of agent and speaks from his or her assumed knowledge, S_2 (hence the subject-supposed-to-know). The analyst encounters the divided subject ($\$$, in the position of the other), the analysand. Her or his division shows through “slips of the tongue, bungled and unintended acts, slurred speech, dreams” (Fink 1995, 135). These constitute the master or single signifier (S_1 , the symptom, the product of analysis), which also represents the end of an association, something that stops the analysand’s speech, a signifier that is lost. Through analysis, this lost signifier is first

isolated; second, questioned and connected to other signifiers in a dialectic relationship (S_2); and, third, got rid of (Žižek 2006).

If certain works of art can bring *objet petit a*, the cause of desire and anxiety, into being and are its manifestation, they occupy, in the gallery space, the position the analyst occupies in the analysis room. Although Lacan did not explicitly form a Discourse of the Artwork, he created a space for a relationship between viewer and object in his seminars (especially VI, XI, XVII, and XXI). The idea of work of art as analyst has been elaborated on (e.g., Adams 1991; Kivland and du Ry 2000; Kivland and Segal 2012; Samuels 1995; Walsh 2012) and psychoanalytic institutions have opened their doors to welcome artists' speech and hold art exhibitions. My role, in this debate, is to tie the ideas around the argument together, to provide an account of the full debate, and to bring it back, through Lacan, to Freud's original experience on the Acropolis. My task is also to approach the dispersed sources as a way of thinking of the *work of art as analyst* argument as a transposition, and not as transference, as has been articulated. I move away from that initial transposition to an underlying or implied general transposition of the work of art to the site of the analyst.

WORK OF ART AS ANALYST

While losing ground as a therapy and, to a certain extent, as the university discourse à la mode, psychoanalysis has been the subject of numerous visual and conceptual enquiries by artists. According to Nixon (2005, 59), these are usually partial to exploring the "Freudian logic of collecting"—see, for example the photographic series of Claudia Guderian (*Magie der Couch*), Sarah Jones (*The Consulting Room—Couch*), and Sharon Kivland (*Mes fils* and *Mes folies*)—or the "dynamics of transference," as exemplified, among others, by Mary Kelly's *Interim* exhibition, Simon Morris's performance *The Royal Road to the Unconscious*, Glenn Ligon's video *Orange and Blue Feelings*, Silvia Kolbowski's installation *An Inadequate History of Conceptual Art*, and Mark Lewis's film *The Story of Psychoanalysis*.

Shellburne Thurber takes this relationship between art and analysis a step further. Between 1999 and 2000 she took around seventy-five photographs of analysts' consulting rooms in their North and South American offices, documenting and putting into public view the privileged enclosures in which the work of many unconscious psyches had been made manifest. Her collection, much like Freud's attraction to antiquities, is by no means a comprehensive survey—as Guderian claims to have done (Nixon 2005, 56)—but rather a contingent series, showing us subjectivities and differences in practice. Blue or red modernist couches are displayed in relation to an array of more or less comfortable psychoanalysts' chairs and other necessary objects, including books, framed pictures, figurines, tables, magazine racks, and filing cabinets. Thurber literally frames the symbolic world in which analysis takes place, calling it into presence.

These images are testimony to the encounter between analyst and analysand, an encounter that evidences transference, which is enigmatic. Transference, also paradoxical in nature, both progresses and hinders treatment (Evans 1996, 212). In its immediacy, transference evokes, makes present something that is not there, something that perhaps gave rise to symptoms, something that may be difficult to place, a repetitive act, something forgotten. It is a double-edged dynamic that has to be worked through in the space between the couch and the chair. A meta-transference, or “transference of transference,” is, according to Laplanche (1997, 665), what takes place in cultural production, a notion I will challenge with that of transposition. As in the analytic setting, this is characterised by an opening out onto, and an address to, the other, but one that is extramural, outside the clinic and into the world (Nixon 2005, 76). Thurber’s images represent a double play, as they call on both enigmatic encounters: the one occurring in the analytic room, between analyst and analysand, and the one that takes place in the gallery space, between viewer and work. They depict the analysis room, and are placed in a gallery. One can see the parallels immediately in the organisation of both spaces and the bodies within them: the dual, relational encounter, the rules of engagement, the internal unravelling of the analysand and the viewer if they engage in the work, the role of gaze as mediator, the silence of the work, the line not to be crossed. Moreover, in 2006, a third layer of meaning was added to her work when this series of photographs was shown as part of the exhibition *The Couch: Thinking in Repose* at the Sigmund Freud Museum in Vienna (5 May–5 November 2006): images of an analytic room displayed in a gallery space that used to be an analytic room. The analytic room of the master, nonetheless.

Newtonville, Mass.: Blue Couch with Multiple Portrait of Freud (2000), in particular, shows us one of these couches. The couch is psychoanalysis’ most metonymic object, the centre of its material culture. The headpiece of the couch is denoted by what seems to be the shape of a head. In the way it denotes a recent presence, it is reminiscent of Felix Gonzalez-Torres’s *Untitled* (1991), a series of billboard images depicting a bed, freshly deserted by a pair of lovers. The couch is the analysand’s reclining place; in this image, however, the counterpart piece of furniture for the analyst, the chair, is not present. In its place at the head of the couch, we find the look of the master in the guise of sixteen portraits visually documenting Freud’s life. He is distant, observing and listening behind a protective glass, silent like most analysts. With its multiple but fixed heads, the recognisable image—let us not forget that it is an image—ventures a cryptic statement, a paradoxical interpretation in the hope that this will unbind the analysand-viewer’s unconscious. What does Freud mean? What does he know? This is the place analysts aim to occupy.

Bear with me, this line of thought might seem a bit confusing: I separate transposition from transference throughout my text and link transposition to the work of art. Yet, following Laplanche above, the work of art here is linked to meta-transference through Thurber’s image, and the image of Freud within her image. By introducing Lacan’s Hysteric into the encounter, it will become clear that the example supports my argument of work of art as analyst.

HYSTERICIS, A NEW REGISTER OF KNOWLEDGE

Lacan develops his Four Discourses in Seminar XVII (2007), which is one of the main texts discussed by Dany Nobus and Malcolm Quinn (2005) in their study of psychoanalytic epistemology. Knowledge, or its presumption, is what is at stake in analysis and, I argue, art, for example in Thurber's picture. For the enigmatic transference to take place, the analysand has to place the analyst in the position of the subject-supposed-to-know, someone who is thought of as knowledgeable of the meaning of the analysand's symptoms, words, and actions. The psychoanalytic relationship, through transference, is dialectical in nature, but correlative to Hegel's Master and Slave dialectic in its opposition. The analyst "operates with the transference in a way that helps the subject produce his or her own new master signifier rather than accepting one from the subject supposed to know" (Bracher 1999, 137). In other words, being an analyst means renouncing the position Lacan identified as that of the master. In his Discourse of the Master ("1. Master" in table 5.1) we find that the master signifier (S_1), representing the truth of the subject ($\$$), is in the dominant position with respect to knowledge (S_2)—which is in the position of an other—with *objet petit a* becoming a surplus. This discourse shows us that all attempts at totalisation through a Master are doomed to fail (Evans 1996, 45). Indeed, as Freud ([1960] 2001b) told us, psychoanalysis does not constitute a *Weltanschauung*, a world view; instead, it adopts a scientific one. "Acting the master is to think of oneself as univocal" (Lacan 2007, 103); adopting a master and putting oneself in the position of the slave are parallel operations. Thurber's photograph, however, is doubly chilling because of its play with the discourses we have examined thus far. Here, the master is in the position of the analyst. A quick look at the algebraic formulation of the discourses of the Master and the Analyst, however, will show that they are inverse, emphasising that, for Lacan, the practice of psychoanalysis essentially excludes the possibility of mastery. What, then, is going on in Thurber's image?

On the one hand, the photograph, the art object, has taken the place of the analyst and the subject-supposed-to-know. On the other, Freud himself, through his image and its placement, becomes the master in the situation depicted by the photograph. The absence of the analyst's chair makes it plausible to argue that the person whom we assumed to be the analyst practising in that room may have been pushed to lie on the couch. A desire to be recognised by the other, the master, is what is present in Thurber's image. If the end of analysis involves desupposing the analyst of knowledge, realising that he or she does not have (and never had) it, the consequences of Thurber's paradoxical image imply, in its totalisation of psychoanalytic practice, that the analysis is interminable, an eternal punishment like Sisyphus experienced.

Let us look closer at Freud's image in Thurber's photograph. The style of its construction and arrangement references the infinitely reproduced Warhol portraits of, for example, Marilyn or Mao. Is this an attempt to commodify the master, to exorcise his power by means of reproducing his image? In her paper "What Could Art Learn from Design, What Might Design Learn from Art?" Beryl Graham (2000) proposes that designers may have a propensity

towards infanticide—that is, to over-analyse one’s creation by using qualitative methods involving, for example, user groups—whereas artists show a tendency towards parricide, a disregard for sources and masters. She asks: “What might designers learn from artists? A willingness to kill one’s parents” (ibid., 431). Graham’s statement is, of course, reminiscent of Freud’s primordial horde, the one that gave rise to the incest taboo. This, however, is an act that, according to Monique David-Ménard (1982), psychoanalysis seems to be unable to do, even though “everyone knows that this appears to be the key to, the vital point for everything that is stated, and not only in the name of myth, concerning what psychoanalysis is about” (Lacan 2007, 119). Thus, one could say that killing the father, the early life master, is also what psychoanalysis could learn from art—which is not to say that it does not already happen. What art could learn from psychoanalysis is related to the transposition I am effecting here.

As a series of photographs, Thurber’s work dismantles, criticises, challenges, and opens up the discourse around psychoanalysis. By entering that privileged space in which only some are allowed, it reveals a practice that, for most, is hidden, and shows how different its approach can be, how space and subjectivity—that of the analyst—play a part in realising the social bond of analysis. Yet, this is meta-transference, as I mentioned above, an interpretation that must be replaced by transposition in order to step out of the psychoanalytic paradigm and into the *work* of art. *Newtonville, Mass.: Blue Couch with Multiple Portrait of Freud* (2000) shows something unconscious within it.

Knowledge (S_2) in Lacan’s Discourse of the University (“2. University” in table 5.1), which was discussed in the seminar he delivered between 1969 and 1970, a year after the May ’68 riots (Lacan 2007), is in the position of the agent, which is not to say it is on the side of the students who seek it: “in the university discourse, the initial term . . . is articulated here under the term S_2 and is in this position of unheard-of pretension of having a thinking being, a subject, as its production. As subject, in its production, there is no question of it being able to see itself for a single instant as the master of knowledge” (ibid., 174). Students, as divided subjects, are the discourse’s product ($\$$); the produced knowledge is retained by the institution, for the institution. Mignon Nixon (2005, 52) explains that what gained Shellburne Thurber access into analysts’ rooms in the Massachusetts area was the “Harvard letterhead,” as she held a Bunting Institute fellowship from Radcliffe College. The institution, rather than the project, opened for her the door towards the completion of her photographic series. The dominance of the institution as a holder of knowledge (instead of the work of art or the artistic process itself) has echoes of the Discourse of the Master. Indeed, according to Lacan (2007, 148), the university goes further: its role is to elucidate it.

The act of questioning, in order to bear a possible answer, needs to bring about an action of dismantling, of taking apart existing knowledge, conceptions, assumptions, and practices—including one’s own artistic practice. “The artist had once taken the investigator into his service to assist him; now the servant had become the stronger and suppressed his master” (Freud [1957] 2001, 77). The rechanneling of libidinal energy directed towards sublimation

(the artist's task) into an examination of the creative process (brought about by the investigator) is motivated by a desire to know—the *Wissentrieb* Freud ([1957] 2001) writes of in his analysis of Leonardo. Lacan offers us a further and useful distinction. This desire to know does not refer to the French *connaissance*, imaginary knowledge or self-knowledge; but to *savoir*, a symbolic, intersubjective, supposed knowledge that is related to *jouissance*, enjoyment beyond the pleasure principle. The quest for *savoir* is also what animates psychoanalytic and artistic pursuits; a *savoir* arrived at through committing to and exploring our conscious and unconscious relationship to objects, be those the outcomes of creative practice or the analyst in the position of *objet petit a*.

Since May '68 the context of the university and its discourse has changed considerably, not least due to the commodification and specialisation of knowledge and neoliberalism entering the academy. Even if the issue of unity of knowledge is not asked as often in the wider sector (where arts, sciences, and humanities meet), this is still a question for each of the disciplines often operating as silos. This, the university as a concept (more than a place), has maintained alive the idea of a totalising discourse, one that does not easily enable dismantling its foundation. How then can this *savoir* be obtained? Lacan (2007, 23) warns us that a desire to know may not be enough: "A radical distinction, which has far-reaching consequences from the point of view of pedagogy—the desire to know is not what leads to knowledge. What leads to knowledge is—allow me to justify this in the more or less long term—the hysteric's discourse." His proposal takes us back to the Acropolis.

What Freud experienced on the Acropolis, what he described as a "disturbance of memory," is a manifestation of Lacan's Discourse of the Hysteric. Hysteria, a form of neurosis, is characterised by the physical manifestation of psychic traumas. The hysteric ("4. Hysteric" in table 5.1) is the subject of the last of the Four Discourses that remain to be explored (if we discount the Discourse of Capitalism, which Lacan did not really elaborate, only hint at). This is where Lacan places knowledge production. Also, through work with hysterical patients, Freud began to gather knowledge and evidence to formulate a new approach for understanding the mind and the individual; thus, psychoanalysis was born. Lacan, however, moved away from the symptomatology described by Freud and understood hysteria as a structure, that of a question concerning the subject's position with respect to the Other's desire. Hysteria, as a clinical concept, is different from this discourse, which designates a social bond (Evans 1996, 79). Considering this, I am careful to avoid a diagnosis of Freud's disturbance as hysteria; instead he was hystericised by the Acropolis: "what the analyst establishes as analytic experience can be put simply—it's the hystericization of discourse. In other words, it is the structural introduction, under artificial conditions, of the hysteric's discourse" (Lacan 2007, 33).

Freud's estrangement from the Acropolis is a manifestation of neurotic symptoms, which are characterised by a failure of the reality principle. This prompted him to ask questions to the Acropolis, questions related to the position he occupied at that time in relation to the Acropolis and to his father. In the Discourse of the Hysteric, the dominant position is occupied by the divided

subject (§, Freud's estrangement) that speaks from a position of desire and *jouissance*. "She has to be the object *a* in order to be desired" (Lacan 2007, 176). The hysteric presents her- or himself to the Other, or master signifier (S_1) "as a question mark, and produces . . . a blacking out of knowledge" (Miller 2005). The hysteric's production is a "dissatisfaction with knowledge" (ibid.), a knowledge that is located on the side of the Other and is intersubjective, relational. This is not absolute knowledge, but rather, *savoir*, "knowledge of the subject's relation to the symbolic order, and also that relation itself" (Evans 1996, 94). It is this dissatisfaction with knowledge that moves viewers and analysands, as exemplified in Freud's experience, to question it "in the name of desire" (Miller 2005). As Danuza Machado (2000a, 126) writes: "[The work of art] is the presence that reveals what is absent, what is not there, available. It brings *anxiety*; the notion that what is familiar is strange at the same time. It is an enigma that must be solved, a decision that must be made—to construct the history of certain events, to give them words, is what is effected in the work of psychoanalysis. Freud was analyzed by the *Acropolis*."

CONCLUSION

As engagement with the arts is also a structured form of social bond, the issue of knowledge in art can be addressed by an emerging Discourse of the Work of Art. So, where is this missing discourse, which I promised to reveal? Is it even possible to establish a discourse for art that does its work as art? Art speaks to viewers, provokes transference, and has the potential to transform us. We might take, as I argued above, the Discourse of the Analyst also to be the discourse of the work of art. If the work of art occupies the position the analyst takes in the consulting room, what happens when it offers an interpretation, interrupts its silence to speak to us? In the clinical setting, a good interpretation, whether true or not, can have the effect of a recovered memory, but perhaps this is where the parallels between art and analysis stop. According to Vincent Dachy (2000, 18), this analogy between art and analysis is one of the many that could be derived from problematising and relating two threefold interactions: art, with the artist, the work, and the viewer; and psychoanalysis, with the analyst, speech, and the analysand. He argues that a discourse of the work of art is impossible (Dachy 2007). He asserts that art finds inspiration in impossibility and impotency, plays with what a discourse cannot fix, and is located in the place where discourse is not yet constituted. For him, therefore, there is no discourse of the work of art, there is not a unified discourse and art is not a part of any of the others—particularly the Discourse of the Analyst—because art operates in between discourses and inhabits all of them. He specifically questions the position of *objet petit a* in relation to art. While the object cause of desire is important for art, it does not necessarily adopt the position of the agent, or of agency, and, thus, this dismantles the relation $a=\text{analyst} / a=\text{art}$.

Could the discourse of the work of art, then, be closer to the hysteric's impossible question *Che vuoi?* (What do you want from me?), encompassing some elements of the analyst, while complementing both of Lacan's discourses?

Whatever the solution, the formulation of this new discourse has to take special care to avoid Lacan's vision of the university—even if produced in that context—and the identification with the master. The work of art, if placed in the dominant position of the agent critiqued by Dachy, is urged to speak by itself—or rather, through its silence—provoke transference, and allow for the viewer's questioning of knowledge.

Lacan argued that further combinations of the constituent parts of his four discourses were impossible (Lacan 2007, 44–45). I am aware that this proposition goes against his assertion. Yet, he also implied that “real Lacanians” do not repeat his words but rather work with his thought to ask further questions in a hysteric's fashion (Lacan [1977] 1981, 263–76; Lacan et al. 1987). This is what remains to be done if the Discourse of the Work of Art is to emerge. Yet, the task might be impossible. This whole chapter is a detour. The transposition has taken us from the work of art as analyst to the work of art by itself, mysterious again, unanalysable. As Sharon Kivland (2005, 18) wrote, interpretation—and I would add, transposition—“can only go so far, as Freud recognises; a dream is only a new version of an original text. This original text is enigmatic; it is untouched by analysis.”

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Annlee; or, Transposition as Artistic Device

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ars adeo latet arte sua
—Ovid¹

This essay discusses transposition as an artistic device, taking as an example the collaborative project *Annlee* (1999–2003), initiated by French artists Pierre Huyghe and Philippe Parreno, focusing in particular on Huyghe’s animated film *One Million Kingdoms* (Huyghe 2001). It is argued that transposition is a key element in the construction of the artwork but also a theme in itself, establishing what Amelia Barikin (2012) has aptly called “parallel presents.”

In 1999, Huyghe and Parreno bought the copyright for a manga figure from the Japanese firm Kworks for forty-six thousand Yen (approximately four hundred US dollars at the time). In an interview, Parreno said that they were looking for “a character without a name, a two-dimensional image, with no turn-around. A character without a biography and without qualities, very cheap, which had that melancholic look, as if it were conscious of the fact that its capacity to survive stories was limited” (Huyghe et al. 2003, 15). Independently and also together with other artists and producers, Huyghe and Parreno then produced a number of animated films and other artworks featuring this character, which they had given the name Annlee. The two first productions were Huyghe’s animated film *Two Minutes Out of Time* (2000) and Parreno’s film *Anywhere Out of the World* (2000), in which Annlee speaks of her various identities as a commodity, a visual sign (without her own voice), and a supernumerary female character. Already in these two films Annlee is being transformed from a ready-made to a remake, something she herself comments on. Parreno has described the two films as “non-fiction,” constituting “the preface to a real story. By freeing the character from the fiction market, it became an empty shell” (Huyghe et al. 2003, 16). This statement is in itself rather paradoxical, since by giving the character a name, making her speak and speak about her alienated situation, she becomes not an empty sign but a *persona*, a mask reflecting on its situation on the screen (much like the characters in Luigi Pirandello’s *Sei personaggi in cerca d’autore* [*Six Characters in Search of an Author*, 1921]). In other words, Annlee’s ability to reflect on her situation makes her remarkably alive, whereas previously she had indeed been but an empty shell. Moreover, in effecting a displacement from popular

¹ *Metamorphoses* 10.252 (Ovid 2014, 27).

culture to serious culture and from East to West—that is, a transposition from one fictional and cultural realm to another—Annlee lost her bearings and became doubly alienated. After being introduced into the art world, she now acquired a more substantial personality in the hands of a series of artists who were invited to work with her and bring her to life.



Fig. 6.1



Fig. 6.2

The artwork that I focus on in this essay is the film *One Million Kingdoms*, directed by Huyghe and produced by Anna Lena Vaney. Huyghe has described the film as the narration of a “non-realised project, Apollo 0” (Centre Pompidou 2013, my translation).² In this animated film we follow a lonely female figure—Annlee—walking through a digitised moonscape drawn by the graphic waves produced by the synthesised voice of American astronaut Neil Armstrong, reading a text written by Huyghe including extensive citations from Jules Verne’s 1864 novel *Voyage au centre de la terre* (*Journey to the Centre of the Earth*).³ Before Annlee appears in the film, the screen shows an animated diagram of the earth and the moon. The first thing to appear, at the top of the earth, is a schematic volcano, and, on the left side of the earth at the level of the equator, a surface indicated as “Expedition departure 1998.” From the latter, a dotted line is drawn to the volcano, now identified as “Snoeffels Jokull” in Iceland and described as “Moon test area.” From here a dotted line is made to the centre of the earth (indexed “Journey to the Centre of the Earth 1865”). From the volcano, a new dotted line is drawn up to the moon (now indexed “Moon landing 1969”). Then there appears another moon, located bottom right of the earth, to which is drawn another dotted line from the surface indicated as “Expedition departure 1998.” Finally, there appears the legend “No ghost just a shell 2001” next to this other moon. During this opening animation, a text runs along the bottom of the screen that reads, “*The Journey to the Centre of the Earth* by Jules Verne begins in Iceland, in the Snoeffels Jokull crater at the north of the island. The conquest of space starts there on that same desert of lava. The first images of Neil Armstrong hopping in his space suit in the middle of a desolated landscape were first shot there. This is an expedition through territories topologically similar.” This text connects the 1969 moon landing with the Snæfell volcano on Iceland, which was the place where Verne’s adventurers entered the underworld and also where the American astronauts had practised moon-walking. There is a transposition of the journey to the centre of the earth (Verne) to the voyage to the moon (Apollo 11). The text states that these journeys are “topologically similar.” As has been noted by Barikin (2012, 183–86 et passim), Huyghe has a long-standing interest in topology, the mathematical study of relations of forms in space. In an interview Huyghe has stated that this interest stems from a desire “to translate an experience without representing it. The experience will be equivalent and still it will be different” (Baker and Huyghe 2004, 92). “When you translate something, you always lose something that was in the original. In a topological situation, by contrast, you lose nothing; it is a deformation of the same” (ibid., 91). In the film, the Icelandic volcano serves not only as a meeting place of two topologically similar explorations but also

2 “Pierre Huyghe le décrit ainsi: ‘Annlee est la narratrice d’un projet non réalisé, *Apollo 0*. Le personnage marche dans un paysage dessiné par des courbes graphiques produites par sa voix. Il se déplace dans ce qu’il énonce. Sa voix est synthétique, elle a été obtenue à partir de celle de Neil Armstrong.’”

3 The text of the soliloquy is reproduced in the catalogue *No Ghost Just a Shell* (Huyghe and Parreno 2013, 142–45), with some slight differences.

as a mirroring of science and science fiction. The topological transformation thus has the form of a double transposition, where the fictional journey to the centre of the earth becomes equivalent to the real voyage to the moon, which in turn initiates Annlee's trip to the moon.

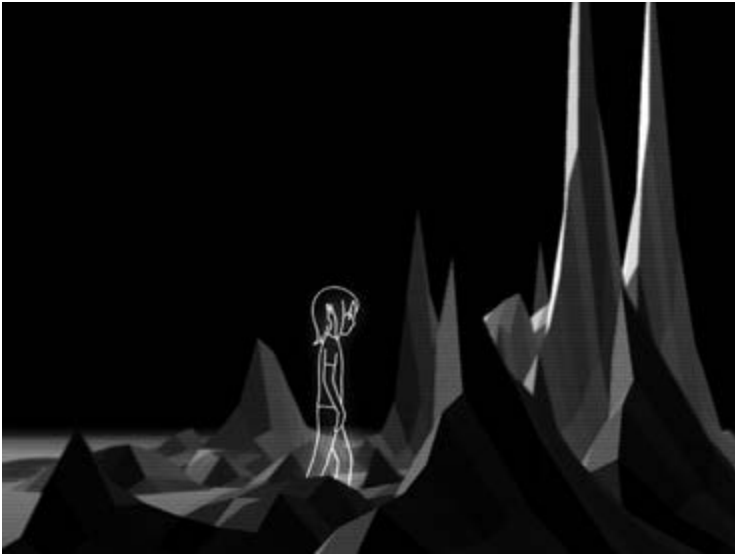


Fig. 6.3

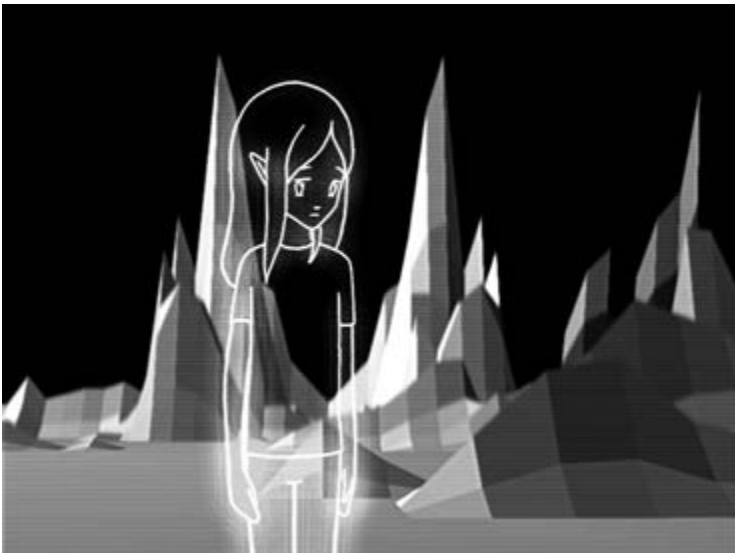


Fig. 6.4

In the film, the synthesised voice, which both belongs to and does not belong to Armstrong, also belongs to the animated female figure—we see her lips moving synchronised with the voice—walking through the landscape that the voice generates. The moonscape is also a voicescape. This creates a confusion of identities: first, the identity of Armstrong himself, lending his synthesised (male) voice to a female character; second, Annlee, who by this feat becomes transgendered, speaking with a male voice; and, third, of the moonscape itself. In English, as in Latin and French, the moon is a “she,”⁴ but in the film it appears rather as masculine (as in Germanic mythology and in the German language) as it is produced by the male voice. How should we understand these transpositions of genders? And how is this related to the other transpositions we have encountered so far: from East to West, from popular culture (manga, Jules Verne) to serious culture, from the journey to the centre of the earth to the voyage to the moon, from the test site on Iceland to the moon landing, from fiction to reality, from text to voice and voice-over narration as soliloquy, from graphic waves to moonscape? It seems that transposition is not only a recurring pattern in the film but a construction plan, a blueprint of how the artwork is conceived and put together.

In rhetoric, transposition (or *transmutatio*) denotes the operation of changing the normal order or arrangement of verbal elements, but it can also be used to describe the operation or function of metaphor (Ricoeur 1975, 34–40).⁵ Most of the transpositions in the film have indeed the character of metaphor—the volcano crater is *like* a lunar landscape, the descent into the underworld is *like* the flight to the moon—yet the meaning of a sign changes when placed in a different context: two (radically) different contexts are brought into contact with

4 In Latin and French this is evident from the gender of the word, whereas in English it appears in discourse, as, for example, in book 4 of John Milton’s *Paradise Lost*, lines 29–30 and 605–9 (Milton [1674] 2004, 85, 102):

Sometimes towards heaven and the full-blazing sun,
Which now sat high in his meridian tower
.....
Hesperus that led
The starry host, rode brightest, till the moon
Rising in clouded majesty, at length
Apparent queen unveiled her peerless light,
And o’er the dark her silver mantle threw.

Or in W. S. Gilbert’s libretto for *The Mikado*, first performed in 1885 (Gilbert 1992, 24–25):

The sun, whose rays are all ablaze with ever-living glory,
does not deny his majesty—he scorns to tell a story!
He don’t exclaim, “I blush for shame, so kindly be indulgent.”
But, fierce and bold, in fiery gold, he glories all effulgent!

I mean to rule the earth, as he the sky—
We really know our worth, the sun and I!

Observe his flame, that placid dame, the moon’s Celestial Highness;
There’s not a trace upon her face of diffidence or shyness:
She borrows light that, through the night, mankind may all acclaim her!
And, truth to tell, she lights up well, so I, for one, don’t blame her!

5 For a philosophical discussion of the relation between metaphor and (conceptual) knowledge, see Derrida ([1971] 1972); Ricoeur 1975 (356–74 et passim).

each other. However, some of the transpositions are metonymical—as when the graphic waves of Armstrong’s voice are turned into a physical landscape. This kind of metonymy has been called “metalepsis of the author,” a figurative inscription of the speech act in the work itself. To quote French rhetorician Pierre Fontanier ([1827] 1977, 128, my translation), it is “the figure by which a poet, a writer, is represented or represents himself as producing that which he in reality is only narrating and describing.”⁶ Although in this case there is a certain confusion as to who is the author/writer (Verne, Armstrong, Annlee, Huyghe), within the fiction of the film it is the voice of Armstrong, spoken by Annlee, that generates the lunar landscape. The effect of metalepsis on the one hand underlines the fictional character of the work, that the character’s voice is able to generate a physical landscape, which makes the separation between subject and object precarious.⁷ On the other hand, the rhetorical figure also has the effect of rendering the fiction real, since it itself appears to be able to create things. In other words, the *mise-en-abyme* structure has dual effects, destabilising the distinction between reality and fiction. This kind of topological inversion of fiction and reality is a recurrent theme in the artworks of Huyghe and Parreno, and to some extent appears to be motivated by an engagement with Guy Debord’s critique of “the society of the spectacle” (see Godfrey 2008; Erickson 2009; Barikin 2012, 16–19, 46).

In the above description of *One Million Kingdoms*, we have thus established that the film narrative is constructed—diegetically and non-diegetically—through a series of transpositions, making transposition the operative device and material theme of the film. In exploring transposition as an artistic and aesthetic device, the analysis of Huyghe’s film also needs to scrutinise the dialogic dimensions of transposition. But before investigating the intertextual mechanics of the film, a few other works produced under the banner of Annlee should be mentioned: Dominique Gonzalez-Foerster’s animated film *Ann Lee in the Anzen Zone* (2000), in which the character speaks in Japanese about there being no “safe zone” (*anzen zone*, in Japanese); Huyghe’s and Parreno’s neon sculpture *Skin of Light* (2001); and Liam Gillick’s video (in collaboration with Lars Magnus Holmgren) *Annlee You Proposes* (2001), which has the form of a trailer for a longer narrative. Yet another work is Rirkrit Tiravanija’s eight-and-a-half-hour film *Ghost Reader C. H.* (2002), in which Annlee reads the entire text of Philip K. Dick’s science fiction novel *Do Androids Dream of Electric Sheep?* (1968).⁸ The novel, perhaps more widely known in the film adaptation by Ridley Scott, *Blade Runner* (1982), is set in a not too distant, post-apocalyptic future. The story

6 “Le tour par lequel un poète, un écrivain, est représenté ou se représente comme produisant lui-même ce qu’il ne fait au fond, que raconter ou décrire.” For an extensive discussion of metalepsis, see Dahlberg (2010).

7 This brings to mind certain scenes in the 1956 science fiction film *Forbidden Planet* (directed by Fred M. Wilcox). The film is loosely based on William Shakespeare’s *The Tempest* and is also informed by Freudian notions of the unconscious. In the scenes in question, creatures of the unconscious are being (inadvertently) materialised through an electronic device, creatures that in turn threaten the survival of the residents.

8 An excerpt of Philip K. Dick’s novel is reproduced in the exhibition catalogue to the exhibition *No Ghost Just a Shell* (Huyghe and Parreno 2003, 197–99).

follows a bounty hunter (Rick Deckard) who is faced with killing (“retiring”) six escaped androids who have returned to earth from slave labour in off-planet colonies. The novel explores the question of what it is to be human, in particular the difference between human intelligence and artificial intelligence. In the story, we encounter androids who are unaware they are not the real thing since they have been provided with false childhood memories—but also the reader/viewer becomes increasingly uncertain whether apparently animate objects really are alive or not, and, conversely, whether lifeless objects might not perhaps be animate. In other words, the reader/viewer experiences what psychologists Ernst Jentsch (1906) and Sigmund Freud ([1919] 1966) identified as disquieting strangeness or the uncanny (*das Unheimliche*).⁹ Annlee’s reading of this novel puts another twist to Dick’s story, since she herself is a visual sign becoming animated.

* * *

In the process of making these films and other artworks in various media, Annlee’s graphic features gradually evolved, but, more importantly, the figure had come to develop a complex personality of its own. Also, from having been designed as a minor figure for manga comics, Annlee now had become an international celebrity. Thus it is tempting to compare her situation to that of the female protagonist in Bernard Shaw’s *Pygmalion* (1913), in which a simple flower girl from Covent Garden is refashioned to pass for a duchess. But perhaps a better comparison is to the development of Don Quixote in Cervantes’s novel. As has been noted by Viktor Shklovsky (1990b, 73–74), Don Quixote was conceived by the author to be a person of rather limited intelligence; but, as the novel progressed, Cervantes found that “he needed Don Quixote as a unifying thread of wise sayings” (*ibid.*, 73). In this way there emerged in the character a duality—between simple mindedness and wisdom—a fact that Cervantes started to exploit halfway through the novel (*ibid.*, 80). As we will see later on, Huyghe and Parreno would deal quite differently with the psychological development of Annlee.

The metamorphosis of Annlee thus stands in sharp contrast to the faceless character she had been when purchased by Huyghe and Parreno. Some of these developments are commented upon in the catalogue to the exhibition *No Ghost Just a Shell* (Huyghe and Parreno 2003), in which all the works produced

⁹ In “Zur Psychologie des Unheimlichen” (On the Psychology of the Uncanny), Jentsch writes: “Among all the psychical uncertainties that can become a cause for the uncanny feeling to arise, there is one in particular that is able to develop a fairly regular, powerful and very general effect: namely, doubt as to whether an apparently living being really is animate and, conversely, doubt as to whether a lifeless object may not in fact be animate—and more precisely, when this doubt only makes itself felt obscurely in one’s consciousness” (Jentsch 1906, 197, as translated in Jentsch 2008, 221). “In storytelling, one of the most reliable artistic devices for producing uncanny effects easily is to leave the reader in uncertainty as to whether he has a human person or rather an automaton before him in the case of a particular character. This is done in such a way that the uncertainty does not appear directly at the focal point of his attention, so that he is not given the occasion to investigate and clarify the matter straight away; for the particular emotional effect, as we said, would hereby be quickly dissipated” (Jentsch 1906, 203, as translated in Jentsch 2008, 224). Both quotations appear in Freud’s “Das Unheimliche” (“The Uncanny”) ([1919] 1966, 237, 238).

in the project were brought together.¹⁰ For the polyphony of the project—that is, that several different artists became authors of the “same” work—the essay by Maurizio Lazzarato (2003) on Mikhail Bakhtin is significant. A key idea of Bakhtin is that the spoken word is inherently dialogic and open to a multiplicity of meanings, which are activated in social intercourse, a view that is radically different from the monologism predominant in linguistics. It is also important to note that the meanings of utterances are not exclusively dependent on a given context; they themselves contribute to shaping the social world, just as Annlee’s soliloquy generates the lunar landscape through which she walks. Although Annlee initially was a visual sign, she soon became a multimodal sign, or rather a complex of signs, which was being addressed and remade by a series of artists. The inclusion of Lazzarato’s essay on Bakhtin in the exhibition catalogue suggests that we should understand her also as a dialogic sign. What does this mean?

In Bakhtin’s readings of Fyodor Dostoyevsky’s novels, close attention is paid to the social contexts in which actions and events take place and that utterances always need to be read against who says what to whom, when and where (Bakhtin 1984; see also Bakhtin 1981). Bakhtin is particularly interested in how different characters function as ideologues for clashing worldviews. The spoken and written word (or “utterance” for short) communicates with other utterances, both inside and outside the immediate context; it is radically dialogic. This form of dialogic reading opens the literary text to topological transformations, where the voices and utterances of characters are allegorically superimposed, as in Annlee’s soliloquy in *One Million Kingdoms*. I will take this invocation of Bakhtin as a cue, and legitimisation, to perform a dialogic reading of Annlee’s lunar soliloquy.

As we have already seen, the beginning of the film establishes a connection between the descent into the underworld in Verne’s novel and the 1969 moon landing. There are however a number of other parallels that also suggest themselves. First, to Georges Méliès’s 1902 film *Le Voyage dans la Lune* (*A Trip to the Moon*), inspired by other novels by Verne. Second, Verne’s fantastic description of the descent into the netherworld has a long literary lineage, including Odysseus’s visit to Hades (Homer’s *Odyssey*, book 11), Aeneas repetition of this feat (Virgil’s *Aeneid*, book 6), and Dante’s thematic elaboration in *Inferno* (1320). In particular, Virgil is invoked several times in Verne’s novel, both directly and indirectly.¹¹ Further, there exist a great number of popular fictions about travelling to other planets. But if the topos is already overdetermined to begin with, what is interesting is what Huyghe makes of it, how he transforms it.

¹⁰ *No Ghost Just a Shell*, Kunsthalle Zürich, 24 August–27 October 2002; SF MOMA, San Francisco, 14 December 2002–16 March 2003; Van Abbemuseum, Eindhoven, 19 January–August 2003.

¹¹ For example, at the end of chapter 11 (“Et quacumque viam dederit fortuna sequamur” [*The Aeneid* 11.128, quoted in Verne (1864) 1919, 97; 1992, 60]), in chapter 18 (“facilis descensus Averno” [*The Aeneid* 6.126, quoted in Verne (1864) 1919, 149; 1992, 92]), and through the *ciceron* of the underworld, Hans Bjelke (“Ce personnage grave, flegmatique et silencieux” [Verne (1864) 1919, 90, as translated in Verne 1992, 56; This serious, phlegmatic, silent type]). For a thorough analysis of the presence of Virgil in Verne, see Stevens (2015).

Annlee's lunar monologue can be divided into three parts: the first part is mainly authored by Huyghe, based on pictures and films of the test site on Iceland and the astronauts' accounts of the moon landing, as well as subsequent re-evaluations of the Apollo project; the second part is made up of quotations from the beginning of chapter 17 of Verne's novel; and the third part consists of two quotations from chapter 28. The first part reads like this:

It's a lie!
It's there, at the foot of the volcano, that the moon-landing tests were filmed.
Before anyone walked on the moon, these pictures foreshadowed us what we would discover later on.
They prepare us for the spectacle of desolation.
On the moon, there is nothing besides dust . . .
The conquest of space, which was a dream until now . . . had become an illusion.
We want to enter the unknown, when the greatest mysteries are right here . . .
.
Here under our steps . . .
We are on the thresholds of another world, just one small step . . .¹²

Although it has repeatedly been suggested by commentators that the text is based on Neil Armstrong's moon landing communiqués, there are only a few direct correspondences to the transcripts of the communication with ground control in Huston on 20 July 1969, or from the Apollo 11 post-flight press conference on 12 August the same year.¹³ Rather, the text seems to describe pictures of the test site in Iceland where the astronauts practised in July 1967. Perhaps Huyghe has used interviews with Armstrong or other astronauts who visited the site; or perhaps he has just used poetic license (as did David Bowie in his song *Space Oddity*, 1969). The verbal echoes we do hear of the astronauts' communications after the moon landing are the description of the empty, desolate landscape ("magnificent desolation")¹⁴ where there is "dust" everywhere,

12 The text in the catalogue *No Ghost Just a Shell* (Huyghe and Parreno 2003, 143) is slightly different:

It's a lie!
After lots of speculation, it's there, at the foot of the volcano, that the moon-landing tests were filmed.
Before anyone walked on the moon, these pictures told us what we would discover later on.
They prepare us for the spectacle of desolation.
On the moon, all you can see is dust (there is nothing else but dust) . . .
The conquest of space, which was a dream until now . . . had become an illusion.
We want to enter the unknown, when the greatest mysteries are right here
.....
Here under our steps . . .
We are on the threshold of another world, just one small step . . .

13 For instance the following description of *One Million Kingdoms* from the Guggenheim Museum in New York: "this brooding young girl [Annlee] speaks in a voice that is an electronically altered version of the astronaut Neil Armstrong's communiqués from the first moon landing; the text she recites conflates Armstrong's historic utterances with excerpts from Jules Verne's 1895 novel *Journey to the Center of the Earth*" (Guggenheim 2017). Another example: "The voice is a rearrangement of Neil Armstrong's recording during the Apollo 11 expedition. . . . The narration is inter-mingled with words from the real record of the lunar landing" (Zironi 2010, 224). For transcripts of the communication between the astronauts and ground control in Huston, see "One Small Step" (NASA 2012). For transcripts from the Apollo 11 post-flight press conference, see *The First Lunar Landing* (NASA 1989a).

14 However, this comment was made by astronaut Buzz Aldrin (see NASA 2012).

and of course the first part of Armstrong's eternalised words, "That's one small step for [a] man, one giant leap for mankind." By contrast, the word "*spectacle*" is quite frequent in Verne's novel.¹⁵ The most striking connection with statements made by the Apollo 11 astronauts is however a response to a question at the post-flight press conference. A female reporter asked whether the astronauts felt "that there will ever be an opportunity for a woman to become an astronaut in our space program?" To which Armstrong replied succinctly, "I sure hope so."¹⁶ It could be argued that the appearance of Annlee on the moon, speaking with the voice of Armstrong, fulfils his desire; yet she does not look like an astronaut (she does not wear a space suit) and her luminous appearance makes her look more like a ghost than a real person.

Speaking of hope and desire, the first part of Annlee's lunar soliloquy thematises the relation between expectations—on the basis both of speculations and of physical preparations on earth—and their realisations in the desolate reality on the moon. Thus, what had been broached as a "conquest of space" brought back home only rocks and dust, and had indeed turned into an illusion. A few years later, in 1972, the Apollo programme would be terminated; no more manned trips were made to the moon. This difference between before and after should lead our attention to the temporal transpositions at work in this short text, already signalled by the temporal gap between 1864 and 1969. Although it is unclear what the initial line refers to ("It's a lie!"), it is marked by the present tense. The following line continues in the same tense ("It's there"), but after the comma moves to past tense ("were filmed"). The following line continues in the past tense, yet at the same time it is a past that tells of future events, of what would be discovered. Thus the paradox that the past is in the present and that which would be discovered was already known. Is this the "lie" that the first line refers to? In any case, the next line moves back to the present, although it is the pictures that are the active agents ("they prepare us"). The following line, still in the present tense, reinforces the spectacle of desolation ("there is nothing besides dust"). The next line, although in past tense, refers to the present ("now")—that is, the present moment had been a dream until now—but in the moment of its realisation it had become an illusion (maybe even a lie). The following line, in the present tense, perhaps contains the truth of this illusion, this lie. The unknown that we seek elsewhere, in space, is already before us, under our steps. This would seem to refer to the descent into the underworld rather than taking small steps on the moon. But, at the

15 To give just some examples (emphasis added): "Je ne me doutais guère alors du *spectacle* qui nous attendait à la presqu'île du Sneffels" (Verne [1864] 1919, 101; as translated in Verne 1992, 63; I hardly realized at this stage what a *sight* awaited us on the Snæfells peninsula); "le *spectacle* d'une substruction basaltique ne s'était pas encore offert à mes regards" (Verne [1864] 1919, 114; as translated in Verne 1992, 71; I had never actually seen the *display* of a basalt construction); "Je quittai ma couche de granit et j'allai jouir du magnifique *spectacle* qui se développait à mes regards" (Verne [1864] 1919, 130; as translated in Verne 1992, 81; I got up from my granite bed to go and enjoy the magnificent *spectacle* laid out before my eyes); "C'est magnifique! m'écriai-je involontairement. Quel *spectacle*, mon oncle!" (Verne [1864] 1919, 149; as translated in Verne 1992, 92; "It's magnificent!" I shouted in spite of myself. "What a *sight*, Uncle!").

16 The transcript (NASA 1989b) has "Gosh, I hope so," but in the video one can clearly hear "I sure hope so" (Motherboard 2010, c.49 min.).

same time, the continued search for the unknown marks a shift from a melancholy feeling in the first part of the soliloquy to a fresh hope of real discoveries. What do these lines mean as spoken by Annlee in the voice of Armstrong? Is she indeed Armstrong's ghost? In the next part s/he will move on to recite passages from *Voyage au centre de la terre*—is this Armstrong reading Verne or Annlee describing her own lunar experiences?

The second part of the lunar soliloquy reads as follows (I have put in italics the direct quotations from *Voyage au centre de la terre*):

We are getting to 1865 . . . at the beginning of chapter 17.
It's from here that we should end up in the centre of the earth.
The real journey was beginning.
Terrifying dangers lurked. *I had not . . . I had not yet looked down into the bottomless pit which I was about to plunge into.*
I was ashamed to step away. Now the time had come.
I land over a projecting rock and looked down . . . My hair stood on end . . .
The fascination of the void took hold of me. I felt my centre of gravity moving, and vertigo rising to my head like intoxication.
There is nothing more powerful than this attraction of the abyss.
Nothing . . . with the possible exception of . . . the state of weightlessness.¹⁷

As can readily be seen, much of this part consists of direct quotations from Verne's novel, describing the descent into the underworld. The rest, with the exception of the last line, are paraphrases from the same chapter. The text is mainly in the past tense used by the first person narrator in Verne's novel. What is the significance of the transposition of the narrator's experiences of entering the underworld, which are a series of shocks and surprises, to Annlee walking on the moon? The most striking element is the contrast to how well

17 Again the text in the catalogue *No Ghost Just a Shell* (Huyghe and Parreno 2003, 14–45) is slightly different:

We are arriving in 1865 . . . the beginning of chapter 17.
It's from here that we should end up in the centre of the earth.
The real journey was beginning.
Fearful dangers lurked. *I had not yet looked down into the bottomless pit which I was about to plunge into.*
I was ashamed to step away. Now the time had come.
I land over a projecting rock and looked down . . . My hair stood on end . . .
The fascination of the void took hold of me. I felt my centre of gravity moving, and vertigo rising to my head like intoxication.
There is nothing more powerful than this attraction of the abyss.
Nothing . . . with the possible exception of . . . the state of weightlessness.

And here are the corresponding lines in *Voyage au centre de la terre* (also in italics):

Le véritable voyage commençait. Jusqu'alors les fatigues l'avaient emporté sur les difficultés; maintenant celles-ci allaient véritablement naître sous nos pas.
Je n'avais point encore plongé mon regard dans ce puits insondable où j'allais m'engouffrer. Le moment était venu. Je pouvais encore ou prendre mon parti de l'entreprise ou refuser de la tenter. Mais j'eus honte de reculer devant le chasseur. . . .
. . . Je me penchai au-dessus d'un roc qui surplombait, et je regardai; mes cheveux se hérissèrent. Le sentiment du vide s'empara de mon être. Je sentis le centre de gravité se déplacer en moi et le vertige monter à ma tête comme une ivresse. Rien de plus capiteux que cette attraction de l'abîme. (Verne [1864] 1919, 138–39; 1992, 86)

prepared the Apollo 11 astronauts were for the moon landing. That is, whereas the volcano crater on Iceland had prepared the astronauts for what they would encounter on the moon, Verne's narrator appears entirely unprepared for the strange topography below. In Annlee's soliloquy, these two experiences are juxtaposed, although technically they follow each other. That is, there is a transition from déjà vu—where the unknown appears familiar—to encountering the familiar as unknown. We have here another version of the uncanny, as identified by Freud. As he notes in the philological part of his study of the notion, part of the meaning of *das Unheimliche* resides in the negation of what is *heimlich*, “homely.” Yet paradoxically, *heimlich* also means “hidden,” “secret,” or “surreptitious.” In other words, among its different meanings, the word *heimlich* exhibits one that is identical with its opposite, *unheimlich*.¹⁸ Freud concludes that what is frightening about the uncanny is not that something is unfamiliar and new, but that what used to be familiar somehow has become strange.¹⁹ In the case of the astronauts' experiences on the moon, the uncanny resides in the opposite, that it was all too familiar.

So what do these lines from Verne's novel refer to when spoken by Annlee walking in a lunar landscape that is being generated by Armstrong's voice? Are we in the underworld or in the lunar world, or perhaps both at the same time, the two being topologically similar? Is Annlee in fact responding to the “real mysteries” mentioned earlier in her soliloquy? However, the last line, speaking of weightlessness, seems to bring us back to the lunar experience.

The last part of the lunar soliloquy consists of two sentences:

For a moment I was afraid that their words might be my own, brought
back by an echo.
I listened once more, and this time I clearly heard my name thrown
through space.²⁰

18 “Thus *heimlich* is a word the meaning of which develops in the direction of ambivalence, until it finally coincides with its opposite, *unheimlich*. *Unheimlich* is in some way or other a sub-species of *heimlich*” (Freud [1919] 1966, 237, as translated in Freud 1955, 226).

19 “The uncanny is that class of the frightening which leads back to what is known of old and long familiar” (Freud [1919] 1966, 231, as translated in Freud 1955, 220). “This uncanny is in reality nothing new or alien, but something which is familiar and old-established in the mind and which has become alienated from it only through the process of repression” (Freud [1919] 1966, 254, as translated in Freud 1955, 241).

20 And again the text in the catalogue *No Ghost Just a Shell* (Huyghe and Parreno 2003, 145) is slightly different:

For a moment I was afraid that their words might be my own, brought back to me by an echo.
I listened once more, and this time I clearly heard my name thrown through the space.

And here are the corresponding two passages in *Voyage au centre de la terre*: “J’eus un instant la crainte que ces paroles ne fussent les miennes, rapportées par un écho” (Verne [1864] 1919, 209; 1992, 129); “J’écoutai de nouveau, et cette fois, oui! cette fois, j’entendis mon nom distinctement jeté à travers l’espace!” (Verne [1864] 1919, 211; 1992, 130).

These lines are also direct citations from Verne's novel, describing the experiences of the narrator having lost contact with the other members of the group. However, as spoken by Annlee, they take on a radically different meaning. On the one hand, she is a person who in her short life (basically since 2000) has been searching for an identity, well aware that her name is an empty signifier. On the other hand, these lines are spoken by a person walking all alone on the lunar surface, whose voice is interacting with the moonscape in a very intimate way. Moreover, since Annlee does not speak with her own voice, the fear that "their words might be my own" has a strange sense of dispossession; that is, since she is unable to own her own voice, she may be appropriated by other voices, in this case both Armstrong and the narrator in Verne's novel (and of course also the director and producer of the film, Huyghe and Vaney). The words she is speaking are indeed not her own, nor are they spoken by her, yet at the same time they are coming back to her in the form of the landscape echoing the words. The second line, the last one in the soliloquy, which for Verne's narrator is a confirmation that he has regained auditory contact with the group, again has a different meaning when spoken by Annlee. She says she is hearing her name, but spoken by whom? Does this signify that she is not alone, or is it her own words she's hearing, calling her name? Is it Armstrong calling her forth? The passage also echoes scenes from previous visits to the underworld, where Odysseus, Aeneas, and Dante are recognised by the permanent dwellers on the other side. The latter are confused by the visit of a living person, but most of all they are eager to hear news from up above. Annlee, by way of contrast, encounters no one in this desolate landscape, even if she clearly hears her "name thrown through space." Again we encounter a disquieting strangeness, we do not know whether we should feel reassured or worried.

* * *

In analysing the film *One Million Kingdoms* we have seen both that it is constructed by transposition and that it thematises this device by making the strange appear familiar and the familiar appear strange. We have noted the proximity to the psychological notion of the uncanny, to which we will return. But before we do this, the device needs to be placed in another context. In a celebrated essay from 1917, Shklovsky (1990a) formulated both a critique of the current symbolist poetics—that poetry consisted in a "thinking in images"—and an alternative, that what is going on in art is an effort to make us *see* things rather than merely recognise them. That is, since human perception has a tendency toward automatisisation, motivated by economy of effort, we do not actually see the world around us and the things and creatures inhabiting it; we have become used to it and in this way have become alienated from our own life-world. Commenting on a diary entry by Leo Tolstoy, Shklovsky (1990a, 5) writes: "Automatization eats away at things, at clothes, at furniture, at our wives, and at our fear of war." To prevent us from living our lives as unconscious beings, the purpose of art is to reverse the effect of automatisisation, creating a defamiliarisation or "making strange" (*ostranenie*):

And so, in order to return sensation to our limbs, in order to make us feel objects, to make a stone feel stony, man has been given the tool of art. The purpose of art, then, is to lead us to a knowledge of a thing through the organ of sight instead of recognition. By “enstranging” objects and complicating form, the device of art makes perception long and “laborious.” The perceptual process in art has a purpose all its own and ought to be extended to the fullest. *Art is a means of experiencing the process of creativity. The artifact itself is quite unimportant.* (Shklovsky 1990a, 6, italics original)

It should be noted first that Shklovsky’s definition of art does not focus on what it *is* but on what it *does*. Thus, in contrast to the Aristotelian notion that poetry, and art in general, is a representation of reality (“that this person is [i.e. represents] that one” [*Poetics* 1448b17, my translation; see Aristotle 1995, 38, 39]),²¹ Shklovsky defines art in functional and teleological terms: art is a means towards an end, to experience the world in a way similar to how children explore their surroundings, feeling and touching objects with open senses and full of wonder. It is also worth noting that the last sentence in the quotation from Shklovsky implies a radical rethinking of the nature of the artwork: not only does it not need to be beautiful but it does not have to be made by an artist nor have a physical existence at all, and is thus open for ready-mades and conceptual art. In the essay, Shklovsky illustrated his notion mainly with literary examples, but among his contemporaries it was adopted primarily by avant-garde film-makers and later in the theatre (which is where Bertolt Brecht encountered it) (Reich 1970, 371). However, the notion can readily be transposed to other forms of art, including music and abstract art, at least to the extent that they let us “see” things.

It has repeatedly been argued that Shklovsky’s definition of art as making things appear strange excludes art’s cognitive dimension. According to this view, art not only makes us perceive and feel reality (“to make a stone feel stony”) but also makes us understand what we see in new ways. This critique is typically found among scholars with a rather narrow knowledge of the Russian formalist school. However, it suffices to pay attention to how Shklovsky uses his examples to see that in his view perception is coupled to cognition, that a new way of seeing things also implies a new way of understanding the matter at hand. Further, it is also frequently argued that Shklovsky did not care for art’s social dimensions.²² Again the literary examples used by Shklovsky in his essay contradict any such claims, since they are largely political in nature, as has recently been shown by Cristina Vatulescu (2006). In other words, Brecht’s appropriation of the term (as *Verfremdung* [distancing]) did not imply a “politicisation” of Shklovsky’s notion, but a transposition from literature to drama, and from Russia to Germany. It could also be noticed in passing that there are certain affinities between Shklovsky’s notion that art makes us see reality and Martin Heidegger’s idea that art discloses reality, bringing forth entities out of

²¹ For a recent critical discussion of this passage, see Tsitsiridis (2005).

²² See, for example, Mitchell (1974, 74–81). For a study of the reception history of the term *ostranenie* in the West, see van den Oever (2010).

concealment.²³ However, in contrast to Brecht, this is not a question of appropriation but rather a return to the philosophical roots of the concept—that is, to Edmund Husserl’s call that we need to return to “things themselves.”²⁴ Further, both Shklovsky and Heidegger pay close attention to art as an act of making (*technē*).

There are striking similarities and differences between the conception of “making strange” found in Shklovsky and “the uncanny” (*das Unheimliche*) in Freud. The similarity consists in that in both cases it is a question of *making* the familiar appear strange (or that the familiar *suddenly* appears strange, as if by itself). The difference is that in one (Shklovsky and Brecht, but also Husserl and Heidegger) the purpose and effect is to make us *see* reality as it *really* is, phenomenally and without preconceived ideas, making possible a “creative” understanding of phenomena (although not in a frightening way); and in the other (Jentsch and Freud), “making strange” implies a sensation of discomfort or fear, according to Freud brought about by the return of either surmounted beliefs belonging to primitive humans (omnipotence of thoughts, instantaneous wish-fulfilment, secret harmful forces, and the return of the dead) or repressed childhood complexes (castration complex, womb fantasies, etc.), having as common denominator “a conflict of judgement as to whether things which have been ‘surmounted’ and are regarded as incredible may not, after all, be possible” (Freud [1919] 1966, 264, as translated in Freud 1955, 250). However, the difference between the two uses or functions of “making strange” is not absolute and they may very well co-exist, for instance by suggesting topological similarities between seemingly separate events and through the inversion of the distinction between reality and fiction, as we have witnessed in the film *One Million Kingdoms*.

In his essay, and also in later works, Shklovsky describes a variety of devices or techniques used by artists to make things appear strange. His favourite examples of such techniques are calling attention to language and “complicating form,” thus making “perception long and ‘laborious’” instead of automatic (for instance by narrative retardation); presenting familiar objects from the point of view of an outsider, such as an animal, a child, or a foreigner; and foregoing the conventional names for things and describing them as if seen for the first time. I would argue that transposition should be added to this list as another artistic device to make familiar things appear strange, as well as the various devices Jentsch and Freud identified as producing the uncanny in literary works.

* * *

23 See Heidegger’s “Der Ursprung des Kunstwerkes” (“The Origin of the Work of Art”), in particular: “τέχνη, as knowledge experienced in the Greek manner, is a bringing forth of beings [des Seienden] in that it *brings forth* present beings as such beings [das Anwesende als ein solches] *out of* concealedness and *into* unconcealment and specifically *into* the unconcealment of their appearance; τέχνη never signifies the action of making.” (Heidegger [1935] 2003, 47, as translated in Harries 2009, 141).

24 “We must go back to the ‘things themselves’” (Husserl 1900–1901, 2:7, as translated in Husserl [1970] 2001, 1:168; Wir wollen auf die “Sachen selbst” zurückgehen).

In 2002, after the announcement that the Van Abbemuseum in Eindhoven had purchased all the video pieces and artworks featuring Annlee, Huyghe and Parreno declared that they had decided to terminate the project, selling the rights to Annlee to a newly created company, owned by themselves and Annlee, with the explicit purpose to prevent further exploitation of the animated figure and in this way liberate her from being owned. A legal document was set up, reproduced in the exhibition catalogue *No Ghost Just a Shell* (Huyghe and Parreno 2003, 303–14). Huyghe has described the motive behind the decision in the following way: “We became the owners of it. . . . We wanted the character to be the owner of its own rights” (ibid., 24). In an interview, Parreno has elaborated this point: “We’re trying to give rights to a thing. . . . The history of authors’ right moves from the king to the printer to the publisher, then from the publisher to the author, and today, from the authors to the character” (ibid.). However, the two artists’ claim to have emancipated Annlee and given her the rights to her own character can be challenged in a number of ways. First, the effect of this act was not to give her life, or more life, but rather to kill her off. Since she did not have the power actually to execute her rights, she would not be able to appear in any future artworks.

A critic has rhetorically put forward the question whether Huyghe and Parreno asked Annlee whether she really did wish to disappear (Yap 2012). Might she not have desired to own her copyright when she was alive rather than dead? Further, some critics have attacked the multiple stereotypes inherent in the narrative of a young, powerless Asian female who is first given form and then silenced by two male Westerners (cited in ibid.). The greatest problem with “terminating” the project is the fiction that it implied an emancipation in any substantial way. Instead of liberating Annlee, she was now even further under the control of the two artists and their corporate lawyer. It appears that to some extent they had anticipated some of these reactions, since in the catalogue they engage in conversation with the biologist Jean Claude Ameisen about the meaning of life and death, and to what extent one can kill something that has never been alive, or at least able to live by itself (compare discussions about abortion and the right to life). Regardless whether one accepts Huyghe’s and Parreno’s stated motifs for emancipating Annlee and takes seriously the discussion of life and death of a visual sign, we here encounter two additional examples of transposition: first from art to law, or rather the invocation of law in art, since the juridical document, although legal, primarily has an artistic function;²⁵ and second from art to biology, or rather the transposition of a biological discussion about life and death to the world of art.

As in every good legal parable, the story of Annlee’s “emancipation” has several interpretations. First, it can be questioned to what extent the contract setting up the company that owns Annlee really prevents any artist from doing work on/with her character. In legal terms, it is enough that one sufficiently transforms the original visual image in order to be able to claim to make an

²⁵ There is a precursor in the setting up of *L’Association des temps libérés* (The Association of Liberated Time), created by Huyghe in 1995 (see Barikin 2012, 2–3, 44–47 et passim; Rotenberg 2013).

original work of art. In fact, rather than ending her imaginary life, the attempt to terminate her existence has provoked several artists to appropriate her character. For instance, Puerto Rican artist Pedro Velez and art collective Law Office, whose artwork *Ann Lee Lives* (2003) shows a picture of a girl looking up at the viewer passively, over which is written: “Philippe + Pierre, you can’t kill Ann Lee! She’s alive and well, in Puerto Rico. Go fuck yourselves! L.O. + P.V.” (Yap 2012). Another example is Judy Zhu’s music video *What a Wonderful World (Covered by “Alice” the Sonic Diva)* (Zhu 2016), which uses video material from *Anywhere Out of the World* and *One Million Kingdoms* and sound from an online text reader website (fromtexttospeech.com)—the voice from the persona called “Alice” singing *What a Wonderful World* (written by Bob Thiele and George David Weiss, first performed by Louis Armstrong in 1967). The effect of this remake of *One Million Kingdoms* is quite striking, radically different from the brooding character we met in Huyghe’s film. Finally, the artists who previously produced work in collaboration with Huyghe and Parreno have not in any way lost their rights to their work, and can of course display them as they wish, prolonging the afterlife of Annlee.

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Transposing the Unseen:

The Metaphors of Modern Physics

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No one has ever seen an atom. This is due neither to a technological restriction nor entirely to a sensory one. There is, some would argue, a fixed lower limit of what we can see, namely the limit of light. In taking this view it is important to remember that optical technology merely enables us to *enlarge* an image, never to *improve* it. An ultraviolet microscope can single out individual chromosomes through an enlargement of approximately 3,500 times, identifying materials at the size of about ten nanometres. But this is the limit. No light, even from outside our visible spectrum, lets us *see* human genes (Bronowski [1973] 2011, 269). As Jacob Bronowski (*ibid.*, 270) would put it: they simply won't cast a shadow. However, this all depends on what we mean by "shadow" and, in turn, how we define "seeing." In optics, a general rule is that the smallest objects you can single out have to have a size of about half the wavelength of the light employed in the microscope. This is known as the Abbe diffraction limit (Born and Wolf [1980] 1997, 63). To get around this limit, we can exploit a number of techniques alternative to optical imaging. Quantum mechanics tells us that particles also have wavelengths. By employing, for instance, electron beams as the source of illumination, we can fire the particles towards an object to observe the traces the particles leave. As with the wavelength of X-rays, which cannot be properly focused in a microscope, we here trace details by penetrating inwards, probing underneath the visible surface. This information is then, in a secondary process, converted into what is often called a *shadow image*. Today such images are usually constructed through computer simulations, digitally converting the penetration data obtained from the particles. We can map out atoms and prove that they exist, but what the images represent are merely their traces transposed.

The notion of transposition in photography often refers to the process of reversing the tonality of an image, as from negative to positive, from latent to manifest. An important difference from the process described above is that this development relies first on visual light. Image processing based on data from electron beams or X-radiation depends upon another, more concealed, form of transposition, as a movement from *information* to *figure*. When claiming that there is a settled limit of visibility, as indicated above, one might end up promoting a categorical distinction between "real" and "false" images. This is problematic. In a sense, even our most primitive photographic technology, detecting and redirecting light falling on a piece of plastic or glass, depends on a certain

transposition from input to output. Our visual perception itself involves interpretation and processing of the information contained in light. Each of these apparatuses possesses an individual limitation, and to claim that one in particular sets the standard of authenticity may turn out to be a deceitful prospect.

Still, treating electron microscope images exactly like any other photography may lead to worse tragedies, particularly as this seems to entrust us with the scientific virtue of looking objectively at nature, even at a subatomic level. It might be more constructive to differentiate between input and output, or between signal and depiction. The movement from one to the other tends to involve a degree of deciphering, whether this is openly performed by human hands or conducted behind the closed curtains of computer algorithms. This distinction has proven exceptionally difficult to make within the realm of particle physics, because here even the input, the mere act of observation, must be viewed in the light of human involvement. At the heart of quantum theory, epitomised in its *wave function*, lies an inherent ambiguity that radically differs from classical mechanics. As the discipline had to come to terms with the perplexing conception that observation itself changes the behaviour of what is observed, new problems started to present themselves (Jones 1982, 6).

These problems have turned out not to be representational, methodical, or technological; they must be understood as conditional paradoxes of human knowledge. They may materialise at various levels within the canon of the scientific method, and they take on distinct forms throughout its different stages—from making hypotheses and conducting experiments, to interpreting the results and communicating their implications. For these reasons, the notion of transposition in physics is extremely hard to trace, and virtually impossible to define accurately. In this chapter I will not seek to reach any definitions, but rather will attempt to address some of the fundamental issues occurring when trying to re-present the subatomic. In doing this, I chose to refer broadly to these transpositional movements, calling them *metaphors*. Importantly, the concept of the metaphor will be explored extendedly, as a relocation of meaning: from idea to word, from information to image, from theory to model. I will consider such alterations not merely as linguistic or visual manoeuvres, but as acts of imagination, or figments of mind.

Metaphor operates at every level of physics. In the most basic sense it is employed as a linguistic tool, suggesting a likeness between two different things by applying the term for one thing to another thing. This pedagogical act is often conducted on the single-word scale, replacing a lesser-known word with a better-known one, what physicists tend to refer to as *the model*. Such transpositions correspond with how Aristotle originally conceptualised the metaphor. One of his suggested definitions was that a metaphor is a *transposition* of an “alien” (*allogrios*)¹ name (*Poetics* 1457^b31), which is a name that belongs to “something else” (1457^b7). This is opposed to an original, “ordinary,” or “current” (*kurion*)² name, which he defines as being “in general use in a country”

1 From Greek *allogrios*, “belonging to another person, belonging to others,” “foreign, strange.”

2 From Greek *kurion*, “properly,” from *kurios*, “he to whom a person or thing belongs.”

(1457^b3-4, as translated in Aristotle 1984, 2332, 2333, quoted in Ricœur 1977, 18). In other words, metaphors can be analysed in terms of deviation from something better known. According to Aristotle, the metaphor possesses qualities of the exotic, but at the same time we recognise that the strangeness or foreignness is imposed on us from “outside” regular language. In effect, the metaphorical word takes the place of a non-metaphorical word that could have been used and, according to philosopher Paul Ricœur (1977, 5), becomes doubly alien: as a present but *borrowed* word and as a *substitute* for an absent word. This seems to imply that the metaphor must always be linked to the substitution of a non-metaphor. Only on one occasion does Aristotle cite a case in which no current word exists that could substitute the metaphorical word. This is through the expression “sowing around a god-created flame” (*Poetics* 1457^b29, as translated in Aristotle 1984, 2333). Following his system of metaphorical proportion: B is to A what D is to C, the action of the sun *is to* light what sowing *is to* grain (Ricœur 1977, 20). But there was no name, at least not in ancient Greek, for the B term of this equation, the action in which the sun sheds its light, so the metaphor came into existence to fill a semantic lacuna. Aristotle did not dwell on this point, because for him the main interest lay in the analogy itself, which is still functioning despite the absence of the particular name. He rather discarded this as an exception to the rule (*ibid.*). But these are exactly the kinds of metaphors that occur more often in contemporary physics than arguably any other discipline. These are metaphors used to conceal that there is no proper word for something.

In physics today, the single-word metaphor is no longer situated in the *alien* term, but in the *familiar* one. To convey increasingly abstract scientific ideas widely, the act of substitution now takes the new concept and replaces it with an older and more established one. The single-word metaphor functions as a reduction, filtering out the deviation between foreign and familiar concepts. But modern physics also exhibits a more active character of metaphor than the forthright comparative quality: an evocation of the inner connection between things, an awareness of duality, and a semblance of two different senses as one. In these terms, the metaphor may be regarded as a transpositional act that hints at the very creation of things, blurring the gap between them and even between them and their names. Viewed extendedly, the metaphors of physics not only appertain to linguistics but could well affect the very process of scientific thought. At best they represent a mental fertility, a creative capacity to reinvent an old idea in the light of something new.

In *The Rule of Metaphor*, a book consisting of eight interrelated studies on the metaphor, Paul Ricœur (1977) arrives at a similar characterisation. After examining the progression of the concept from one discipline to the other—from classical rhetoric and poetics to semantics and hermeneutics—he reaches a generous depiction of the metaphor as a process of interrelating concepts, a cognitive phenomenon that should not be confined to the department of language (*ibid.*, 307). Many linguists have since subscribed to the latter part of this view. According to George Lakoff (1993, 204), the dominant attitude in linguistics before the 1970s was that metaphors merely operated in what he

describes as “the realm of poetic or figurative language.” A now classic essay by fellow linguist Michael Reddy (1993) became influential in changing this view. Through a collection of common expressions gathered from everyday conversations, Reddy argued that the English language functions as a *conduit*, a sort of imaginary pipeline, a space into which speakers can insert their emotions, thoughts, and ideas. He claimed that the core essence of the English language, its skeleton so to speak, has to be understood as metaphorical (ibid., 282).

Try to *get your thoughts across* better.
None of Mary’s *feelings came through* to me with any clarity.
You still haven’t *given me any idea* of what you mean. (Ibid., 286)

The words italicised in the sentences above are what Reddy refers to as *core expressions*. Of course, none of these expressions are to be taken literally. Most people do not believe that they actually “get their thoughts across” through some mental telepathy when they speak. According to Reddy, language rather helps a person construct something like a replica in reference to his or her own mental reservoir. The final output is like a blueprint, or a model in physics. Unlike Ricoeur, Reddy and Lakoff do not attempt to accentuate the fertility and inventive aptitude of such operations. They were convinced that speakers, of English in particular, are drawn into a “very real and serious” frame of conflict, which may have considerable impact on social and cultural problems (Reddy 1993, 285). This conflict does not necessarily unfold solely at the level of everyday use of language; it may bias even educated scholars, dictating and predisposing the very process of scientific thought.

The notion that ideas or thoughts could exist freely and detached from us, circulating in an exterior space, carries significant ramifications. Alarmingly, it seems to leave the “receiver” of language in a passive position from where the “transmitted” content can be soberly observed, not unlike the external stand that some physicists still claim the right to occupy. In this comparison, the imaginary pipeline would be the theoretical schemes themselves, most prolifically the standard model of particle physics, through which all the secrets of nature may supposedly be exposed as long as the human effect is systematically put aside. In *Physics as Metaphor*, physicist Roger S. Jones (1982) examines the natural laws of our universe as metaphorical constructs. Through meticulous illustrations he highlights what he refers to as four cardinal metaphors: *space*, *time*, *matter*, and *number*, offering us a basis for wholeness and a scientific starting point for quantification (ibid., 52). Using the term *cardinal* he suggests concepts that represent the deepest expressions of our consciousness, concepts through which we have created a framework for comprehending and analysing the material world. According to Jones, this framework is, despite how unassailable and absolute it may appear to us, a human construct emanated from the restraints of our consciousness. For him, mind and matter should not be thought of as distinct, and the metaphor, as he proposes it, is ultimately inseparable from physical theory. What else are we to think, Jones asks, when the theory of relativity teaches us that space and time are *the same* as matter and

energy, and that geometry *is* gravity (ibid., 5)? Which is really a metaphor for which?

Modern physics, regarded as part of the scientific establishment, appears eager to preserve certain metaphors sourced from the world of our senses: dark matter, the spin of the electron, quantum leaps, bent space–time, electromagnetic waves, black holes, and so forth. But do not these metaphors contribute to uphold some of our predisposed assumptions of time, space, and matter, of which they were initially supposed to be disproving? And is it even possible for physicists to avoid being swayed by such assumptions when envisaging their theories? Can they truthfully claim themselves able to conceive time and space as a single quantity, and include their own consciousness as part of the equation? In Jones’s (1982, 63) opinion, the doctrine of physics continues to treat the material world as if it was *distinctively external* to us; time passing in causal sequences, space being located *out there* for us to *travel through*. This externalisation leaves physicists in an illusory position from where they can *look at* nature. The scientific intent, then, is to unfold its hidden structures, reveal its governing laws, and, ultimately, compose a theory of everything. It can be noticed that there is no metaphor, transposition, or representational self-reflection involved in this project. While dream, myth, literature, and art, in Jones’s view are relegated to the realm of imagination and subjectivity—what philosophers often refer to as *mythos*—science is celebrated as the discipline that deals with *logos*; what can be controlled, measured, and predicted; what we can know without considering that we are fallible. The standard model may be the most successful fundamental model in the history of physics, but as Edward MacKinnon (2008, 448) argues, it cannot be revised to fit the basic norms of the semantic conception of theories (MacKinnon 2008, 448). He argues that the standard model is not even a theory, but rather a huge collection of disjointed rules modified to accommodate experimental results. In such a scheme there is no real place for ontological interpretations, or, as MacKinnon puts it, no one is asking Richard Feynman’s forbidden question: what must (might) the world be like if a theory is true of it (MacKinnon 2008, 456).

The idea that in today’s physics there still prevails a kind of professional detachment from nature is not the mainstream story being voiced by the scientific community. On paper, physics is, and has been for several generations, deeply concerned with issues relating to human consciousness; that is, it is at least in terms of its numerical effects. The transition from classical to quantum mechanics has seen an ongoing alternation of this philosophical landscape, and today there are many opposing views of what the transition fundamentally implies. Whereas classical mechanics claimed the ability to extract simultaneous definite values from the physical world, quantum mechanics has excluded such a possibility entirely (Hilgevoord and Uffink 2016). When Werner Heisenberg first formulated his uncertainty principle in 1927, he gave this very impossibility a name. The principle states that the more knowledge we have of a particle’s position, the less we can know about its momentum, and vice versa. Essentially, this means that if we accelerate, say, an electron, in a specific direction and with a specific velocity, we cannot be certain of its position.

And, reversely, if we acquire knowledge of its position at any given time, we cannot be sure of its speed, nor the direction in which it is travelling (Bronowski [1973] 2011, 295). This may seem like a crude principle for a physical law, but in fact it is rather the opposite. Heisenberg's equations are precise because they include a very specific amount of uncertainty, or human tolerance, needed to make meaningful measurements of particle properties. Using the term *human tolerance* about such uncertainties might be questionable because, strictly speaking, they have nothing to do with us. Another branch of Heisenberg's work did indeed give the observer an essential role in nature. According to his and Niels Bohr's view—the Copenhagen interpretation of quantum mechanics—physical theory deals only with an observed world, and the observer has an uncontrollable and non-removable effect on what is observed (Jones 1982, 6). This observer effect is, however, not to be confused with the uncertainty principle, because the latter has proven to be inherent in all wave-like systems. Thus, it does not describe a situation in which an observer takes part but any interaction between classical objects and quantum objects. The transpositions of modern physics operate most evidently in the confrontation between these two worlds.

Still I argue that, on a more humanistic level, the uncertainty principle marks a change in tolerance. Whichever term one prefers to apply to it—latitude, spread, imprecision, inaccuracy, and so forth—with pioneers like Bohr and Heisenberg, physics undoubtedly became a discipline concerned with what we can know *although* we are fallible. This newfound acceptance of uncertainty has undoubtedly become a value of significant importance to physics, no longer merely as an obstacle for experimentalists to sidestep but as a real component to include in theoretical equations. What has also become apparent, however, is that subjectivity in physics has both personal and impersonal features. Tastes, preferences, and prejudices are individual facets, and, although they may be the consequences of culture and trends, such factors change over time. Uncertainty, as formulated through quantum physics, serves as an impersonal, mathematical variable that is detached from us yet entwined in our theories. But, although its implications may be discrete and autonomous, it could still be possible to recognise the mere notion of quantifying uncertainty as a human creation, one that could have taken a different form in the hands and mind of someone else. More generally, this seems to be the way in which physics treats its language—as a customised measure. Terms like *atom*, derived from the Greek word for “indivisible,” and *proton*, meaning “first” or “fundamental,” remain in use although their etymological derivation has long since been proved contradictory. For most practising physicists, language is first a necessity, a kind of flawed tool used to reproduce experiments and explain discoveries to other physicists. And, once a specific term has gone into circulation, it becomes virtually immortal.

To construct the framework for a new branch of physics, Heisenberg and his contemporaries first had to accept that in doing this the language and images available to them were far from sufficient. What they found simply could not be compared with anything from the classical world of our senses. Instead, they

had to come to terms with the conception that there is no certain knowledge, and that the only meaningful way of approaching particles is through measures of probability. Heisenberg (1971) later declared this very admission to be “the most important step” of the entire movement; or, as Bohr later expressed to him in a famous letter, “When it comes to atoms, language can be used only as in poetry. The poet, too, is not nearly so concerned with describing facts as with creating images” (quoted in Bronowski [1973] 2011, 256). It is crucial to point out that such statements were not purely made in desperation. Accepting the imperfections of human knowledge is not simply a matter of reaching for second-best solutions; it is what the quantum world demands from us. However, the Copenhagen interpretation is far from the only framework for understanding quantum uncertainty. There is general consent that it represents an inescapable restriction, but one question still being debated is when and where this restriction emerges. In the *Stanford Encyclopedia of Philosophy* the main disagreement is accurately summarised: “Do Heisenberg’s relations express restrictions on the experiments we can perform on quantum systems, and, therefore, restrictions on the information we can gather about such systems; or do they express restrictions on the meaning of the concepts we use to describe quantum systems?” (Hilgevoord and Uffink 2016).

Theorems like the uncertainty principle and the observer effect arguably anchored theoretical physics as a form of philosophy. Consequently, there are many opposing schools of thought in physics today, not just the logical empiricism and operationalism that dominated the field during the preceding centuries. However, as I will now seek to demonstrate, this shift towards what could be described as a kind of professional humility did surprisingly little to alter the representations employed within the discipline. Despite the confession that visual refinement was desperately needed, old images prevailed, much like the obsolete terms derived from Greek and Latin. At the turn of the twentieth century, even the atom, the model for which had seemed so unequivocal up until then, proved impossible to represent traditionally. Before this it was generally believed that atoms, of which all matter was assumed to consist, came in the form of hard balls. As Roger Jones (1982, 115) notes, this is a perfect example of how a metaphor can be transposed from one level to another:

Newton’s mechanics had been so successfully used to analyse the solar system in terms of the forces between the planets and the sun that this approach becomes the prototype for all physical theories. The attack was the same at all levels and the size scales whether one thought of planets revolving around an attracting sun, colliding billiard balls, or the tiny molecules of a gas bouncing against each other and their containing walls. It was only natural that people began to believe in the reality of the models. The particle metaphor was transposed from the macroscopic to the microscopic level, replacing, rather than rejuvenating, the ancient Greek *átomos*.

Perhaps such transpositions are inevitable when dealing with the microscopic. As the alchemists of the Middle Ages discovered, the act of moving an element from the large world and applying its properties in the small world proved extremely valuable in the recognition that everything consists of the same thing.

For them, a volcano was an up-scaled boil, and a rainstorm a fit of weeping. Time and space were intimately linked; life was determined by the formation of stars and planets at the time of birth; its meaning was created from the parallel occurrence of separate events. The alchemists also believed that all metals grew from mercury and sulphur inside the earth, as bones were thought to grow inside the embryo from an egg. These symbols are in fact still used in medicine. For the female we apply the alchemical sign for copper, everything that is soft; for the male we use the sign for iron, all that is hard. Furthermore, these are also the signs for the planets Venus and Mars: ♀ ♂. Ernest Rutherford's model of the atom as a solar system draws a similar analogy, following Aristotle's rule of proportion: old age is related to life *as* evening is related to the day (*Poetics* 1457^b22, Aristotle 1984, 2333). But much like the outdated emblems of gender used in medicine, the macro-image of the atom has proven to be dangerously inaccurate and, despite its conflicting nature, this model is still being recycled through popular science and teaching today. There is a case to be made that the transpositions of physics do not necessarily signify the dynamic movement mentioned earlier—the metaphorical act that rejuvenates our awareness of duality and the inner connection between things. They may as well represent a kind of reproduced regression.

One major problem with picturing the atom as a microscopic planet, of which electrons orbit, is this: modern matter is not solid. As far as present knowledge goes, all matter does admittedly consist of massive atoms, but the popular depiction of matter as solid substance, which is to say substance having mass even at rest, is scientifically dubious. This is because the mass of an object may change in relation to the motion and energies of its different parts, a paradox leaving physicists today without a universal definition of the term *matter*. To state it slightly dramatically, atoms are not what they used to be; their metaphorical potentiality has been exhausted. When measuring at this level, there is always a trade-off in accuracy between present and future knowledge. To determine the position of an atom, observers agitate the atom so severely that its location only an instant later will be completely unknown. This is the contradiction of any measurement: to measure precisely we first need to define the edges of what we are measuring, and to do this we first need to measure. As matter today is defined, somewhat loosely, as *molecules in motion*, these edges are elusively unstable. Instead of giving a definition of matter, physicists rather talk in terms of *probability densities* and *electron clouds* when describing the atom.

In the case of the electron, the inert problem of creating an adequate visual model becomes even more apparent. And this is not to mention all the other obscure particles populating the “subatomic zoo.” We know certain things about electrons: they are all identical; they all have the exact same mass, the same electric charge, and the same spin. These properties *define* an electron; or, expressed reversely, if you observe a particle with these properties, you can be sure that it is an electron. It is tempting, even for physicists, to think of these particles as spinning balls of charge, but there are severe problems even with this picture. In *The Theory of Almost Everything*, physicist Robert Oerter (2006) uses the metaphor of an ice skater to illustrate these problems. As ice skaters

pull their hands in, making themselves smaller, their spin speed increases. We are used to thinking of rotating objects in this manner, but applying the logic to electrons simply does not work. Although their exact size has never been accurately measured, experiments have shown that electrons are so small that, to have the known value of spin and still behave according to our laws of rotation, the “ball” would have to be moving faster than the speed of light (ibid., 95). Nor does it help replacing the circle with any other geometrical shape.

So what is an electron? What has charge and spin without being a spinning charge? Oerter (ibid.) rhetorically asks. One last mental resort is to think of the electron as a shapeless point with no size, a truly fundamental particle, mathematically as well as visually. But how can something with no size have mass? Are not weight, size, and motion interlinked concepts after all? These questions remain without answers today. It may well be that we have to leave them unanswered partly because they posit and reflect the spatial metaphors customised for our perceptible world. The electron puzzle reveals how deeply the impossibility of picturing these particles is embedded in the theories about them. They are undepictable by definition. The dispute over the reason for their identical characteristics compelled physicist John Wheeler to propose a theory of a one-electron universe, in which he suggested that all electrons were exposures of a single body, moving backwards and forwards in time. His colleague Richard Feynman ([1965] 2014) recalled first hearing about the idea: “I received a telephone call one day at the graduate college at Princeton from Professor Wheeler, in which he said, ‘Feynman, I know why all electrons have the same charge and the same mass.’ ‘Why?’ ‘Because, they are all the same electron!’”

Wheeler’s postulate takes shape as a rhetorically convenient, almost romantic solution that echoes the alchemist’s way of reasoning. Whether it is thought of in terms of a single interconnected body or not, the case of the electron demonstrates how radically we have to modify our preconceptions of the world to attempt to comprehend the attributes of particles. The metaphor may seem to arise as a rescuing hand: a versatile instrument redeeming us from the otherwise inconceivable notion that physical reality will always be tied up with our depictions of it. But the broader picture is that this kind of reasoning, in practical terms, is the expression of a system that is grasping for mental and visual shortcuts. Desperate for slick solutions, teachers and popularisers might do themselves a great disservice. By choice or by bias, the metaphorical act tends to be exercised to force together the physical world as we experience it and the physical world as quantum theory tells us it must be. The incompatibility of these worlds is so pre-eminent that the insistency on merging them through metaphors suggests a certain denial. The problem is not that metaphors are used, but rather that the same inaccurate ones are used and reused repeatedly without much consideration, until they become entangled with the elements they represent, entrenched in the so-called commonplace. The billiard ball, for instance, has somehow carelessly reached a status as the popular icon of the atom, while electrons, because we have become so used to firing, are typically illustrated as tiny BB pellets moving causally in orbits around its nucleus. When these granular figures fall short in aptness, particu-

larly when trying to illustrate the photon, the wave metaphor can be applied as replacement.

In 1925, Niels Bohr, who himself had only two years earlier explained photon collisions in terms of the classical billiard ball picture, felt obliged to withhold the possibility of any meaningful visualisation of such events. He concluded that the complications caused by the light quantum's unavoidable fluctuations in time made it impossible to apply what he referred to as *anschauliche Bilder*, or "intuitive images" (Miller [1984] 1986, 173). Today we know that there is no such thing as an electron orbit, at least not in its usual kinematic meaning. Nor does causality exist in any classical mechanical sense. But the intuitive images remain; only the admission regarding them as such seems to have vanished. This is a much more stagnant attribute of metaphor than the active and inventive property mentioned earlier. Here, the models seem to have been fostered into exact duplicates; the analogies have become equivalent to the thing, as if they were derived from it. But they are solely derived from the faculty of imagination. This operation is rather a semiotic device that routinely conceals that there is no thing to derive the model from. Curiously, the models come into existence because there is no base for modelling. Unlike the case of Aristotle's "sowing around a God-created flame," these semiotic lacunas cannot conveniently be filled by the creation of new words.

While physicists are certainly capable of distinguishing model from thing and distilling only the accurate features from a metaphor, this does not seem to me to be a professional priority. Physics is an establishment that is first and foremost engaged in providing hard evidence and reproducing results, and although these objectives may be regarded as by-products of a more existentially legitimised project, they are what keep this highly expensive industry operational. When it comes to articulating and illustrating their results many researchers, quite understandably, seem to prefer the easy way out. After all, physics is not a discipline primarily occupied with visual communication. Still, images are used productively in both experimental and theoretical physics. Electron cloud pictures, for instance, represent a probability distribution of the electron in the space of the atom. These figures are designed graphically to mimic information about the electron's probable location. Where the clouds are most intense, the probability is high, and where they are diffuse, it is low. But these are not pictures of electrons; they are pictures of probability.

This very distinction is important to keep in mind when transposing information from one sphere to another. Our spatial, temporal, and numerical metaphors are bound to affect this process. In the written formulation of acoustic signals, for instance, there is a convention of picturing harmony vertically, as it emerges in the parallel layering of tones, and melody horizontally, unfolding in a causal sequence, like an *image of time*. A similar visual language is applied in most statistical graphs, even those designed to represent the mentioned probability distribution of particles. The word *image* is derived from Latin *imāgō*, meaning "copy" or "likeness," and for Roland Barthes, the origin of the word reveals the most significant problem related to the semiology of images. He asks whether analogical representation, *the copy*, can produce true systems of

signs and not merely simple agglutinations of symbols (Barthes 1977, 153). According to physicist and philosopher David Bohm, science is primarily involved in a perceptual enterprise in which knowledge is secondary. He insists that scientific theories never give us a final true knowledge, but rather provide us with an apparatus for looking at something—the word *theōriā* in Greek means “contemplation,” “speculation,” or “looking at” (Bohm and Angelos 1990).³ Furthermore, the English word *theatre* is also derived from the same word, supporting Bohm’s assertion that scientific theory functions as a sort of *theatre of mind*, giving us insight *into* the thing (ibid.). There is a case to be made, however, that such a statement itself relies on a spatial metaphor, one that pictures knowledge as a process moving *inwards*.

When faced with the contradiction deeming particles *not visible* and yet *not invisible*, it is tempting to advertise this as a representational, even strictly visual, dilemma. As I have argued, this must rather be understood as a paradox of human knowledge. Clearly, it is not as if physicists are unaware of this. Questions related to images and depiction, including those presented by Barthes and Bohm, are still highly topical in particle physics today. But although there seems to be a strong discursive concern for them, it is my impression that such questions are unlikely to be the centre of attention in everyday discussions between physicists. Nor are they, perhaps more understandably, given much consideration in scientific papers. Surely, more artistic approaches to attacking such matters should not simply be dismissed as superfluous; there might even be a substantial demand for them. The notion of transposition could serve as an effective induction for future discourses. Whether it is in the form of computer imaging processes or as mental evocations shaping the interpretive act, transpositions are always needed to make scientific data readable. However, where physicists tend to cover up these processes by minimising their impact on measures and results, artistic researchers may instead want to accentuate the erratic nature of the data. In this respect, the notion of transposition joins a growing tradition that engages with scientific data, not necessarily to arrange or resolve anything, but to reveal and exhibit its natural obscurity, as if by looking obliquely at Bohm’s theatre.

There is a popular metaphor claiming that science is pure analysis, like taking the rainbow to pieces, while art is pure synthesis, like putting it back together. Modern physics, as much as modern art, has proven this to be an inaccurate distinction. Pablo Picasso took the world to pieces while Niels Bohr puzzled it back together. In doing so, however, neither of them relied solely on one of these generalised attributes. Discovery requires both imagination and examination. One aim of artistic research should be to emphasise the *re* in representation, acting as a reminder that knowledge is always created, never simply revealed. This is a responsibility far too pivotal to leave only to scientific institutions that are largely driven by profit and a constant pressure to produce breakthroughs. Another typical distinction tends to be made between personal and impersonal approaches. Many scientists strive to remove all traces of trial

3 From late Latin *theōria*, from Greek *theōriā*, from *theōros* “spectator,” from *theā* “a viewing” + *oros* “seeing.”

and error when presenting ideas and achievements to others. Artists and writers may do this too, by concealing their failures, even destroying sketches and studies, releasing only the finished work. Many creators want to exhibit a polished surface for others to admire without leaving any evidence of the personal struggle that got them there. It is important to remember that all ideas, scientific as much as artistic, are generated by real people with real and sometimes irrational thoughts. Modern physics, or at least its popular offspring, reflects an attempt to convince people that the theories presented are objective by eliminating all traces of the human minds that produced them. Most physicists would probably admit, professionally, that the theories are conditional and approximate. The question is whether such disclaimers are not merely a form of required humility. In practical terms, my own research suggests, many may still consider themselves to be observers of an external world, and may legitimise their occupation through the discovery and description—not the creation and representation—of this world. If there is any truth to such statements, this indicates that artistic perspectives are needed to provide science with additional self-reflection. However, there is one major problem with this proposal: *reproducibility*.

The criterion of reproducibility has been the cornerstone of the scientific method since the seventeenth century. It has also formed the basis of a recurring criticism against artistic research in recent years. When considering the scientific canon's hard-earned faith in systematic observation, measurement, experiment, and modification of hypotheses, it seems obvious that artistic practice cannot traditionally meet all these conditions while still maintaining its native integrity. Looking closer though, reproducibility emerges as a more problematic principle than what is usually declared. A recent survey of more than 1,500 researchers conducted by *Nature* showed that more than 70 per cent of the participants had tried and failed to reproduce another scientist's experiments, and more than 50 per cent had failed to reproduce their own (Baker 2016). Half those researchers surveyed agreed to the claim that we are seeing a crisis of reproducibility, but far fewer found that the published results in their field were in any way untrustworthy. Most confident in their published literature were the physicists.

But is it even meaningful to talk in terms of reproducible results in particle physics today? A quick look at a typical collision experiment might reveal some of the problems associated with this norm. COMPASS is the name of a case study conducted at CERN, where scattered traces of muons are observed by several detectors, interpreting the "path" of the particles as they travel through the collider.

Since their whereabouts in between the different detectors are theoretically uncertain, the path, stretched out in classical space and time, functions as a form of transposed probability. Of course, experimentalists will never be able to reproduce *any one* of the incidents occurring, and consequently they will need millions of events for the data to become useful. The set-up for the experiment is certainly reproducible, as is the equipment for interpretation and the structuring of the data. But the particular results may never manifest

themselves again. Reproducing a scientific experiment is even sometimes called *replicating* it, a word indicating that the process functions like a sort of recipe. This is significant because, in a sense, all physics does is to provide recipes for measuring. None of its concepts are really ever defined, only in terms of what is called *operational definitions*, the bare essentials of what is needed for conducting a specific measurement. To build a rocket and travel to outer space, we do not need to define space, only give a prescription for how to measure it. As Roger Jones (1982, 16) notes, the scientific purpose that lies in facilitating precise measurement of space may make it possible for us to navigate in it, but it does not tell us what space is.

Of course, this empiric operationalism is not an approach shared by every physicist. By some this attitude might be viewed as too straightforward and naive to handle the subtleties of the quantum world. Yet, that does not mean that this philosophical tension represents a real issue for practising physicists today. How scientists legitimise their work and how they talk among themselves does not always coincide. Within other faculties of thought, such as the humanities, economics, or social sciences, each term and concept needs to be meticulously defined for the research to be regarded scientifically valid. It may be surprising to find that the department of particle physics, with all its emphasis on accuracy and precision, operates without defining many of its central concepts, such as space and matter. No wonder the discipline also struggles with conceptualising the abstruse effects that metaphors can have on its creative constructions. So how does the relatively new realm of artistic research assess its scientific pertinence? This is too early to say. Although they may not meet the golden standard of reproducibility, which in time may turn out to be an outdated norm even for the natural sciences, nor set out to reach any universally approvable definitions, many artistically motivated projects engage with physical theory and data collection through procedures that could benefit from being recognised as scientific. These activities do not necessarily prescribe recipes but can allow the transposition of each recipe, the metaphorical movement itself, to be the focal point.

Is there, though, a real productive value in recognising these movements at work? Does not the hyperbolic attention to the metaphor deprive us of any useful distinction between the “real” and the “depicted”? Are we not then running the risk of advocating a position from where everything may be regarded metaphorically? This is exactly what quantum theory has already done, but without providing any replacement to fill the semantic vacuum it has left behind. If metaphorical reasoning can shape the way we think and speak about the physical world, then it may also influence the production of models and the structure of experiments, even influence the design of observational equipment and maintenance of certain assumptions and cultural biases. Precisely because these mechanisms tend to be so concealed within each area of the scientific canon, identifying common traits becomes particularly meaningful. Using the term *metaphor*, however, might not be the most convenient way of organising such a variety of different processes. This is partly because the term is already stained by its long history of proposed definitions, in linguistics, semiotics, and

hermeneutics. Perhaps *transposition* could serve the cause as a more dynamic umbrella term. Aristotle's original description of the metaphor as *allotrios*, the transposition of an "alien name" (*Poetics* 1457^b31) "that belongs to something else" (1457^b7), may help shed some light on the relation between these two terms (as translated in Aristotle 1984, 2332, 2333). While the metaphor relates to the whole process of relocation—its overall narrative and the resulting implications of taking something out of its familiar sphere and imposing its current meaning onto something else—the transposition merely refers to the movement itself. In other words, the transposition says nothing about the meaning created by the metaphor, and nothing about the initial meaning before the metaphor entered the equation. Furthermore, if a metaphor can be transposed from one level to another, as mentioned earlier with the case of Rutherford's atom model, the transposition does not cultivate two separate metaphors but rather explains the movement of one. Transposition, then, could also be suited to describing the technological conversion of a signal, such as the mental translation from a nerve stimulus to a sound, or the attachment of meaning when this sound is interpreted as language. As modern physics has left us tangling in a duality where mind and matter, consciousness and nature, observation and representation, are theoretically intertwined concepts, one approach for attaining a more refined framework might be to concentrate on its re-creations and transpositions of meaning. After all, movement of meaning is what discovery is all about.

A generous view of the metaphor, one that is extended from the department of language, does not imply that all metaphors bespeak the same thing. There are clear differences connected to intentions as well as to practical usage and implications. It may even be useful to point out some variations in quality, or at least in degrees of aptness. In my opinion, the billiard ball is an inapt metaphor. This is because it makes assumptions about the properties and visual attributes of the atom that not only are inaccurate but also undermine the core essence of the theories they represent. Dark matter, on the other hand, is a metaphor merely expressing the fact that its constituents, still unknown to astrophysicists, do not interact with radiation of any sort. It does not make any claims about the material composition, except that it is physically present and yet unseen. But dark matter is only a name, an abstract invention in language. Much like the *quark* or the *wimp* in particle physics, the term bears more of a figurative function than a theoretical one. Whereas the metaphor of the billiard ball draws its comparison from our pre-existing familiarity with the game and the physical assumptions of kinetic energy, creations such as dark matter and quarks are expressions of an alternating continuum of meaning, one that evolves from the combined activities of investigation, discovery, and, equally importantly, storytelling. Science, like all human endeavours, is constantly shaped by stories of particular people and events, by which its concepts are infused with meaning.

In 1963, when American physicist Murray Gell-Mann was to propose a name for a material constituent yet to be discovered, he started with a sound. The sound he had in mind was something like /kwɔrk/, mainly because it meant nothing and thus would never turn obsolete. To avoid the loss of meaning asso-

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ciated with Greek and Latin terms, Gell-Mann wanted to make one that was purely rooted in phonetics. But he was unsure of how to spell it. Then, while leafing through James Joyce's *Finnegans Wake* he came across the word *quark* in a phrase, and decided to use that spelling.

—Three quarks for Muster Mark!
Sure he hasn't got much of a bark
And sure any he has it's all beside the mark.
But O, Wreaneagle Almighty, wouldn't un be a sky of a lark
To see that old buzzard whooping about for uns shirt in the dark
And he hunting round for uns speckled trousers around by Palmer-stown Park?
Hohohoho, moulty Mark! (Joyce [1939] 1975, 383)

The term *dark matter* was first used in 1933 by the Swiss astrophysicist Fritz Zwicky, who was studying galaxy clusters and managed to estimate that the cluster had to have significantly more mass than what was visibly observable. Zwicky indirectly obtained evidence of this unseen mass, and decided to name it *dunkle Materie* (Richmond 2007). Prior to his calculations, the term *missing mass* had been used to explain the disproportion between the motion of the galaxies and their gravitational effects. Now that the missing mass was argued to be physically there, having both weight and gravity, the term *dark matter* was suddenly more appropriate. In *The Art of Scientific Investigation*, W. I. B. Beveridge (1957) explores the mental processes that stimulate creativity and trigger different kinds of discoveries. Through quotations taken from scientists' diaries and personal notes, he reveals how intuition, eureka, chance, and serendipity are essential factors in scientific encounters. This is, for instance, how German chemist August Kekulé allegedly came to solve the structure of benzene, a breakthrough that revolutionised organic chemistry:

It did not go well; my spirit was with other things. I turned the chair to the fireplace and sank into a half sleep. The atoms flitted before my eyes. Long rows, variously, more closely, united; all in movement wriggling and turning like snakes. And see, what was that? One of the snakes seized its own tail and the image whirled scornfully before my eyes. As though from a flash of lightning I awoke; I occupied the rest of the night in working out the consequence of the hypothesis. . . . Let us learn to dream, gentlemen. (Kekulé quoted in Beveridge 1957, 56)

These final excerpts may help highlight what is perhaps the most influential of all the attributes of metaphor: it plays an equally prominent part not only in scientific thought but also in conveying stories, dreams, and personal legacies. Throughout this chapter, I have been making use of such stories, because, to me, they are what give science life. Moreover, I have frequently resorted to various kinds of metaphors when assembling my arguments. In some cases this has been done intentionally, in others not. I have habitually employed Reddy's conduit metaphors, practically in every sentence. I have even made use of popular illustrations resembling those that I most blatantly denounced. The primary objective of this text has not been one of accusation. Metaphors merely pose problems when they are not recognised as such; they also represent a fertility

of language and a comparative capacity of mind. The latter should be viewed as a benevolent feature allowing us to identify similarities where, at first glance, they seem least likely to occur. This, precisely, is the broader ambition of my approach. There is an underlying affinity between the natural sciences and the fine arts, one that transcends the binary oppositions of hard and soft, brain and heart, analysis and synthesis, logos and mythos. The standout achievement of modern physics has been neither the exploration of galaxy clusters nor the probing of subatomic particles but the disclosure of the shortcomings of the human mind. These revelations are what make the discipline relevant to everyone, and they are still reflected in the language and imagery employed today. Much like in painting, we need to accept that the transpositional layering of names, concepts, and anecdotes can add meaning to an image but never make the image complete.

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Staging Collisions:

On Behaviour

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DIFFRACTION

In physics, diffraction describes the phenomenon occurring when a wave encounters an obstacle. In particular, the term is used to denote what happens when light waves bend around the corner of a slit. Experiments examining diffraction effects were an important moment in the history of physics, marking the passage from what was thought to be a strict division between wave phenomena and the behaviour of particles, to a more fluid concept of materiality. Exceeding this border suddenly brought together into one essence two substances that before were not only different but unrelated, incommensurate. A collision that produced an entirely new state of matter, something that eludes both the wave and particle categories and is not reducible to their sum, something that, with respect to those categories, is intrinsically indeterminate: quantum matter.

The concept of transposition shares some aspects with this kind of matter; physics could be a model of how to deal with concepts or phenomena eluding the categories that we are trained to think in.

Diffraction literally means disrupting, breaking something apart or into its constituent parts. The light wave that collides with the slit on its path is broken by it. This breaking is not only metaphorical but also literal, in the sense that for a moment at the collision the light ray loses its coherent image and appears as the collection of quanta (particle waves) it is. Immediately this collection undergoes a reconstruction governed by the laws of interaction that the parts are subject to. This reorganisation process results in the appearance of the well-known interference patterns. Observing these patterns, confronting them with assumptions, marking their differences, produces traces of the inner workings of the light phenomenon itself, revealing the interactions within it and its behaviour. As a different image of the light ray is constructed, eventually the observed phenomenon itself undergoes a transformation: it is transposed into something different. We speak no more of particles of light, nor of waves.

I regard this text as a diffraction. The object being diffracted is the concept of transposition and the obstacle, the slit that it encounters, is the need to formulate this very text.

While writing I have tried to understand my own practice in terms of transposition. In doing so I realised that its concept has become a complex entanglement, a compound of various elements interacting with one another. There is my scientific background in physics, my artistic background in experimental electronic music, and my practice in artistic research, in particular as a member of the project *Transpositions*. All these elements are tightly connected in their particular and personal appearance. Their relation with one another is so strong that taking one away would maybe make my argument clearer, but in some way it would collapse it into a state that would capture some limited aspects of its construction.

My intent is therefore not to provide the reader with a “solution”—that is, a sharply cut definition of the concept of transposition that would then be ready to be instrumentalised. Instead, I allow the idea of transposition to be an attractor of images, metaphors, thoughts, definitions, and statements, becoming a knot of elements explicitly held together by implicitly drawn connections. I lay out a field of fragments, products of the diffraction, which are in relation to one another, overlap one another, or maybe are even in opposition: instead of delineating a completed path, I would like to leave the end open to the reader to construct and reconstruct an image of transposition, offering the potential for a pattern of interference to emerge. I will try a “weak measurement” of the idea of transposition.

Thus, on the one hand, the text reflects a quality of a transposition that I perceive as fundamental to its generative potential: that of being an indefinite position in all or some ways, of being a site that exists as relative to something other as a difference position. On the other hand, more pragmatically, in this way I try to cope with the difficulty I encounter in translating my experiences as an artist researcher into the propositional form of a theoretical text. I meet this difficulty by trying to transform this text into a transposition itself.

WEAK MEASUREMENT

In quantum mechanics, measuring a phenomenon also means causing a change in what is observed. More specifically, the effect of measurement is to collapse the observed into a state that is different from the one it was in before, a state that is only a partial component of the original complete phenomenon. Measurement thus has a dramatic effect on the object and reveals only a limited aspect of the phenomenon, the complete image of which remains inaccessible.

For example, reconsidering the experiments on diffraction, the dramatic effect of measurement is particularly evident in the double slit experiment. In this experiment, an incoming beam of electrons (or photons, i.e., light) encounters an obstacle, a wall pierced by two parallel slits. After the wall there is a screen on which the known interference patterns are visible, the effect of the wave-like characteristics of the beam. Now, we will keep the whole experiment the same, but add a sensor that detects when and whether a particle passes through one of the two slits. As an effect of this measurement, interference patterns on the screen will disappear, as the detector will cause the particle

waves to collapse into their particle state and lose their wave qualities. We will measure just what the detector is built to measure; we are not able to sense something something else (i.e., waves), something that we are not expecting. The apparatus strongly affects and determines what can be seen.

A “weak measurement” is on the contrary a type of measurement that tries to interfere as little as possible with the system it observes, thus attempting to reduce the effect of the measurement itself, but that also obtains very little information.

SPECULATIONS

Throughout the text, statements are interspersed that have a double nature. On one side, they function as marks placed in a landscape of unsure and moving concepts: they are condensation moments for some line of thought that appears in the text. On the other, they work as speculations: conjectures or hypotheses based on unclear images. I use them as a tool in writing this text, placing a trace in a space where I sense an interesting direction of imagination and of thinking and then, a posteriori, trying to reconstruct a path towards it, rejoining with it.

Transpositions are aesthetic speculations.

QUARKS

Quarks are subatomic particles that are, in the currently widely accepted “standard model,” the constituents of hadrons. Hadrons are, for example, protons or neutrons, the particles that with electrons build atoms. The existence of quarks was postulated by theoretical physicist André Petermann in 1963. Their existence was postulated as there was no evidence of such a particle: no measurement or data directly accounted for their existence. Quarks are a theoretical construct that tries to account for deviations in the expected behaviour of elementary particles that can be observed in experiments.

Experimental investigations into the existence of quarks and their properties began in the late 1960s (after their postulated existence). These deep inelastic electron-nucleon scattering experiments, in which an electron is shot with extremely high energy onto a proton or a neutron, showed a particular property of quark behaviour: the so-called *confinement*, one of physics’ hard problems.

Because of *confinement*, quarks do not appear as free particles, unlike most other particles known to physics. Electrons or photons, for example, can be detected and measured, as they or their effects can be recorded by a suitable detector. Yet quarks cannot be detected; they cannot be sensed by any instrument. And this is not because the technology we have at our disposal is insufficiently precise: it is a characteristic of quarks themselves, a consequence of the *confinement* phenomenon.

One could depict the situation in the following way: imagine a spring—a very strong one—with two ends, A and B. If one tries to take just end A, thus separating it from the spring and the other end, one would pull the spring very hard. At some point, the spring would break, leaving us with the situation of having two springs, instead of one, and four ends.

If we call one end quark A and the other quark B, this simple metaphor depicts how quark confinement works. If we try to analyse just one quark by pulling it out from the system it is in, our action would immediately generate more springs—more ends and more quarks that remain bound to one another by springs. In fact, quarks appear exclusively in groups forming compounds of two or more interacting quarks. These compounds appear (i.e., are detectable) as whole particles, which conceals that, rather than being “one” object, they are a system, formed by quarks interacting with one another.

How is it even possible to formulate their existence if there isn’t even the possibility of an empirical measurement? If we did not know they existed, we would observe slight changes in the other particles’ states and trajectories, which would deviate from the predictions that we could make with the laws of physics we know. But, these variations are such that they can be regarded as the trace of a coherent behaviour. This behaviour is the basis on which it is possible to postulate, or even construct, the existence of quarks.

BEHAVIOUR

The term *behaviour* is used here with the meaning it has in physics or mathematics. Its meaning is somewhat underdefined in those disciplines: behaviour is used to indicate “how” a function or a system evolves from one point or state to another. For example, how $1/x$ reaches 0 when x tends to infinity is a behaviour proper to that function and to that function only. Or how the velocity of a mass m attached to a spring changes periodically in time is the behaviour specific to that system.

Behaviour denotes the way a state changes from one moment to the next, from one coordinate to the other. Behaviour denotes the unfolding of change, the time-ordered variations of a system when it proceeds from one state to another. It is constructed by differences produced by the system being observed in dependence from the conditions it is placed in. It is the defining characteristic of that particular system and of every other system exhibiting the same behaviour.

Behaviour is the coherency of differences.

We perceive through differences; our senses have evolved to be more sensible to differences than to invariant phenomena: for example, whereas static continuous sounds become inaudible after a time—they become masked, filtered out by our perceptual system—sounds that change over time strongly attract our attention. The same applies to our visual perception: an object, even if small, moving fast through our field of view is particularly evident to us. On the other hand, it is known that constant visual stimuli cause the photoreceptors to become unresponsive: that is, we are blind towards static phenomena. Even

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when there is no change, the coupled system of body and sensing apparatus is able to produce those differences. We have two eyes and two ears that sense distinct visual or acoustic images and that we continuously move with imperceptible small movements, therefore generating different percepts that our cognitive apparatus then integrates into one coherent image.

Behaviour is a perceptual construction.

When we want to know something we interact with it, we collide our bodies and our senses with that object: we look at it, listen to it, touch it, move it. Interaction means the generation of perceivable differences in the states of both involved systems (the perceived and the “perceptor”). Integrating these differences into a coherent image, a consistent behaviour, defines the object we interact with.

Interaction elicits behaviour.

I understand my own artistic practice as the composition of fields of differences having the affordance of being coherently reconstructed in terms of behaviour. Differences might be found in the specific work itself—that is, in the way events in the work relate to one another in time or space, as well as in the relations the work might present towards other artistic works or approaches in the context of computer music. This field of differences is not limited to the work itself: it stretches out from it, touching others with which it is in relation, with which it interacts.

COLLISIONS

A collision is an event limited in time in which two bodies exert forces on each other. Although in common language *collision* indicates a crash, a dramatic event in which the forces involved are so great that the two objects eventually break apart, generally a collision is independent of the forces involved.

Collision is a form of interaction.

Collisions generate compounds.

Collisions generate complexity.

In an extended definition, a collision could indicate a bringing together, a more or less forceful contraction of different and maybe opposing, concepts, such as the idea of a particle with that of a wave. From this collision, out of the interaction of the two ideas, something entirely different may emerge, something that is not just the sum of the two.

OSCILLATIONS

Transpositions are relational positions: they are objects whose primary characteristic is to indicate distances to their origin or towards other transpositions. That is, they construct a space from a network of differences.

A transposition is thus always in relation to something else. Even if it appears as a definite artefact, it affords a movement of rejoining towards something else—a continuous oscillation that recursively reconstructs the path from and to the transposition.

COMPLEXITY

As with the word *behaviour*, *complexity* is an unclearly defined term. It is used throughout different fields of research, yet there is no consensus on its absolute meaning.

In general, it is used to denote the quality of a system composed of many parts whose reciprocal interactions result in emergent phenomena that exhibit a higher order of variability, greater than the sum of the parts.

Behaviour is complex.

Compounds are complex.

Analytical approaches towards the understanding of phenomena attempt to decompose what is observed into its parts, in order to be able to formulate a description in terms of the involved components. Focusing on preselected aspects and consequently filtering out what cannot be conceived, the effect of analysis is to collapse the examined into partial perspectives, which fails to grasp the behaviour of complex phenomena.

Analysis is a strong measurement.

Complexification instead describes a movement orthogonal to analysis: it is the process of making something even more complex. From my perspective, complexification is a process that tries to keep the phenomenon intact without breaking it apart and therefore neutralising the interactions between its parts. Instead a complexification brings what is observed into interaction with other (possibly also complex) processes or objects. Observing the products of these interaction—the variations that it produces—may result in the appearance of a behaviour that is proper to that configuration: a behaviour that defines that configuration.

Complexification elicits behaviour.

Complexification means resisting analysis. It means acknowledging that what is observed might be more than the sum of its parts. It means centring focus on interaction processes rather than on the extraction of static qualities. Complexification means understanding interaction as being constituent, or even generative, of the observed: an interaction that unfolds internally as well as stretching out towards other objects or processes in its environment.

In a way, complexification is a weak measurement technique: in complexifying it is acceptable to know less about the exact constitution of the object, in exchange for keeping its emergent properties intact. The observed is kept in a state of slight indeterminacy in the hope of keeping its capacity to interact alive.

A transposition is not an analysis.

A transposition is a complexification.

This text is a complexification.

DYNAMICAL SYSTEMS

“Composing means creating a world.” This is what one of my teachers told me when I was studying electronic music, and I took that advice literally. Thus, I began trying to understand what kind of “world” I would like to create.

In my personal perspective, “world” means a complex environment consisting of interacting elements: organic, evolving, and coherent. Most of all, it is constructed out of its perceptible qualities. These expose differences and variations that hint at the organic behaviour of the interacting parts it is composed of. I understand my artistic practice as the crafting of computational tools that allow me to compose difference relations between computer-generated forms that possess the perceptual affordances of being reconstructed into the image of a coherent behaviour.

While studying theoretical physics I had the chance to engage with the simulation of dynamical systems. From a theoretical definition, dynamical systems are mathematical models that describe how a system evolves in time. They consist of a set of rules (formulated in terms of differential equations) that govern how a system undergoes state changes.

In the collision of these two approaches, the artistic and the mathematical, I have developed tools that allow me to realise works based on these ideas. With this software I can implement and simulate dynamical systems whose evolution in time is translated into sound or images. The question of whether the rules responsible for the emergence of complex behaviour could be “read” or “heard” from the result is unimportant. My aim is to explore the conditions for and the extent to which this behaviour translates as a perceptible quality of aural or visual forms of works. I therefore regard this practice primarily as a sort of experimental aesthetics.

TRANSPPOSITION

The term *transposition* is a noun. It indicates a place that lies aside with respect to another. A transposition has unclear coordinates. It is a position that is defined by the relationship it has with other places, with other positions or objects with which it connects or interacts. A transposition always affords a reference to another position, to an “original,” to an object that it refers to.

Transpositions afford connections.

In the context of this text, transpositions are artistic artefacts—works that originate from an artistic engagement with something: a text, a theory, or a set of measurement data, as in the Transpositions research project. The original is used and appropriated as a moulding material, extracted from the context it is placed in, reconstructed and inserted into a work that draws different connections: the origin is de-placed, put into an undetermined position.

COMPOUND

A compound is an aggregate state of multiple elements. Quarks form compound states that present themselves as particles. The elements that form the compound cannot be taken apart or separated from the others without destroying the compound itself or without generating a new compound.

The elements in the compound are defined by and exist only in the interaction with the other elements.

A transposition is a compound.

DATA

In the artistic research project Transpositions, we direct our focus onto scientific data. The project investigates the possibilities of generating artistic auditory and visual forms based on the analysis and transformation of scientific data. At the time of writing this text, the project is still ongoing. At present we have already produced many of these forms from different data sets, such as simulations of neural networks or recordings of deep inelastic scattering collision events at CERN. But, even if we already have worked with this “material” and produced transpositions of it, we still are in the process of understanding not only what we are dealing with but also how we approach it.

Scientific data is the result of measurement or a numerical simulation. It is recorded and stored as numbers organised in some sort of matrix. *Data* means “given” in Latin and, as such, it is usually treated as a trace and a representation of what has been observed.

Data is the collection of information produced by the application of a reiterated function, the experiment. It collects the results of probing what is observed under varying conditions (e.g., different position, times, etc.) and thus is a field of values that are variations of one another with respect to the measuring parameters, the conditions of the experiment, that is, of the independent variables of the experiment.

This differential field contains the trace of the behaviour of the sought phenomenon. Integrating this field of variation would mean reformulating this behaviour in terms of a rule.

NEURONS

During one of the case studies in the Transpositions project, we worked with data that was generated by simulating neural networks. These simulations were implemented and run at the department of Computational Biology at the KTH Royal Institute of Technology in Stockholm. The data consists of recordings of the evolution of the electric potential at the membranes of the neurons in a modelled network evolving in time. These models are themselves dynamical systems exhibiting emergent properties that are of great interest to researchers as they provide the basis for understanding how our brains are able to perform complex functions.

While to a certain extent engaging with the scientific research questions and methodologies that are part of the production and the analysis of these data sets, we attempted various forms of transposition in which we followed paths often orthogonal to researchers' methods. In particular, we have chosen to concentrate on the behaviour inscribed in the time evolution of the system, stretching it and zooming into particular events. Analysis methods usually applied by researchers on this data aim at reducing its complexity and extracting a set of quantities expressing some overall statistical quality, but neglecting locality and isolated processes.

In one particular transposition, we have used the correlations of neurons with one another. Correlation is a measure of how much the activity of one neuron is related or similar to that of any other neuron in the same network: it is a measure of the mutual relationship or interdependence of different nodes in the network. These values, calculated for each pair of the eighty-one neurons of the network we focused on, constructed a multidimensional ($81! = 81 \times 80 \times 79 \times \dots \times 2 \times 1$ dimensions) evolving structure, folding and unfolding in time.

DIFFERENTIALITY

Differentiability is the property of a set or a field of points to have a univocal link to a set of defined values or coordinates. This means that the relation between the points can be expressed in terms of the variation of those coordinates that can be called independent variables. For example, in a scientific experiment, the coordinates are the conditions or the settings of the detector used for the repeated measurements. Changing these coordinates will produce different outputs.

This property of data is central to scientific research as it allows the behaviour of the phenomenon implicit in the data to be reformulated in terms of well-defined rules. Mathematical equations in physics could be regarded as such rules, expressing in a specific language how a certain behaviour presents itself. On the basis of differentiability, these formulations integrate fields of differences into complete images: they stabilise fragmentary variations and construct a whole.

Transpositions are differential.

Transpositions resist integration.

The conditions under which transpositions come to be and are performed are unclear. Processes leading to a transposition might be traceable in terms of the operations that have been performed on the object. This tracing, however, will not recognise the complexity of the aesthetic decisions that have led to those operations. Further, these conditions might vary drastically from one transposition of the same object to another: transpositions are incomparable.

Transpositions indicate difference positions; they are inherently differential. But there is no defined common basis, such as a comparable set of numbers or coordinates, which might link one transposition to another or to its original material.

Transpositions resist integration in the sense that they cannot be brought into a univocal relationship with the conditions that generated them, which cannot be entirely known. They resist stabilisation into a finite propositional formulation. Relations and differences towards one another and with the object they are applied to remain incompressible; they continue to be a network of differential interacting positions.

FACTA

Looking closer at the nature of data, at its properties, one realises that it is more complex than normally assumed. First, data exists only in relation and interaction with an experiment that has been performed, with research questions, and with the particular measuring devices that have been used, as well as the analysis methods that are then applied to it. From this perspective, data is less a stable result and more a complex compound of all those factors that cannot be separated from it.

In a way, data is not simply “given.” There is an apparatus, for example a particle detector at CERN, that actually produces a data set by performing a great number of operations that transform the input phenomenon. Further, all these operations involving data “taking” are infused with the researchers’ knowledge and expectations and thus are a generative factor of the data itself. Data might as well have a double nature of “facta,” created, produced, and emerging from the interactions between all the technological and theoretical tools that scientists employ.

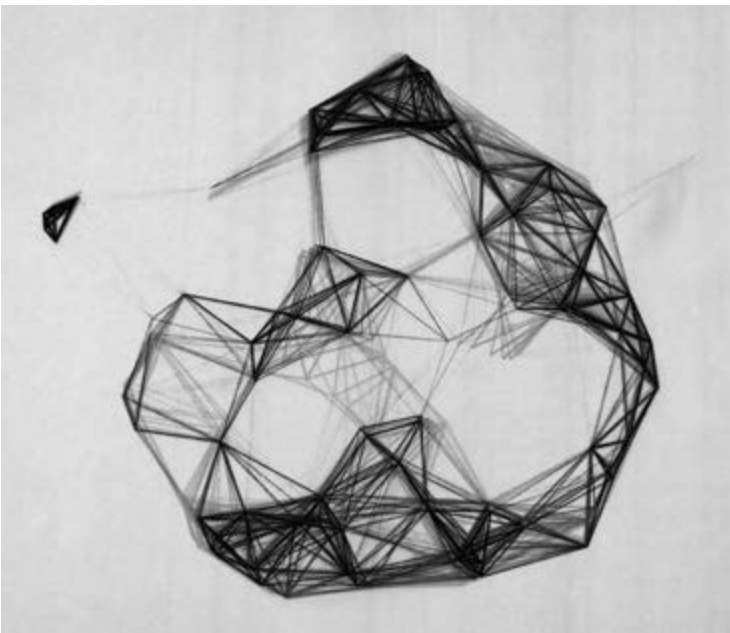


Fig. 8.1

One result of the Transpositions project was understanding that transposing a data set means recognising and acknowledging its complexity. It means recovering its context and the net of interactions in it. The transposed becomes less a static moulding material onto which transposing operations are applied and more a produced phenomenon that is active due to the interactions it emerges from and that it affords.

NETWORK

Trying to find a perceptible visual form for the complex space of neuron correlations, we searched for an operation that could transform this multidimensional structure into a two-dimensional figure, without loss of detail. To this end, we devised another dynamic system, which would accomplish this specific task in a recursive computation. The system consists of eighty-one mutually interacting masses on a plane, one for each neuron. The magnitude of the force each mass pair is subject to reflects the correlation value that the neuron pair has: highly correlated neurons would result in very close positions, while uncorrelated ones would remain as far from one another as possible. A set of the correlation values of the neural network activity would simultaneously cause all the masses to move and search for positions whose relative distances to all other masses corresponds to that node's relationship to all other nodes. Similarity and interdependence are transposed into geometrical distance relationships. Eventually, the dynamical system will result in an arrangement of the masses that reflects the best possible two-dimensional approximation of the multidimensional structure, constructing a figure that folds and unfolds in time.

The resulting visual form is a transposition. In many ways it is a collision between the data set and the expectations scientists have towards it, my artistic practice in employing dynamic systems, and the artistic choices guiding fine tuning of the drawing, to name only a few ways. And it is a complexification: we are dealing now with two interacting and inextricably interwoven dynamical systems whose responsibilities in the visual result cannot be exactly separated. The transposition doesn't extract quantifiable information from what it is applied to; neither does it present a "solution," as it doesn't search for causes. Rather, a transposition brings to light specific qualities of the transposed that are inherently incalculable. And, finally, it is a compound formed or even produced by the interaction—the collision of all these aspects. It might stand as a self-contained artistic artefact, but its transpositional potential lies in the affordance of interactions with other artefacts, concepts, contexts, and so on.

Using these tools, we realised different transpositions of the neural simulation data: we developed multiple parametrisations for the dynamical system and the figure's visual rendering. The result is a field of figures, artefacts whose mutual relationships construct themselves a network.

RECURSION

The concept of recursion seems to be a theme running in the background of some thoughts I'm trying to depict here: it might be apt to clarify some ideas.

In computing, recursion describes the situation where one of the steps of an algorithm consists of a new invocation of the same algorithm. For example, the simulation of the dynamical system we used to generate the visual representation of the correlations of the neural network is a recursive function. In general, dynamical systems may be considered recursive algorithms: they consist of the recursive application of evolution rules to a state, the result being the input for the calculation of the next step. Recursion is the algorithmic formalisation of a process that evolves through time.

Transpositions are recursive.

Having unclear positions, transpositions afford a non-static perception: their connections towards other positions, including their origin, are continuously reconstructed in an oscillatory movement, a triangulation involving all elements in their network.

Transpositions are compounds of interacting elements: artistic and scientific practices, visual or aural forms, the theoretical embedding of the original material as well as its artistic, historical, and social context. These elements are enclosed in the artefact and are generative of its perceptual construction. Their recursive interaction is the generative function of the transposition.

INTERFERENCE

Transpositions are compounds of undefined states generated by collisions between complex objects. In the case of the Transpositions project these objects could be understood as data, as phenomenon, and as the artistic practices of the project's researchers. These objects bring with them a whole context of complex interrelations in which they appear: that is, data is not only a collection of numbers that is given to the researchers to be analysed, it is also tightly bound to the whole context in which it is generated. These collisions result in a complexification; that is, the object arising from the collision is more than just the sum of the two, it is an inextricable compound of interacting parts that are modified in the process. This transposition appears as an aesthetic object, a work of art.

Performing a transposition means acknowledging the complexity of the interrelations that the two colliding objects are in, as well as placing the transposition in the context of the other objects, possibly other transpositions, with which it is related. A transposition relates to others, with connections towards not only other artefacts of the same form but also other forms of formulation.

As a transposition has an unclear state, it can be perceived just through the relations it constructs in an operation of triangulation based on its differences to other objects, its behaviour inside this network of relations. The staging and showing of a transposition in this context induces interactions between all the objects in the network, eventually changing and restructuring it and possibly generating new interactions.

Staging Collisions

A transposition is therefore active: it oscillates and elicits interactions. The emerging behaviour of how relationships undergo variation is a trace of the complexity of the network. As transpositions resist integration this behaviour remains an aesthetic quality and therefore unformulated.

As the whole context in and outside a transposition is changed in the moment of its placing, the relationships to it also change. It is modified by the process of producing, staging, and presenting a transposition as a work with its interconnections. A transposition, while being a work of art, is not under the complete control of the artists who produced it, in the sense that it offers an openness to be seen, perceived, or thought in different ways to how it was first conceived.

Algorithms under Reconfiguration

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PREAMBLE

A *configuration* is an arrangement, a set of—possibly heterogeneous—elements along with their positions or relations with respect to each other. This chapter looks at specific configurations in sound works that use algorithmic experimentation as their compositional strategy. As opposed to the term *system* that stresses aspects of design and function, suggesting technological determination, a *configuration* focuses instead on the productive potential of the representations that its elements both entail and operate on.

A reconfiguration then is the deliberate or collateral modification of a configuration through the introduction of a new element or relation or through a shift in position. In algorithmic practices, where pieces of code assume the production of forms and establish mutual writing processes between human and computer, reconfiguration is considered to be the fundamental mechanism by which the specific medium of algorithmicity articulates itself. Going beyond the traditional view of algorithms as a tight interlocking of logic and control structures, with little knowledge about their coming into existence, reconfigurations are always speculative, in that their effects cannot be predicted. From this perspective, algorithms involve the production of materials that are yet “continually unrealized” (Parisi 2013, 223).

Despite having an abundance of digital artefacts at our disposal, the nature of the configuration process is intrinsically difficult to observe. Each digital sound model, each textual or visual interface, and each set of language symbols used to implement an algorithm, permit specific ways to orient elements towards another and bring about aesthetic and epistemic consequences. Configuration always remains in an ambiguous position between state (“having a configuration”) and activity (“performing a configuration”). If algorithms are always under reconfiguration, the constancy and boundary of pieces created through algorithmic experimentation are thrown into question. If an object is something that creates a resonance with an observer, it can be said that algorithmic pieces are discerned as instances of object-series related to one another through reconfigurations and related to the observers through transpositions, both of which are operations characterised by discrete positions or levels and the crossing of gaps.

INTRODUCTION: FROM CORRESPONDENCE TO RESONANCE

At first it seems surprising that the theme of algorithms is now seeing a renaissance, given that the history of modern computing goes back at least until the 1940s, with the introduction of digital computers and the establishment of computer science; or even the 1930s, with the seminal work of Kurt Gödel (recursive functions), Alonzo Church (lambda calculus), Emil Post (string rewriting), and Alan Turing (the Turing machine), a time when “computers” meant humans that carried out the evaluation of mathematical functions, even before the advent of digital computers, which initially were called “automatic computers” (Denning 2010, 2). One explanation for the renewed interest in algorithms is that a shift is taking place in the understanding of the way they exhibit agency (Rutz 2016).

Today, typical cases of “machine learning” are mostly stuck in a “post-cybernetic” mode of predictive rendering, a mode where algorithms seemingly generate new data but in fact only extrapolate from recorded past knowledge. However, the notion that this mode constitutes the essence of computation is being challenged: Cultural theorist Luciana Parisi (2013) argues for the possibility of new architectures of thought outside the predictive paradigm. Departing from Alfred North Whitehead’s concept of prehension, she proposes that speculative reasoning lies at the centre of algorithms—something that escapes the possibility of formalisation and is also disjoint from pragmatic reason and explanations based on assimilating sensorial input to a system. At the core we find instead what in a later article she calls an “experimental axiomatic,” where the algorithm “stubbornly produces axioms—or truths—about what is not yet known” (Parisi 2014, 409, 415), constantly adding novel data that makes it irreducible to just the set of initial and final states.

In the historical alliance between computation, logic, linguistics, cybernetics, and semiotics, as well as in counterparts in early computer music and computer art, algorithms were seen as representations of the results of our thinking processes, with their purpose not being to carry these processes further but to faithfully reproduce them. But now we start to see a materiality in computational processes, not as a naive physical determination, but as the production of traces and *graphemes*, to use Jacques Derrida’s ([1976] 1997) concept of the material trace and excess of writing. The symbolon as metaphor for communication processes has become worn out, and its implication has become obsolete that a “code describes the process of ‘translation’ by establishing a correspondence between the motions, changes, or choices made in one medium and motions, changes, or choices subsequently occurring in another” (Krippendorff 1993, 11); obsolete, too, has become code built on an understanding of *information* in the mathematical terms of Shannon such that it “measures the extent to which coding processes are reversible and thus preserve a pattern” (ibid.). Parisi (2013) argues that an algorithmic object not only possesses a finite material form—a particular implementation and set of instructions—but that it is complemented by an abstract reality that makes it possible to produce and transform novel data. This *surplus* value is non-written and non-implemented, “incompressible” in the sense that it cannot be formulated.

If the correspondence model and the reversibility of coding are dismissed, then one has to take a fresh look at the process of coding itself instead of its end points. I will relate this process to acts of reconfiguration, in which elements of an algorithmic object appear, disappear, or change position with respect to one another. A reconfiguration requires an engagement with the algorithmic object—although it is always already susceptible to reconfiguration—but the way it unfolds cannot be unilaterally attributed to either the artist-programmer or some “derivative intentionality” embodied by a program.¹ Instead, a reconfiguration is always the co-product of these two sides, as both are in fact elements of the configuration itself. This also implies that the algorithmic object (which we have not defined so far) extends beyond a neatly separated domain of computation and the computer. Parisi (2013, 6) uses the term *infection* for this behaviour of algorithmic objects to “take over and program.” True to the digital domain, there are always gaps and leaps produced by each reconfiguration, and therefore there is a preference for using the term *transposition* rather than a term conventionally associated with the correspondence model, such as *transformation*.

While the term *reconfiguration* focuses more on the change of positions as if they could be observed from an uninterested or distant position (an analytical term that, of course, is a simplification from reality), the term *transposition* may be used to stress the effect that a reconfiguration has on the aesthetic and perceptual level. We recently organised a small symposium on the topic of algorithmic agency,² and one interesting question that arose concerned the nature of objects, and under what circumstances an algorithmic proposition constituted an object. It was suggested by mathematician Klemens Fellner that an object is constituted through a resonance with the observer. This view is compatible with Karen Barad’s emergence of phenomena (discussed later) and other concepts, such as Gernot Böhme’s atmospheres, in which qualities “radiate” out from a thing (Böhme 1993, 121).³ “Resonance” can be described as a particular interference of frequencies, and *transposition* then becomes a useful and adequate term to describe the shift or leap in interference patterns as the quality of an algorithmic object changes due to reconfiguration.

Thus, algorithms are no longer understood as endpoints corresponding to efforts of formalisation in the human brain, but rather as being animated by an intrinsic regime producing graphematic traces. In Parisi’s reading of Whitehead, this regime is explained as a final cause—not in a direct teleological sense, but through entanglement with efficient cause, where the speculative reason’s purpose is “to revise and change its premises” (Parisi 2014, 422), a purpose that lies only within the algorithmic object itself and is foreign to any-

1 Nick Collins (2008, 238) cites this idea of John Searle to argue that we “must always accept the precursor of human design.” Searle (1980), interestingly, derives his opposition of human intentionality and computer programs precisely from the idea that a program is purely formal.

2 Titled “Interpolations,” this micro-symposium took place on 2 December 2016 at esc media art lab Graz in the context of the exhibition *Imperfect Reconstruction*.

3 It may also be useful to look at Graham Harman’s (2005) work on objects, as it is frequently referred to by Parisi (2013, 48–58).

one else's intention. This conclusion has far-reaching implications, especially for the ubiquitous discourse on the ethics of algorithms, where algorithms are mostly seen as either endangering humanity through some presumed dark and anti-human nature, or as complacent tools controlled by a few powerful corporations to manipulate the masses. Both claims seem largely unrelated to the actual nature of algorithms, and I would go as far as to suggest that algorithms and human nature are intimately linked through speculative reason, and that we experience this linkage through aesthetics, precisely because it accepts the mutual otherness of "purposes in themselves."

To accept the intrinsic graphematic regime of algorithms and work productively with it, we have to ask how the algorithmic is articulated, how reconfigurations take place. Although the following list is not exhaustive, the focus will be on three select properties or ways in which algorithmicity—the computational medium—is articulated, ways in which the performativity of algorithms appears. These properties have been elicited through practical work with algorithms—in other words, through the observation of transpositions, leaps in the perceived resonances produced by the practices. In each instance, we may then step back and ask what kind of reconfiguration can be linked to a transposition.

RHYTHM

During some intermediate stages of the present document, and as both an experiment and an effort to linearise scattered material, text was developed using recordings of my voice. That situated recording exerts influences on the narration, its intermittent pausing. Feeding the recording into an automatic transcription process leaves me with some hundred short fragments; from these I am still capable of reconstructing the original utterance, but this is now superimposed with the repeated interjection of many new words—some fitting, some not, the utterance of the (quite poor) speech recognition algorithm itself. Left to its own, this might be not more than a stuttering; but if I allow myself to incorporate the alterations and interjections as I move the cursor across them, a true rhythmic element arises, an exchange of two sides.

Far beyond being homophones, algorithms and rhythms have many things in common. Picturing them next to one another, the *routine* can be seen as a bridge that connects them. When crossing this bridge, the algorithm concept is put into pulsation, going forward and backward from the narrow seizures of computation—it computes, thus it is algorithmic—to a broader and more inclusive conception of practising iteration. Whether or not algorithms in the narrow sense of computer programs are employed, all processes of iterative writing and formulation can be interrogated with respect to their rhythmic phenomena.

By tentatively accepting this pulsation, we may tackle the problem of how to proceed from an experience of algorithmic agency to a written account thereof. By so doing, I aim to open up the possibility to relate two writing processes: creating an artwork, and transporting it into a discourse *on* the arts. This is a fundamental problem of artistic research—the rupture between the unrepe-

ability of the experience of an artwork outside the context of this experience, and the requirement of making meaningful generalisations about an artistic process, for example in this book. The strategy of stitching up the rupture into a reconfiguration, really transposing a particular engagement with algorithms into a text on such engagement, finding a new appropriate resonance while preserving the object, is to use this pulsation as a means for a re-entry of the “subject matter.”

To talk about the artistic process, I seem to have at my disposal the entire network of relations pertaining to a thing, yet when I sit down and try to cut out a chunk and put it into linear verbal form, I sense self-deceit. How is this form any more valid than a text emerging through the dance of human with machine? Does not the latter preserve better the motion that I wished to transmit, as a re-enactment of the other writing process, where the cutting out of chunks frees itself from a priori intentionality? Beyond generating material, when applied to a part of this text, speech recognition also produces a re-entry of the work with similarities and imperfections into the form of its treatment. We could say that a partial operational closure preserves something that makes it possible to speak of a reconfiguration instead of a disconnect.

The rhythm or algorithm in this instance turns a part of the memory’s topography into a bead chain: it prescribes how to leap from atom to atom to produce a series. If we direct our attention to the study of writing processes, we may find a substrate common to composition, performance, notation, and analysis (writing-about). It seems plausible that “we”—the entangled “I” and the machine—operate similarly, whether we write a sound piece, a text piece, or a graphical piece. And the same is true of how one approaches a material—and how one enters the scene—engages with it, organises it in space and time, sorts and discards it (see Rutz 2014b, 297–302). The disconnect comes about more as an after-effect of the particular rule systems that constrain the performance of each of these “texts.” The algorithm becomes a support structure we can use to keep these constraints at distance. Support means to mediate between movement, suspension (having a velocity, a degree of freedom), and resting points (*Anhaltspunkte*).

Suspension is, I believe, the essence of rhythm. The anticipation of what will happen with the fragments spat out of the transcription algorithm is unfulfilled. The process of spreading out the fragments and interpolating the new text did not happen, instead they served as a strange aide-mémoire, suggesting some new words, but otherwise leaving me alone. Perhaps this is a valid interpretation of the statement that algorithms may produce spatio-temporalities that at the same time are “continually unrealized” (Parisi 2013, 223). The traces are real and concrete, but their production is paralleled by the maintenance of inconclusiveness. Between the beads, between the resting points, we find not a void but an elastic space, offering us a true freedom of non-selection (see Rutz 2017)—a passive intervention, not pre-programmed, that is integrated into the motion. This attempt at hybrid text production is also an attempt to prevent

losing something very crucial [SILENCE] [NOISE] [SILENCE]⁴ and that is not just the translation of pauses into my performance but the whole commitment:⁵ the large investments, ranging from seemingly mundane things like the chair in which we sit while writing⁶ to the micro-rituals we develop as we become *extimate* with our configuration; the interleaving of our own rhythms with those of the machine, becoming a compound machine where the boundaries between inside and outside fade; and the development of a joint topology, where resting points are related by degrees of proximity without a clear separating threshold.

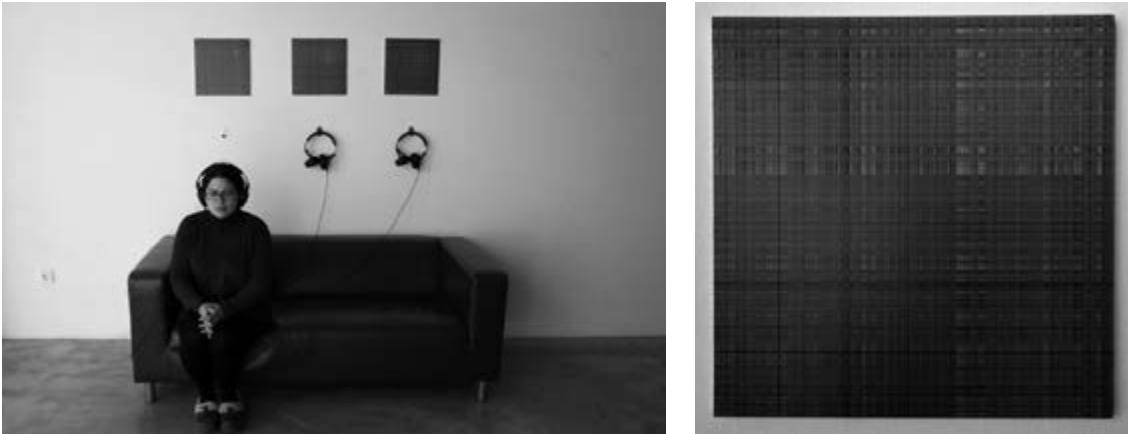


Fig. 9.1

Let us look at two examples of micro-rituals. The first one is about the establishment of a jogging routine, the observation of which had previously found its way into the sound installation *Unvorhergesehen–Real–Farblos* (*Unforeseen–Real–Achromatic*) (Rutz 2012d). This work implements the inverse reconfiguration, moving the discourse on art into the work itself. The setting is very simple: During a residency, I developed a sound piece by recording my own voice as “foreground” in front of the open window of my apartment as “background,” in each instance reflecting about my artistic process, recalling thoughts that I developed on my daily jogging route. In the show, three recordings were chosen and presented on headphones that were accompanied by digital prints showing an abstract pattern derived from the auto-correlation of the spectral and temporal features of each sound signal (figure 9.1). These two rituals, the run and the ensuing soliloquy, became strangely intertwined, each unfolding a particular type of rhythmic texture. A rhythm in this sense can be understood as the coming together of positions—entities inseparable from their locatedness—and a procedure of traversal.

4 [Text in small upper-case enclosed in brackets represents traces of the algorithmic transcription.—Ed.]

5 See Rheinberger (2008, 14); see also Barad (2007, 119) on the wholeness of the experimental arrangement.

6 There is a bon mot of Morton Feldman that if only he found the right chair he could unfold his ingenuity (Feldman [1965] 2000, 30).

Algorithms under Reconfiguration

I was running always practically the exact same route, not out of scrupulousness but because the idea of running is to establish a form of lightness so that the movement is sustained automatically. I must not think about each motion of my feet or each bend, it must be pure motion . . . you eject yourself from the landscape, you do not know any longer how you came to arrive at a specific point, it becomes again a bead chain . . . you forget the details and they surface like these pearls . . . so there is a specific point where water is dripping in an underpass, for example, or there is a specific point where the sound of the river suddenly becomes louder . . . this is, so to say, the contour of the run, it consists of these tiny differences . . . when I run, I do not anticipate these locations but you re-encounter them suddenly, and the pearl is beaded onto the ribbon, and at the end the chain is “completed” again.⁷

There are two noteworthy things here. First, the positions scanned by a rhythm or the elements scanned by an algorithm are given meaning by way of a *con-juncture* of their individual qualities and their traversal and repetition. Data thus becomes inseparable from the data structure and the structure’s control (figure 9.2), the environment inseparable from the system, contrary to classical definitions of an algorithm (Kowalski 1979). If one stays within the traditional cybernetic metaphor of system and environment, this exchange might be described as Francisco Varela characterised it: a dance between autonomy (law-from-the-inside) and control (law-from-the-outside), where the former “represents generation, internal regulation, assertion of one’s own identity” (*the algorithm*) and the latter “represents consumption, input and output” (Varela 1981, 20). But we will see that algorithms are not adequately described by means of organisational closure.

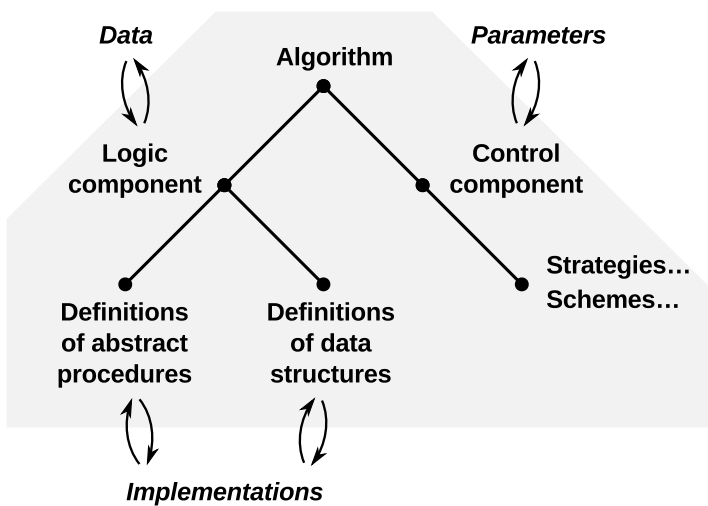


Fig. 9.2

⁷ Approximate transcription from *Real*.

Second, routines are not conceived, they build up over time. They are also not like an adventure; they do not enclose the idea of paying attention [SILENCE] to [SILENCE] everything that surrounds you [SILENCE] but include the surroundings as a support structure. Like oscillation, they have to stabilise between spinning out of range and decaying and forgetting the past; they have to continuously actualise what they store, forming a sort of memory that Luhmann (1993, 772) describes as the “capacity to delay the repetitive use of forms.”

Building such routines or re-presentations is important, because we may want to transfer them to other places—for example, inject them into other writing processes such as making a work of art. From the above it should be clear that the transference of a routine implies its reconfiguration, since the surrounding support structure changes. We are interested in this reconfiguration, and thus our purpose for representations is not mapping or model building. Despite their stability, they always carry the possibility of breakdown, the disappearance of “circumspection” to give way to the appearance of things as foreign objects (Hamman 1999).

One day I accidentally disrupted the routine. Normally I would begin to run on the right side of the river, eventually cross a bridge, and return on the left side. Somehow distracted, I crossed the bridge at the very beginning and began the run on the river’s left side. Everything changed, the entire rhythm seemed to have disappeared; for the first in a long time I became aware again of the pathway, the sequence of bends that normally remains the substrate on top of which the beads assemble. The next day I went back to the old routine.

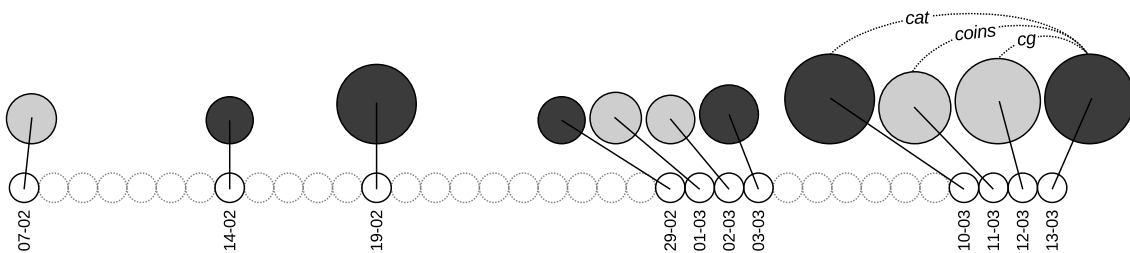


Fig. 9.3

My second micro-ritual is the keeping of a dream diary, an example of which is shown in figure 9.3. The build-up or *Einschwingvorgang* can be seen. Typically, the amount of text produced or material remembered grows over time, indicated by the size of the circles. In addition, the frequency of note-taking increases and stabilises. Rhythms never occur in isolation but emerge through the interference of multiple patterns. The pattern of black and grey shades, which track whether dreams were in German (black) or English (grey), is most likely conditioned by my interactions with people and texts of the previous day; however, it becomes a rhythmic layer only through the *integration* into the routine—that is, again, by conjuncture. And again, the individual constituents are not so much interesting on their own but rather through their interaction.

Three elements that appeared in the last depicted dream—cats, coins, and computer graphics—are recurrences from the previous three days. It is typical of reconfigurations that we grant stationary position to the “intact” element, below which the background drifts. The memories preserved, often over years or even decades, are not general memories, general knowledges, mappings, or models, but *incompressible* memories. So is the fallout of the algorithmic writing. There is a particularity about the injected and unerased words, forming a myodesopic perception. Two cats, two coins are intact only as tokens—we take them as the same object—but as floaters they are actually the conjuncture of the iterated suspension of the background with the memorised fact, which the scanning procedure of the algorithm selects as an irregularity or anomaly. Parisi (2013) aligns this procedure with the speculative reason’s force to “open the fact of the past to the pressure of the future” (72), incorporating it as “irreversible data” (77). This notion of becoming lies in the asymmetry that results, when reading figure 9.3 from left to right.

* * *

A reconfiguration at the rhythmic level can invoke the two sides of the conjuncture: first, by altering the way elements are scanned or how they are selected; and, second, by building up the routine again at a different site. In either case, these changes are both irreducible and irreversible. This can be simply demonstrated following the initial example of the transitory insertion of the aural text. Two rhythmic layers interacted here: the change from an initially written draft to narrated form, and the computational restitution of written form from sound recording. The abstract dimension of the experiment was “unrealised” by the resistance to fulfil any planned order. The disruption of the writing process briefly dissolved the conjuncture, and the elements were foregrounded (for me as the observer of this disruption). Then the routine was built up again, but we have not returned to the former site. The rhythm was truly reverberating; although difficult to quantify, the scanning order of the transcription managed to infect the project and became part of the whole commitment.

GROWTH AND SHRINKAGE

Seen as a rewriting machine, an algorithm takes a set of tokens and transforms them into a new set of tokens that replaces the old tokens. Often one also employs the terms *analysis*—mostly when the set of tokens shrinks as part of this rewriting—or *synthesis*—mostly when the set of tokens grows. This transformative view suggests that growth and shrinkage are equivalent qualities. On the other hand, an asymmetry can be seen, since digital symbols in any higher-level programming language are not actually consumed by the transformation. With a function $sort: A \rightarrow B$ and an invocation $b := sort(a)$, one actually doubles the tokens; it is only when the computer detects that the program makes no further reference to a that it “garbage-collects” this object.

The generative point of view, based on the compressibility of a program, similarly expresses this asymmetry, for example in Niklaus Wirth’s formulation: “The power of recursion evidently lies in the possibility of defining an infinite set of objects by a finite statement” (1976, 126). Figure 9.4 illustrates the result of applying a simple recursive function.

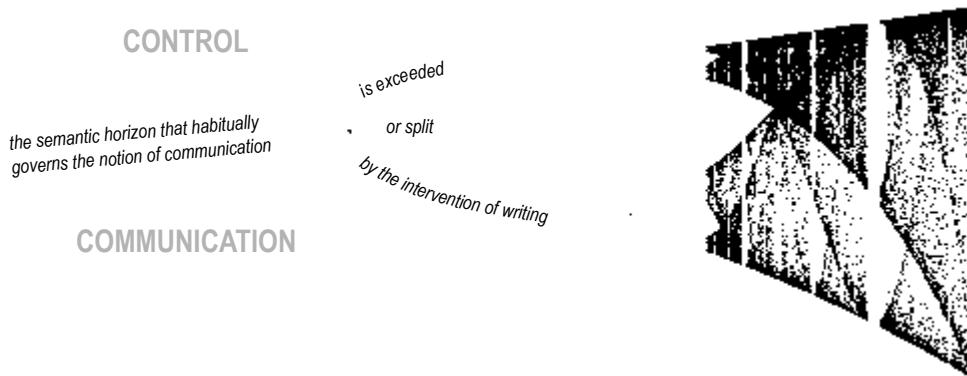


Fig. 9.4

However, the logistic map is only a metaphor here, an image of the dance of agency and the irreducibility of the performance of an algorithm. It is an algorithm’s abstract reality, the continuous state of not-yet-actualised but nevertheless real (Parisi and Portanova 2011), that implies a bias towards growth.⁸ The opening of the cleft between the cybernetic endpoints of control and communication denotes a form of excess, an over- and undershoot, that appears in thinking from Derrida (the quotation in the figure is taken from *Signature Event Context* [(1977) 1988, 20]), to Hans-Jörg Rheinberger (for whom it signifies that which escapes in an experimental system and thus marks its boundaries [1994, 7–8]), to Parisi (who connects it to Félix Guattari’s metamodelling as a transgression of exhaustive formal definition [Parisi 2013, §1]). In all these interpretations, excess is a phenomenon of the virtual, not a simple description of actual material production, although it manifests itself as such.

The image of growth is also deeply entrenched in our understanding of (especially digital) art. One starts with almost nothing, one “generates” something new; now there is more than before. In the digital world, oblivion barely exists, it must—for example, to comply with a “right to be forgotten” legislation—practically be simulated, as data is cached and duplicated across networks, is stored in append-only databases, or waits indefinitely for “garbage collection” or recovery from hard-drives on the scrap yards of developing countries (see Samson 2015). Algorithms and data structures are designed for growth, often taking the classical forms of trees and filiation, with great effort invested in

⁸ In Parisi’s *Contagious Architecture* (2013), one can count 46 occurrences of “grow*”—words beginning with “grow,” such as “growth,” “growing” and so on—45 of “increas*,” and 151 of “complex*,” in contrast to 1 appearance of “shrink*,” 2 of “decreas*,” and 78 of “simple.” Interestingly, the occurrences of “compress*” and “incompress*”—that is, the potential for or inhibition of shrinkage—are balanced.

obtaining a sub-linear Big-O. My own computer music platform *Sound Processes* (Rutz 2014a) has not been spared. It provides a database for the registration of transactions that, when one selects the confluent or tracing mode, continuously grows as the composer manipulates objects, writing the trace of these manipulations into huge trees of logarithmically growing complexity.

The interesting question is: what do we do with the wealth of data? What aesthetic consequences can we draw if we do not subscribe to the fetish of the huge, ever-growing, pulsating brain—the friendly, helpful brain that (unlike our own) never forgets, or the evil brain that in Orwellian manner erases and rewrites the past? The burden of Big Data businesses to address the scarcity of human attention by concocting ways to separate meaningful from meaningless and boil the former down to increasingly ridiculous categories, as in the case of sentiment analysis,⁹ is not our burden as artists.

If one adopts the pair pattern/randomness as a governing distinction (Hayles 1999, 25–49), we are more interested in randomness, taken as the possibility of reciprocation, than in being “able to spot where the new patterns with real added value lie” (Floridi 2012, 436)¹⁰—in other words, to establish predictability. As an example, looking again at the synthetic text transcription: of the garbled fragments eventually most were erased, and that is the liberating aspect of working with algorithms—an inversion in which the common behaviour of assembling things is changed for one of discarding. This does not arise from lethargy but from a de-emphasis of a root cause,¹¹ and growth/shrinkage only appear *prima facie* as symmetric sides of a zero-sum game. It is the sheer size of the data that enables experimentation with its decimation. We have to learn to develop strategies of “un-selection” (Rutz 2017). These can be embodied by other computer algorithms or by our own biophysical algorithms. The characteristic mesostics of John Cage’s “writing through . . .,” for instance, are not about discovering patterns but about the emergence of novel connections, dissolving a previous order but not stopping short of realignment. In Marjorie Perloff’s (1997) analysis of Cage’s *What You Say . . .*, based on writing through an “ordinary, flat discourse” (138) of painter Jasper Johns, she finds that there is a sonic resonance between Cage’s cadence and Johns’s cadence, “‘de-militarizing’ the syntax so as to controvert the chosen statement’s linearity and permit its components to realign themselves” (*ibid.*). This is, for me, an example of randomness-as-reciprocation.

9 The reduction of a body of textual information to simple polarities—friendly or evil?—exploitable by a marketing application.

10 An interesting area of conflict is sonification where the dialectic between the freedom of transposition and a longing for the discovery of Floridi’s “small patterns” is in full effect.

11 Feldman once explained—although I am unable to trace this reference—that one of his techniques to immediately dive into the textures typical of his work was to start composing and eventually to cut off the first bars leading to the establishment of the texture. At another occasion, he pointed out that the question of how to start making a piece became totally irrelevant: “The main thing really is when is it finished” (Feldman [1967] 2000, 78). In this respect, it can be argued that post-war art’s fascination with process and consequently with the question of how and when processes terminate is essentially an algorithmic question.

The first type of growth and condensation, in which gestures are decelerated or accelerated, is made possible through a digital signal process of “time-stretching.” Afforded by the plainest representation of recorded sound, the evenly sampled scalar numbers of a waveform, an algorithm for time-stretching can build and operate on a more complex representation by transforming the samples into a frequency-phase space. The second type, which entailed insertion or removal, was carried out by my free choice, although it was again facilitated by the sample representation that let me cut and splice arbitrarily in the stream of numbers. A subtle, third shrinkage took place because, after each iteration, I could export from the multi-track editor the “optimised” version of the sound material file from which the imitation was constructed, retaining only the used chunks. Executing a custom Recycle module in my signal processing software FScape (Rutz 2001), the input sound material was filtered to contain only yet-unused chunks, providing a condensed file for the next iteration in which no exact duplication of sounds was permitted.

* * *

Understanding transpositions through the duality of growth and shrinkage requires a shift from a generative, telic aesthetics to one of stumbling or going astray. The two movements are then employed in a manner characterised by randomness and disinterest. We might think of Agostino Di Scipio’s (1998, 237) observation that processes of “technological efficiency” are characterised by a symmetry of *before* and *after*, and of his argument that the singularity of events bears both a constructive and a destructive impetus. In terms of shrinkage, we may also think of the random access that cutting and filtering processes have on a sound signal in the electroacoustic domain.

Reconfigurations may then start out from a location in the diagrams of figures 9.2 and 9.4. On the interior of figure 9.2, it is possible literally to change mechanisms that enable or inhibit growth and shrinkage. Thus, for example, a particular data structure might be changed from unbounded queue to bounded queue, from linear buffer to ring buffer. Alternatively, growth and shrinkage can be composed; thus, in the installation *Dissemination* (Rutz and Castillo 2010), a self-observation is used to maintain a kind of energy balance of the sound, autolytically generating or withdrawing material (Rutz 2011a). On the boundary, algorithms can be turned inside out to produce an enantiomorphic configuration: an element that has been an inner, transitory representation of the algorithm changes position with the outside data input or output. For example, one might zoom into an algorithm, deconstructing its implementation to excavate an element that then governs the form. Finally, on the outside, one might suspend the selection and play with the question, what does it mean to bring material into the process or to take it out of it? The surplus of an uneconomic production may be stored and retrieved at a different time in a different piece. Or one might perform more radical acts of suspension that I have called

un-selection (the abandonment or interruption of a preprogrammed flow) and non-selection (the non-compliance with the proposition that a situation requires a selection *at all*) (Rutz 2017).

REPRESENTATION

It might seem odd to return now from pattern–randomness to the old-fashioned pair presence–absence. It should therefore first be made clear in what sense we are talking about the representations of algorithms. Another comparison with scientific experimentation is useful, which has been described by Rheinberger as follows: “the scientist creates a space of representation through graphematic concatenations that represent the epistemic thing as a kind of ‘writing’” (Rheinberger 1998, 287). Isolated, this statement is very dense, and so it must be unpacked. The core of Rheinberger’s observation is that in many of the sciences it does not make sense to think of a representation as something that is “matched” with nature, since there is no real shape or consistence that could function as a reference for the representamen. Instead what one handles in a laboratory are material traces—graphemes—which are conditioned by the representations that one can envision as embodiments of the scientific object by the various machines and devices present in the lab. Representations cannot be subtracted; any representation is an intervention; and with this concept Rheinberger clearly distances himself from Ian Hacking (1983), who keeps these two separate. Similarly, one could also reject the notion of representation as employed in cognitive science.¹²

In short, representations are “false identities,” relatively stable handles or interfaces to things otherwise difficult to describe. They are not homomorphisms, but rather strategies of actualisation and concatenation. All operators operate on representations, and therefore operational closure and the topology of such closure depend on the choice and affordances of representations. In terms of the coherence of our experimentation (in art, with an algorithm), a representation fixes one thing, that which stays *intact*, while permitting the motion of another layer. Rheinberger sees a sort of struggle for hegemony—one representation *suppresses* another—but there is no reason not to allow the coexistence of many representations, which is facilitated by un- and non-selection. And we may actively engineer our own representations, our tools for manipulation. What is important is to understand how the representations, even when we introduce them as utilitarian tools, become inseparable from what they operate on. As Karen Barad (2007) points out, there is no fixed object-apparatus distinction; instead, this distinction emerges through our interventions.¹³

For an example in which a representation is seemingly held intact while its background moves, consider the piece *Dots* (Rutz 2012a; figure 9.6).

¹² For instance, when Alva Noë (2004, 172) insists that representations are about “how things look,” a sort of pictoriality associated with passivity and detachment from the world, as opposed to engagement and enactivism.

¹³ See, for example, Barad (2007, chapter 8).

Algorithms under Reconfiguration

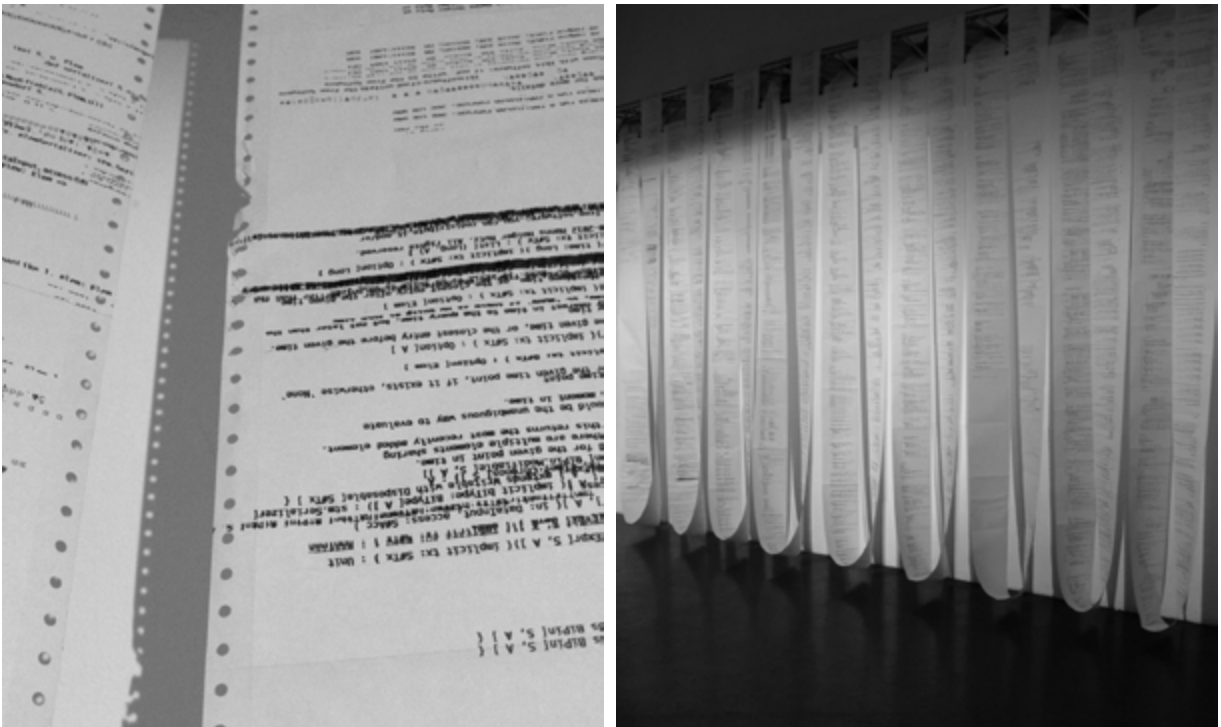


Fig. 9.6

Dots is made from the printout of source code on fanfold paper, suspended in loops to form a wall. The source code consists of all the subroutines of *Sound Processes*, and the work was originally shown adjacent to a sound installation realised with this software framework. Having worked on this framework for several years, I wanted to make visible in the exhibition the machinery behind the works. I had not used matrix printers for probably two decades, and I was excited to find an older computer that could still talk to these printers. In the process of physical printing and montage, several new writing processes emerged, transforming this from a representation of a program to a peculiar sound piece itself. Patterns inside the code are exhibited and overlaid with a rhythm of [SILENCE] (gaps) and blackness (erroneous line feeds) caused by glitches of the printer driver. This kind of graphematicity was enabled only by the representation of the code as it was sent through the wire, not as a pixel matrix but as a character protocol. It interacts with the overall rhythm of the display, in which loops are formed, based on the extent of the wall. *Dots* has thus indeed become a sound piece on another level: it has a sound that is imaginary, both as remembrance (the needles hitting the paper) and as potentiality (the future compositions that could be written with the software). Moreover, this representational space was infected by its proximity to the other sound installation in the next room.

The act of reconfiguration begins with the transposition of a functional *code base*. Technically, a code base is a tree of dependent modules spread across so-called repositories on an open-source hosting platform. A small script can gather the related files, each of which contains a text fragment, and produce one continuous text. Representation in the classical sense (as a passive and independent entity) is preserved at first, but it is already corrupted on its way from computer to printer. Context of placement and the relationships change continuously. The transfer operation from repository to screen to printer to paper to wall brings about a shift that cannot be quantified but only experienced. The reconfiguration, observed after the fact, was more like an avalanche, because many consequential changes in the representational space follow: solving the loops, hanging, lighting, placement in space, and so forth.

Even if we do not foreground representations, as was so obviously the case in this piece (and to some extent in *Unvorhergesehen . . .* with the self-similarity prints), they are influential in the agency that ultimately leads to the forms we designate as pieces or products of the artistic process. Every node in figure 2 involves a choice and evolution of representations. And beyond that, representations nest; one can direct or guide another. By guiding, I mean that there is an initial mental image that configures how I conceive the form, but it thereby influences the way computational presentations are selected and configured.¹⁴ For example, for a while I pursued what I call a *sound mobile*. The term *mobile* alludes first of all to Alexander Calder's pieces, a suggestion of same-but-different, of rotation-of-perspective, of motion-within. In my earlier work, this appeared first in the installation *Zelle 148* (Rutz 2006), where durationless sounds were recorded and conceived as endless loops punctuated by moments of possible transition from one to another, as if the sounds were cogwheels that interlock. This conception directly affected the way this installation was programmed. In *Kalligraphie* (Rutz 2007b), the mobile is perhaps best understood as a spatial image. In this eight-channel installation, each material may appear "in front of" or "behind" another, accents in one layer may suppress or "shadow" those in another layer, pairs of layers are forbidden to be co-present, and each layer is decomposed into elements that "rotate" around the head-space of the visitor. All these derivative representations in turn guided the programming. The name remains intact; but through always varying relations to the other elements in the configuration, the agency that realises the algorithms drifts and leaps. In the audio-visual installation *Command Control Communication (CCC)* (Rutz 2007a), created around the same time as *Kalligraphie*, the shadowing of layers was translated into a more technicistic signal processing—instead of presence/absence, there were filtering grades that

14 I have observed—both in my own work and in the works of other composers with whom I worked—that there is a strong need to name things. Precisely because many objects and procedures in the computer are very abstract, and the same applies to the ephemeral nature of sounds, we tend to find or invent names to talk about them or to retrieve them. Often these names are metaphorical or associative, but what matters more is that, in addition to what Latour (1987, 87) says about the laboratory—that we name new objects after what they do—the opposite is also true: things begin to shape and stabilise on the basis of the names we give them. These guiding representations play an important role in the process of configuring the work.

emphasise colourfulness of shadow. And one could find more works, in which the representation of a sound mobile would be actualised differently.

There are many more aspects to the agency of representations, and each deserves separate treatment. To name just one, representation may engage in a game of suspension and spatio-temporal deferral of forms.¹⁵ The development of the echelon structure in George Spencer-Brown's *Laws of Form* could be interpreted entirely this way: the transformation of symbols leads ultimately to the possibility of either indeterminate or paradoxical but yet *productive* oscillations, paving the way to the formulation of re-entry (Spencer-Brown 1979, chap. 11). The key principle here is not so much operational closure, the possibility to concatenate isomorphic representations, but the principle of *complementarity* (see Krippendorff 1994), by which a code or representation may be collapsed and replaced by another “fitting” code or representation.

The versatility of representations, the way they act as hinges between everything within a configuration, leads to vast possibilities for reconfiguration. Three categories could be defined: the single-sided substitution of the representation, the single-sided substitution of what the representation is directed at, and the centring of the network of horizontal and nested representations. An example of the first case occurred with the interface of *Wolkenpumpe* (Rutz 2008), a modular live-improvisation software. The thing, the modular patch, was first represented by a fixed matrix on the screen; in the next iteration it was represented as a dynamic set of boxes; and in the third iteration a force-directed physically modelled and animated layout was introduced. This last step also brought about several unfunctional and aesthetic consequences, enabling the leap from player interface to a graphical work in its own right (figure 9.7).

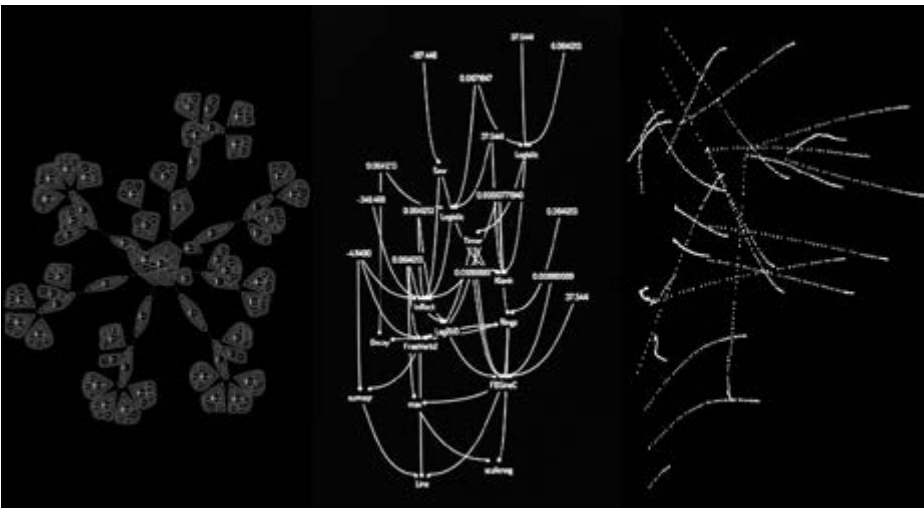


Fig. 9.7

15 This matter is raised for example with respect to the use of recursion in the piece *(Inde)terminus* in Rutz (2014a).

Examples of the second kind abound because of the stability that representations have in our conceptions. The *sound mobile* has been mentioned, and later we will construct a series based on *similarity*.¹⁶ The third case, about the panning across the matrix of representations, could be exemplified by the two adjacent and nested forms of *sound mobile* and *shadowing-foreground-background*. This network is incompressible in that it is continuously built and actualised with each activation of a representation. Above all, one must not forget that representations are not only about actual forms but equally about potentiality. A speculative, “unrealised” representation, for instance, might be the imagination of a collision of signal and text processing, whereby this text could be reverberated, granulated, or quantised.

ALGORITHMIC WRITING, ALGORITHMIC RECONFIGURATION

The attempt to be true to the medium-specificity of algorithms can be only a bottom-up practice, building tiny experimental systems that oscillate between the two sides of the distinction, between the formal descriptions of algorithms and all the noise that happens as they operate. The algorithmic agency is something that goes beyond our exclusive control; hence all three aspects discussed—rhythm, growth/shrinkage, and representational animation—manifest themselves both as deliberately constructed and involuntarily or experimentally encountered (or analytically observed). Also evident, although only indirectly, by way of the examples chosen, is that the algorithmic is not something confined to digital computers; instead, we can find its specific agency in our own biophysical practices, as articulated through reconfigurations of rhythm and growth, as perceived through transpositions of shrinkage and representation. Computers are just excellent machines for conducting algorithmic experimentation.

There is a huge difference between throwing an off-the-shelf algorithm at something and considering algorithms to be the plastic material from which the artistic object is moulded. The reconfigurative nature of algorithms enters right from the beginning of the writing process. This is even apparent in computer science papers, where one would expect the methodology to be strictly driven by optimising a given problem. Exploring concepts of swarming, I recently came across an older article titled “A Growing Neural Gas Network Learns Topologies” by Bernd Fritzke (1995). Presented in this paper is an algorithm for unsupervised topological learning, the evolution of a graph structure that organises the proximities of elements in an unknown input data set. I found this paper interesting in many ways that relate to how algorithms are written. First of all, *growing neural gas* (GNG) composes two prior algorithms, one called *growing cell structures*, by the same author, and one called *neural gas* (NG), developed by two other authors. NG is actually CHL/NG, with CHL standing for *competitive Hebbian learning*, and so it is already a composition of two partial algorithms. By carefully reading through the description of GNG

¹⁶ It should now be clear that, with our reading of representation, signifier and signified may well reverse their roles depending on which is taken to be the *directing* form.

and the preceding algorithms, one can retrace the reconfigurations that have taken place. For example, Fritzke was originally using *growing cell structures* in the context of supervised learning, a method in which the algorithm approximates a target state by comparison with known samples. In unsupervised learning, such an explicit target is not given. And the point at which the new algorithm tries to improve over CHL/NG has to do with this unknown target: CHL/NG needs an a priori setting for the number of molecules (quantisation vectors) and the number of iterations, which is contrary to the nature of unsupervised learning, as these numbers are generally not known before running the algorithm. The improvement in the new algorithm is that it introduces mechanisms for growth and shrinkage, beginning with a “vacuum” and building up the gas volume step by step. Also noteworthy is that several parameters are required that control the behaviour and adaptation of the algorithm, and that in general these parameters have to be experimentally determined. Instead of presenting lengthy tables or charts with the convergence features of different parameter sets, Fritzke chose to make extensive use of diagrams to demonstrate the behaviour of the algorithm. He has also created an interactive web applet that one can use to experiment with the parameters and that gives a very physical feel for the behaviour, reflecting the choice of the gas metaphor for the algorithm’s name. Without interviewing the author, it is impossible to tell how much experimentation and intuition played a part in the development of the algorithm, and the author might perhaps even disagree that such aspects were relevant at all, but this cursory observation and the observation of the wording used in the description and justification of the algorithm—“This step is Hebbian in its spirit since . . .,” “The accumulation . . . during the adaptation helps to identify . . .” (Fritzke 1995, 628, 629)—do suggest that the algorithm was obtained through experimentation.

To write an algorithm suggests a clear subject (the writer) and object (the written), while we have said that in reality this is rather a reciprocal relationship, and that writing must be understood to include all sorts of trace-making, such as exploring the space of an artwork-in-making, collecting materials, and so forth. Since, in the case of GNG, it was alleged that experimentation occurred, I want to verify this on the basis of algorithmic writing that I conducted myself, moving from and to *Configuration* (Rutz 2015), a site-specific installation realised in Riga in 2015. What does configuring a work entail? In a study of technological transformations, Frank Geels identified configurations and conditions for their change and innovation, and he provides a useful first definition of configuration: “the alignment between a heterogeneous set of elements” (Geels 2002, 1257). Although relating to a different realm and scale (entire industries), some of the observations can still be useful descriptors: during a reconfiguration, the linkages of a configuration loosen up, allowing the substitution of elements. This is a process that often involves experimentation and a transitory phase during which the new things are coupled to the old configuration. Often multiple elements co-evolve at the same time. As opposed to the comparably rigid term *system*, as used in cybernetics, where loose coupling would typically be attributed to the boundary between system and environ-

ment but not the system's interior, *configuration* emphasises the openness and relative autonomy of its elements. Different authors have used it in this way; for instance, in her observation of a 1920s quantum physics experiment, Karen Barad (2007, 161–68) notes that an apparently minor *reconfiguration*, a change of shape in a beam slit yielded a different outcome and an entire reworking of the scientists' conclusion.

In a similar way, and as suggested by the title, *Configuration*, the installation, renders an overall figure by bringing together multiple, loosely coupled elements—sounds, videos, space, light, scent. The installation was situated in the basement of the boat *Betanovuss*, a group of four subspaces made of concrete and with bull's-eye views onto the Daugava river. The sound component consisted of nine metal plates with transducers, and the last subspace was darkened and contained a three-channel video installation on large screens horizontally placed across the floor.¹⁷ I am going to walk through the rhythmical, economical, and representational reconfigurations that happen in this work.

Rhythm: *Configuration* was developed during the first half of a two-month residency that allowed permanent access to the exhibition space, which led to the build-up of a routine of visiting the space. Combined with the site specificity, this routine connected the experience to *Amplifikation* (Rutz 2009), among others, an installation in a former tram depot in Weimar in 2009. In such charged spaces, it is a privilege but also a requirement to slowly “inhabit” them, if one wants to respond to them within the work. It becomes a ritual to return to the site, daily or nearly daily. There is a specific path that one follows. In the case of *Configuration*, this entailed a forty-minute walk from the residency apartment. During the walk, you are alone with your thoughts, you sort them, you respond to the ambience. Entering the space becomes very important, because the awareness of its particularity is heightened. The repetition is essential, because there emerges iteratively an orientation in and an experience of the site—the way the atmosphere is constructed and changes over time: temperature, light, smell, ambient sounds, volume, topology. The first action in both sites was to clear them. Things were stored from before; dust had accumulated. Alone in the space, nobody will interrupt. It is not an exhibition space yet, it is a working environment. The materials are there, the resting points. In Riga: the concrete thresholds across the floor, the bull's eyes that had been pasted up, the metal staircase, a wall penetration, metal hooks, the division into subspaces, planks; in Weimar: a window front with views to an opposite brick wall building, the wholeness of the large space, two long inspection chambers in the floor, old lamella radiators.

¹⁷ See http://www.sciss.de/texts/ins_configuration.html.

Algorithms under Reconfiguration



Fig. 9.8

Materials undergo a re-entry in both pieces. In Riga: sounds recorded in the space are used to direct a genetic programming of synthetic sound structures, a video recording of a bull's eye is used in the video installation, a sheet of metal is used as a sound emitter, sacks of cocoa shells were found and their content is spilled across one side of the planks. . . . In Weimar: a chamber is opened, recordings of rain on the roof and of the metal lamellas enter the composition. . . . The space is appropriated. In Riga: installing transducers on found and introduced metal objects—each brings an individual timbre. In Weimar: “duplicating” the windowpanes by hanging glass plates with transducers—each brings a very similar timbre. The space is conditioned. In Riga: faint colour gels are inserted into the bull's eyes at an early stage (my experience told me what would happen). In Weimar: strong colour gels are attached to the windowpanes at a late stage.

Growth/shrinkage: the sound composition of *Configuration* has a generative inception. Short microphone recordings from the space (metal, concrete, reverberation) are used to direct the genetic programming (GP) of synthetic sound structures, a process that produces a population of hundreds and thousands of tiny programs that try to approximate the recorded sound. In each iteration, the programs are mutated and mixed with each other, relying on evolutionary self-optimisation of the population. The process is endless; even after countless iterations it is impossible to reproduce the recorded sound, and instead the pool of intermediate results keeps growing. In the sound piece, I compose this growth with a selection procedure that decimates the results of each iteration, subsequently introducing the selected elements to another growth process, the build-up of a self-organising map (SOM) based on timbres. In the composition, the SOM is reduced to sequences by a small swarm of cursors that traverses the SOM. In the video piece, I use an enantiomorphic reconfiguration. I zoom into the life span and evolution of individual sound programs. I reprogram the algorithm to preserve information about this evolution. Branches in the program tree grow, branches die. In the video, temporality projects the temporality of the GP, whereas, in the sound composition, the temporality follows the scanning process across the SOM, with individuals being stripped of their heritage. The difference in direction the reconfiguration took since the generative inception is accentuated by the contrast between the physicality of the vibrating and resonating metal sheets against the purely geometric play in black and white of the flush, horizontal screens.

Representation: the (partial) reconstruction of a given sound by algorithmic means in *Configuration* has several precedents, so one could pick different instances for comparison. The electroacoustic or fixed-media piece *Leere Null* (Rutz 2012b) offers a good instance of a type of reconfiguration that has been characterised as centring the network of horizontal and nested representations. Figure 9.9 is an attempt to draw up possible networks for the two pieces.

Algorithms under Reconfiguration

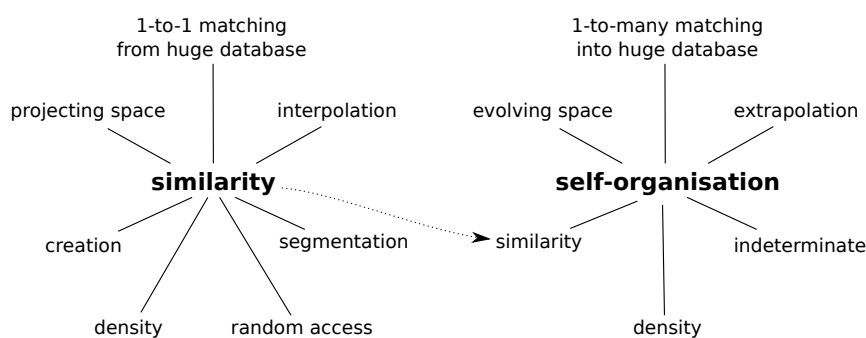


Fig. 9.9

Analysing the pieces, I would say that *Leere Null* is essentially guided by *similarity* as a strategy for actualisation and concatenation, and similarity is also the subject of an article discussing the piece in more detail (Rutz 2012c). The main movement of the piece uses a huge database of my own sound recordings as a corpus from which to retrieve material. “Hidden” sound layers derived from the first movement guide an algorithm in a search for suitable fragments from the database. The piece is animated by the question what it means to create musical material, departing from emptiness, and what is enabled by the particular conflict between a fixed (linear) media piece and the random access operations used in the construction of such a piece. Similarity guides both the micro and the macro form, in that it is used to segment the hidden target sound-layers and to “interpolate” between the different channels of the multi-channel piece. It is as if the large database of existing sounds is projected onto the given space of the piece, and the engagement with the algorithms is occupied with obtained different grades of density throughout the piece.

In contrast, when looking at the sound part in *Configuration*, although similarity is still a central element, it has somehow made room for another strategy that could be labelled “self-organisation.” Also, the elements grouped around the centre have drifted. The huge database is not the starting point of the search but its outcome. Instead of traversing a target sound through segmentation and through matching segment by segment, we fix the target and produce a wealth of matches, all of which significantly deviate from one another, creating a new evolving space of timbres and rhythms, asking for strategies of their organisation. There is no particular halting point in the search; instead the search is an ongoing and endless process.¹⁸ The new representation of sounds as signal processing graphs led to a form where these sounds would extend beyond or “extrapolate” the target duration of the original search. Self-organisation also guides various other aspects in the work, such as the already mentioned SOM or one part of the video triptych that translates the GP visualisation algorithm into a self-organising network of text lines.

¹⁸ Strictly speaking, the search was carried out for a number of iterations, because it was not feasible to run it in real time at the point. In the more recent work *Imperfect Reconstruction* (2016), another reconfiguration took place that indeed took the search into a non-terminating, real-time domain.

AN OBJECT THROUGH TRANSPOSITION

One has to actually execute these reconfigurations to find out how the consequences turn out. But the term *configuration* must also be taken as a caution against looking too closely at technologically determined operations; often we are not even aware of how a reconfiguration is conditioned until we look at it after the fact. This loose coupling could be compared to the strange relationship elements acquire in dreams. Here, reconfigurations happen, at first unnoticed, in the background while we are focused on the intact foreground. What we *can* do is to draw out a series of reconfigurations by choosing a stable representation against which we evaluate the qualitative changes. Figure 9.10 shows such a series of eight nodes or seven groups based on the notion of *similarity*. They are chronologically ordered, although a different sequence would be possible. It must be understood that these orderings and categories are tentative; a more thorough effort would create several concurrent series, since the eventual goal is to describe the *texture* in which algorithmic reconfigurations are organised. Quite deliberately the labels are these guiding representations, rather than descriptions such as “by ear,” “cut and splice,” “extract MFCC coefficients,” “create a weighted sum,” and so on.

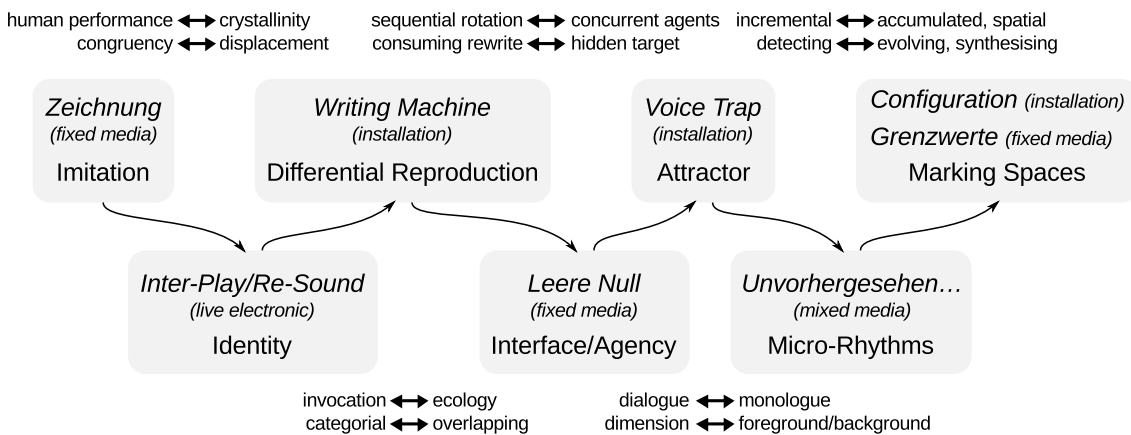


Fig. 9.10

Here we have only one strand of the texture. Some pieces have been mentioned in this chapter. In *Zeichnung* (Rutz 2005), which begins the series, similarity appears as a measure that the human composer must apply in imitating each gesture over and over again, so that the results can be superimposed on one another. Instead of focusing on this human, performative aspect and the achievement of congruency, in the installation *Writing Machine* (Rutz 2011b) the computer searches for similarities but with the aim of creating a continuous displacement of sounds. Displayed in a ring of sounding Petri dishes, the *object* is circling in the cold detachment of a scientific arrangement devoid of human personality. Although using a similar code, *Voice Trap* (Rutz and Castillo 2012) instead spawns many independent agents, each of which performs similarity

searches, this time not attempting to rewrite the current sound to produce drift but to gather utterances by matching it against inaudible speech recordings. Continuing, one could complete the series with all possible combinations of pairs of nodes.

Next to this series or strand one would assemble other series. One could fix one's focus on text–language with the five nodes *Kalligraphie* > *Unvorhergesehen* . . . > *Voice Trap* > *Configuration* > *Machinae Coelestis*. Or one could fix one's focus on the already mentioned sound mobile, with the five nodes *Zelle 148* > *CCC* > *Kalligraphie* > *Dissemination* > *Inter-Play/Re-Sound*. I might exclude *Dissemination*; I previously considered it part of this series, but from today's perspective I believe it is not primarily located in the figure of a sound mobile. In other words, it must also be possible to pierce or rip apart the fabric created through the interweaving of these series.

Clearly, the boundary drawn between pieces is not interesting because it delimits a piece, but because of that which remains intact across the boundary. Something of the algorithmic “mattering” is preserved, not despite but because of its reconfiguration. And now we can return to the question of what an algorithmic object is. Similarly to Parisi, one could first state that they are bounded and irreducible spatiotemporalities. But they are stable and in flux at the same time; just because we draw a series does not mean the object is permanently fixed. On the other hand, this object never exists independently of us drawing the series; the object is also our investment, we are part of the algorithmic. This view is largely consistent with Barad's description of the entangled co-production of phenomena, although she is investigating a scientific apparatus instead of an algorithmic one. Like algorithms, apparatuses are not static things but dynamic sets of “open-ended practices, iteratively refined and reconfigured” (Barad 2007, 167), and humans become part of the reconfiguration. Parisi's speculative reasoning is likewise found here, because the exchange between humans and apparatuses (algorithms), what Barad calls intra-actions, has the curious effect that while decisions are made and thus constraints are introduced, the future is not narrowed: due to the actualisations, “new possibilities open up as others that might have been possible are now excluded: possibilities are reconfigured and reconfiguring” (ibid., 177).

Barad uses the optical term *diffraction*, borrowed from Donna Haraway, as a metaphor for a way of reading or studying objects by focusing on performativity (effects) and entanglements. Typical of such entanglements (of observer and observed, of algorithm and data) is a complementarity between things that become determinate and others that become indeterminate—something we had encountered with becoming foreground and becoming drifting background in the play of representations. As Barad points out, diffraction is a term mostly synonymous with interference, and we had initially linked objecthood to the production of resonances between two agents; now, instead of understanding these resonances in a too literal, simplistic, or monistic way, it seems more appropriate to understand them as the complex patterns that occur in the interference of the two agents. The characteristic of algorithmic reconfiguration then lies in the fact that, although it may be technically constituted by just

a small detail—rotating a position, shifting focus, flipping a sign—the effects are discontinuous, as if a particle leaps from energy level to energy level. This leap in frequencies may, consequently, result in drastic changes to our perception and the aesthetic experience of an algorithmic object. The effectual leap in frequencies, caused by reconfiguration and corresponding to a displacement in the determination of the algorithmic object, we may call *transposition*.

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Speculations on Transpositional Photography

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Can we understand photography as transposition? Such a reading seems to be at odds with the major narratives of photo theory. Despite all differences over the question of how photographic images (either still or moving) obtain meanings, there is a basic consensus that an image as such is something different from the specific thing or situation it apparently has a connection to. The main issue of any photo theory, then, is how to define the translation between these two poles of subject and image. The answers range from a direct, indexical relation to no relation at all. Even normative aesthetics of realism that call for closing the gap between subject and image in their first step accept the divide as a problem they promise to solve.¹

The notion of transpositional photography, on the other hand, implies that no ontological transformation occurs, or at least that any kind of transformation is less relevant than the change of position or environment that the term transposition suggests. Thus, to understand photography as transposition means that there are not two states but two positions for the same thing. In the course of the photographic process this thing would not change in regard of what it is but of where it is and what surrounds it. So can we replace the ontological question of photography with a topological one? If we dismiss subject and image as the two states that theories of photography under a semiotic paradigm postulate, we have to ask how one can conceive of an identity across very different manifestations.

Turning from translation to transposition also has implications for photography as an epistemic practice. Photography understood as translation is based on the assumption that it constitutes a qualitative and positivistic step; a photo isolates and abstracts real-world phenomena and thus shows something we might not see without it, for which the motion studies of Eadweard Muybridge are the most obvious example.² Transposition, in contrast, is a potentially never-ending process of shifts, displacements, and assemblies not offering any stable position. Concerning artistic research this can be a venturesome step as the practice of translation is supported by a long tradition of representation and aesthetic competences. To abandon this practice poses the question what the

1 This also applies to André Bazin, for whom the photographic process resembles that of transubstantiation (Hediger 2018).

2 Regarding the photo as visual evidence, see, for example, Daston and Galison (2007); Wilder (2009); Rickli (2011); Dufour (2015).

creation of knowledge without representation would look like. The critique of representation that is inscribed in late modern art, as much as post-conceptual art practices, have prepared such a step.

AESTHETIC JOURNALISM

I am going to elaborate on the proposition of transpositional photography in regard to selected photographic works of the last two decades. In particular, this will take account of practices that Alfredo Cramerotti has synthesised under the term “aesthetic journalism” as these share epistemic interests and often use still and moving photographic images. Aesthetic journalism is an appropriation from the domain of mass media to the field of fine arts that saw its initiation with Catherine David’s *documenta X* in 1997. For Cramerotti (2009, 23), “the journalistic method is the principal instrument to read the world; it provides a certain security, by establishing an order for the things ‘out there.’” That it is artists who investigate incidents or situations and exhibit their findings as documentations of their research is seen here as a reaction to a crisis of traditional journalism. “The journalistic position in art responds to an urgency felt by artists and video makers to foreground topics that are absent from mass-media information” (*ibid.*, 69). It is primarily the influence of economic interests that had an effect not only on the content but also on the formalised modes of narration that alternative practices claim to respond to. What makes aesthetic journalism, according to Cramerotti, “aesthetic” is that its inquiry includes the means and forms but also critiques of representation. And it is such an epistemological interest that spans subject and method, which connects aesthetic journalism with the field of artistic research.³

Among the examples that Cramerotti provides is *Helsinki Shipyard/Port San Juan* (2002–3) by Laura Horelli, which can help us gain a better understanding of how aesthetic journalism uses photographic images. Horelli’s work depicts in two parallel videos the construction and operation of large cruise ships. While this is a subject that is not unusual for documentaries or even commercial television, the way she treats it is at odds with the practices and aesthetics of traditional journalism. The recordings favour the ease of use of the then newly available miniDV video equipment over conventional image and sound standards. Commenting on her practice, she expresses unease over the need to edit her forty hours of original footage down to the thirty minutes she actually shows (Horelli and Kopsa 2005). In consolidating her material, she avoids a clear narrative, which is supported by the decision to show two looped videos of slightly different duration side by side, leaving it up to the viewer how to watch them. But despite her practical and aesthetical non-compliance with journalistic standards and the open form that comes with it, she does have a clear, political message, as Cramerotti (2009, 90) notes. Whether a personal

3 I will leave open the question whether and where one should draw a line between journalism and research as it is not relevant to my argument. Instead, I will simply regard both aesthetic journalism and artistic research as epistemic practices that use photography.

attitude for him is indicative of aesthetic journalism's deviance from common journalism remains unclear.

The deprecation of a coherent and elaborate form in combination with the necessity to point to specific subjects—in the case of Horelli, the working conditions and economies of globalisation—is reminiscent of early so-called actuality films. Before the emergence of the documentary genre as “the creative treatment of actuality” (Grierson 1933, 8) in the late silent film era, non-fiction films depicted or re-enacted current and historic events in an effortless mode of looking rather than developing a narrative from them (Gunning 1997). But the video works of Horelli and others are post- rather than pre-narratives. Their unwieldy styles are a way to avoid a hegemonic position that inevitably comes with the representational function of standardised narratives. They place themselves in a tradition of scrutinising (aesthetic) representation, which has been a defining matter for modernism since its beginning. But the reluctance to represent an issue contradicts the claim of political agency that is attributed to works of aesthetic journalism. Therefore, representation is not obsolete here but must evolve in a different form than imaging and narrating. This is a tension within any modern and contemporary art practice that conceives itself as political: is it possible to represent without an aesthetics of representation? Here, photography as transposition becomes relevant since, as I have suggested earlier, it disregards the distinction between subject and image and, hence, challenges representation. In what follows, I will speculate whether it is productive to speak about transpositional photography in the context of aesthetic journalism and more recent photographic practices, and whether we can consider their use of photography as document, witness, or finally as place.

BETWEEN WITNESSES AND DOCUMENTS

One Step Beyond by Lukas Einsele, another work from Cramerotti's corpus of aesthetic journalism, documents the use of and the victims of land mines in different crisis regions of the world. Catherine David, who supported the project, starts her contribution to its catalogue (Einsele 2005) with an assessment of Einsele's approach as a counter-movement to the aesthetics of traditional journalism. The combination of a refusal to fulfil expectations—here by not depicting violence and misery—and an openness towards viewers' interpretations likewise echoes Cramerotti's concept of aesthetic journalism. Each victim was the subject of a photographic portrait and was asked to describe their accident and make a drawing of the situation. The reduced depth of focus displayed in the portraits, which were shot in close-up using a large-format camera, gives the survivors an idiosyncratic quality. The focal point on the eyes corroborates their identity and personal story while the rapid decrease in focus and the uniform style of the portraits makes them also look like objects. There are additional photographs and texts but the standardised representation of the survivors is at the centre of the project. And it is these portraits that convey the impression that the survivors function as witnesses. The role of the witness at the time has to be related to another phenomenon. Commercial news

coverage of the Second Gulf War worked with the concept of embedded journalism—the integration of reporters into the military—as a strategic method of warfare. As Hito Steyerl (2007) has pointed out, the emphasis on witnesses was at the expense of the expressiveness of their reports. While their real-time images often show little information, the presence of the journalists fills this vacant space. The witness as a role becomes more important than the actual message he or she delivers.

But explaining *One Step Beyond* with the figure of the witness is problematic for several reasons. First, Einsele acts as a mediator between the survivors and the audience. In contrast to embedded journalists, he himself is not a witness but, if at all, presents others to us as witnesses. Second, the witness is a figure of authority who challenges claims for the openness of the artwork. Cramerotti (2009, 74–77) discusses this aspect with reference to Umberto Eco’s concept of the open work and refers to Jacques Rancière’s “emancipated spectator” to describe the relationship between the work and us as audience. According to Rancière, “an art is emancipated and emancipating when it renounces the authority of the imposed message, the target audience, and the univocal mode of explicating the world, when, in other words, it stops *wanting* to emancipate us” (Carnevale and Kelsey 2007, 258). Or, in Cramerotti’s (2009, 76–77) words, “the significance of aesthetic journalism today is shot through with the idea that we, as spectators, need to be aware of the distance from the proposed subject, and from the author who proposes it. We must be aware of our capacity to interpret what we see, touch and hear, translating others’ ideas into our own.” Finally, Einsele’s own description of the project also tells a different story. In the catalogue he presents his project like a legal or scientific investigation when he elaborates on procedures and identifies devices that were used to make the photos and to record the sounds. He also discloses the agreements he made with the victims to produce the artefacts that he shows in the exhibition and the catalogue (Einsele 2005, 4–5). Neither in his methodological statement nor in the photos themselves does Einsele aim to increase the credibility of the survivors. Instead, we can ask whether the photos, texts, and drawings have the status of documents.

As with the witness, it is helpful to relate the concept of documents to political events of the time. On 5 February 2003 Colin Powell, then US Secretary of State, presented evidence at the United Nations to support the thesis of Saddam Hussein’s possession of weapons of mass destruction. In a situation like this, photographs (along with other kinds of media) can turn into documents if they are successfully integrated into a purposeful procedure of reasoning. At the same time, the value of such documents largely depends on how they were produced—and this is what Einsele clarifies in his statement. That Powell’s argumentation was later refuted was analysed by Bruno Latour in his cause for what he called “Dingpolitik.” Latour (2005a) uses the failure of documents to argue for the relevance of objects as such. “For too long, objects have been wrongly portrayed as matters-of-fact. This is unfair to them, unfair to science, unfair to objectivity, unfair to experience. They are much more interesting, variegated, uncertain, complicated, far reaching, heterogeneous, risky,

historical, local, material and networky than the pathetic version offered for too long by philosophers” (ibid., 9, 11). Latour’s praise of things shares with aesthetic journalism the aim of establishing communal spaces of discourse. What remains problematic though with the concept of photography as document is that it cannot satisfy the claims to provide images that are at the same time specific and open for a discursive appropriation through the spectator. Any attempt to establish an aesthetic discourse will likewise harm the status of the documents. The positivistic claim that comes with documents is too strong to fit aesthetic journalism and we can only emancipate ourselves from them at the price of their invalidation—this is where Latour (2004a) suggests letting the things themselves speak. Regarding the question of photography as transposition, documents have the advantage that they are designed for mobility. But their mobility aims at a universal validity, which attempts to make the documents independent of any specific context. This comes at the cost that the photographic document no longer has a specific position per se. This can be observed in Einsele’s project and likewise is an argument against the usefulness of the document as a model to understand photographic images within the context of aesthetic journalism. If we understand transposition as a change of locations or contexts, then an image that claims to be independent of any context cannot be transposed.

PLACES

If we consider aesthetic journalism’s photographs to be problematic as witnesses and as documents, then what is its specific quality? What is it that is transposed here? To answer this question, we can look at Steve McQueen’s film *Western Deep* (2002), which thematises everyday work in a gold mine near Johannesburg. Over the course of twenty-five minutes we accompany miners going underground, digging tunnels, and finally attending a somewhat enigmatic drill or physical test. The impressive experience, which the film provides, suggests that the audience actually gets an idea of what the miners’ work looks or, better, feels like. But considering the images and sounds this impression can be questioned. The Super 8 film used for shooting in the difficult light conditions underground reacts in a different way than the human eye. The images it brings forth are rich in contrast and often feature merely stray highlights. Hence, T. J. Demos (2005, 61) has called the film “striking for what it does *not* show.” During the elevator’s initial descent, light occurs only occasionally through the cabin grille. The following images of drilling workers also do not represent human perception of the portrayed situation. And the drill scene—the only one that is clearly depicted—remains opaque regarding its meaning. The lack of information that the images exhibit is supplemented with a powerful but interrupted soundtrack. Image and sound, it seems, never belong together, which is just another way that the film raises doubts about itself. Cramerotti (2009, 29) comments on this common feature of aesthetic journalism when he writes, “The point is that art is not about *delivering* information; it is about *questioning* that information.”

Western Deep's images feature an indeterminacy that requires emancipated spectators but also curators, critics, and scholars as mediators who cultivate the vacant space that McQueen has provided them. That the openness of works empowers not only the audience but also intermediaries is left out by both Cramerotti and Rancière; nevertheless, at this point we should set down that the production of meaning is accomplished by networks rather than emancipated individuals.⁴ That modern artworks call for educated comment is not new, but in the case of aesthetic journalism the discourses that back the artwork have a different significance as in most cases they address political rather than aesthetic issues. In opposition to Cramerotti, I would say that it is not the selection of otherwise ignored issues that has given aesthetic journalism its relevance but the alternative modes of discourse that come with it.

These discourses depend on institutional spaces, both physical and structural—that is, the openness of the works becomes productive within collective sites like the museum. Because the works and their public presentations are indissociable, canonical lists of exhibitions are an integral part of the discussion of aesthetic journalism as a phenomenon.⁵ Regardless whether the works are actually installations, they all turn into site-based media. Bringing this to mind can help us better understand the aesthetics of aesthetic journalism. What do these works themselves provide besides the selection of a subject and an openness in its representation? After rejecting them as witnesses and as documents, we can say that what they really do is to represent places. And it is these places that relate to the sites of presentation. But the representation of foreign places is not an act of immersion; the exhibition space does not mimic the original site. The work within an art-space merely evokes the place it represents. Though aesthetic journalism may involve other media, it is photography that realises transpositions because photographic images—as a result of optics and independent from the question whether they actually show something in a recognisable way—inherently refer to places. This is often overlooked because the discussion of photography tends to focus on the medium's temporal aspects as for example with Roland Barthes's (1981, 77) definition of photography as “that-has-been.” Writing primarily about portrait photography, in *Camera Lucida* Barthes recurrently raises doubts about images as realistic representations of the depicted. Nevertheless, the plain assessment he makes (and which has dominated the reception of his seminal book) is that everything and everybody we see in a photograph belongs to an unidentified moment in the past. What has received less attention is how specific Barthes's reading of photographs can be when it comes to locations. Writing about André Kertész's 1921 photo of a blind violinist, Barthes (1981, 45) looks at the muddy road and states, “I recognize, with my whole body, the straggling villages I passed through on my long-ago travels in Hungary and Romania.” To relate to a photograph in regard to the exact moment of its origin can be much more difficult

4 With Latour we would have to speak of mediators instead of intermediaries here, because for him the latter are merely neutral means of transportation while the former “transform, translate, distort, and modify the meaning or the elements they are supposed to carry” (Latour 2005b, 39).

5 Beside Cramerotti (2009, 83), see also Balsom and Peleg (2016, 19).

than to build a connection to its location because the point in time is, strictly speaking, invisible. The place is necessarily also much more specific than the time in the context of aesthetic journalism, where most works already in their titles make such a claim. Looking again at Einsele's portraits of the survivors, we can say that despite isolating the faces of the depicted and eliminating any visual information that could refer to a specific place we *know* that the artist had to travel to such a place to make the photo. The same is the case with the works of Horelli and McQueen.

Although aesthetic journalism brings reports on the world into museums, it has little to do with the question posed by modernist ready-mades over what constitutes an artwork. The reference such works build upon is much more recent: the entrance of film culture into art-spaces in the early 1990s with artists such as Douglas Gordon. These artists had reacted to home video, which, on the one hand, gave the public for the first time individual access to feature films and, on the other hand, devalued the cinema as a collective place to watch them. Gordon's *24 Hour Psycho* (1993), which may be the most effectual example, slowed down the eponymous 1960 thriller to the duration of an entire day. By resolving the narrative into a combination of silence and a perceivable succession of individual frames, Gordon thus created a space where viewers could *visit* and not just *watch* Alfred Hitchcock's film.⁶ What then was new and specific about aesthetic journalism is that it did not compare the art-space with another place, such as cinema, but it installed a foreign place within the art-space. And it did so primarily by means of photography as transposition.

So what enables transposition in photography? In comparison with text or physical objects, in this respect photography has a privileged position because of its genealogy from linear perspective as a means not only to capture but also to control space. Latour (1990, 29) elaborates on how linear perspective is less an analytical than a constructivist method that makes it possible to take arbitrary elements and "to reshuffle them like a pack of cards." This approach can be traced from the emergence of Western science in the Renaissance to the montage of Sergei Eisenstein—or the craft of conventional journalism. Hence, aesthetic journalism can be said to refrain from the act of construction and to rely solely on the capacity that linear perspective has bestowed on photography: to transpose things while keeping them intact and thus trustworthy. Such a displacement can turn them into what Latour (1990, 26–35) famously has called immutable mobiles. But their immutability only becomes evident and also necessary in the moment when they are recombined. As aesthetic journalism artists tend to turn this into a discursive option for visitors, there is no need to deliver subjects as components. (A problem with Einsele's project is that he presents a collection of [photo]graphic objects instead of just evoking the places of accidents.) What remains is photography's spatial referentiality that can be invoked and that allows one to evoke a place such as a gold mine in South Africa without depicting it.

6 Since then, the desire to create places for media has further been nurtured by the Internet and what Peter Osborne (2015) has described as the "distributed image."

So far, I have elaborated on how I would understand transpositional photography and how it occurs to different degrees within what Cramerotti calls aesthetic journalism. Transpositional photography though is not limited to this field and has also surpassed it, as finally I want to show. Aesthetic journalism as a prominent artistic practice, it seems, ended with the publication of Cramerotti's book in 2009. As I want to argue, this also has to do with questions of transposition that aesthetic journalism had to deal with, the most crucial of which is, How specific can or should the places be that transpositional photography connects?

Aesthetic journalists by all accounts rely on the specificity of the transposed places. Their depiction may be vague but is often balanced by concrete denominations in the titles and commentaries of curators and critics in the constitutive periphery of the works. Furthermore, the political agency of aesthetic journalism requires specific places as an argument of immediacy. On the other hand, we can witness a growing unspecificity of many places. Already in 1992, Marc Augé had described these as non-places, as spaces that are defined as transitory, exchangeable, and the effect of globalised capitalism. The question here is whether we still can understand the problems caused by a global economy by looking at the specific places or if non-places are not much more expressive of the underlying structures. This is where aesthetic journalism fails, with the exception of artists such as McQueen who highlight the unspecificity of places in their works. Contemporary artists themselves as travellers are a part of the supermodernity that Augé describes. They travel through the transitory non-places, which are no longer self-contained but merely hubs, to find a real place. The dualism between these two kinds of locales is, of course, not absolute, as Augé himself has pointed out: "Place and non-place are rather like opposed polarities: the first is never completely erased, the second never totally completed; they are like palimpsests on which the scrambled game of identity and relations is ceaselessly rewritten" (Augé 2008, 64). Peter Osborne, finally, has adapted Augé's term for the art-space, which itself is transitory and at least in some aspects unspecific. "Contemporary art produces (or fails to produce) the non-place of art-space as the condition of its autonomy and hence its functioning as 'art'" (Osborne 2001, 192).

BETWEEN DELAY AND REAL TIME

Aesthetic journalism thus understands and uses photography as transpositional but eventually fails regarding the places that are transposed or the destination of this transposition. There are two different though closely connected reasons that led to the decline of aesthetic journalism and that helped apprehend how transpositional photography continues to be relevant for more recent works. The first half of my argument here concerns the question of critique. Aesthetic journalism legitimises itself primarily politically and not aesthetically. At least in the way Cramerotti portrays it, it challenges journalistic ineffectiveness when it comes to debate relevant political and economic issues. This critical position is difficult, for one, because of the position of the artists and the art-

space as explained above and, for another, because critique in general is a tough act to follow today.⁷ The other half of my argument is that meanwhile technologies and economics have significantly changed our experience of time.⁸ The decreased interest in aesthetic journalism since 2010 coincides with an accelerated mediality, as has been demonstrated, for example, by different protest movements since then. The 2011 protests in Cairo's Tahrir Square could be watched live over the Internet; the images conveyed atmosphere rather than information but they were highly effective. Social media and video live-streaming thus have challenged authorship and criticality to the benefit of affects and participation. Aesthetic journalism is primarily travel photography but the correspondence between places it creates also involve different times. David (2005) when writing about Einsele points to Rancière and his claim for "intervals" that separate situations and places. But that the delay caused by the spatial distance is a necessary condition for the criticality of aesthetic journalism only becomes evident once such an interval turns optional.

There are different ways to react to this situation. One can be outlined on the basis of recent works by the Swiss photographers Taiyo Onorato and Nico Krebs. For *The Great Unreal* (2009), a project that "simultaneously reinforces and undermines the mythology of the American road" (Rothman, Onorato, and Krebs 2015), they travelled for several months through the United States. With wit and artifice, they either constructed the subjects they set out to find or modified the prints later. The resulting images celebrate analogue photography as well as its decline. Critique here is limited to the medium itself and its aesthetic history. In such an aesthetical stalemate, transposition is both impossible and unwanted. This has changed with their latest exhibition project, *Eurasia* (2015) (see Onorato and Krebs 2017), for which they by all accounts simply travelled in the opposite direction. But on their tour through Central Asia they could not rely on or mimic familiar images. Their still and moving photographs, it seems, strive to find again a somewhat naive view of what they discovered and brought home. This brings us back to the question how transpositional photography functions as an epistemic practice relevant for artistic research. *Eurasia* would hardly be considered a research project—first because of the lack of a specific question. But the project's return to collecting the things "out there" is the first step of many scientific methods, which can make it a useful reference for artistic research. This is applicable for example to the short 16mm film loops that Onorato and Krebs produced in an expansion of their earlier practice, which depict daily scenes whose meaning stays enigmatic to the tourist eye. While this points at the origins of photography and the transpositional disposition therein, it also comes at the price of nostalgia. Nonetheless, such a collection might gain a very different character in other circumstances.

An alternative post-critical approach to transpositional photography can be studied in a series of events organised by Selina Grüter and Michèle Graf

7 This is a question beyond the scope of this text. One argument comes from Latour (2004b), who describes how critique has become too cheap and easy to have to be still effective.

8 See, for example, Cray (2013).

in 2014 and 2015: *Watch the Sunset* consisted of eleven public gatherings at different locations in Zurich for which Grüter and Graf commissioned friends in places such as Buenos Aires, Hong Kong, or Los Angeles to broadcast a static shot of their local sunsets. Each live-stream lasted three hours and started in accordance with the local time of the respective sunset. Transposition here becomes ironic as the subject of the sun setting can be observed everywhere.⁹ Differences in light and scenery, of course, exist but are overshadowed by the denomination of the locations and the arbitrary times of the social watching.

The redundancy of the series reinforces the question what a sunset actually is. It can be defined as the apparent conjunction of a light emitting object, which, as *Wikipedia* informs us, is about 150 gigametres away with the border of our own space of perception. Both the sun and the horizon are out of reach for us in their own ways. Their meeting remains a delusion because it only happens for our eyes or the camera lens, respectively. In that sense the sunset (as much as the sunrise) already is a photo—that is, it does not depict what it shows but is merely a view. It looks real, we comprehend it immediately, but it only exists as an image defined by the combination of a specific location and time. Drawing on Augé (2008, 63) and his concept of non-place as “a space which cannot be defined as relational, or historical, or concerned with identity,” we can conceive the sunset as a non-photo. And just as Osborne (2001, 189) revises Augé’s non-place as a place that is “the product of the *dialectic* of the space of places and the space of flows,” I understand the non-photo as a photographic image that is specified by its own transposition rather than the specificity it bears.

The association with specific sites that Grüter and Graf carry out is a simple act of declaration. In a dialectical movement the different sunsets become generic by associating them with distinct names such as Casablanca or Treasure Island, which gain their value from the suspicion that they might not refer to existing places at all. Relations, histories, and identities only become possible in the course of the events the artists organised. Osborne (2001, 191) has furthered Augé’s concept to the domain of arts when he writes: “It is in its specific character as a self-enclosed and specialised place that the gallery appears as an exemplary or ‘pure’ non-place: constituted as a non-place by its dual negation of place-based social functions by itinerary and textuality: the itinerary of the viewer, the ‘textuality’ of the work—a form of itinerary that mediates the universality of the work’s address with the individuality of relations of private property.” The sunset here is not only the perfect photo, as a non-photo it is also the congenial mirror for the art-space as non-place.

To understand the different kinds of transpositions, we have to look at how they relate their operations to time. In the works of aesthetic journalism, differences in place and time necessarily correlate. As the presentation in an art-space and the foregoing investigation are both tied to the artist as author, there is a necessary temporal interval. This fact is so self-evident that it is not seen as

9 At this point *Watch the Sunset* departs from Andy Warhol’s *Empire* (1964), its obvious precursor, which does celebrate its subject. Warhol reportedly also inspired Brian Cury, founder of EarthCam, an online directory of webcams worldwide, to start his company. One such camera has since 2013 showed Warhol’s grave (see <http://earthcam.com/warhol/>).

a principal element for aesthetic journalism as a practice. But it is the basis for the critical treatment of a subject. In the moment when this delay gives way, a critical reflection is also no longer possible in the course of image production. If it is reintroduced as by Onorato and Krebs, it turns into either nostalgia or formalism. The more compelling option here is the playful approach by Grüter and Graf who, at a stroke, promise simultaneity and point at the time shifts as the final delay in a globalised and mediatised world, a weird obstacle, a brain twister.

The function of time is also relevant when we finally conclude these speculations with an example from artistic research in the closer sense. Paul Landon (2013) has investigated two small islands, Île Sainte-Hélène and Île Notre-Dame, in Montreal as historic places. Most famously, they were the location for Expo 67 but Landon connects this with the lesser-known fact that about a decade later the abandoned site of the world fair served as a set for Robert Altman's dystopian movie *Quintet*. Landon visited his hometown's islands in 2011 to look for traces of both historic events. Time here is not relevant to his practices but is inscribed into the subject of his research because of the history of the place itself and because the two historic events were futuristic in their very different ways. Where aesthetic journalism depends on the interval between visiting a place and evoking it in the exhibition space, Landon publishes his research online. While the Internet, of course, is not independent from time and space, they both work so differently "there" that connections to real-world time and space are less compulsory. Landon instead builds these relations within his exploration. He uses three kinds of photographs: the ones he made himself in 2011, the ones from Altman's 1979 movie, and original postcards from Expo 67. Landon's own photographs are pale in every sense of the word, just as the light seems to be in Montreal "in mid-November at a time of year just before snow covers the city" (Landon 2013). Their primary aim seems to be to show what is not there, leaving us with the place as such. The images from Altman's film are replaced by a series of simple drawings, which suggest a figure disappearing in the landscape. The postcards from 1967, finally, here appear as prototypical forms of transpositional photography. Either sent or brought from a trip to the place, they claim to be that place. They say, "I am a French/British/Soviet/Iranian/ . . . pavilion at the Expo in Montreal," and not what happened there or who has been there. This is what a text that is written on them might say. Therefore, they make clear that transpositional photography requires additional steps to claim something that is more than the evocation of a place. These additional steps are not photographic. In the case of Landon, it is his drawings, mappings, and layerings of the same place in different times. Transpositional photographs, therefore, in artistic research can be valuable points of departure that allow knowledge to be created without being representational themselves.

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Transpositionality and Artistic Research

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1

Marcel Duchamp's *Fountain* (1917) is probably the most famous engagement with expositiveness (Schwab 2011a, 2012, 2014; Schwab and Borgdorff 2014b) in the history of art. Expositiveness, understood in its most general sense, is *the articulation of something as something else*. Here, the title *Fountain* captures how a "piece of plumbing" (Duchamp's own words in "The Richard Mutt Case") could become a work of art. This exposition of a urinal as art may be called "appropriation," "ready-made," and so on but, in its most basic operation, it simply consists of the gradual transposition of the urinal in question into art: bought at J. L. Mott Iron Works on Fifth Avenue in New York City,¹ it must have been moved to the Grand Central Palace where the first exhibition of the Society of Independent Artists was about to take place and, later, after its rejection, to Alfred Stieglitz's 291 gallery where Stieglitz himself took the by now famous photograph that was to appear in the first issue of *The Blind Man* as an illustration to "The Richard Mutt Case." Its later whereabouts remain unknown.

However, what has happened to the object at the centre of this chain of transpositions? When seen from the perspective of the urinal we have to face the distinct possibility that nothing has changed, and that the object itself has remained what it has always been—an existing thing in the world that has not been materially altered as it was moved from shop to art. Transpositions and, hence, expositions do not necessarily alter the world by materially changing their objects; what changes in a transposition are the interrelations of material objects in the world and, hence, the difference of meaning that those objects carry across distinct positions. "Meaning" here is attributed to material constellations and not to a secondary act of interpretation, although interpretations, being material in themselves, also have an impact on those very constellations and, hence, on their meaning.

Recognising a transposition, however, implies that a difference has been made; simply moving the urinal from one corner of J. L. Mott Iron Works to another may literally not mean anything and be thus transpositionally neutral.

¹ For this introductory passage, I am content to follow this simpler narrative. A more complex reconstruction states that *Fountain* was conceived by Elsa von Freytag-Loringhoven, who bought the urinal in Philadelphia and had Charles Demuth bring it to New York City (Gammel 2003, 223–28). Both versions provide ample ground to argue for the role that transpositions played in the creation of the work.

This need for difference challenges assumptions of material identity of the kind just made—surely it *is* not a urinal anymore as the object was moved first onto a plinth and then onto a photograph. In fact, the very “loss” of the urinal after its photograph had been taken attests that the transposed object—*Fountain*—was so different that the initial piece of white ware simply did not matter anymore. Hence, today, we have the absurd situation that replicas of the urinal used for *Fountain* (deployed by Duchamp since 1950 [Cabinet 2007])—that is, essentially *different* objects—appear in museums of modern art across the globe to confirm the *identity* of this masterpiece. This tangle is not dissimilar to Duchamp’s *L.H.O.O.Q.* from 1919, a picture postcard of Leonardo’s *Mona Lisa* with added moustache and goatee, which in 1965 as *L.H.O.O.Q. rasée* Duchamp omitted again. Can *L.H.O.O.Q. rasée* ever be seen as the original postcard—that is, as an identical object—or has Duchamp managed to install difference in something seemingly identical?

One may qualify the difference between the urinal and *Fountain* or the identical-looking postcard of the *Mona Lisa* before and after Duchamp’s double intervention as “infra-thin,” Duchamp’s neologism, which he refused to define beyond listing examples (de Duve [1991] 2005, 160). Following this definitory openness, scholars apply the notion of “infra-thin” differently. Thierry de Duve ([1991] 2005, 94), for instance, highlights selection and nomination of the ready-made as “infra-thin”; Dalia Judovitz points to “infra-thin” differences between mass-produced objects (1998, 129) or to the change exhibition brings to an object (ibid., 142). However, all these interpretations rely on transpositions of sorts, suggesting that one should not in principle prefer one reading over the other but seek the operational logic that supports and requires the “infra-thin.” De Duve’s (2005, 160) more general point—that “the infra-thin separation is working at its maximum when it distinguishes the same from the same, when it is an indifferent difference, or a differential identity”—is, thus, more helpful for an understanding of the complications between structures of identity and structures of difference enacted in a transposition.

Caught between those structures, the ontological status of the transpositional object in question is jeopardised. While it remains, and, indeed, must remain, *a* thing, we cannot but see difference scattered all over it since without such difference any significant relationship to the thing *as a vehicle of meaning*—which we like to see it as—would be lost. The transpositional object is and is not self-same; depending on the route of access, it may present itself in a transposition as identical or as different—the urinal may or may not remain what it had been. Hence, in a theory of transposition, what may initially have looked like a contradiction—is it, or is it not the same thing that we see before and after the transposition?—when embraced, becomes the bridge to a new kind of thinking in which contradictions belong to the material conditions of reality. Not knowing what a thing precisely is may offer better access to understanding its complexities than fixing it in a reductionist notion of identity.

A *Vexierbild* or, as W. J. T. Mitchell (1995, 45–57) says, a “multistable image” displays a similar ambiguity where a single image can host two different rep-

representations in such a way that when I see the one, I seem unable to see the other, and vice versa. Accordingly, an arbitrary object (the urinal) can be looked at as a work of art (*Fountain*), or a work of art can be looked at as an arbitrary object, but not both at the same time without flattening the one into the other. Hence, multistable images are first aesthetic and not representative objects; they only represent when they have broken down into a specific image at the price of the disappearance of all other possible images in what may be called the background noise of the picture (the images that we don't see when we see an image). As Mitchell reminds us following Ludwig Wittgenstein's engagement with the famous "Duck-Rabbit" picture, there is a productive state before such breakdown if one does not lament the lack of representation but rather celebrate its *open potential*. Dario Gamboni's *Potential Images: Ambiguity and Indeterminacy in Modern Art* (2002), for instance, provides examples from the history of art to indicate that to artists multistable or ambiguous images have always been relevant. This history includes *Fountain* and the debate the members of the council of directors of the Society of Independent Artists had already had over what else the urinal may become in the imagination. (Louise Norton's contribution to *The Blind Man* is entitled "Buddha of the Bathroom." In it, she says: "Someone said, 'Like a lovely Buddha'; someone said, 'Like the legs of the ladies by Cézanne'; but have they not, those ladies, in their long, round nudity always recalled to your mind the calm curves of decadent plumbers' porcelains?" [Norton 1917, 6].) In fact, as Jacques Rancière (2004, 23) suggests, when replacing the representative regime of the arts with the aesthetic regime of art, the aesthetic mode can and, in fact, must contain a contradictory kind of heterogeneity—"the power of a form of thought that has become foreign to itself"—for it to do its work, which here has been characterised as essentially transpositional and for which to work "knowledge [must be] transformed into non-knowledge" (ibid.).

Assuming the importance of transpositionality for contemporary art as suggested here with reference to Duchamp and Rancière, the intertwinedness of knowledge and non-knowledge under conditions of receding ontological stability describes the context within which artistic research can be epistemologically situated. In other words, if research is seen as directed play between difference and identification, non-representational notions of knowledge need to be sought whose epistemological strength does not come from what the world is believed to be—ontology—but from qualities emergent from the very operations of research: its "active state and not the result" (Duchamp, *Notes* 26, quoted in Judovitz 1998, 134). As when riding a bicycle, once we move and the bicycle is "active" we can let go, but we are forced to touch the ground when we stop.

2

The tension between representational and aesthetic paradigms bears heavily on the history of photography and, more generally, on the history of technical images (Flusser 2000) as such. While before the invention of non-human imag-

ing representational and aesthetic modes may have lived side by side in the murky waters of “the arts,” the invention of a representationally supercharged photography can be seen to have put pressure on artists to accelerate their engagement with the aesthetic in order to maintain not only their status as artists but also, following Kant’s *Critique of Judgement*, the balance and harmony between imagination and understanding in a wider cultural context. In other words, even before the invention of photography improvements to representational apparatus—such as for instance the use of optical devices as an aid for drawing and painting from about 1420 (Hockney 2001)—have in the arts bred a sharpened focus on the aesthetic of the kind that may have led to an “aesthetic regime,” as Rancière proclaims.

Photography as an essentially technical process would have naturally fallen on the representational side of things, suggesting that it could not be a suitable form of art under aesthetic conditions. This, in turn, provoked photographers such as Stieglitz to work towards establishing photography’s artistic credentials, for instance, in his 291 gallery, which was actually called The Little Galleries of the Photo-Secession, where he not only launched the careers of photographers such as Edward Steichen but also introduced hitherto unknown European art to the United States. While Thierry de Duve (1996, chap. 2) gives an excellent account for the reasons why Duchamp may have chosen Stieglitz to photograph *Fountain*—Stieglitz’s desire to seek recognition for photography, that is, for a “minor” practice—his focus on Duchamp makes him miss a point on photography’s own transpositional character seemingly absent from Stieglitz’s project. This concerns an understanding of “aesthetics” not so much as a field of philosophy, but as part of the sense of world created through art, an understanding that fundamentally separated Duchamp and Stieglitz. (As de Duve [1996, 117] suggests, Stieglitz could only be enlisted to photograph *Fountain* as long as he believed it to be by the unknown artist “R. Mutt” and not by Duchamp, since he “tended to consider Duchamp a charlatan.”)

At stake is the relationship to art and the role of the aesthetic in it. Duchamp, by then already famous for his *Nude Descending a Staircase, No. 2* (1912), in declaring to have moved beyond “retinal painting” in effect had decided not only against his own history as a painter and the type of painting that Stieglitz might have shown in his gallery, but also against an ideal of photography modelled on precisely such “retinal” art. While those “retinal” photographers and painters may be exquisite artists, in their work the aesthetic is confined to function only within “art” and not simultaneously against it. In other words, the institution of “art” is passively accepted and not proactively transposed into a new beginning. This is not a question of the aesthetic versus the conceptual, for instance, but a question of in whose service the aesthetic is (the eye or the mind?), how radically it is made to matter, and how seriously the aesthetic challenge to the intellect is taken.

Regarding photography, it is thus fittingly ironic that Stieglitz’s modernist path ultimately had only limited success, while a completely different strand of photography—suitably named “Walker Evans & Company” by Peter Galassi in his 2001 exhibition at the Museum of Modern Art, New York (Galassi 2000),

which included works by artists as diverse as Andy Warhol and Robert Adams—proved to be the more relevant and successful trajectory of photography in the twentieth century. Crucially, this trajectory has not been oriented “upwards” to major forms and painting in particular but “downwards” to photo-journalism, everyday photography and amateurism suggesting that photographs are arbitrary and not special objects in the world, not dissimilar to, say, a piece of white ware.

Here, Walker Evans’s reflections on his own “documentary style” photography may provide an example of Duchamp’s “infra-thin” and the associated ontological ambivalence of the photograph. As Evans said in an interview with Karl Katz in 1971, “When you say ‘documentary,’ you have to have a sophisticated ear to receive that word. It should be documentary style, because documentary is police photography of a scene and a murder. . . . That’s a real document. You see art is really useless, and a document has use. And therefore art is never a document, but it can adopt that style. I do it. I’m called a documentary photographer. But that presupposes a quite subtle knowledge of this distinction” (Evans 1983, 216).

This “subtle knowledge” is the knowledge of the possibility of an infra-thin difference within documentary, that is, representational photography. In terms of the documentary, both a police photograph and a photograph by Walker Evans are the same—they depict “a scene”—what differentiates them is their non-representational aspect in which Walker Evans’s photographs also engage with photography as such and a photographer’s as well as a viewer’s engagement in the world that dwarfs their use value as document. However, if the meaning of such “works” stems from their transpositional operations and not from modes of representation (including representing “art”), we must find an understanding of photographs that is not limited to what they depict and, thus, continue the quest for aesthetic registers for objects that are usually considered representational. How can we see a photograph, and beyond this, any document or data in general as transpositional and not just as a representation? What kind of apparatus can support and potentially intensify the transpositional?

Consisting of a simple material move, a transposition can be understood as a more basic process than a representation. A photograph is first a material object and a transposition of a material situation (“the scene”) before and beyond any interpretation has taken place. When this transposition is understood as representation, a second process becomes active in which the difference that the transposition materially installs between objects is reduced in the service of a specific identity function between the two that does not just confirm what we already know or what we have already seen but which invents new relationships that could not have been anticipated. Despite its material base, in a representational understanding of photography, a supplementary, reflexive pane is suggested that reinscribes into the transposition the photographed as origin of the photograph in a manner analysed by Jacques Derrida

as *différance*.² Hence, conventional notions of “representation” may be defined as impoverished transpositions where the structures of identity (representation) overshadow those of difference (transposition). For instance, while we know that a photograph offers only a representation of the photographed, we usually only challenge the form and not the identity of what we see. Were we to look at a photograph through a theory of transposition, though, we could also engage in a more radical play of identity and difference.

3

Given the historical dominance of the representational paradigm for theories of photography, a shift to a transpositional understanding of technical images is not straightforward, making an apparatus necessary that can suspend the moulding of meaning into registers of representation. In the context of photography, the most striking example of such an apparatus is probably Roland Barthes’s *Camera Lucida*. In this book, Barthes lures us away from a *studium* of a photograph—gaining understanding of what it represents—by highlighting its figural aspects, its *punctum*, which do not require a spectator’s interpretation, which it rather disturbs, or “pierces,” as Barthes says. I use Jean-François Lyotard’s notion of “the figural” (2011) here specifically through Rosalind Krauss’s reading in *The Im/Pulse to See* (1988) not only to highlight the piercing (Barthes) or beating (Krauss, but also Barthes [(1985) 1991, 299] in his writings on Schumann) aspects of the figural/the *punctum*, but also to draw attention to the link Krauss makes with Duchamp’s *Precision Optics*, which “bears witness to Duchamp’s commitment to the construction of the image through the activity of a beat [where] the pulse is accompanied by what feels like a structural alteration of the image as it is consolidated only continually to dissolve” (Krauss 1988, 60). The active, transpositional image escapes representational fixture.

However, in the second part of *Camera Lucida*, Barthes goes beyond an analysis of images refusing simply to add the concept of the *punctum* to the *studium* of photography suggested in the first part of the book. He does so by denying us a specific image, the famous Winter Garden photograph of his late mother in her childhood, where the object itself and not an image detail *for Barthes* has the quality of a *punctum*. (“I cannot reproduce the Winter Garden Photograph. It exists only for me” [Barthes (1981) 1993, 73].) Here, then, there is no representational anchor, no image plate, for his words that we could recognise. Rather, in this second part, he exercises how a text can escape representational closure keeping open the figural wound afflicted on us at concrete material positions not readily transferable from Barthes to ourselves without us also becoming affected by his grief (ibid., 70) through the *noeme* of photography, the “that-has-been” (ibid., 77).

2 Rodolphe Gasché (1979) traces the beginnings of deconstructive criticism also to Maurice Merleau-Ponty’s *The Visible and the Invisible* (1968). For my argument here, Merleau-Ponty’s notion of “hyper-reflection” is crucial. As he says, “the whole reflective analysis is not false, but still naïve, as long as . . . in order to constitute the world, it is necessary to have a notion of the world as preconstituted—as long as the procedure is in principle delayed behind itself” (Merleau-Ponty 1968, 34).

At the same time and as result of the operational refusal of representation in Barthes's text, we are left wondering who the girl is in the only photograph from the "author's collection" labelled "The Stock" (Barthes [1981] 1993, 104) and who somehow—miraculously?—seems to *become* his mother, and for which, of course, no proof only sense can be given. Diana Knight (1997, 138) captures some of Barthes's apparatus and its effect when she writes:

If Barthes refuses to reproduce the Winter Garden photograph, it cannot be for the reasons given in the bracketed apology that has so often been taken at face value. If *Camera Lucida* recounts a "true story" of Barthes refinding his mother in a photo of her as a child, then the photo must surely be the one reproduced later in the text with the title "The Stock" ("*La Souche*"). If the mother as child is younger than five, and if she and her brother stand with their grandfather (rather than alone in a conservatory), her pose, her expression, and the position of her hands exactly match Barthes's description of the Winter Garden photograph. It is therefore my belief (or my fantasy) that the Winter Garden photo is simply an invention, a transposition [*sic*] of the "real" photo ("The Stock") to a setting that provides Barthes with the symbolism of light and revelation appropriate to a recognition scene and to his inversion of the camera obscura of photography into a *chambre claire*.

This quotation, as it terms Barthes's operation a "transposition," highlights at least two relevant aspects. First, the accuracy of statements needs to be re-evaluated from the vantage point of the transpositional apparatus. Under a representational regime, we expect Barthes to give the correct information; that is, that the photograph of his mother in question is as he says not reproduced. Under a transpositional premise, Barthes's "lie" (i.e., that a photograph of his mother, against Barthes's claim, may be reproduced) may facilitate a more complex kind of articulation in which not only Barthes's mother but also his own sentiment as well as his philosophy of photography become re-presented. Second, Knight—or any reader for that matter—can never be sure where that photograph is. It may or may not be "The Stock," but this ambiguity needs to be negotiated in the interpretation as either "belief" or "fantasy." In other words, a secondary reflection identifying a transposition struggles to do so representationally and will always be at risk of being questioned and, hence, in need of defence, as happens here in the quotation when Knight refers not only to herself but also to something even more private and hence uncontestable such as her "fantasy."

Radicalising such a notion of transposition, Jay Prosser (2005, 43) is not content with Knight's "fantasy" that ultimately wishes to identify "The Stock" as the real photograph of Barthes's mother and the Winter Garden photograph as "invention." Rather, refusing to settle transpositional ambiguity, Prosser moves the focus to the very first photograph reproduced in the second part of the book precisely as the Winter Garden photograph is introduced: "Nadar: The Artist's Mother (or Wife)." This photograph, not depicting a child, we *know* cannot be the Winter Garden image; at the same time, it *could* be the Winter Garden photograph transposed to the time before Barthes's mother's death (she in her old age) and also to Nadar and his mother (or wife). Again, a "fantasy." When reading *Camera Lucida*, there is something in Nadar's photograph

(its glance?) that attaches itself to the image of Barthes's mother not denying the possibility that "The Stock" might be *it*, but opening up further positions and modes in which Barthes's mother may appear.

In fact, the complications do not stop here. Open to question is not just where exactly Barthes's image of his mother appears in the book, but also what she appears as. First, we have the option of seeing her as a child ("The Stock") or shortly before her death (Nadar's photograph), collapsing chronology in an image—Barthes's image—of his mother, which, as a consequence, seems to have liberated itself from history. Beyond this, as Prosser points out, Barthes's image caption to Nadar's photograph also has an impact on this play. Providing that we can see the sitter as Barthes's mother, the caption suggests that she could also be his wife. (According to Prosser [2005, 41], the caption on one level correctly represents, albeit without the usual scholarly apparatus, the different attributions of the sitter—in Barthes's edition of Nadar she is his mother, in the catalogue at the Bibliothèque Nationale she is his wife.³) Here then Roland Barthes's own identity becomes jeopardised: not anymore the mature man reflecting on photography and the death of his mother, but the mature man still as boy who desires his mother as his wife.

As Kathrin Yacavone (2012, 18) suggests, Barthes was not only aware of such scholarly imprecisions ("it's in this sense [not wanting to go through too much text to find a reference] that I'm *a bit cavalier* {*léger*}, experiencing my culture as an incomplete recollection" [Barthes 2011, 141]), he also seems to have embraced them as part of what may be called his *transpositional methodology*. Together with other, equally underdetermined elements—such as his "imagistic citation of Benjamin" (Yacavone 2012, 22)—they leave "traces . . . for others to recognize" (*ibid.*, 23). In effect, such an indirect mode of working opens up new possibilities for the text: "readers and critics . . . are compelled to embark on an interpretative and speculative search that parallels [Barthes's] own subjective and associative probing of the images in question" (*ibid.*, 170). Only if representational fixture is loosened can transpositional operations take over the development of meaning.

Ultimately, as the secondary literature on *Camera Lucida* testifies, the book's transpositional mode can be interrupted at any point and the representational fallout harvested by scholars. However, in terms of artistic research, its proper contributions happen in its transpositional operations as the further complication, densification, and intensification of an epistemic object before it breaks and settles into representational knowledge. In *Camera Lucida*, at least, it seems futile to argue where the "real" Winter Garden photograph is. Hence, representational reduction—being partial and closed—seems less intellectually attractive than a continuation of the epistemic play that is better able to meaningfully engage with the complexity of the material situation. Delaying in

3 While with those two references Prosser manages to explain Barthes's double attribution of the sitter, he seems at risk of overinterpretation when he emphasises the importance of the parenthesis in the image caption. Other than the English translation, which states "Nadar: The Artist's Mother (or Wife)," in the original 1980 French edition it simply says "Nadar: mère ou femme de l'artiste" (Barthes 1980, 108).

an aesthetic operation the (inevitable?) process of becoming-knowledge must thus also be seen as an epistemic function postponing claims as to what precisely it is we know while continuing to add relevant materials and, thus, depth.

4

The transpositional operations along which we can try to capture where in *Camera Lucida* Barthes's mother appears are highly structured textual moves and not a game in which Barthes simply withholds information. Thus, we have to imagine the book as revealing a multiple image of Barthes's mother not only to us but also to Barthes himself—that is, as an investigation in text of what both author and reader do not yet know. In this way, the “death of the author” (Barthes 1978) liberates the text, so that an author, too, will not know in advance what a text amounts to; rather, after accepting the operations of the text, we will supply all relevant positions in varying degrees of clarity: Barthes's mother(s), he as the author, we as the readers, photography, and so on. Furthermore, the better a text works, the better it will be able to secure not only already known relationships but also those of a highly speculative order. That is, if we accept that this and that is the case, through transpositional operations we may be led to insights of varying degree of sharpness and blur that are not as yet representationally secured and perhaps never will be.

Concretely, in *Camera Lucida* we are told that there is a relationship between the absent Winter Garden photograph and Barthes's dead mother; we may say, the Winter Garden photograph is as absent as Barthes's mother is dead. In other words, through the absent Winter Garden photograph, *Camera Lucida* can become to us what the photo itself is to Barthes, a form, in which an absence can be experienced. This experience is, of course, not simply an omission, but an absence is made present for Barthes through the photograph (his mother) and for us through the book (photography). Since it is clear that the Winter Garden photograph will never mean to us what it means to Barthes, his decision not to show it on the one hand blocks a route along which we would be led to compare our respective responses to the photograph, while, on the other hand, it opens up the possibility that the book itself can become a transposition of photography. In this way, then, *Camera Lucida* not only can be about photography but also can be a work of *photography*.

This logic may explain some of Prosser's unease with Knight's suggestion that “The Stock” is, in fact, the missing photograph of Barthes's mother. Seen in this light, the crucial part of the interpretation is not so much whether it is Barthes's mother who is photographed in “The Stock”; rather, what really matters is whether we think that it must be a photograph that fills in for the missing Winter Garden photograph or whether *Camera Lucida* itself can be granted that role. Knight, as it were, by over interpreting “The Stock,” limits the transpositional operations of the text.

Yacavone's reflections on *Camera Lucida* lend further support to this argument. Just as in “normal” photography, where there is always something that is photographed, for a book to be a work of photography, it *must* have a material reality to work from; or, in Yacavone's (2012, 185) words, *Camera Lucida* can

“only be triggered by an actual photograph.” Hence, *Camera Lucida* can only be a transposition of photography if the Winter Garden photograph really existed in the way it is described, a necessity that Yacavone sets out to prove by arguing that a framed photograph visible in two portraits of Barthes at his desk (both from 1979) is the actual missing photograph that is likely still in the possession of Barthes’s family.⁴

However, while from this angle also Knight’s suggestion that the Winter Garden photograph was “an invention” (see quotation above) must be questioned, and while it is important to state with Yacavone that it must have existed, the proof that is constructed with the help of the two portraits of Barthes at his desk risks damaging *Camera Lucida*’s transpositional operations, for we are getting closer to seeing precisely what Barthes did not want us to see. In Yacavone’s defence—if such a defence is, in fact, deemed necessary—it is important to note that despite allowing us to glimpse the Winter Garden photograph in those portraits, the quality of their reproduction is so poor that we see virtually nothing.

De Duve also discusses such transpositional operations at length in chapter two of *Kant after Duchamp* using Duchamp’s notion of “algebraic comparison” from his *Green Box* (1934): “ a/b , a being the exhibition, b being the possibilities, the ration a/b is in no way given by a number c ($a/b = c$) but by the sign (/) which separates a and b ” (Duchamp quoted in de Duve 1996, 99). He does so in combination with a note from *The Box of 1914* (Duchamp quoted in de Duve 1996, 101):

$$\frac{arrhe}{art} = \frac{merdre}{merde}$$

This allows de Duve to not dwell on the “separator” (the /) as Duchamp suggests in the first note but proceed to a formulaic interpretation of Duchamp’s “algebraic comparison” guiding his own interpretation of *Fountain* through this general formula (de Duve 1996, 101):

$$\frac{a}{b} = \frac{a'}{b'}$$

This expression states that the ratio between two things can be the same as between two other, unrelated things. Hence, it is not the things themselves that matter but their relationships and the relationship of these relationships. Through relationships, things that are not alike can become part of identity structures. While this formulaic interpretation of Duchamp’s “algebraic comparison” as analogy appears to be a reduction of the note from the *Green Box*, in de Duve’s hands, it can nevertheless be used to explain how *Fountain* may have arrived in art. Such formulations may also inform a theory of transpositions.

4 As Yacavone states (2012, 166n14), the framed photograph in question is also referred to as the Winter Garden photograph in the 2010 English translation of Barthes’s *Mourning Diary*. She further states (ibid., 171n24) that the Winter Garden photograph was not handed to the Bibliothèque Nationale in 2011 when Barthes’s estate was transferred, remaining a “family secret.”

From the many formulas that de Duve offers in chapter two, given the above discussion regarding Stieglitz, this one may best explain the concept:

$$\frac{\textit{Photograph of Fountain}}{\textit{The Blind Man}} = \frac{\textit{Fountain}}{291}$$

De Duve describes it as such: “Since Stieglitz, who is author of the photograph, falls into the trap and more or less unwittingly endorses Richard Mutt, the legitimation ‘Photograph by Alfred Stieglitz’ by P. B. T., the editorial board of the magazine, is equivalent to that of the object that is its referent, *Fountain*, by Gallery 291” (de Duve 1996, 122). In other words, authenticating a photograph of an artwork for an art magazine is like authenticating the artwork itself for a gallery. In effect, de Duve argues that it is Stieglitz’s gallery that despite not having shown *Fountain* as a work of art made *Fountain* a work of art through Stieglitz’s depiction. It is for this reason alone, according to de Duve, that Duchamp turned to Stieglitz for the photograph and not to, say, Man Ray, who had already photographed previous works by Duchamp (de Duve 1996, 118). Man Ray would not have been able to provide the same level of authentication of *Fountain* as Duchamp was able to obtain from Stieglitz through his role in Gallery 291.

While de Duve’s interpretation and use of Duchamp’s “algebraic comparison” seems to explain aspects of the genesis of *Fountain*, de Duve runs the risk of portraying Duchamp as a calculating genius (de Duve [1996, 116] speaks for instance of “a stroke of genius”), for instance, akin to the well-known image of Duchamp as chess player, missing perhaps the point of the whole episode as an experiment on art. Hence, it is important not to confuse the result of a transpositional operation with its beginning and to highlight also its generative dimension. In other words, the “/” and the related “=” are deeply situated and productive elements of the formulation; their historical character runs against an interpretation of Duchamp’s “algebraic comparison” and the notion of “transposition” as discussed here as calculation. However, this does not mean that the transposition of an artistic operation into a formulaic expression will not yield any insights as long as we don’t take the outcome of such an interpretation as predating the transposition.

With this in mind, the transposition that turns *Camera Lucida* into a photograph of photography may be interpreted and expressed like this:

$$\frac{\textit{Winter Garden photograph}}{\textit{Barthes}} = \frac{\textit{Camera Lucida}}{\textit{“us”}}$$

As in the case of *Fountain*, this equation only works if all elements come together in an apparatus that supports the transposition. In *Camera Lucida*, it is, for example, the preparatory first part that lays with the *punctum* the ground for this operation, or the arrangement of text and images including the way Barthes deploys his captions. As de Duve suggests in the case of Duchamp, such an apparatus is manufactured to realise, or better still, to *make* concrete spec-

ulations, such as about the nature of photography or contemporary art. Those elements are more than positions in a single equation, but a network of relationship within which transpositions become quasi-logical moves as if, as the “maths” suggests, a complex formula could be “solved.” However, and this is the striking realisation, despite the fundamental differences between a photograph and a book, or a urinal and an artwork, transpositions work insofar as they *make* the formula and hence make demonstrably possible what until then may have looked like an impossibility. In effect, the transpositional logic of contemporary art has irrevocably broken the functional and, thus, representational limitations of what under conditions of modernity used to be the role of the medium. Photography can no longer be reduced to its technical support (the camera, etc.); likewise, art has no basis anymore in specific objects or specific practices. In other words, transpositional operations have added new possibilities to art.

5

Two further aspects of Duchamp’s “algebraic comparisons” as transpositional operation must be emphasised. The first concerns the difference between quantity and quality, or number and concept. In his note, Duchamp states that “the ratio a/b is in no way given by a number c ” (Duchamp quoted in de Duve 1996, 99). De Duve (1996, 100n19) stresses that “it is most likely that in Duchamp’s mind at the time the notion of *algebraic comparison*, which he invented, was his response to that of *arithmetical proportion*, then in favor with his brothers and cubist friends, all members of the group *La Section d’Or*” in order to assert that there can be no fixed number—such as 0.618 or the golden section—or, more generally, a rule that would help predicting what counts as “art.” Duchamp’s “equations,” as it were, can only be solved by another differential and not by a (fixed) identity (a'/b' and not c).

Furthermore, despite looking like a formula, we are of course dealing with concepts not numbers. To emphasise this, at the start of chapter 2 of *Kant after Duchamp*, de Duve quotes a section from “The Analogies of Experience” from Kant’s *Critique of Pure Reason* where Kant distinguishes philosophical from mathematical analogies. As Kant says in this quotation, if we were dealing with numbers as we are in mathematics, we would be able to construct a missing fourth number providing the other three are given. In philosophy, that is, when operating with qualities, this is not possible. “The relation yields, however, a rule according to which I may look in experience for the fourth term, and a sign by which I may detect it” (Kant as translated in de Duve 1996, 89, cf. Kant 1998, 298).

The second aspect follows from this. In Kant’s philosophy, the rule to which he refers here is a priori given; that is, *in general terms*, we know how a relates to b . The task then is to find a relationship *in experience* that is analogous to the general relationship expressed in the rule. How and by which terms this relationship is constructed is not predictable; that is, we will not be able to anticipate the fourth term, but, as long as it is an analogy, the relationship itself must

be according to the rule. Hence, with the help of philosophical analogies, we can move from the general to the concrete, allowing us to explain cases where deductions are impossible.

However, does Duchamp with his *algebraic comparison* actually suggest that he is after applications of a rule? Looking at the wider context that de Duve supplies, for instance in chapter 1 of *Kant after Duchamp*, one may be tempted to look for a new rule of what counts or does not count as art after *Fountain*. However, focusing on the details of the *transpositional operations* as analysed in chapter 2, it is clear that in order to arrive at his challenge to art, Duchamp does not follow a rule but moves from a concrete relationship to a concrete relationship. Taking this into account, Milan Jaros replaces the notion of “rule” by that of “model,” suggesting that the concrete relationship given on the one side of the analogy acts as the model for another relationship that is as concrete as the former. What Kant says—namely, the impossibility of anticipating missing terms—still applies while liberating art from the idea of “rule” altogether, at least at the moment when it is made.

Jaros explains his use of “model” with reference to science, where, for instance, models of the solar system had been “invented . . . years before any analytic mathematical apparatus for implementing them was available” (Jaros 2004, 657). Although such examples from the history of science can support Jaros’s desired limitation of “calculation” and highlight the role “creativity” may play in knowledge generation, they nevertheless place emphasis on theoretical rather than material processes of the kind Karl Popper favoured, who likewise claims that to start with, theories must be unscientific (See Popper 2007, 8). The notion of “model” may, however, also designate a particular type of material object, for instance, “model organisms” of the kind Hans-Jörg Rheinberger describes in *An Epistemology of the Concrete* (2010). Such “models” still act as points of reference in a research process, but they lack the transparency and clarity of theoretical formulations. As Rheinberger writes: “From the standpoint of the research process, models maintain their function for only as long as this representational relation [that “every model stands for something that it represents”] remains somewhat hazy, only as long as we cannot say exactly what a particular model ultimately represents. The emergence of certainty about a particular question abolishes the need for models altogether” (Rheinberger 2010, 8).

While Jaros may not get sufficiently deep into the role of materiality in scientific research, his move from law to model in the context of de Duve’s analysis of Duchamp’s work is still useful to highlight a point of departure from the Kantian concept of philosophical analogy that moves from the general to the concrete. Laws, and even traditions, according to Jaros, do not secure or legitimate anymore what is to be done; rather, “sequences of approximations”—or transpositions—“are the invisible rails along which contemporary thoughts travel and collide. They are the ultimate residual source of motion—what remains when traditions fail us” (Jaros 2004, 655). And later: “In the absence of legitimating meta-narratives the mathematical-algorithmic relations appear (consciously or unconsciously) to be a handy source of onto-epistemic dynam-

ics. As Duchamp already understood it, its inscriptions lurking behind any manmade structure-events are there to help us at the moment of an embarrassing lack of ideas about what to do next. They invite us to make analogous moves.” This “amounts to an irreducible directional move whose main source is local individual energy” (ibid., 656). Nevertheless, the historical status of those sequences remains unclear. While they are meant to be outside tradition, the sequence is still historically organised as a more or less extended succession of sequential positions. Can the individual transpositions that make up such a sequence by themselves be the “rails” that Jaros talks about, or must they be historically extended in order to be stabilising and legitimising?

The analogies that de Duve traces in Duchamp’s work may be turned into rules about art—representations as mentioned above—but this does not do justice to their methodological as well as epistemic function and perhaps also not to Duchamp’s motivation. Rather, they can be used to describe how artistic practice can be liberated from the presuppositions that have been used to externally define how it is to be done, be they tradition, taste, or aesthetic rules, such as the golden section.

Rather than the term “analogy” that still carries relationships to rules, the notion of “transposition” may be used as a descriptor for the smallest unit of such sequences. It is a construct with two distinct positions and a logic that allows moving from the one to the other. This logic is speculative, experimental, and opens when proposing a possible move forward; it is reflexive, confirmatory, and closes when looking backward, where in upholding the transposition it demonstrates its force to bind both positions. Hence, hidden in the equals sign is not an already given identity, such as $a = b$, but a move that allows us to see something as a at the position of a and as b at the position of b . This move displaces and replaces a by b without an external structure that would allow for a formal comparison of a and b . Ultimately, at least in the context of contemporary art, it may not be b that really matters but the logic—that is, the mode of thinking and doing that allows for the transposition and thus a meaningful and knowledge-generating relationship between what is otherwise unconnected: a and b , urinals and artworks, or photographs and books.

6

Interpretations of transpositions will always be limited since there is only a representational register for their residues and not for the transpositions themselves. The work they do can only be grasped from within the transpositional sequence as its extension and not from outside in representational snapshots of single, static elements. Outside representation, sequence formation may be the best way of capturing transpositions; but, like representations, sequences *cover* individual transpositions in what may be called their “historical effect” (event if it does not amount to a “tradition”). Thus, given that both representation and extension may miss the work of individual transpositions, it is difficult even to argue that transpositions of the radical, proto-sequential kind alluded to here exist; and, if they are taken to exist, it seems impossible to locate them

both in time and space. Are the transpositions in *Camera Lucida* in the photographs that the book reproduces, in the text, or in my mind as I read the book?

While my mind can certainly be part of a transposition, it literally can only ever occupy *one* position without turning spatio-temporal positionality into a metaphor allowing my mind to “occupy” multiple “positions” and “transpositions” between them. Comparable with Derrida’s focus on “writing,” transpositions, being spatio-temporal constructs require both materiality and difference. They can thus never occupy exclusively exterior or interior spaces; rather, transpositions transgress the order of subject and object not having settled yet in *this* internal or *that* external representation, be it “subject” or “object.” Transpositions *must* be outside singular places or times as they concern relations between them. Crucially, as there is no pure trace, to use Derrida’s notion, there is also no pure transposition. “It” is always “instituted” (Derrida [1976] 1997, 46) and we know of it only through acts of confluence, confirmation, representation, or identification, that is, in degrees of stability and duration. “Artistic research” through its active involvement in creating transpositions, and hence models rather than representations or sequences, may thus be relieved of philosophical explanations. Important as it is, philosophy represents a discourse different to artistic research, for which philosophy can and perhaps even should be bracketed if it cannot be transpositionally deployed. Transpositions must be made or missed.

Artistic research as a field of practice needs to negotiate its border not only with philosophy but also with other disciplines that explain how transpositions function in places where the notion of “sequence” also seems to feature prominently. For instance, George Kubler’s art historical theory of “formal sequences” described in *The Shape of Time: Remarks on the History of Things* (see Kubler 2008) is able to describe how artworks and, more generally, artefacts may historically be linked. In Kubler’s theory, each formal sequence has its own historical speed and, through its focus on specific artefacts, sites at which it is developed. This opens the possibility of multiple, parallel sequences that run side by side (with limited cross-fertilisation) that never amount to a single history that is being developed. The sequences themselves are defined as open-ended problem solving chains, where the “problem”—also a historical entity—supplies the “armature” that keeps the “solutions” linked over time. Formal sequences are thus characterised by repetition and variation.

Kubler’s historicisation of art history could provide a useful framework for a theory of transpositions with its focus on the materiality and situatedness of cultural production. At the same time, Kubler’s emphasis on form marks an important difference since it implies that formal comparisons within a sequence are not only possible but also necessary to stabilise it. Transpositions of the kind discussed above clearly don’t allow for such formal comparison; in fact, the notion of transposition was chosen to emphasise the possibility that relationships can be made in art for which no point of external reference exist and where formal triangulation is impossible.

Hence, transpositions are not highlighted as plastic elements in Kubler’s theory of formal sequences. When he uses the notion, he means it to indicate

a move not along a sequence but across sequences. Such “transpositions” are deemed problematic since they would “betray the nature of our ideas about historical change” (Kubler 2008, 58) since “we would have to abandon *all* our own positions” (ibid., 59, my emphasis). As Kubler says, “since no two things or events can occupy the same coordinates of space and time . . . no two things or acts can be accepted as identical” (ibid., 61). Hence, to Kubler, transpositions cannot manufacture identity; identity is seen as a passive concept. Can art (and with it artistic research) still be captured as operating by repetition and variation, or would certain phenomena, in particular those belonging to contemporary art not be lost if it was made to cohere to an idea of history (which Kubler as a historian admittedly brings to the table)? If at all, transpositions would need to be captured in a-formal sequences that can cut across what can be recognised.

In chapter two of *Pandora’s Hope: Essays on the Reality of Science Studies*, Bruno Latour also highlights sequences or “chains,” as he calls them, that display transpositional qualities. His case study investigates how scientists arrive at knowledge about the world—in this case, the zone between savannah and forest. Latour describes, for instance, how the forest floor is first partitioned to organise the sites at which soil samples are taken, which are then deposited in a gridded box, a pedocomparator, before being colour matched in the Munsell colour system and finally appearing as numbers in a scientific paper. Each stage along the chain is separated from the preceding and succeeding stages by a “gap” that allows for “transformations, transmutations, and translations” (Latour 1999, 58) in such a way that the previous stage acts as content to the following form: the soil is the content placed in the pedocomparator, the colour codes are the content of a diagram in the scientific paper, and so on. Suitably, in Latour’s own diagram (1999, 70, fig. 2.21), the gap between matter and form is labelled as “?,” the productive but unnameable “glue” that connects two elements, which without resemblance are able to stand in for each other.

The chains that Latour describes, by bracketing resemblance, seem more relevant to a theory of transpositions. They are sequences of articulations and not variations, which afford a greater degree of formal distance between successive positions on the sequence. In fact, Latour’s matter/form couple allows for absolute formal distance, but this does not mean that the problem of representation is avoided. Just the opposite, representation precisely needs such a “gap” to operate and to “mediate presence” (Seyhan 1992, 8). “Making strange, distancing, and exoticizing are, paradoxically, poetic operations of making an other familiar” (ibid., 14). It is, thus, not resemblance but familiarity, and, hence, still “presence” that binds the positions together, which allow for upstream *and* downstream movement along the chain. Its point of origin (a sample collected on site), like Kubler’s initial “problem,” remains an identity that informs the whole sequence, through which, conversely, it can become known. While it is already transpositional in nature, it severely limits what transpositions can do.

However, in another context, in which Latour describes how an articulation also “loads” what it articulates, he relinquishes original points of reference. Each “translation . . . completely transforms that which gets transported”

(Latour 1991, 117) and hence quite literally changes the world. While transforming what is passed through the connection, each position is not an articulation in its own right but always in danger of becoming just an element in a larger assemblage that harbours identity. It adds to the chain, but it may not fundamentally rework and unwork (Lacoue-Labarthe and Nancy 1988) it. In art, however, transpositions need not “grow”; transpositions need not be compared with regard to their length, which for Latour (1991, 118) is the degree of reality that they carry.

That historians or sociologists may approach art through sequences does not mean that they would not learn something about art; my point here only is that as a transposition is made, a sequence is not as stable as it is made to appear and must always also be ready to be jeopardised if we try to capture the practice of contemporary art and through it aspects of artistic research. The “rails” that secure practice, to use Jaros’s notion again, may not need to be seen to form a sequence extended in history and could be seen—and in fact must be seen—to be as short as a single transposition.

In both Kubler and Latour, despite their relevance for a theory of transpositions, specific transpositions seem to *disappear* into larger sequences, chains, or networks, which are called upon to represent them. This cannot be compared with the situation of an artist or artistic researcher who has the task of not only adding to the sequence but also transposing it—*inventing* a new origin.

7

Relationships to rules or sequences may be explained in transpositional terms, but notions such as “analogy” or “model” do not allow for a sufficient focus on concrete things and their respective internal relationships. In other words, those explanations live off—as explained for the case of representation—the productivity of transpositions since they rely on their plastic character while still affording external references, which act as points of origin, however remote. Yet, a more radical theory of transpositions must also hold for situations in which we move from the concrete to the concrete in a single step where no preceding sequence offers the kind of “rails” that could secure a movement. Is there a post-deconstructive, post-historical mode of research that we may perhaps call artistic and which we can only transpositionally grasp?

This approach to artistic research implies that it cannot be a stable field, discipline, or concept (Schwab 2011a) since each new example will shift what we believe the term to cover (Schwab 2017). This is not dissimilar to the situation of art in general (de Duve 1996, chap. 1; Schwab and Borgdorff 2014a, 13). It implies, furthermore, that while one may insist on a notion such as “transposition” there may not be a clear definition that can be applied to all possible examples, since each new example may enact transpositional operations differently, thereby redefining the scope and character of the notion. It may describe an aesthetic idea rather than a concept, to use Kantian terminology, or, more precisely, how aesthetic ideas operate transposing experience into thinking. At the same time, as should have become clear, while thinking is always possible,

such transpositional operations of understanding need not be limited to some form of “subjective” realm but happen between positions, including but not limited to that of the subject. This aspect of non-hermeneutic understanding is the reason why transpositions must be articulations; positions stand in for meanings, which transpositions connect to understanding.

In reality, however, what we think artistic research is has to a large degree been conditioned by institutional definitions, most importantly perhaps by institutes of higher education that have been grappling since the 1990s with the inclusion of practice-based knowledges (engineering, medicine, but also art)⁵ feeding into the so-called Bologna process, which aims at the integration of higher education across the European Higher Education Area. While these developments have had a big influence on the discourses of which this chapter is an example, the degree to which practitioners have been trying to avoid the formation of a discipline is striking. This may be due to an “incursion” within the institutional setting itself that the introduction of artistic research has provided; lacking an already established “discipline” of artistic research, its insertion into the institutional context at that particular historical point in time has had the effect that credible artistic research, in not being able to avoid the issue of “institution,” needed to institute itself rather than be instituted (Kirkkopelto 2015). Using the notion of “institution,” Kirkkopelto emphasises the contested territory of artistic research, which in consequence may look less like a single institution than a multitude of connected and disconnected institutions from which the dynamics of the field emerge. In effect, these dynamics can also be explained in terms of transposition: a new institutional form transposes the field to its own concrete setting, changing it in turn. How precisely this happens on the level of artwork, exhibition, or university matters a lot since through it an originary stance becomes possible. As such, “institution” is first of all local action and not so much the organisation of power (into which transpositions may nevertheless decay).

In other words, lacking those historical “rails” that a long standing discipline may have provided and being sufficiently sensitive to the pitfalls of historicalisation through the legacy of contemporary art, deconstruction, and institutional critique, the only solution available to “the field” has seemingly been to solve the problem of artistic research on a case-by-case basis.⁶ This had to happen outside a presupposed identity of the concept of artistic research, also suspending with it the identity of each project that lays claim to it. Other projects may inform a specific project (and our understanding of the notion of artistic research) but none in their particular material locality can provide a shortcut to it since it is the concrete within which a transposition operates.

There can thus be no sequence or “rails” that could be enacted; rather, research takes place precisely *against* sequences from which it aims to meaningfully deviate. Therefore, a transposition of the kind envisaged here must

⁵ For the case of the UK, see Candlin (2001).

⁶ This reflects the position of the *Journal for Artistic Research* (JAR), which I have edited since its inception in 2011; a case-by-case assessment rather than the application of assessment criteria play an important part in JAR’s peer-review process (See Schwab 2011b, 2018).

be unique. While it may be tempting for a historian (or those looking for a project's "impact") to search for sequences originating from a particular transposition, say, from *Fountain*, its value at the moment of creation cannot be derived from them. Rather, at the point of making, there can only ever be potentials for sequences, and it is those rather than their form that may in-form future transpositions (see also Schwab 2013, 9). Seen from this angle, it is clear that transpositions may inform but cannot be captured in sequences since a sequence has already aligned its elements into an institution. Only if the next transposition breaks sufficiently deeply with the previous one does it have the power to institute again. This is another way of saying that the concrete must remain concrete, resisting absorption into more general forms or movements. However, this does not mean that concretes may not become aligned; it simply means that alignment is not due to a power that is exerted by one concrete over another but rather that through a transpositional approach those concretes will be more sensitive to the material conditions of meaning-making, which have their own texture effecting meaning and understanding.

Against the backdrop of such an approach to artistic research and despite what I seem to have suggested in this chapter, *Camera Lucida* cannot simply be seen as an example of artistic research, as if what we today call "artistic research" had already existed. At the same time, it seems perfectly possible to ask how the book could be transposed into this discourse and to what effect—that is, whether relationships can be made between Barthes, his mother, photography, and so on and artistic research, which could highlight the role and importance of transpositionality. If this was the case, we could be tempted to retroactively see in Barthes's work—and also in that of Duchamp—some form of artistic research *avant la lettre*. And, in theory, we could expand this circle to include other examples, so that a fabric might emerge that may support the kind of concern that I wish to highlight as a particular stance regarding the relevance and potential of artistic research.

Crucially, though, I am stressing the importance of transpositional operations in this context not to simply associate certain practices, but, by doing so, to place emphasis on their fundamentally *different* material reality that resists any form of generalisation or representation, where the one could simply stand in for the other without being affected by this change of position. Knowledge could then be seen only to propagate through concrete transpositional connections. This aesthetico-epistemic approach, which with Barthes ([1981] 1993, 71) may be seen as "*the impossible science of the unique being*," is what he posits as photography and which I seek to extend to include notions of artistic research. In some sense, despite appearing as (general) concepts, "photography" or "artistic research," implied as they are in such concrete operations, can never settle—this much we know from the long history of photography as well as from the comparatively short history of artistic research.

In *Duchamp and the Aesthetics of Chance*, Herbert Molderings (2010) argues that Duchamp's work after 1912 was heavily influenced by the changing science of his time. However, rather than arguing that Duchamp was primarily working through the more specific problems of non-Euclidean geometry and

the representation of higher dimensional spaces, which Duchamp also did (cf. Henderson 2013; Schwab 2015), Molderings highlights Duchamp's two-sided approach along the limits of both art and science. Duchamp criticises "all painting [as] antiscientific" (quoted in Molderings 2010, 12), explaining, for instance, his development away from retinal art, at the same time as he is out to "discredit" science (ibid.). "This contradiction, that is, his fascination with modern scientific thought, on the one hand, and, on the other, his simultaneous ironization of the claim laid by science to universal truths, was to be the hallmark of his entire oeuvre from 1913 onward" (ibid., 12). While this "contradiction" keeps the history of art and science distinct—art as obscuring representational operations and science as idealising them—they both converge insofar as neither problematises the basic operation in which a thing is to stand in for another thing: a painting for a world it depicts or a universal law for cases that it explains. A critical position towards both histories, thus, requires developing what is happening during this operation from a merely reflective into a productive understanding—that is, seeking non-neutrality on all levels.

What has been characterised as Duchamp's ironic, artistic "solution," Molderings presents as predating the later development of quantum mechanics, which also problematised orthodox science. As Wolfgang Pauli—who, together with Werner Heisenberg and Niels Bohr, was a key figure in the development of quantum mechanics—says: "The need for a definition of reproducibility in the law of nature has . . . resulted in the loss of the unique in the scientific conceptualisation of nature. What we have experienced in quantum mechanics is the occurrence of the essentially unique where it would least be expected, namely in ('non-lawful') individual observation" (quoted in Molderings 2010, 127).

The term for Duchamp's own "science" would arguably be "pataphysics"—the "merdre" in Duchamp's note from 1914 that triggered de Duve's analysis is a reference to Alfred Jarry's play *Ubu roi* (1896) (Molderings 2010, 119)—at least in the eyes of Molderings, who suggests as much in chapter eight of his book. Pataphysics was invented by Jarry as "the science of imaginary solutions . . . pataphysics will be, above all, the science of the particular, despite the common opinion that the only science is that of the general" (Jarry quoted in Molderings 2010, 117). While there is a strong surrealist current in pataphysics, by linking it beyond quantum mechanics also to philosophy (Nietzsche) and mathematics (Poincaré), Molderings gives pataphysics—and Duchamp's work—a particular epistemic relevance, which, at the limits of both art and science through its focus on the unique cannot sufficiently be secured by the "rails" of those disciplines. As Andrew Hugill suggests when he says that "to understand pataphysics is to fail to understand pataphysics" (Hugill 2012, 1), given that those limits are not only limits of disciplines but also limits of understanding, the phenomenon of pataphysics itself cannot be coherently comprehended and must remain disciplinary vague. Still, "pataphysics, although complex and difficult, is in fact quite a cogent body of exploits and ideas, which has a history and certain fixed precepts" (ibid., xvi).

Although for some, such elusiveness may give reason to doubt the epistemic status of Duchamp's work (he may have been interested in science, but used it only to produce art), for others, his work may represent knowledge of a more advanced kind (Duchamp proposes a new art and a new science). However, as I suggest in section one of this chapter, either option simplifies and thus flattens the particular transpositional ambiguity at hand. Rather than deciding for the one reading against the other, we could also try to capture a transposition's suspended state, entering a transpositional relation with it as I have tried to do—successfully or not—in this chapter.

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Transpositions:

From Traces through Data to Models and Simulations^{*}

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Transposition is a word with many different meanings and uses. I will look at it from a philosophy of science perspective, more precisely, the perspective of historical epistemology. Historical epistemology is a way of looking at the sciences for which—to modify the title of a paper by Theodosius Dobzhansky (1973), the noted twentieth-century genetician and evolutionary biologist—nothing in philosophy of science makes sense except in the light of the historical development of the sciences. At the core of historical epistemology lies a focus on scientific practice in general, and on scientific experimentation in particular. Scientific practice, however, comes in many guises that have in turn developed and greatly changed over time. But there is one gesture that is common to all of them: transposition. Transposition basically means that things are taken out of a particular context of use—or out of their absence in that particular context for that matter—and brought into a constellation where we can marvel at and do things with them. We could go through the different forms of scientific practice—observation, experiment, classification, quantification, isolation, purification, analysing, synthesising, just to name the most obvious of them—and see what specific forms transposition can take. In the following, I will concentrate on experimentation. In the experimental sciences, transposition means, first and foremost, the creation of an experimental context in which epistemic things can be explored for the sake of gaining knowledge about them. With respect to the epistemic objects so created, we can then observe a further chain of transpositions. Epistemic entities and their traces themselves get transposed, recreated, so to speak, in what we can address as a data space. This additional transposition presupposes a transition from one medium into another—from the medium in which experimental traces are engendered, that is, a graphematic space, to a medium in which these traces take on a durable form, a space of representation of sorts. It allows one to move around data and to tentatively condense them into configurations. In the sciences, the classical way of doing so is modelling. There are other forms of such transpositions at one remove that allow for and provoke gazing at things differently. And it

^{*} This paper is based on materials and reflections developed in two earlier papers (Rheinberger 2011, forthcoming).

engages researchers in a game of reciprocal transition between two forms of transposition, one more mobile, the other one temporarily more rigidified. Such a game appears to me to be at the core of the scientific practice of experimentation, of the epistemic process of trying and finding out.

INFRA-EXPERIMENTALITY

The graphematic and representational transpositions briefly described above form the space of infra-experimentality, as one could put it. The notion points to the game of producing knowledge effects *under* the hands of the experimenter, in the world beneath him or her. If a word were looked for that could convey the corresponding methodical effort, my choice would be “subduction.” It seeks to grasp and expose those moments—chains of events—in which matter is made to mean and scientific meaning is made to matter. At stake are the interface *between* the agents of knowing and the objects of their desire. In the modern sciences, this interface has proliferated and grown out into experimental systems of various kinds. They eventually not only have filled the space between, but also have over-grown both poles—of subject and object—and produced a world of their own: the world of phenomenotechniques, to use Gaston Bachelard’s expression ([1931–32] 1970, 18–19).

TRACES

I have tried to mobilise Jacques Derrida’s concept of trace or of grapheme as a deeper grounding, as a layer beneath the traditional metaphors of image and writing dominating the space of representation. With Michael Schwab, we can state that the graphematic space lies before—and under—the space of representation (Rheinberger and Schwab 2013). With traces, we are basically dealing with a form of material manifestation—things made *handgreiflich*, to use a fitting German word—that, first, is more elementary than representation, second, is in a certain way indexical in character, and, third, has not yet fallen either on the side of imaging or of writing—our traditional forms of representation *after* the trace, as it were (Rheinberger 2007; see also Krämer 2009). The trace is thus supposed to be *anterior* to both writing and image, as it still manifests the “asemic kernel” of both of them—to borrow an expression from Rodolphe Gasché (Derrida [1985] 1988, 113–14)—and it has a rather precarious structural characteristic. It is the trace of something, but this something is always only a substituted or supplemented something. As Derrida (1997, 74) put it, “a meditation upon the trace should undoubtedly teach us that there is no origin, that is to say simple origin; that the questions of origin carry with them a metaphysics of presence.” And insofar as we are concerned with *scientific research*, this something—as an always only supposed origin—is not only absent in the sense of being away, but in a much stronger sense has never been there as such. From this point of view, we must assume that a recursive move is built into the very temporal structure of the systems of empirical investigation, and with that, into the temporal structure of the production of phenomenotechnical

traces. “The trace”—following Derrida, and quoting from his *Grammatology*—“is not only the disappearance of origin—within the discourse that we sustain and according to the path that we follow it means that the origin did not even disappear, that it was never constituted except reciprocally by a nonorigin, the trace, which thus becomes the origin of the origin” (ibid., 61). Something like an origin then only *arises* in the process of tracing. We could say that this transposition of a phenomenon into a trace—a traceable entity—is of a very peculiar character: it always and at the same time calls into question the very essence of its own movement as a trans-position.

From such a perspective, it will perhaps become possible to determine more specifically what goes on in the material transformation processes of *scientific experimentation* in terms of epistemic procedures, without always having to deal with the heavy load of critique accumulated on the notion of representation. This at least has been the idea behind the experimental systems approach that I have adopted and tried to develop and strengthen as a heuristics for *tracing* at another level—the level of history of science (Rheinberger 1997). If experimental traces can be located at the level of scientific object formation, for the historian, experimental systems are the traces at the level of historical object formation. But to follow this transposition would be another story.

We can describe the situation in a different way by looking at the individuals engaged in the process instead of the things involved in it. From the perspective of the researcher, we are dealing with an act of delegation. Setting up an experimental system revolving around an epistemic object and exploring some of the inexhaustible aspects of its thingness definitely undercuts the traditional subject–object relation in the sense of a face-to-face relation between an observer and something being observed. In an experiment, the act of observing is delegated to a technical arrangement of an appropriate kind that one brings into interaction with the epistemic object. According to Hans Blumenberg, the action at a distance that such a relation implies lies at the very basis of conceptualisation *überhaupt*. Research, then, can be seen as conceptualisation at one remove. It brings under the domain of the conceptual what has not yet been or cannot be conceptualised in terms of life-worldly experience. Such experimental interaction has to be crafted in a way that the outcome—the traces that the interaction leaves behind—is not completely determined in advance. If so, we would be concerned with a demonstration and not a research experiment. A research experiment lives from a particular kind of “unconceptuality,” to use Blumenberg’s (2007) notion for this peculiar tension: it needs to bring into the realm of conceptualisation what cannot be conceptualised in advance. Hence the fuzzy boundaries of concepts that reveal themselves as being productive in research.

If one shares this point of departure, it follows that reflecting on the phenomenotechnical constitution of such trace-generating experimental set-ups, themselves embedded in cultures of experimentation, becomes a central task. But exactly such reflection on experimental mediation—that is, on the *apparatus* in all its complexity and intricacy that comes to stand between the knowing subjects and the objects of knowledge, the new world of traces it creates at the

interfaces between object and instrument, in other words, the multiform and extended proper sphere of the assay, the trial, the experiment—is something that used to have no place in the perspective of traditional epistemology or theory of knowledge. In terms of a critique of science and its self-awareness one is faced with the phenomenon that, in the self-perception of the sciences, all instrumental mediation is permanently made to disappear in what comes under the rubric of “result.” A conceptual counter-effort is thus needed, the direction of which I can allude and point to here only in outline.

DATA

From here, we can approach the ensuing transposition. Traces produced in an experiment are usually of a volatile character. In order to work with them in what can be called a data space, they have to be made durable. This, however, is a transposition that is not linear and monotonous, but goes along with qualitative shifts, shifts that are far from trivial. The step from traces to data is a decisive step in the chain of transpositions that Bruno Latour has so pointedly described in his photo-philosophical montage “Le ‘pédofil’ de Boa Vista” (1993). A typical example that is nearer to my own laboratory experience is the transposition of a molecular DNA sequence gel into a chain of symbols. This can be seen by viewing the image of a sequence gel in Frederick Sanger’s famous 1979 paper describing his new method of DNA sequencing (Sanger, Nicklen, and Coulson 1979, 5465) alongside the complete sequence of the bacterial virus PhiX174—Sanger’s object of experimentation—as a sequence of characters standing for the four different DNA bases, a chain some five-thousand-odd nucleotides long, shown by Alberts et al. (1983, 104, fig. 3.8). With this visual display, leading from bars to letters, total abstraction is made not only from the virus out of which the nucleic acid was extracted, but also from the test tube reaction in which it was sequenced, and moreover from the gel and its material qualities in which the fragments were separated and visualised. We could appropriately say that no trace is left of these traces. But while there is a lot left out, there is also something added: with their representation as data, meaning is not only invested, but also fixed. The aseptic kernel of the trace, already overlaid by the order of bars on the gel, is now bound to disappear completely. From a sequential arrangement of molecules of different size an overall sequence of symbols is constructed, a symbolic transposition of a strand of DNA, of which molecular geneticists claim that it contains the *information* for the expression of a particular cellular product, a protein. In the experimental world of molecular biology, with its molecular dissection and sorting mechanisms, this may be considered a subtle shift. But conceptually, it is a decisive transposition—from trace to data and with that, we could say, from residue to representation.

I suggest thus that we see transpositions of this sort as a transition from “traces” to “data.” The first important aspect in such a transposition is that the traceable result of the experiment is brought into a form in which it can be *stored*, and, consequently, *retrieved* as well. There is much to recommend

the assumption that the ability to be stored, that is, to be made *durable*, is the most important change accompanying transposing *traces* into *data*. Traces are not but data are of the form of Latourian “immutable mobiles” (Latour 1990). Their relative immutability is a prerequisite for their mobility in the data-space, for their retrievability, and, with that, their options for being re-enacted and everything else we associate with data and not with—usually precarious, bound-to-disappear—traces. The second important aspect is that the transposition from traces to data implies a change of medium. All that follows depends on this second conversion.

MODELS

Depending on the scientific field in question—the epistemic objects under consideration, that is—the targets of research can assume widely different forms. In the life sciences, but not only there, *preparations*—anatomical, microscopic, biochemical—have played and continue to play an important role (see Rheinberger 2010, esp. chap. 12). Preparations, in one way or another, share in and are part of the very materiality of the phenomena under review. They could be addressed as trace-configurations and thus still belong to the graphematic space. In almost all scientific fields, however, *models* of vastly different forms are particularly prominent.¹ And it is a general distinction of models that their instantiations imply a change of the medium: They present themselves as reconfigurations in a particular data space. The change from one medium to another that they share with data, as reconfigurations of data, sets them apart from the aforementioned preparations. In contrast, models operate in and through a medium that presupposes an ontic cut with respect to the target phenomenon, the epistemic thing in question. Besides that, however, I happily subscribe to the deflationary assertion of Margaret Morrison (2015, 6) that, given their essential context-specificity, it is hard to think of a general theory of models in science. What we observe is an overwhelming variety of models. Models can be purely mathematical or diagrammatic, that is, situated in the realm of the symbolic and “materialised” only in a paper medium. But they can also be realised as hands-on working models in a variety of materials with which one can tinker (Chadarevian and Hopwood 2004). Today, computer models in the form of digital algorithms, about whose epistemic nature there is an ongoing controversy (see, e.g., Frigg, Hartmann, and Imbert 2009), are ubiquitous in scientific laboratories.

Let us have a brief look at some of the epistemological prerequisites for the construction of such models. They rest on the two characters outlined above: durability and a change of medium. One important option that becomes possible with this two-layered transposition consists in bringing data into tentative connection with one another, thus forming something like a provisional

¹ Accordingly, there is a huge amount of literature on scientific modelling. I cannot survey it here. For a more recent overview from a historical perspective, see Dirks and Knobloch (2008); for a philosophical perspective, see Morrison (2015).

whole from parts. The phenomenon from which the traces result is recreated in another medium. It is in this step that the model enters the stage, and this step goes along with a strange form of epistemic inversion. As structural anthropologist Claude Lévi-Strauss has observed, in the reduced model the “knowledge of the whole precedes knowledge of the parts. And even if this is an illusion, the point of the procedure is to create or sustain the illusion, which gratifies the intelligence and gives rise to a sense of pleasure which can already be called aesthetic on these grounds alone” (1966, 24). Simplification is the way of bringing about this inversion of whole and part. We cannot have the whole in an experiment. The permissibility of such simplification is up for permanent negotiation. As Richard Levins (1966, 421–22), the noted American population geneticist, once put it: “The difference between legitimate and illegitimate simplifications depends not only on the reality to be described but also on the state of the science.”

From this perspective, which can be characterised as a bottom-up or experiment-first perspective, models can be addressed as “data clusters” or “data assemblies.” What they basically allow one to do is to survey at one glance a multiplicity of data in connection with one another: they thus create the illusion of “seeing” the whole, to come back to Lévi-Strauss’s remark. This is their strength, and at the same time it is their weakness. Their weakness is that they easily let one forget the simplification on which they rest. Their strength is that they form a scaffold that can sensibly react as a whole if alterations in one of its parts are introduced. Models instantiate relations. Through their connection, the parts affect other points of the network of data and thus the model as a whole. This also means that they open the possibility for surrogate action on the model itself. The questions that come up by tinkering with the model can then give rise to changes in the ongoing stream of the experimental production of traces. In this way a loop is established that implies a permanent change of media, from the experimental phenomenon to the model and vice versa.

I do not claim to do justice to the manifold forms and filiations of models in the sciences with this description. There is also the option to come the other way around, top-down, or theory first. In the words of Morrison (2015, 20), models either function as “mediators between theory and applications (the model provides simplifications of the theory’s equations so they can be applied) or between theory and the world (the model is an idealised or abstract representation of some phenomenon or physical system).” The models I will briefly describe below clearly belong to the latter category, but represent a type of model for which one might doubt whether the notions of idealization or abstraction in conjunction with theory are pertinent. I will remain here with the notion of simplification.

Let us have a look at the following models: atomic resolutions of a cellular organelle, the ribosome, the protein synthesising machinery of the cell. They largely result from sequencing data as described above, on the one hand, and from X-ray diffraction data of purified, crystallised samples, on the other hand. Around the turn of the twenty-first century, three groups, worldwide, competed for higher and higher resolutions of such kinds of models. Beside Ada Yonath’s

group (Rehovot/Berlin/Hamburg), there was Venkatraman Ramakrishnan's group (Salt Lake City) and Thomas Steitz's group (New Haven). The breadth of computer graphic, more-or-less atomic representation options that had been developed over the course of two decades can be seen by comparing the following sources: (1) A stereo representation of the small ribosomal subunit, with a resolution of 5.5 angstroms, in which the ribonucleic acid and the proteins are shown in the standard form of their secondary structure—double helix areas for RNA, alpha-helices and beta-sheets for the proteins—as shown by Ramakrishnan et al. (2000, 7, fig. 6). (2) A compact surface representation of the large ribosomal subunit based on structural data with a resolution of 5–9 angstroms—selected proteins and binding sites for further protein factors are indicated—as shown by Ban et al. (2000, 15, fig. 2). And, finally, (3), an electron density model of the small ribosomal subunit on the basis of a structural resolution of 7–12 angstroms (in the bottom row, this model is compared to models derived from electron optical data), as shown by Bashan et al. (2000, 23, fig 1).²

In this latter case, we see yet another transposition at work. It results from the comparison of models derived from X-ray crystallography and electron microscopy, respectively. This time, it is a transposition within the data space itself. It is the practice of mutually comparing models derived from different data sets and acquired by different imaging technologies that can be seen at work here, exposing its further knowledge generating potential. Since the different technologies require different sample preparation procedures in order to create a suitable interface between the instrument and the object—a prerequisite for potentially meaningful traces—they all, in one way or another, interfere with the native configuration of the particles. “Native” refers here to the organelle in its cellular environment. But since native and untouched particles in their cellular environment cannot be seen without instrumental intervention, their shape can only indirectly be assessed by a permanent triangulation of the results of different manipulations. It is in this space of triangulation, the space of data condensation, that models can clash, that representations can stand against representations and confirm one another or cancel one another out.

As can be glimpsed from the pictures described above, the resources for computer graphic modelling are of a multiple and variegated nature. The representational conventions for the secondary structures of nucleic acids and proteins, respectively, which had already been developed long before the time of computer modelling, became part and parcel of its repertoire, as did other features of classical three-dimensional molecular modelling such as space-filling and rod models. Arguably one of the most innovative aspects of this kind of computer modelling, however, cannot be presented any more in the form of a traditional, static model object. It is the free rotational mobility of the parts of such computer models in virtual space and the visualisation of the degrees of freedom to move with respect to their components. This additional feature

² All three groups, whose work is mentioned here, once more refined their models in the course of the first decade of the new millennium, to a considerable degree. Together, they were awarded the Nobel Prize for Chemistry in autumn 2009 for their work.

offers not only new possibilities for tentative atomic fitting, such as the binding of antibiotics and other ligands, but also to simulate functional states of the molecular assembly and their sequential succession *in time*.

Here, however, we arrive at a border at which it becomes urgent to ask whether computer simulations represent a new category of epistemic object altogether—a category that is no longer sufficiently captured by the concept of model that underlies the outline of my presentation and thus presents yet another transposition in the data space. We can associate it with a distinction between passive and active models. The former can be seen as being based on data generated from traces, whereas the latter open the possibility to generate new data derived from the model itself. We could tentatively address them as model data in contrast to experimental data. In particular, this concerns models in which relevant data themselves are generated by computer algorithms. I started from the assumption that models result from experimental traces turned into data and are always accompanied by a switch in the medium of representation. Computer simulation, however, can potentially operate with self-generated data that no longer rest on such a switch. With that, they also open an alternative space of experimentation where the model itself can become the target of action to an extent that by far transcends the work on classical models and that includes the unfolding, manipulation, and measurement of virtually created data (Gramelsberger 2010). Whether the technical and epistemic units of virtual space must be addressed as a new kind of experimental system—*in silico* systems, or “simulation systems” as Morrison (2015, 218) calls them—or whether they simply add to and expand the technical options of wet experimentation in the realm of the data space is a matter of ongoing discussion,³ to which I do not have a definite answer. What is clear, however, is that there is a whole class of computer simulations that remain on this side of the fence—such as the ones discussed here—that thoroughly rest on the generation of experimental data and are consequently as good as the data that are used to feed them.⁴

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3 For a comprehensive overview and critical assessment of the different positions, see Frigg, Hartmann, and Imbert (2009), and therein specifically, Winsberg (2009); Humphreys (2009); Parker (2009). See also Morrison (2015).

4 As one of the contributors to the work described in this last section put it in conversation, when asked about the contribution of the computer to that work: “Forget it, it’s all chemistry.”

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Transposition

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Logical transposition and mathematical permutation, allegory and metaphor—so many modes of transposition. All have admirable bibliographies at their heels. Yet the notion of transposition itself, its participation in processes of discovery and invention, does not appear to tickle the curiosity of philosophers beyond its regional, technical applications. And yet, eminent French historian of philosophy Emile Brehier ([1930] 2009, 156, my translation and emphasis) even places the idea of transposition at a crucial turning point in the history of philosophical method. Yet it is as if out of nowhere that the word transposition appears here: “We saw, by means of what *transposition* Plato had made the dialectic the be-all of philosophy.”¹

Brehier does not proceed with an analysis or explanation of the word “transposition,” because here the idea of transposition merely acts as a mediator for the key concepts of dialectic and philosophy. Its function is quite self-explanatory, such as it is for instance in Plato’s dialogue, when the idea of the fisherman catching fish is transposed to the idea of the Sophist seducing young minds.

There is thus an intuitive aspect of analogical thinking in transposition, here transposing the idea of the capture of gullible minds to the capture of fish, but this is not all transposition does. The dialectical method also transposes the problematic of truth in discourse along a deductive chain of reasoning, “if . . . then. . .” Also, empirical induction is based on a transposition, this time transposing an experience onto a thought schema, which will in turn lend itself to being transposed onto other experiences. In truth the very distinction between theory and praxis neglects the shared use of transposition. Theory is itself a praxis that is embodied and further materialised by transposing ideas onto a material body of notation, just as every praxis is reliant on implicit or explicit, improvisational or set mental schemas. Whichever method (inductive, deductive, or dialectical), a general form of transposition is operating in the pursuit of knowledge or know-how. Its *systematic* use participates in what Michel Foucault called an episteme, and, from the point of view of the consensus it drives, transposition also consolidates what Thomas Kuhn called a paradigm.

It is not surprising, then, that despite its role as mere mediation the idea of transposition nevertheless occupies a key function in Emile Brehier’s formulation. For, if we read Brehier’s words carefully, it is the transposition that Plato must lodge at philosophy’s heart rather than the dialectical method. This is

¹ “On a vu par quelle transposition Platon avait fait de cette dialectique le tout de la philosophie.”

because the philosophical reliance on the dialectic depends upon the transposition that first hoists the dialectic from the rhetorical toolbox to the philosophical stratospheres of analysis and speculation. The dialectic is thereby transposed from the relatively limited domain of the rhetorical effectiveness of discourse to the unlimited domain of philosophical analysis and speculation in what one could call a vertical transposition, insofar as it introduces a hierarchy between non-commensurate domains. The dialectic's polyvalence—namely, its (horizontal) capacity to invest and illuminate vastly different fields of inquiry—too, will depend on transposing the dialectical method of reasoning from one topic to another.

If we grant the word transposition the importance that it deserves, in light of its almost accidentally central function in Brehier's observation, then we must acknowledge that transposition is at least one of the *principles* (understood as a first step with an enduring regulative function) that enables an articulation of Platonic dialogues among one another. And it is on the *basis* of transposition (in part grounding it as one of its conditions of possibility) that philosophy can henceforth unfold its peculiar dialectical rhythm, transposing a problem from question to answer, from answer to a new question, and so forth. While it is the dialectic that has exercised the greatest minds, it is thus ultimately on the basis of the humble transposition that the dialectic can morph its structuring principle to suit the most diverse topics.

It is because of the intuitive power of transpositions that the act of transposition itself is rarely the centre of any critical enquiry. There is an obviousness that gives it diplomatic immunity, the freedom to traverse boundaries of thought and practice. Yet when Plato compares the Sophist who seduces the minds of young people with the fisherman who catches fish, what exactly is it that allows him to harness the very different realities that are compared? What is it that philosophy does when it transposes and thereby correlates the theoretically structuring principle of two different realities, for instance, of rhetorical persuasion and fishery? Transposition confronts us with the question of mediation, well before there can be talk of transmission and media in the context of new technologies of communication.

What I would like to question here is the assumed permeability of every possible form of reality to transposition and hence to mediation. Conversely the tacit assumption that everything lends itself to being thought, explored, and even invented by means of transpositions implies also the susceptibility of every possible form of reality (ideal or empirical) to being unravelled by transposition, for instance, by the transposition of doubt or of refutation. Even when we are dealing with the ultimately counter-intuitive power of transpositions, in formal logical and mathematical forms of reasoning, and even when reason uses transposition to dismantle common sense and unhinge our faith in naive realism, as Kant did with his transcendental analytic, there is always the underlying faith that this is what reason can do. It can transpose the known to what is as yet unknown, transpose proof to what is as yet unproven, just as it can, conversely, unravel this fabric of transpositions that we call knowledge or experience by transposing a doubt, by transposing the beginning of a decon-

struction. Yet this assumption, that everything is susceptible to transposition, is by no means as anodyne as it is intuitive.

1

Whether constructive or deconstructive, either way, transposition is allowed, almost unquestioned, to act at the heart of a daredevil dynamism with which thought-acts jump not only from one argument to another but also from one ontological domain to another. Transposition transgresses ontological boundaries when, for instance in geometry, it jumps from the measure of land to the configuration of the stars, only to step from the empire of the senses into the realm of pure ideas, and from its graphic visualisation to its purely mathematical formalisation. Transposition also propagates from the question of *what is* to the question *how we know about it*; that is, it steps freely from the level of ontology to that of epistemology.

The process of transposition thereby irrigates the complex and conflicting edifice of a culture's theory and praxis with comparable and hence communicable structures and problems. Yet while the discovery of analogical schemas certainly feeds into the idea of transposition, is analogy all that is at stake here? For if you pause at Brehier's curious statement on the role of transposition at his fleeting but crucial mention of it in this key methodological and historical moment, you chance upon the coronary artery of what is called Western thought, pulsing through antiquity to the Renaissance and the Enlightenment, and from modernity to postmodernity. That the idea of Western thought is misleading should go without saying, having inherited not only the preserved and translated ancient Greek manuscripts from the Arab-speaking world but also its systematic philosophical reformulations of ancient Greek metaphysical problems, not to mention its scientific and mathematical advances (Benmakhlouf 2013). And yet it is true that with the advent of Greek philosophy a singularity occurs in the history of thought. A bifurcation that henceforth rattles through the history of thought, a bifurcation more profound than the political and religious divisions between East and West, or even North and South, a bifurcation that will henceforth marble culturally diverse intellectual worlds with a new antagonism: the rational use of transposition inaugurates the antagonism between myth and reason, and between faith and reason. This antagonism between the rational and the mythological or theological use of transposition is not specific to Western thought, but it is no doubt fair to say that it is in the early hours of Greek philosophy that we first see this schism, rupturing the world of wisdom and reason into different epistemic, rather than geographical, tectonic plates.

Plato's transposition of the dialectical method to the core of philosophical thinking can indeed be said to consolidate a bifurcation from within a more ancient tradition of transposition, a bifurcation that will accompany the ceaseless flow of transformation of thought that henceforth pulses through all cultures it touches. Before philosophical transposition, myth and religion long narrated the reproduction of a perennial cosmos enfolding the human

order according to various schemes of transposition, ranging from incantation to astrology, from oracle to prophecy. By transposing the human order to the cosmic order, an otherwise inexplicable sequence of events was harnessed through anthropic identification. In temporal terms the creationist principle transposes the consequences of an origin of the world onto its future. The teleological idea of an intelligent design, conversely, transposes the future onto the present, by way of a retrojection of the consequences of a final cause, determining fate and predestination (in *Oedipus Rex* no less than in relation to God's will, where "everything happens for a reason"). This temporal transposition of an already determined future onto the present could be said to persist in a post-Enlightenment, pseudo-rational global capitalism, where mythological modes of transposition still compete and interlock with rational modes of transposition. Mythological transposition now takes the form, for instance, of a tacit faith in the self-regulation of the "free" market economy, of a waning, but still powerful, teleological sense of progress toward future fulfilment through economic growth, and, conversely, of latent scenarios of climatic apocalypse and Armageddon.

Plato's transposition of the dialectic to the level of philosophical inquiry marks a bifurcation from the hitherto mythological and religious regime of transposition. Two competing principles of transposition henceforth interlock in competition with one another and are sometimes indistinguishable from one another. Myth certainly persists through its transposition onto new discourses, and religion clearly retains the power to shape modern politics and public discourse, from Tony Blair and George W. Bush's crusade to the religious feuds and renewed dogmatism that enflame the conflict between Muslims, and between Muslims and Christians in the Middle East, in Asia, Africa, and in Europe. It is thus not in holy isolation, but in perpetual conflict with the mythological and religious regimes of transposition, that the methodical use of dialogical reason, with its basically open concatenation of question and answer, henceforth transposes the order of reason to the order of the cosmos.

What emerges from this bifurcation is the difference between the perennial cyclical order of myth and religion, wherein all movement and change is subsumed under a principle of identity, and the historical order of conceptualisation and invention, which in turn generates new orders of reason. Was it not on the basis of the transposition of the dialectical method, going back and forth between question and answer, but also between metaphysical and empirical problems, that the royal path of reason could open up a horizon beyond myth and religion? A path that has led, *mutatis mutandis*, to the hypothetico-deductive methods of the modern sciences, by using "an idea or method in a different situation from the one it was originally developed in," as the dictionary definition of transposition puts it (*Macmillan Dictionary* 2017).

History has shown that a single act of transposition may provoke a sudden restructuring of an entire field of knowledge, that the transposition of a new theoretical or experimental insight can provoke a scientific revolution, or even spur on the invention of new fields of knowledge. Dmitri Mendeleev for instance, was able to consolidate the eclectic observations of chemical elements

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as a unified science on the basis of a transposable pattern of atomic weights by inventing the periodic table. He thereby also recast our understanding of physics, even laying the foundations for sciences of the future, like molecular biology, and accurately predicting the future discovery of hitherto unknown elements.

While the emphasis in myth and religion is on a principle of identity that cannot surrender to the plurality of newly arising ordering principles, and can only suffer them as an objectionable alterity, the history of the philosophical method of question and answer generates an open system of transposition, whose emphasis is henceforth on the tipping points that it grudgingly generates from one school of thought to another and toward their proliferation into a plurality of regimes of transposition, as so many ways of reasoning and doing. Where these tipping points are denied and philosophy or science proclaims itself the protagonist of a logic of endgames and absolute principles of truth, to which all else must be reduced, myth is never far away.

2

A curiously underexplored notion, barely a philosophical concept outside its strictly technical definitions in mathematics, music, or biology, transposition is thus clearly an underestimated key to the various processes of our understanding (epistemology) and to fully gauging the relation between these transposable processes of the understanding and the constructive and deconstructive aspects of our presence in the world (via the use of transpositions in the arts, technology, and technics more generally).

Transposition mediates between different domains of theory and praxis, this much is clear. It establishes or reveals points of communication between ideal or empirical entities that hitherto appeared unrelated. And each form of transposition has a cultural history that makes it familiar to us. It is the fruit of a methodological body that enables us to practise it, it has a technical history at its heels that allows us to follow the process and transformation of mediations step by step. However, the simple fact that transposition partakes in everything we do—its familiarity, our praxis and our knowledge of its manifold histories and intricate technicalities—does not answer the question, What does it mean to transpose an insight and experience, so that it illuminates and structures that of which we were ignorant or which seemed haphazard?

While we rightly laugh at people who present themselves as “mediums” between the living and the dead, we trust unreservedly in the mediation of an idea between orders of reality that are as heterogeneous and irreducible to each other as the ideal and the empirical. The absolute idealist who, like Fichte, postulates the identity of the idea and being, and the reductionist who eliminates the very idea of consciousness as a folk-psychological idea in favour of causal explanations of physical or bio-chemical processes, both eschew this problem of transposition as a mediation between ideas and experience. While many sneer at the extreme positions of the absolute idealist or the radical reductionist, few can answer what kind of a medium the transposition is, if it is to

mediate between the ideal and the empirical? If the medium is not understood as a milieu—a middle term such as an “ether” that acts as the element wherein all that *is* and all that *can be thought* can be transposed—then what is it that facilitates transposition?

A more recent understanding of *situative* and embodied forms of cognition, coming from behavioural psychology and the cognitive neurosciences, shines a light on the act of transposition from a different angle. Rather than putting the idea or concept in the driving seat of cognition, context and physiological factors are said to generate and drive cognition at a preconscious level. In this praxis-driven understanding of the creative process, the act of dancing generates choreography, the act of writing or drawing generates the idea or schema, and the conversation produces the argument. Also, certain approaches to the history of science and technology embrace this situative and embodied intelligence, whereby laboratories become materialised or embodied thoughts, which in turn act as a set of conditions enabling some theoretical and practical developments and precluding others, and always in the midst of a social praxis of science that facilitates certain activities and suppresses others (see Hörl 2011).

Yet while it is more intuitive to see bodies and situations act as mediators that enable the transposition of a practical to a mental schema we are still no wiser about the nature of its mediation between thought and praxis. Transposition, it seems to me, is no less reducible to a purely material and mechanical transduction of structure, of which our ideas (and mental schemas) would merely be an involuntary expression (since this process of transposition also lends itself to purely formal speculation and prediction of new material conditions), than it is assignable to an absolute spirit that would imbue experience with sufficient coherence to warrant infinite transposition (the crisis of foundation of mathematics and logic at the beginning of the twentieth century has revealed a fundamental schism between thought and intuition, making the transposition between reason and experience a perillious act). The least we can say is that, far from being as simple as it is intuitive and self-evident, the humble notion of transposition reveals a polymorphous capacity to correlate and transform *both* the ideal and the empirical. It traverses the whole spectrum of human endeavour, interlocking its manifold practices, criss-crossing back and forth between experience and theory, between the necessity of reason and the possibilities of the imagination, correlating spontaneous and formal language, improvisation and method.

Now, why, despite its fundamental role in cognition and praxis, is this apparently simple act of transposition itself rarely called into question? For it ought to be. It rests on a belief that is as fundamental as it is unspoken, as logical as it is political, as aesthetic as it is ethical: the belief that a structuring principle can be extended indefinitely over positive (experienced) and speculative (metaphysical) reality. The assumption on which the very possibility of transposition rests is that of an indefinitely valid structuring principle. Not that everything transposed must submit to the same structure, but that all reality can be subject to transposition because of a latent possibility of structure in general, such that

we can interconnect, at least in principle, all that is and all that can be with all that can be thought.

Does not the prized erudition of the Renaissance man and, conversely today's fascination with specialists imply the transposable correspondence between all things and all ideas, which would allow society to transpose knowledge from one domain to another, rather than falter in the autodidact's infinitely sprawling accumulation of haphazard observations and ideas?

Without this belief in the potential for transposition, all methodical endeavour to establish knowledge and ground new practices would be vain and all efforts to construct a new domain of knowledge or practice would succumb to radical scepticism. There can be no notion of process where the purely haphazard iteration of events rules. Even scepticism, insofar as it still inhabits a discourse of rational doubt, would have to step aside and make room for unreasoned nihilism or mysticism. For where chance rules, transposition (even the transposition of doubt) is condemned to be an errant hit and miss, a surrealist thought-association at best, and at worst a conservative absolutist ideology (imposing itself against absolute uncertainty, wilfully, yet without legitimacy or reason). Transposition, when seen as more than a merely facilitating, connective word, thus reveals a fundamental, if implicit, postulate of all theoretical and experimental endeavours: where the fundamental belief in the transposable nature of structure in general, or logic in particular, cannot be proven, as it would be when it is axiomatic, nor at least consolidated empirically (by experiment and proof of repeatability), there the fundamental function of transposition cannot be anything other than a belief. Quentin Meillassoux (2009, 82) even goes one step further, discarding also empirical proof, when, in defence of the radical and necessary contingency of the laws of nature, he remarks, "So long as we believe that there must be a reason why what is, is the way it is, we will continue to fuel superstition, which is to say, the belief that there is an ineffable reason underlying all things. Since we will never be able to discover or understand such a reason, all we can do is believe in it, or aspire to believe in it."

To even contemplate the possibility of transposing an idea, a logical, practical, or even poetic sequence that makes a minimal degree of sense, it must be assumed that either empirical reality or reason inherently lends itself to such transpositions, and consequently that (ideal or material) reality universally lends itself to a principle of structuration. Such "lending" implies that whatever so lends itself to the structuring dynamics of transposition (the world, culture, our mind, our brain, this poem or piece of music) must necessarily already harbour a virtual reservoir of all possible structures within which thought and practice can glide from an explicit to an implicit reason, by way of deductive transposition, jump from one observation to the next, via inductive reasoning and experiment, or stride from a possibility to an actuality, by projecting and executing the inventive transposition of a sequence of thoughts and actions. It is on the basis of this assumption that the principle of transposition always explodes the initial frame of reference (the topos whose schema is being transposed) and engulfs neighbouring spheres of knowledge and practice.

The only requirement for this belief to hold up is that the thinker, engineer, or artist finds the key to the right conversion—in other words, that she or he has sufficient mastery of the idea, structure, or schema to be transposed, and of the domains of transposition, in order to handle with subtlety and confidence the permutations required to transpose without distortion, and to transform without thwarting the power of this transposition with erroneous associations that lead elsewhere. The key to the mastery of transposition is thus a question of method. Truly, the very idea of method rests on the assumption that what works in one context can be applied to varied contexts by means of a methodical transposition and its context-specific permutations. Method, hence, is another word for transposition. It is how any given transposition works.

Logic, arithmetic, algebra, metaphor, and faith, whatever the structuring principle implied in the act of transposition, all rely on the assumption that everything they apply themselves to either can be actively *ordered* according to the scientific method or religious dogma (thereby constructively transforming disorder into order), or will *reveal* a pre-existing or virtually possible order that retrospectively confirms the validity of the scientific method or of religious dogma. Without the tacit assumption of such a reservoir of all possible structures, of a latency of structural potential only waiting to receive articulation through the act of transposition, we would be in the absurd (or theological) dilemma that each thought-act involving transposition must invent the world from scratch. Without it our cognitive and empirical systems necessarily frazzle out into haphazard, absolutely contingent concatenations, ephemeral thought-associations whose worth cannot, ultimately, transcend superstition. As Meillassoux argues, even our faith in reason, or at least in experience, fuels a form of superstition in an ineffable reason underlying all things.

3

When Brehier placed the idea of transposition at the epicentre of a turning point in thought, namely at the consolidation of philosophical reflection in the dialectical method, the question he left open for us is, what is transposition? What does the idea of transposition imply about the constructive relation between question and answer? What does it prove about the constructive relation between the ideal and the empirical status of reality and of our thought constructs?

To get a better handle on the as yet mysterious power of transposition, on its power to transgress the boundary between the domains of the ideal and the empirical, it is worth noting that the idea of transposition is not simple but designates a range of operations and structural manipulations with different objectives. What can be said is that a transposition is, in its most basic definition, the procedure of shifting the relative position of a set of elements or of a schema of operation to a different position within the same entity or system, or to project the structural schema of these elements or a dynamical schema from one context onto another. The idea of transposition is most commonly illustrated with the transposition of a set of musical notes to another key, or

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to another pitch. The translation of a text from one language to another is another example. Relevant is that transposition designates a constellation of elements (or a schema of operations or instructions) that is transferred, structurally unaltered, or that is changed during this operation according to a codified permutation. Transposition thus results in the emergence of a structure analogous to the initial schema. The following permutation of numbers and letters is a one-to-one correspondence, also called a bijective or bijective function, which is used in mathematical set theory to analyse the characteristics of the elements of a set (see figure 13.1):

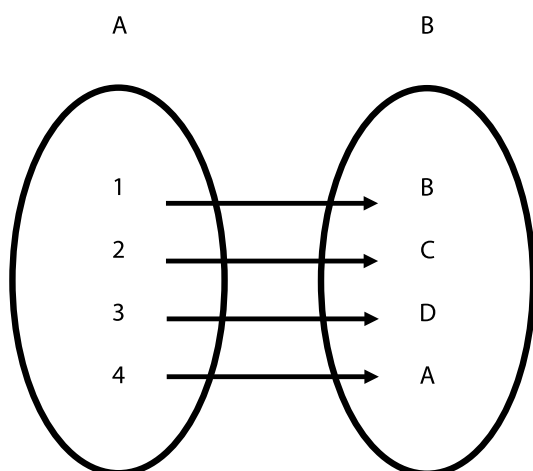


Fig. 13.1

Far from merely mirroring a structure or schema, the process of transposition thus also participates in the generation of new structures, with varying degrees of complexity depending on the rules of transposition employed. Some transpositions apply a principle of variation, such as a change in the order, position, or sequence of elements, such as when the letters “two” are swapped to spell “tow” in an anagram, or when one swaps one or several elements in a sequence of numbers, for instance when one transposes the numbers 2 and 5 from the sequence 123456 to 153426 with all others staying the same. This substitutional transposition of (sets of) elements is what is also called a “permutation.”

In algebra the transfer of any term of an equation, from one side over to the other side of the equation with a corresponding change of the sign, is also called a transposition. In propositional logic, similarly, transposition is a rule of replacement of a segment of an expression by another, for instance when one can infer from the statement “A implies B” that “Not-B implies not-A.”

However, it is not only a structural or dynamical schema that is reproduced or modulated in transposition. What is modulated is, more fundamentally, also the boundary between the known and the unknown. Transposition drives a conceptual or practical schema forward to cover new ground, to occupy the unknown X in a particular equation, just as it does, differently, in a dialectical

process of question and answer, or in an experimental or improvisational use of transposition.

Logic, arithmetic, algebra, geometry, and even metaphor can be said to arise from a transposition of a known schema to the unknown, supposing and then testing, via theoretical or empirical proof, but also via critique or performance, whether and how known schemas are viable beyond the current bounds of knowledge and experience.

According to Gilbert Simondon, technical schemas have determined the provision of major sources of transposable cognitive schemas. So for instance the Aristotelian idea of a hylomorphic relation between energy and matter is said to have owed much to the model of brick-making in Greek antiquity. This technical example, where energy moulds presumably passive matter, came to serve as a metaphysical paradigm of ontogenesis. Its schema of active form informing passive matter could be transposed not only to Aristotle's empirical exploration of the physical world but also to metaphysical and moral considerations.

Simondon (2009) also reminds us that the Cartesian method and the system of rationality it implied were indebted to the transposition of a technical schema onto the presumed process and structure of reason. In the Cartesian method rational thought espouses the basic principle of the simple machine, wherein a moving power and a resistant power are posited as identical, such that each step in the mechanical process is a transfer of energy leading towards their equilibrium—as in the example of the counterweights and wheels of a clock. The mechanical concatenation of steps, and by analogy the steps of reasons, are the mental transpositions of mechanical links in a chain. The power of Cartesian rationalism lies in a transfer without loss, in which even the last link is connected without loss, via all others, to the first link, which in turn is fixed in its foundation. The axiomatic certainty of Descartes's *cogito ergo sum* is, similarly, analogous with the solid foundation of a house, wherein what is *certum quid et inconcussum* (certain and indubitable) is transposed to each layer up to the roof (Simondon 2009, 18).

Simondon also points out that the cybernetic schema of automated self-regulating machines with feedback more recently provided a new basis for the transposition of a new schema of rationality. Cybernetics, according to Simondon, provided another great generalisable cognitive schema. On the basis of the mathematisation of automatised processes of regulation in machines with feedback mechanisms, it proved fruitful in any domain dealing with dynamical processes. Not only computer science but also for instance the study of meteorological or ecological processes lend themselves to the transposition of the cybernetic paradigm. Each of these technical schemas, according to Simondon, provided reason with a principle of intelligibility that was endowed with a "latent power of universality" (Simondon 2009, 17).

Simondon here makes an important point about the orientation of scientific thought resulting from the mechanical paradigm of Descartes's method: the transfer of ideas, in the ideal realm of *res cogitans*, works like the analogue transfer in *res extensa*, on condition that it involves processes without loss of energy. Today one could say that the transposition of a technical paradigm onto reason

implies that each step of reason is a transfer without noise. In other words, the scientific and philosophical validity of a schema is bounded by the idea and logic of what we would now call “noise-free” transfers, which can be understood as unambiguous and fully reversible chains of reasoning.²

Let us now pause at the consequences for the very idea of transposition, when both rational and technological models open up to the idea of processes with “noise.” The recognition of entropy as the loss of available energy has come to inform a subtler scientific paradigm than the Cartesian and Newtonian mechanical paradigm. Non-classical mechanics, including quantum mechanics, are possible because of their acknowledgement of the fundamental role played by entropy. “Noise” has become a transposable metaphor for entropy, and the constitutive presence of “noise,” over and beyond its negative connotation as error or perturbation, is now well established not only in non-classical mechanics but also in many other fields, notably in evolutionary genetics. More generally any statistically observable phenomenon now incorporates an understanding of “noise” in terms of partially unexplained variation from the average.

The rise to prominence of entropy and its metaphor “noise” signal an epistemological shift from the Cartesian paradigm of classical mechanics to the paradigm of non-classical mechanics, of stable equilibria to systems far from equilibrium and systems with feedback and noise. This shift, however, is not a “fait accompli,” but a messy and lengthy historical process engulfing the entire system of transpositions that formally and informally characterise our “episteme.” In the process also the humanist importance given to the individual *cogito* crumbles away at the edges and is increasingly shot through with a pluralised notion of cognition. Indeed, individualism or the rational subject is so shot-through with statistics, with cultural relativism, with neurocognitivist determinations and posthuman technological extensions that its metaphysical essence begins to pulverise.

Within this protracted shift, where we hold on to the old mechanics of the individual and reason, while throwing ourselves into a new, distributed and multi-platform intelligence, another bifurcation, similar to the one provoked by Plato’s transposition of the dialectic method, goes almost unnoticed. This bifurcation will be as monumental in its consequences as the ancient bifurcation between the transpositions of myth and reason. It splits in two our understanding of entropy and the lineage of its multiple transpositions: information theory derives its concept of information from the same mathematics as cybernetics, but instead of assigning low probability only to noise and error, as cybernetics does, the unpredictability of entropy instead becomes what characterises the novelty of information, leading Claude Shannon to adopt the term “information entropy.” The bifurcation I am talking about here is that between a conservative episteme whose transpositions aim to secure what is predictable

² Unfortunately, in this particular text Simondon did not set himself the task of elucidating the role that noise came to play in the development of cybernetics and indeed in information theory, although elsewhere he does give us plentiful resources to think about noise in terms of margins of indeterminacy.

against “noise” and an episteme whose transpositions, on the contrary, follow from a concept of information essentially inclined towards unpredictability.

Information theory of course has the job of securing the information content of a message against noise, and “information entropy” is a concept that is limited to the domain of signal transfer, ignoring explicitly all aspects of “meaning.” But this must not distract us from the *coup d'état* that is implicit in the concept of “information entropy,” by way of the fundamental principle that information is unpredictable if it truly informs us—making the difference between information and “noise” a purely a posteriori difference, since one cannot know in advance, absolutely, whether something unpredictable will reveal itself to be significant.

A new understanding of information and noise lies dormant in the technical enclave of information theory, but it may yet pave the way also for a new paradigm of transpositions, where cognitive schemas acknowledge the importance of “noise” in the form of a greater openness to complexity and non-reductive thinking. Any such greater inclination of transpositions towards openness, toward unpredictable variation, will, in turn, resonate throughout culture, if it is true that the transposition of known schemas to unknown fields spreads analogical relations like wildfire, from one domain of thought and praxis to another, generating new disciplines along the way, and weaving together ever more tightly the various disciplines of thought and praxis. The compulsion towards a coherent whole of knowledge and experience, which transposition implies by way of the interrelatedness of its theoretical and experimental endeavours, may thus finally evade the risk of producing a proto-fascist principle of identity.

For the synergy of transpositions, the fact that they amplify certain avenues of knowledge and co-opt other domains of knowledge and experience indeed acts as an “enslavement principle,” in the sense that the term was developed by the physicist Hermann Haken, to first describe the phenomenon of the phase-locking of frequencies in laser beams, and later to describe phenomena of so-called self-organisation in systems that maintain themselves far from equilibrium (i.e., from entropic dissipation of energy). While Haken himself made highly speculative observations about synergy in business management by transposing his theory of synergetics onto business models, there is a rich statistical sophistication in his mathematical and scientific concept of synergetics, one that leads to an understanding of noise as a potentially productive aspect of spontaneous self-organising phenomena in an open system far from equilibrium.

What is at stake is ultimately a fundamental aspect of reason. Serious consideration must therefore be given to the idea of transposition, because the consequences of our tacit assumptions about it also shape the social and political systems to which we transpose our modes of thinking. To understand the power of transposition is also to understand its compulsion to totalise any given system, and even all transposable systems, by propagating the structure of a particular schema ad infinitum. It is thus all the more important to understand also its openness, to understand transpositions as processes with noise, that is, whose

structural propagation is not entirely predictable, and to measure this openness against what Althusser called the “spontaneous ideology” of scientists (quoted in Macherey 2009, 23).

This gives us an indication just how decisive the present bifurcation between an information and a noise paradigm may be for the future of reason and its transpositions, a bifurcation arising from ripple effects of these two opposite inclinations toward entropy and its metaphor, “noise”: one edifying the negation of entropy or “noise” as the very principle of information (the concept of *negentropy* coming from cybernetics) and the other on the contrary defining information, rather closely to noise, as a measure entropy (“information entropy” in information theory).

It is within the very process of cognition that we must seek to understand this difference between transposition’s propensity to either propagate a reductive principle of identity or on the contrary to harbour, in its very process, non-linear and hence unpredictable developments.

Attempts have been made, notably in Gestalt psychology, to understand the process of perception and cognition in terms of the spontaneous transposition of percepts from one experience to another, based on “the similarity in structural relationships” (Harris 2012, 140). The invariance that characterises form in perception, which is said to result from the organisation of sense data, is attributed to the so-called law of transposition. James Harris argues that according to this law of transposition form is constructed in the process of perception and is deemed to arise spontaneously from a principle of fractal geometry in nature: “Much of nature is structured either perceptibly or subtly by the principles of fractal geometry. This structure is consciously or unconsciously embedded in our cognitive and emotional makeup” (ibid.). In other words, perception is inserted into a chain of transpositions that far outstrips the domain of perception itself. The idea is that perception participates in the transposition of elements, repeating themselves from the micro to the macro level in a holographic principle of nested self-similarity, such as the repetitive motif of a fern leaf. (Quite how dependent such a principle of self-similarity of forms is on intuition and its transcendental conditions is not addressed). Yet what is interesting is that Harris places the *Gestaltist* law of transposition in the context of a much later mathematical paradigm, that of fractal geometry. Fractal geometry is based on an iterative principle of form but breaks away from the principle of predictable self-sameness by way of non-linear (or chaotic) processes. Euclidian geometry had until then served as the basis for our general theories of perception, perspective, and optics. In the 1950s, Benoit Mandelbrot’s work on “noise” for IBM led him to a breakthrough that resulted in his now famous aperiodic (irregular, non-periodic vibrations) and non-linear (non-sequential, disproportional input and output) graphs—in other words, graphs of chaotic processes. It is this new form of geometry that we now call fractal geometry, of which one can find an artistic interpretation in the computer-generated fractal by Bernd Preiss in figure 13.2.



Fig. 13.2

Mandelbrot's fractal geometry has proven itself to be of extraordinary fertility in all empirical sciences, from statistical physics, meteorology, and geomorphology, to neurobiology, linguistics, and the social sciences. Far from gridlocking rationality and perception in a hall of mirrors, fractal transposition must be understood as a methodological driver of a process of structural and conceptual variation.

While it appears that the process of transposition should progressively structure all it touches, and thereby seize the world with the inherent order of its logic, both mathematics, no less than poetry, and the arts show that there is an excess inherent in this generic process, an excess that transcends even the totality of a hyper-large set of combinatorial possibilities, such as that of the alphabet. Transposition drives itself, *sui generis*, to the edge of reason.

Georg Cantor notably used mathematical permutations (such as bijective functions) to radically break open the idea of a simple infinity that hitherto sheltered mathematics from the philosophically absurd. A deceptively simple system of transpositions, his “diagonal argument,” published in 1891 (see Cantor 1892), enabled Cantor to prove the hitherto inconceivable idea of infinite sets of numbers of different magnitude; in his words, that there are “infinite manifolds [more technically: infinite aggregates] that do not mutually and unequivocally refer to the totality of all finite whole numbers $1, 2, 3, \dots, \nu, \dots$, or, as I like to say, that do not have the power of the sequence $1, 2, 3, \dots, \nu, \dots$ ” (ibid., 75, my translation).³ The necessity to introduce plurality into the hitherto simple concept of the infinite led Cantor to invent the category of *transfinite* sets with which to compare the magnitude or “power” of infinite sets.

Jason Claes (2009) explains Cantor’s diagonal argument by using the idea of a dictionary of infinite words, which perhaps incidentally places the problem of transposition within an altogether different lineage of transposable ideas, by shedding a strange new light on Foucault’s ([1970] 2002, xvi) mention of Jorge Luis Borges’s “Chinese Encyclopaedia” in *The Order of Things*: Cantor’s diagonal argument, if we follow Claes’s suggestion, creates an impossible dictionary, whose excessive rationality borders, systematically, on the absurd.

Claes makes Cantor’s argument beautifully intuitive, by describing the rules of permutation as “words” composed of the letters “m” and “w,” each “word” subject to a permutation of the two letters continuing infinitely to the right, starting with the first word (E_0), then the second (E_1), and so on (see figure 13.3).

Cantor’s proof is that if you take the diagonal (bold) as another “word,” and then generate a subsequent “word” by swapping the letters, such that each “m” becomes a “w” and vice versa, as in the word E_n , then you generate a word that cannot be part of the list according to a one-to-one correspondence, because it will differ in at least one letter from all other words in the list. It is this “simple” demonstration by means of a transposition that enables Cantor (1892, 75, my translation) to provide proof, even “independently of the consideration of irrational numbers,” that the set of all real numbers cannot be “represented” by the set of all finite, whole numbers.⁴

3 “unendliche Mannigfaltigkeiten giebt, die sich nicht gegenseitig eindeutig auf die Gesamtheit aller endlichen ganzen Zahlen $1, 2, 3, \dots, \nu, \dots$ beziehen lassen, oder, wie ich mich auszudrücken pflege, die nicht die Mächtigkeit der Zahlenreihe $1, 2, 3, \dots, \nu, \dots$ haben.”

4 “Aus dem . . . Bewiesenen folgt nämlich ohne weiteres, dass beispielsweise die Gesamtheit aller reellen Zahlen eines beliebigen Intervalles . . . sich nicht in der Reihenform: $w_1, w_2, \dots, w_i, \dots$ vorstellen lässt. Es lässt sich aber von jenem Satze ein viel einfacherer Beweis liefern, der unabhängig von der Betrachtung der Irrationalen Zahlen ist.”

E_0	—	m	m	m	m	m	m	m	m	m	m	m	m	...
E_1	—	w	w	w	w	w	w	w	w	w	w	w	w	...
E_2	—	m	w	m	w	m	w	m	w	m	w	m	w	...
E_3	—	w	m	w	m	w	m	w	m	w	m	m	w	...
E_4	—	w	m	m	w	w	m	m	w	m	w	m	w	...
E_5	—	m	w	m	w	w	m	w	m	w	m	w	m	...
E_6	—	m	w	m	w	w	m	w	w	m	w	m	w	...
E_7	=	w	m	m	w	m	w	m	w	m	w	m	w	...
E_8	=	m	m	w	m	w	m	w	m	w	m	w	m	...
E_9	=	w	m	w	m	m	w	w	m	w	w	m	w	...
E_{10}	=	w	w	m	w	m	w	m	w	m	m	w	m	...
E_{11}	=	m	w	m	w	w	m	w	m	m	w	m	m	...
⋮		⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
E_{\aleph_1}	≠	w	m	w	w	m	w	m	m	m	m	m	w	...

Fig. 13.3

It was thus through a simple modus of systematic transposition that Cantor could compare the magnitude or “power” of infinite sets of numbers and thus break open the hitherto simple idea of the infinite into transfinite sets of different orders of magnitude, allowing for comparative “powers” of infinite sets, which could henceforth be designated by “cardinal” numbers. The infinite set of natural numbers is the first transfinite cardinal number (\aleph_0 [aleph null]).

Now, if we take seriously the fact that Cantor could prove the plurality of infinities by means of a relatively simple method of transposition, and do so in opposition to the mathematical establishment thinkers of his time, then we must pause at the ubiquity with which the principle of transposition is used today—not only in science, but also in artistic practices, and even (and especially) advertisement.

The last sentence of Cantor’s article, namely that “the ongoing discovery of this field is the task of the future” (1892, 78, my translation),⁵ must resound as an ethical imperative to us, to identify and resist the totalising inclination that a superficial approach to transpositions and thinking by association may imply. If transposition is to drive a way of thinking that can embrace novelty and plu-

5 “Die weitere Erschliessung dieses Feldes ist Aufgabe der Zukunft.”

Figure 13.3. Reconstruction of Georg Cantor’s diagonal argument (1890–91, 75). After Claes (2009).

rality, rather than succumbing to the temptation of its totalising use, then it must be rethought, as a principle generating the excess of its own principle of identity *sui generis*.

CONCLUSION

Brehier perhaps accidentally pointed to the fundamental role of the transposition in philosophy, by revealing its importance to the dialectical method. Not just analogical thinking, as when the idea of the fisherman catching fish is transposed to that of the Sophist seducing gullible minds, but inductive, deductive, and dialectical modes of thinking can be said to rely equally on transposition. The very relation between theory and praxis, if we want to hold on to this distinction, requires a transposition from mental to otherwise embodied schemas. Yet the intuitive nature of transposition must not conceal the counter-intuitive consequences of the generative process it harbours, *sui generis*, in the great web of transpositions.

In a quasi-epidemic process, transposition engulfs the many ways of being and the many ways of knowing and thinking that characterise the diverse complexes we call cultures. Driven by a criss-crossing of transpositional trajectories, cultures aggregate into a complex overlay of transpositions, forming a pool of virtual possibilities of thought and experience in an episteme, or congealing habitual paths of transposition in the grooves of consensus of a paradigm. By virtue of structuring thought and experience, and not least by structuring the body of legal thought that characterises any culture, the transposition of precedents notably correlates the power to impose norms of collective action with the power to act in the face of uncertainty. These manifold transpositions resonate, synergetically in a master transposition, which is nothing other than the underlying faith that any culture places in its own viability. This master transposition can be God, just as it can be the idea of historical progress, or more recently the trust placed in the collectively beneficial self-organising prowess of the global financial markets. Yet history shows time and again the vulnerability of these master transpositions, their vulnerability to change and, in conjunction with change, also to critical inquiry.

It is important to look closely at the generative principle of transposition because our understanding of it corresponds to a belief and an inclination. It corresponds to the belief that all that is and all that can be thought can be subsumed under one structuring principle, without which there can be no transposition. It corresponds also to an inclination. By virtue of the ubiquitous role of transposition in theory and practice, this inclination irrigates the whole fabric of culture. Transposition can transmit a conservative investment in a principle of identity, interpreted as the preservation of the status quo, or a revolutionary investment in the quick-fire transposition of a transformation with unpredictable outcomes.

The non-linear dynamic that has been formally recovered at the heart of transposition, by Cantor no less than by Mandelbrot, may not transpire openly in a given praxis or theory, in terms of content or belief, indeed it may be con-

cealed by it, but it nevertheless ploughs away blindly at the space of theoretical and practical possibilities. It is what ultimately makes the future of theory and experiment inherently and radically unpredictable.

Given the philosophical, political, and ethical implications, it is startling that the idea of transposition is treated, generally, as nothing but a tool-concept. And yet the question regarding the ubiquity of transposition is of capital importance. It is of capital importance not only because it works, and because every culture is perhaps the work of a grandiose ensemble of transpositions, but also more importantly because it invariably falters and fails to constitute a fully resonant totality, in which the cosmos and culture would form a symphonic transposition of knowledge and praxis, of ethics and morals. While transposition fundamentally unites hitherto separate endeavours, from rhetoric to fishery, from agronomy to astronomy, and so on, the diversity of fields that transposition has invested has not yielded a unified field of knowledge and action. And while the vector of transposition (the direction and speed of development of knowledges it enables) domesticates time, by ordering the past according to a set of narratives and logics that anticipate the future, it does not make the future itself predictable. There is no shortage of projects to cast the complexity of the world into a transparent transposable whole, whose frontiers would border the domain of lost souls or unexplored market opportunities. And yet the world is a mess, and in all likelihood it would be hell itself if any of these master transpositions were to prevail, synchronising all others. Indeed, the world currently is hell on earth wherever economic, political, and religious ambitions of total transposition struggle for sole domination.

If the bifurcation in the dominant modes of transposition of our time, introduced by our new conceptions of information, noise, and fractal geometry, is taken into account, then transposition can be understood as a method of permutation, whose degree of freedom ranges from the formal rules of axiomatic systems to the poetic license of metaphor, and whose complexity reaches into the most advanced domains of non-Euclidian geometry, no less than into the informal complexity of cultural semantic systems. Within this range transposition can be understood as a generative way of reasoning, thinking, and indeed doing and making. In this most basic sense, even the alphabet is a set of elements whose permutation powers the infinite linguistic prowess Wilhelm von Humboldt speaks of when he says a language “must . . . make infinite employment of finite means” (Humboldt 1907, 98–99, as translated in Humboldt 1999, 91).

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Transduction and Ensembles of Transducers: Relaying Flows of Intensities

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O. INTRODUCTION

Transduction is Gilbert Simondon's key concept for understanding processes of differentiation and of individuation in several fields, including scientific disciplines, social and human sciences, technological devices, and artistic domains. Originating in the sciences and crucially developed in its philosophical implications by Simondon, *transduction* refers to a dynamic operation by which energy is actualised, moving from one state to the next, in a process that individuates new materialities. This chapter appropriates this concept for musical practice, seeking to establish a foundational conceptual layer for a broader research effort that crucially includes artistic practice—both composition and performance—as its starting and end points. After an introductory depiction of what transduction might mean for a music performer, this paper focuses on the presentation of different definitions of transduction, mainly stemming from Simondon himself, but including two further extensions: one to Deleuze's concept of *haecceity* (and via Deleuze, to my own *micro-haecceity*), and the other to Brian Massumi's notion of *corporeality*. Keeping in mind the potential of these definitions for the making of music, this essay explores eight different, yet complementary, ways of thinking through notions of transduction, which are presented in a growing scale of complexity from the incandescent light bulb (3.1) to the intricacies of decision-making in living organisms (3.8), passing by questions of time and temporality (3.2), thermodynamics (3.3), information theory (3.4), a redesigned theory of haecceities (3.5), Riemannian topology (3.6), and corporeality (3.7). All these topics are presented here, in short, as opening gates to wider fields of inquiry, suggesting future avenues of research, rather than claiming to offer finished thought.

Transposition generally refers to operations by which a set of data or phenomena is transferred or transcoded from one medium or system of coordinates to another one(s). The data in the starting system and the data in the target system are different, but both are observable externally, and both are measurable and quantifiable. Data are *trans-posed*—that is, they are moved from one place to another one. Transduction, on the contrary, describes energetic

processes mainly characterised by the absence of predeterminism and by the unpredictability of future results. Distinct from “in-duction” and “de-duction,” “trans-duction” takes place *in medias res*, inside the transfer process itself. In this sense, transposition can be considered as one particular case of transduction, one that deals with measurable and quantifiable phenomena that can be observed externally. Thus, transduction has the potential to provide a broader perspective on transposition.

1. RELAYING FLOWS OF INTENSITIES IN MUSIC

Imagine a young pianist just about to go onstage to perform Brahms’s Piano Concerto No. 2 in B \flat Major, op. 83. The performance will start in a few minutes, the musicians of the orchestra are already seated in their playing positions, the conductor will soon touch her shoulders as a sign to go onstage, and our soloist’s mind is probably fully concentrated on the first two pages of the score, on the piano’s dialogue with the horns, followed by the daunting cadence which leads to the entry of the full orchestra. In this particular moment, in the very last seconds before going onstage, the whole concerto—its overall form and all its pitches, rhythms, instrumental colours, dynamic ranges, tempi, pedalling, fingerings, gestures—is vividly present in the pianist’s body and mind, being concretely felt as a huge field of *virtuality*. This virtuality relates to a *virtual* that is not to be understood as a kind of virtual reality, but, on the contrary, as something absolutely real, something that exists and that is perceived in this very moment—just before starting the performance—as tension, as an infinite reservoir of *topological singularities*, some of which will happen, and which will start happening as soon as the conductor beats the first bar. For a musician, this is one of the best situations in which to feel, to grasp, and to understand the complex relations between the Deleuzian concepts of the *virtual* and the *actual*.¹ Everything a musician knows and feels about a given musical work is viscerally present in such moments as highly energetic clouds of potentialities. As soon as the pianist starts performing—physically touching the keyboard, attentively listening to the orchestra, punctually looking at the conductor—all those potentialities go through a process of synthesis, leading to the radical here-and-now of every single fraction of a second, which one by one, one after the other, in closest vicinity and rapid pace, are producing concrete *actualisations* of forces and materials. Once the concert officially starts, what our young pianist and the listeners are experiencing in real time is the passage from a “just already” constituted assemblage of forces, intensities, and energies to another one, still in the process of being constituted. Something—a force, a

¹ The terminological couple virtual–actual is central to the philosophy of Gilles Deleuze, being present in his books and essays since his first published texts on Bergson in 1956. *Actual* and *virtual* describe the fundamental categories of Deleuze’s differential ontology, one that “starts off with ‘differentiation’ (virtual structure) and then moves to ‘differentiation’ (the genesis of actuality)” (Satoor 2017, 46). According to Anne Sauvagnargues (2003, 22, my translation), “The actual designates the present and material state of things, while the virtual refers to everything that is not currently/presently here (including incorporeal, past, or ideal events).” It is the exchange and communication between the actual and the virtual that enables a dynamics of becoming as different/ciation and creation.

signal—is being transmitted from one instant to the next, at light speed, without any break or loss of energy. A continuous process of differentiation is happening and taking place in front of our eyes and ears. This process happens “operationally”: something is at work, something is emerging from a vast field of pre-individual and impersonal tensions, which constitute the “metastable horizon” of the piece and of the performers, an operation that leads to the emergence of new tensions, which are generated in the radical here-and-now of the performance, without univocal determinism or absolute predictability. At the interstices between what the performer intends, what really occurs, and what is intended immediately afterwards, an impulse of virtuality runs from one actualisation to another. Flows of intensities unfold throughout time in the specific here-and-now, in the highly accelerated and hyper-energised *ere-whons* of music performance. It is this particular process of musical making, communication, transmission, and emergence of intensities that I propose to call “performative transduction”—appropriating for musical practice the term introduced by French philosopher of science Gilbert Simondon in the 1950s.²

Simondon’s overarching goal was the development of a dynamic theory of technology, replacing ontology with ontogenesis and structure with embryogenesis. His effort resonates with, and has been inspirational to, my own ongoing work towards a dynamic theory of musical works and their performance. Simondon’s concept of transduction is extremely promising for musicians because it seems to have the potential to afford new ways of conceiving, problematising, and doing activities on the basis of intense temporal processes, such as music performances and compositions. Both in the moment of composing or in the act of performing, but also while simply reading a score or studying a sketch, several transducers and transductive processes can be identified. The main transducer (interface), however, is a human body (notating a score, playing an instrument, vibrating vocal cords), a complex living organism inhabited by diverse layers of information and by innumerable drives, which, working together, shape the actual rendering of musical events. Considering bodies, instruments, body-instruments, scores, recordings, concert halls, and audiences as different types of transducers, this chapter aims at laying the ground for a novel approach to music-making, defining an experimental regime characterised by ensembles of transducers and their respective relaying of affects and intensities. Such an approach enables and enhances a decisive shift from the static opposition between “work” and “performance,” between “score” and expected “image of work,” between archetypal generalities (“the work”) and contingent particulars (“a performance”), to a zone that is energetic and molecular.

The appropriation for music of Simondon’s concepts and terminology further enables an urgently needed move away from historically situated, but problematically still operative, formalistic and subjectivity-based approaches to music. On the one hand, music theory is dominated by formalism, dialectic

2 The concept of “transduction” is so central to Simondon’s thought that it is present in innumerable passages of his writings. Its first official appearance in a text is probably in the introduction to Simondon’s doctoral thesis, “L’individuation à la lumière des notions de forme et d’information” (see Simondon [1954–58] 2013, 32).

tically separating form from matter (hylemorphism), focusing on fixed structures (*res extensa*, which remains the preferred field for analysis and historiography) while underestimating energetic potentials (*res intensa*, which constitutes the working habitat of composers and performers), and ignoring the energetic conditions and entropic processes that lead to the shaping of any given musical form and expression. Formalism relies more on moulding—“an abstract conception that opposes matter to form” (Sauvagnargues 2016, 70)—than on modulation—“a continuous assumption of form between properties of material and the concrete action of form” (ibid.). In this sense, it is important to stress that this chapter is part of a larger effort to investigate *genetic operations*, the *processes of individuation* of musical works, and a *new image* of musical objects based upon the notion of multiplicity, an effort that ultimately criticises generic structures or archetypal images of musical works.

On the other hand, questions about subjectivity have a propensity to ignore or exclude the non-human component of any transductive process. Studies of subjectivity tend therefore to be *human, all too human*. Any individual involved in a performance is modulating through a complex set of disparate elements, solving and resolving on the spot diverse disparate inconsistencies of the materials, operating instant synthesis (actualisations) out of a cloud of pre-individual singularities (the virtual) that really exist. As Simondon demonstrates, the individual, “whether it concerns a subject or a being of any kind, is never given substantially, but is produced through a process of individuation” (Sauvagnargues 2016, 63). Transduction permits a perspective in which musical objects and music performers are individuated at the same time, liberating the works from structural fixedness and the performers from psychological subjectification. Instead of operating out of a centralised, controlling consciousness, the performer appears as the link between the impersonal and pre-individual diversity of the virtual components of any given work and its actualisation in sound and gesture. Beyond subjectivity, the notion of transduction enables the inclusion of a non-human perspective on the processes of relaying flows of intensities in music.

2. SIMONDON’S CONCEPT OF TRANSDUCTION

Simondon defined transduction in several ways; but, in short, transduction is a process whereby a disparity is topologically and temporally restructured across some interface or ensembles of interfaces. Thus it contrasts with the Aristotelian, hylemorphic scheme, which is based upon the dualism form–matter and upon the pre-existence of pre-formed individuated terms, Simondon radically focuses on processes of “in-formation,” claiming that any event or any individual is not just a result, but a milieu of individuation.

Transduction is Simondon’s key concept for understanding processes of individuation in a variety of fields: scientific disciplines such as physics, biology, histology, ethology, crystallography, psychology; technological devices such as motors, electric tubes, lamps, telephones, mills, turbines, and cars; and artistic domains—an aesthetic extension of his system, which Simondon sketches in

the third section of his 1958 thesis, “On the Mode of Existence of Technical Objects” (see Michaud 2012, 121). The reasons for such impressive versatility are certainly many, and of different natures. First, Simondon’s project is radically oriented towards a logic of creation: things and subjects are never considered as pre-constituted, and the “good form” is never stabilised (see Garelli 2013, 16), remaining suspended between structure and energy in a metastable balance. Second, the very notion of transduction thematises the event, insisting on the emergence of the new, on those components of any agency or assemblage that have the potential to change, to disrupt habits, stratifications, or any other forms of rigidity. Third, by focusing on energetic processes, transduction carries a vitalist dimension, generating sequences of becoming, a becoming-intensity, whereby intensity itself can be defined as the creative vector of the dissolution of individuation: becoming-something is not becoming-*this*, but always becoming-something-*else*. All these aspects reinforce a modal perspective on the world, opposed to rigid essentialist or substantialist accounts, making the notion of transduction easily applicable in any given field of inquiry.

3. SIMONDON’S VARIOUS DEFINITIONS OF TRANSDUCTION

Every philosophical concept has its own precursors, predecessors, lineages of formation, and different definitions. Concepts are operative in specific contexts, and they go out of use, disappear for a while, and reappear later, in a different context, relating to different sets of problems. Like cells, organisms, and machines, concepts also have their own embryogenesis, being the modal and temporary result of an individuating process. They also partake in the virtual-actual couple, and they also participate in transductive operations. On 10 November 1981, during the first session of his seminar on cinema, held at the University Paris VIII, in Vincennes, Gilles Deleuze made an important observation about the “thickness” of concepts:³ “A philosophical idea is always an idea with diverse layers and levels. It is like an idea and its projections. I mean, it has many levels of expression, of manifestations. It has a thickness. A philosophical idea, a philosophical concept, is always a thickness, a volume. One can take it at one level, then at another, and still at another one; that is not contradictory. But the levels are very different from one another” (Deleuze 1981, 0’55”–1’26”, my translation).

Simondon’s concept of transduction is a good example of such “thickness.” Simondon himself offered diverse definitions of transduction, illuminating every time a particular perspective, or addressing discipline-specific examples and problems. In what follows, I present, briefly, some of the different definitions of transduction provided by Simondon. Additionally, I present two further extensions: one to Deleuze’s concept of *haecceity* (and via Deleuze, to my own *micro-haecceity*), the other to Brian Massumi’s notion of *corporeality*.

³ Deleuze was about to present Bergson’s concept of “intuition,” and the sentence I am quoting here was a kind of spoken footnote that prepared the audience for the density and thickness of Bergson’s concept.

3.1. Discharge (potentiality)

On the simplest technical level, Simondon defined a transducer as a continuous electric relay that operates as a modulable resistance between a potential energy and its concrete place of actualisation (see Simondon [1954–58] 2013, 82). In this simple and eminently technological definition, transduction is presented as a *discharge* of energy from a field of potentialities toward a particular emergence of an event. Significantly, in this definition, the transducer doesn't belong to the domain of either the potential or the actual energy: it works as the mediator between these two domains, as the fringe of indeterminacy between them; and the indeterminacy results from information, which is a condition for actualisation to happen (see Simondon [1958] 2012, 143). It is in this sense that Brian Massumi could conclude that “transduction [is] the transmission of an impulse of virtuality from one actualization to another and across them all. . . . Transduction is the transmission of a force of potential that cannot but be felt, simultaneously doubling, enabling, and ultimately counteracting the limitative selections of apparatuses of actualization and implantation” (Massumi 2002, 42–43). With the expression “a force of potential that cannot but be felt,” Massumi refers to the absolute reality of that “potential”: all the forces that constitute Simondon's potential energy are real and do exist “in this world.” Sometimes they are perceived as tension; other times they remain hidden from our senses, but are measurable with technical apparatuses.

The incandescent lamp is probably the simplest example of a transducer as a continuous electric relay. Electric current is available in the electric circuit as potential energy; the moment one switches the lamp on, a part of that potential energy is discharged into the bulb, which converts only 5 per cent of the total energy into visible light (the rest is dispersed as heat). The goal of the incandescent light bulb is to produce light, but the concrete transductive process generates light and heat, counteracting the material limitations of the tungsten filament and eventually destroying it by burning it. It is the modulable resistance—the complete set of filaments, materials, sustainers, and gases inside the bulb—that changes, generates, and varies the actual rendering of energy as light. All those materials are not “electric current,” nor are they “light”; they are just the transducers, mediating between electricity and luminosity.

3.2. Passage (temporality)

A more general and broader definition of transduction is to be found in Simondon's collected essays *Sur la Technique* (2014), where—in the context of discussing notions of technical progress—transduction is presented as “the passage from a constituted ensemble towards another one in the process of being constituted” (Simondon 2014, 452, my translation).⁴ What is striking in this definition is the fundamental inclusion of time and temporality as integral to the transductive operation. Transduction happens in time: it is a process, an

4 This sentence was part of Simondon's reply to a question posed by Anita Kéchickian in a 1981 interview, published in a reduced version in the journal *Esprit* (1983) and as “Saver l'objet technique” in Simondon (2014, 447–54).

operation with a temporal and energetic direction (even if not precisely determinable). And this temporal dimension unfolds from one point to the next, in very close vicinity each to the other, but not in a full continuum: “In this sense transduction is something transmitted *little by little*, something that propagates, eventually, in amplified form” (ibid., 452, my translation and emphasis). Simondon writes “de proche en proche,” translated here as “little by little” but meaning also “gradually,” “slowly,” “progressively,” or “step by step.” Simondon couldn’t be clearer about the essential feature of transduction: namely, its *processuality*. This reflection lies at the heart of Simondon’s project: more important than discussing what things “are” is to consider how they come to be what they are, and what futures they entail. Every present, every here-and-now, every event—but also every material construction—is infinitely divided into past and future.

These two first definitions of transduction—the intensive *discharge* of discrete units of potential energy, and the temporal *passage* from one state to another—reveal the underlying presence of different kinds of tensions, of different *fields of problematcity*. On the one hand—energetically—not all the potential energy is actualised in the here-and-now of the event; there are always ample amounts of potential energy that remain *possibilities*, which, even though real (as possibilities), are not concretised.⁵ On the other hand—temporally—not all the innumerable constituents of the pre-life of a thing or event can be actualised in their *concretisations*. The transductive process leads to ever-changing states that are, at the same time and without contradiction, *more* and *less* than their past or future potentials: *less*, because they cannot contain all virtual possibilities; *more*, because they generate new, and not precisely foreseeable, tensions, new potentials that require further processes towards equilibrium. If transduction involves a *reduction* of the potential(s) in the service of an ongoing actualisation, it also comprises a future increase of tensions (unpredictability), which will reinforce the field of the virtual.

3.3. Energy (thermodynamics): potential, scales, entropy

In contrast to classical theories of form such as the *Gestalttheorie*, which relates to stabilised forms, or the hylemorphic scheme, with its clearly distinguishable pair of form and matter, Simondon proposes a view of forms and matters that fundamentally includes the energetic dimension, fully loaded with transductions yet to take place. From the very first pages of his introduction to *L’individuation* (Simondon [1954–58] 2013), Simondon argues that the hylemorphic and the monist schemes fail to account for the *energetic conditions* of the constitution of form and matter themselves, which are inhabited by powerful energetic potentials and by shape-giving informational structures. A metastable system displays a complex balance between two major processes: degradation of energy (entropy) and generation of structural order (negentropy). In

⁵ This is a point of contention that involves the notions of “potential” and “real potential,” which will be addressed in the next section. With his notion of “potential,” Simondon seems to exclude the Deleuzian “virtual”; but not so with his “real potential,” which comes closer to the Deleuzian understanding of the “virtual.”

his consideration of individuation, both physic and psychic, Simondon regards “being” not as a substance, matter, or shape, but as a system in tension, oversaturated, something more than one single unity: “To think about individuation, one must consider Being not as a substance, or matter, or form, but as a system in tension, oversaturated, above the level of a unity, not constituted only in itself, and not satisfactorily grasped through the principle of the excluded third: the concrete being, or the whole being—that is, a pre-individual being—is a being that is more than one unity” (Simondon [1954–58] 2013, 25, my translation).

Simondon’s critique of modes of thought exclusively based upon stable forms of equilibrium, which impose “being” and exclude “becoming,” led him to a definition of “metastability” grounded upon three basic notions from thermodynamics: (1) the potential energy of a system; (2) the orders of magnitude of a system (including intensive and extensive variables, and the modulation from micro- to macro-scales); and (3) the growth of entropy (energetic degradation of the system). It is upon this tripartite set of references that Simondon bases his exploration of the ideas of “preindividual,” “metastable system,” “oversaturation,” “processes of differentiation,” and “individuation.” A form considered totally “stable,” or “finished,” corresponds to the highest possible level of negentropy, defining an immovable stratum. Opposed to this, in any given metastable system there are flows of oversaturated potential energies of diverse orders that, at some point (structural germ), produce an over-voltage of the system, wherefrom the energy deteriorates (entropy) leading to processes of differentiation and individuation (negentropy).

3.3.1. *Potential energy*

In the conventional usage of the term in physics, “potential energy” refers to the *possible* or the *virtual* (in the traditional sense of “not being real,” or remaining as pure “possibilities”). Often, Simondon refers to this usage, and David Scott (2014) pointedly described the divergence of this conception from the Deleuzian notion of the virtual (where the potential possibilities are real, despite remaining non-actualised). Apparently, a crucial distinction between Simondon and Deleuze is implicit here, involving the concept of the “virtual.” On the one hand, “Simondon quite definitely rejects the notion of the virtual” (Scott 2014, 17);⁶ but, on the other, he introduces a crucial qualifier, namely the “real potential,” indicating that the potential “actually exists” (see Barthélémy 2012, 225). As Simondon writes: “The potential, conceived as potential energy, is *real*, because it expresses the reality of a metastable state, and its energetic situation” (Simondon [1954–58] 2013, 554n8, as translated in Barthélémy 2012, 225). The real potential is fundamental for the definition of a metastable system: it is the potential that gives such a system the possibility of a becoming, the possibility of shifting phases from one state to the next. An individuation

6 Scott continues: “The taking of form is the passage from real metastability to a stable state. But this operation, for Simondon, has nothing to do with the notion of virtuality, which he argues is composed by an imagined ideal state (‘Good Form’). In other words, completely opposite to Deleuze, who worries that one might confuse virtual and the possible [Deleuze 1994, 211–15], Simondon finds them to be synonymous” (Scott 2014, 17).

starts with an imbalance between potentials of energy, from which an individual emerges progressively, as the solution to a problem that is itself of a different nature. As Beistegui writes ([2005] 2012, 170, italics original): “An organism . . . is always ‘more’ than its organized and fully differentiated reality. This excess signals a *virtual* reality that can be observed at the embryonic stage.”

3.3.2. *Orders of magnitude (scales)*

For Simondon any given portion of matter can only enter a process of new individuation if it is brought to a suitable energetic state. Against the hylemorphic scheme, which implies fixed forms and fixed matters, Simondon argues that “the coming-about of any entity equals the appearance of a metastable ‘phase of being,’ which constitutes its own, new ‘magnitude’” (Borum 2017, 99). The individuation process is thus based on singular events that establish a link between different “orders of magnitude” (today normally referred to as “scales”). For example, when DNA is transferred from one bacterium to another by a virus—a process in which, more generally, foreign DNA is introduced into another cell via a viral vector—the scale of the virus is passed to the scale of the bacterium, bringing the latter into a new form of individuation. Another example provided by Simondon ([1954–58] 2013) is the vegetative, which is presented as “an individual that puts in relation the order of the cosmic grandeur of sunlight—necessary for photosynthesis—and the molecular order of mineral salts that nourish the vegetative” (Barthélémy 2012, 220). The crucial point is that Simondon was looking for the effects of the *relation* between orders of magnitude. For him, the individual *is* relation and not simply *in* relation to something external. The individual that enables these relations is actually defined by them; it is the relation between different orders of magnitude that make the individual what it is. Thus, any given individual can only emerge in intrinsic articulation with an associated milieu. No individual is autonomous. There is no autonomy. Everything is relation between diverse orders of magnitude: “There is individuation, because there is an exchange between the microphysical and the macrophysical level” (Simondon [1964] 1995, 148, my translation).

3.3.3. *Entropy*

A metastable system displays a complex balance between two major processes: degradation of energy (entropy) and generation of structural order (negentropy). Even if, according to the second law of thermodynamics, entropy can only increase, most of the existing systems are ruled by negentropy and by information. As Beistegui (2012, 171) has put it: “A metastable system is a system that, whilst not contradicting the second law of thermodynamics, which stipulates that, in the long term, all differences of energy will be cancelled, harbours within itself a sufficient amount of energy—of differences of potential, in other words—to create order. . . . There is no form that presides over the organization of matter; there is simply a series of processes of information through which matter organizes itself.”

To distance himself from recent developments in cybernetics and information theory, and from the debates about the notions of entropy and negentropy that involved Norbert Wiener and Claude E. Shannon, Simondon affirmed that “the differencing process can in no way be understood in quantitative terms, and is not susceptible to any kind of stable formalization” (quoted in Massumi et al. 2012, 32). For Simondon, even if photosynthesis does coincide with the discharge of a measurable amount of energy, it crucially coincides with passing a threshold to reach a qualitatively new level of individuation. The qualitative threshold is what most matters to Simondon. No doubt the system will degrade itself energetically, in the long run, but as long as the potential energy is not fully exhausted, information will counteract that dispersion, vibrantly opposing *res intensa* to *res extensa*. Traditional physics of substances and matter had ignored the problems posed by energetic distributions, focusing too much on *res extensa* (see Garelli 2013, 14). With thermodynamics, Simondon found a way to more adequately address the in-formation of events. An early draft of the introduction to *L’individuation à la lumière des notions de forme et d’information* reveals Simondon’s precise positioning within cybernetic debates of the day: “In order to define metastability, it is necessary to include the notion of information of a system . . . particularly the notion of information provided by modern physics and pure technology (information understood as negentropy), as well as the notion of potential energy, which gains a more precise meaning when linked to the notion of negentropy” (Simondon [1954–58] 2013, 26n3, my translation).

Along the same lines, on the occasion of a public lecture at the French Philosophical Society (27 February 1960), Simondon offered a complete definition of transduction, including the “irreversibility of information” at its very core. Once the potential energy starts being liberated, it appears as a new structure, “which is like a solution to the problem; from that moment, *information is no longer reversible*: information is the organiser of direction that arises a short distance from the structural germ and that conquers the field” (Simondon [1954–1958] 2013, 538, my translation and emphasis). Entropy and negentropy define the fundamental coordinates of movement and directionality of the transductive operation.

3.4. Structural germs and singularities (structuration)

The affirmation of the complex processes of differentiation/individuation described so far raises the question of knowing what causes, what initiates, what sets them in motion. A totally stable system no longer has any internal motion; it is a stratum with the highest level of negentropy. At the other extreme, a totally unstable, chaotic system is without the capability for structure, never concretising all its potentials. But what causes a metastable system to start the transductive process? Simondon is extremely precise in identifying the initiator of this process: it is what he calls a *structural germ* (see Simondon [1954–58] 2013, 77–84). Drawing on scientific studies of crystallisation, Simondon offers the example of allotropic crystals (crystals that exist in two or more different forms, though in the same physical state) in order to present transduction

as “the name given to the ongoing actualization or structuring of the potentials of a metastable system whose constitutive, heterogeneous orders have been brought into communication by a singularity functioning as a ‘structural germ’” (Bowden 2012, 141).⁷ This “germ” is the point of departure for the whole subsequent transductive process. It contains a *singularity* (Simondon [1954–58] 2013, 77); and this has the capacity to break the metastable equilibrium of the system, enabling the propagation of a transformation that runs from point to point between the already transformed parts and those yet to be transformed. Every “future” point is, therefore, a sort of “extension” or “prolongation” of the initial germ with its intrinsic singularity. As Simondon has put it, “the individual results from a process of amplification that is triggered by a singularity within a hylomorphic situation, and it [the individual] prolongs this singularity” (Simondon [1954–58] 2013, 82, my translation).

Recapitulating: there is a starting germ, which contains a singularity. This singularity is then “prolonged” throughout time—that is, the singularity is *set in motion* for a certain length of time, defining a surface of intensities. The singularity cannot be described in itself, or abstractly, as Simondon consistently avoids any kind of “essence.” A singularity has only a local definition, given under precise conditions; and these conditions are exactly those that enable (or are enabled by) the rupture of the metastable equilibrium. The main point is that the starting germ is not a form or a matter, but a structural constitutive potential; that is, it carries some sort of *information*, which sets the basic conditions for an *event* to happen, information that often comes from an external system. As Simondon writes: “The effective existence of an individuated being results from two conditions that are independent of one another and occur simultaneously: an energetic and material condition derived from the actual state of a system, and an ‘evental’ [from “event”] condition that most often includes a relation to other series of events, coming from other systems” (Simondon [1954–58] 2013, 80, my translation).

This quotation contains yet another crucial component of the transductive process. A metastable system is not only non-stable but also non-Unitarian. It is not “One”; there are always multiple “series” of events going through it. It is a system capable of expansion, and it is necessarily obliged to expand out of itself to interact with other systems. It is neither independent nor autonomous. It cannot survive or subsist in exclusive relation to itself. It is a contained system: tense, oversaturated, superposed over itself, heterogeneous with itself. Being cannot be reduced to what it is; being is at the same time structure and energy (see Simondon [1954–58] 1989, 284), sign and potency, longitude and latitude.

The structural germ functions therefore as a component in an assemblage that sets it in motion, that *dramatizes* it. The distinction between the virtual and the actual is not unilateral, nor is it ontologically black-boxed. The distinction is processual and differential, making of the “*a priori* and the *a posteriori* . . . a product of individuating processes rather than their condition” (Toscano 2009, 389). In this sense, individuation (with all its actualisations) can be thought of

⁷ This synthetic formulation by Bowden is based upon Simondon ([1954–58] 2013, 78–82).

as dramatisation: the sudden, unexpected, and effective formation and emergence of a percept. As Alberto Toscano (2009, 390) writes: “Simondon’s theorisation of pre-individual singularities remains formative.” The structural germ operates as the agitator, the excavator, or the explosive trigger of a spatio-temporal metastable system.

3.5. Radicalising haecceity: from *haecceitas* (Duns Scotus) to *eccéité* (Simondon) to *heccéité* (Deleuze and Guattari) to *micro-haecceity*

This dramatic opening of a new space–time of possibilities has strong resonances with Deleuze and Guattari’s concept of *haecceity*, a concept that theorises the emergence of a singularity at any given scale and field—from molecular encounters to geological clashes, landscapes, hours of the day, human thought, arts, and so on. Importantly, a haecceity does not refer to a fully qualified space–time, but to an intensive spatio-temporal dynamism. As François Zourabichvili notes, “it does not combine two preexisting empirical space-times, rather it presides over their genesis. It is the putting-into-communication of heterogeneous dimensions of time from out of which space-times are derived” (2012, 128). Thus, a haecceity is a passage, a singular point in space–time that dramatises space–time itself, curving it, folding it, giving it transient form and temporal structure.

In “Memories of a Haecceity” Deleuze and Guattari (1987, 260–65) appropriated and refabricated the medieval concept of *haecceitas* to suggest a mode of individuation that is not confused with that of a thing or a subject (see Sauvagnargues 2016, 65). In response to a clarification requested by the translators of the American edition of *Dialogues* (Deleuze and Parnet 1987), Deleuze stated that “*Haecceitas* is a term frequently used in the school of Duns Scotus, in order to designate the individuation of beings. [I use it] in a more special sense: in the sense of an individuation which is not that of an object, nor of a person, but rather of an event (wind, river, day or even hour of the day)” (Deleuze and Parnet 1987, 151n9). The difference from Duns Scotus’s usage is crucial and can only be perfectly understood in light of Simondon’s (apparent) misspelling of *heccéité* as “*ecceité*” (without an *h*), which gives the term a modal (and not essential) quality.⁸ In a famous footnote to *A Thousand Plateaus*, Deleuze and Guattari (1987, 540–41n33) explained precisely this crucial difference: “[Haecceity] is sometimes written ‘*ecceity*,’ deriving the word from *ecce*, ‘here is.’ This is an error, since Duns Scotus created the word and the concept from *haec*, ‘this thing.’ But it is a fruitful error because it suggests a *mode of individuation* that is distinct from that of a thing or a subject” (my emphasis). And in the main text they explain further: “A season, a winter, a summer, an hour, a date have a perfect individuality lacking nothing, even though this individuality is

8 Whereas Duns Scotus’s *haecceitas* is “a non-qualitative property responsible for individuation and identity[,] . . . [which is] supposed to explain individuality” (Cross 2014, §1), Simondon’s *eccéité* is modal, pointing to a never-finished process of emergence or appearance (“here is”). But Simondon keeps Duns Scotus’s focus on the “thisness” (a *haecceitas*, from the Latin *haec*, meaning “this”) as opposed to a “whatness” (a *quidditas*, from the Latin *quid*, meaning “what”) (see Cross 2014, §1). For a detailed introduction to Duns Scotus’s theory of individuation, see Sondag ([1992] 2005).

different from that of a thing or a subject. They are haecceities in the sense that they consist entirely of relations of movement and rest between molecules or particles, capacities to affect and be affected" (ibid., 261).

When appropriating this terminology for the performing arts (music, dance, theatre, or performance), and particularly when speaking of a particular type of haecceities that are set in motion through highly informed "structural germs," I propose the introduction of the notion of *micro-haecceity*, a temporal radicalisation of the concept, collapsing it into an infinitesimal fraction of a second, into the radical here-and-now of the evolving performance. Such radical micro-haecceities would be characterised by intensive negentropic properties, by an almost instantaneous time of existence, and by following one after the other at very high speed. These kinds of haecceities do not suggest (stable) contemplation, but rather rash and *metastable* actions. Deleuze's characteristic example of haecceity—Lorca's "at five in the afternoon" (see Lorca 1997, 263, 265)—has a scenic quality: it evokes a particular landscape, time of the day, temperature, sunlight, inner *memories*, and so on. It implies that a certain amount of time (a thickness of the "present") is required for it to be fully apprehended. Almost all the examples of haecceity advanced by Deleuze describe situations of suspended temporality within long durations of chronometric physical time. But the young pianist performing Brahms's Second Piano Concerto—my starting example—is navigating high-speed successions of "prolonged singularities." There is no time for contemplation; things must happen in the unavoidable urgency and imperative sequentially of the here-and-now. Micro-haecceities are high-energy-loaded and high-speed-moving singularities that carry a force of potential from one position to the next. They make up the visible or audible part of artistic transductive processes. In their functioning as radical becoming they never appear as stable "beings," remaining an impulse of virtuality from one actualisation to the next. If one thinks, or does, or experiences artistic performances with these operations in mind, the Deleuzian notion of "capture of forces" becomes more graspable than ever: the virtual becomes actual in order to be instantly dissolved into the virtual again. Our pianist playing Brahms perfectly exemplifies such a capture: she is not merely reproducing a stratified, pre-existing entity, but operating a capture of forces (from the virtual) that produces a new individuation (actual) as a highly intensive becoming, which immediately—as soon as it is generated—points forward to other virtual pre- and after-individualities. Micro-haecceities reveal, therefore, not so much the non-deterministic pasts of their individuated constitutive forces and energies as their unpredictable futures. By so doing, micro-haecceities reveal that the making of art is a fundamentally problematic field—generating and enhancing heterogeneous tensions that produce the conditions of their own (transient) resolutions. Thus, micro-haecceities, like Deleuzian haecceities, thematise the event: the emergence of a singularity and the passage from one milieu to another.

3.6. In-formation (topology)

With the definitions of transduction exposed so far, we have presented spatio-temporal energetic processes ranging from very simple electric discharges (the incandescent light bulb) to highly complex thermodynamic operations, including a link to Deleuze and Guattari's concept of haecceity. Thus, we have mainly remained within the realm of physical individuation, which corresponds, roughly, to one third of Simondon's overall project. In fact, Simondon proposed other ways of thinking transduction, including the individuation of biological organisms and of psychic and collective agencies and assemblages. It is not possible to cover all those aspects here, but we shall mention one further essential aspect of transduction: its *topological* implications. As Jacques Garelli wrote in the introduction to *L'individuation à la lumière des notions de forme et d'information*: "Transduction, intimately linked to the discharge of the oversaturated potential energy of a metastable system, will emerge as the shaping of a form and, thus, in a double sense—*topological* and *noetic*—as in-formation" (Garelli 2013, 15, my translation and emphasis).

In the process of unfolding itself throughout time the transductive operation gives shape to a surface. Because this surface did not exist before the transductive operation itself, and because it came into existence only through the concrete, here-and-now inscriptions of the transductive process, one can label it as a surface of immanence, as opposed to any transcendental surface that would exist in advance (or at least as an idea of surface).⁹ Within the horizon of possibilities defined by their associated milieu and their multiple orders of magnitude, transductive processes generate a specific space that can be mapped without referring to external systems of coordinates. In parallel with the discharge of pre-individual potential energy, and with the interference between different scales, the transductive process *in-forms* a topological structure, generating a multi-dimensional shape. The information carried through the transductive movements is not to be conceived as the mere transmission of a coded message—perfectly sent by a sender to a receiver—but much more as a "taking shape" during the communication process itself. Information thus has two sides: a *noetic* side that carries the "structural germ," and a *topological* side that renders this structural germ visible, audible, touchable, or perceptible in some other way. In its double function—noetic and topological—transduction integrates thought and becoming in one single dimension that is not external to its own terms.

While *deduction* needs an external principle to solve a local problem in a given field, and while *induction* (by definition) makes generalisations by extracting the characteristics common to all terms in the field, *transduction* is the continuous

9 Mathematically, this discussion is indebted to the work of Carl Friedrich Gauss on curved surfaces. Gauss started by studying curved two-dimensional surfaces using the old Cartesian method, that is to say, by embedding the two-dimensional surface in a three-dimensional space with its set of axes. But later, as Manuel DeLanda writes: "Gauss realized that the calculus, focusing as it does on infinitesimal points on the surface itself (that is, operating entirely with local information), allowed the study of the surface *without any reference to a global embedding space*. . . . 'Gauss advanced the totally new concept that *a surface is a space in itself*'" (DeLanda 2002, 12, emphasis original, incorporating quotation from Kline 1972, 882, DeLanda's emphasis).

creation of new dimensions within a system, establishing links and communication paths between its own disparate constitutive parts. Transduction engenders shapes and textures. It is in this sense that one can say that transduction points to a new concept of space based upon multiplicities, manifolds, vectors, and potentialities. It is not a matter of curves in a flat space, but of the curvature of the space itself. In the place of a transcendental space of reference—with its system of coordinates and its external/extensive properties—transduction creates a Riemannian surface, an immanent space with intensive, internal, and intrinsic properties. The structural germ carries a powerful vector of transport, whose precise speed and direction are the relentless agents responsible for the unfolding of form and structure. Where the hylemorphic scheme imposes a form on a matter within a metric Euclidean space of coordinates, Simondon's transductive perspective enables multiplicities and differential manifolds to emerge within self-defined space-surfaces. Vectors and functions replace the traditional X–Y–Z system of coordinates. As Manuel DeLanda puts it, “while the points in a metric space are defined by a set X, Y, and Z values, presupposing a set of Cartesian coordinates and a transcendent global space in which the space being studied is inscribed, a differential manifold is a field of rapidities and slownesses, the rapidity or slowness with which curvature changes at each point” (DeLanda 2012, 227).

Topology becomes more relevant than geometry: the latter has to do with measurements and locations in an external system of reference, while the former disregards measurement and deals only with the structure of space *qua* space. Figures and shapes are not placed *in* space; they constitute spaces *in/of* their own. As Arkady Plotnitsky (2009, 203) argues, “this view radically transforms our philosophy of space and matter, and of their relationships, by leading to a horizontal rather than vertical (hierarchical) science of space as a ‘typology and topology of manifolds,’ which Deleuze and Guattari associate with the end of dialectic and extend to spaces that are philosophical, aesthetic, cultural, or political.”

Such can be the powerful consequences of a topological understanding of transduction, leading to a non-Euclidean mode of thought—enabling individuations to become space-surfaces of potentially infinite dimensions, and liberating relationships from any form of transcendental determination. The notion of a topological space of possibilities is what allowed Deleuze to overcome and replace the old dichotomy—which had dominated philosophy from Aristotle to Kant and Hegel—between “the general” and “the particular,” implying hierarchical (vertical) distributions of forms and matter. Deleuze replaces the “general” with a topological space of possibilities, a topological diagram that can be folded into another form without losing its identity (what Deleuze calls *universal singularities*). And, on the other side, the “particular” is considered only as actual populations of things (*individual singularities*).¹⁰ Beyond a system of categories, Deleuze's actual world is populated only by such *individual singularities*

¹⁰ For a thorough analysis and description of Deleuze's notions of *universal singularities* and *individual singularities*, see DeLanda (2006a [full lecture]; 2006b, 26–32; 2010, 81–113; 2011 [full lecture]; 2012).

as result from transductive processes of individuation. The new topological spaces and their defining planes of reference or composition are deeply immanent and opposed to geometrical planes of transcendence, which always come from above, as if designed “in the mind of god . . . [and involving the] formation of subjects” (Deleuze 1988, 128). In contrast, a plane of immanence has no supplementary dimension. Such a plane “will be perceived [only] with that which it makes perceptible to us, as we proceed” (ibid.). From a topological point of view, a plane of immanence and a plane of transcendence are fundamentally different—“we do not live or think or write in the same way on both [planes]” (ibid.).

3.7. Somatic transduction (corporeality)

A further extension of the concept of transduction has been proposed by Brian Massumi, who, focusing on the human body, defined it as a “transducer of the virtual”: “In sensation the thinking-feeling body is operating as a transducer. If sensation is the analog processing by body-matter of ongoing transformative forces, then foremost among them are forces of appearing as such: of coming into being, registering as becoming. The body, sensor of change, is a transducer of the virtual” (Massumi 2002, 135).

It follows from this that the body—every single human body—is not only the individuated ongoing result of transductive process but also itself a transducer; it is itself part of diverse transductive chains of events. The human body is no longer the privileged place of an idealised subjective and uncorrupted “I,” but a conglomerate of molecules thorough which impersonal and pre-individual singularities have the chance to become actualised in specific events such as cell fecundation, embryonic stage, fluid- and organ-formation, nervous system, brain, heart, psychic and collective modes of individuation, noetic, cultural, and artistic expressions, and so forth. This wide-ranging body is pre-human, human, non-human, and posthuman, all at the same time, through different processes of modulation and transduction. The crucial point is the death of the subject, which allows the body to embrace energetic processes that enable unpredictable events to happen: no one will ever know what a body can do—especially because this does not depend on any idealised “will” of the subject.

In music, whether in composing or performing, the main interface or transducer between the innumerable incompatible potentials and their effective, acoustic concretisation is precisely the human body: a body radically energised, activated by desire production, set in motion by diverse simultaneous impulses, attentively listening to its own ongoing manifestations, loving what it does, hating what it does, and continuing in the uncertainty of the future. It is a transducer within a metastable system, but it is itself another metastable system. With the human body we enter a realm of transducers of transducers, something like an *ensemble of transducers*. A performer’s body is “a body that beats” (Barthes 1985, 299), an excited body just about to explode, just about to initiate an energetic discharge from the uncontainable tensions of music and somatic intensities to newly individuated tensions and sensations. Instead of a logic of sense (with clear forms and matters), the artist’s body operates as

a transducer within a logic of sensation (immersed in intensive, transductive processes).

The body that notates a score, vibrates its vocal cords, plays an instrument, or conducts an orchestra is a complex organism, inhabited by diverse layers of information, which modulate and shape the actual rendering of musical events. As every musician knows, “no one knows what a body can do”; but beyond this Spinozan claim, one can affirm with Deleuze (1988, 124–25) that “no one knows ahead of time the affects one is capable of; it is a long affair of experimentation, requiring a lasting prudence—a Spinozan wisdom that implies the construction of a plane of immanence or consistency.” It is the construction of such planes of composition, of unprecedented assemblages of forces and intensities, that moves the desiring body in the first place. Linguistic metaphors, structural analysis, or semiological studies cannot explain or interpret such productions of desire. Signs, forms, and forces are not to be “interpreted,” but transduced and reassembled in a vital relation that allows the artist to become an experimenter, or, as Anne Sauvagnargues beautifully expressed it, an *operator of forces*: “A grouping of forces, an interpretation of forces, says Nietzsche; in other words, a mode of affection. A sign is a force as long as it is not interpreted, but it is felt in a living relation that allows the artist to be an experimenter, an *operator of forces*. This is where the invention of new forms takes place, which binds art to the exploration of margins about which it posits an intensive theory” (Sauvagnargues 2013, 33, my emphasis).

If we think with Simondon and use his terminology, such forces are to be captured from the tendentially inexhaustible reservoir of potential energy and from the negentropic loaded information of the structural germs. Once set in motion, the capture of forces prolongs itself, originating specific individuations of (new) forces and textures. More than for any other kind of individual, the human body reflects what Simondon expressed in general terms about universal individuals: “The individual, by its energetic conditions of existence, is not only inside its own limits; *it constitutes itself at the limit of itself and exists at the limit of itself*; it comes out of a singularity” (Simondon [1964] 1995, 60, my translation and emphasis). This sentence comes close to Spinoza’s famous definition from his *Ethics*: “By substance I mean that which is in itself and is conceived through itself” (*Ethics* I, 3, as translated in Spinoza 2002, 217; *Per substantiam intelligo id, quod in se est et per se concipitur*),¹¹ an affirmation that had the potential to exclude transcendence from the realm of things.

3.8. Permanent transduction: “being-in-the-world” and *fluctuatio animi*

The particular specificity of living organisms—that which differentiates them from purely technical objects—is that their transductive modes of individuation actually never stop (except with death, of course). While technical objects can cease their individuating processes, living organisms (for Simondon and

¹¹ Reflecting on modes of performance of immanent expression, Viennese philosopher Arno Böhler (2014, 171) interpreted this famous sentence by Spinoza as follows: “For Spinoza, substance does not exist *in* something *else*. It exists, rather, *in itself* such that it conceptualizes itself *from within itself*.”

Deleuze) are individualities that simply do not cease their individuation: they are in a state of *permanent transduction* (see Borum 2017, 114n12). An example taken from brick manufacture shows how the transduction happens “when the heat from burning and the pressure from the mould cause the clay molecules to simultaneously take on a collective individuality, held together by potential energy” (ibid.). Once moulded, transduction finishes, and the brick stops being individuated; and if the internal resonance is incomplete, the brick will crack in the burning process, never achieving an individuated state. With living organisms transduction never stops, due to their fundamental and necessary metastability as a complex system inhabited by a permanent structural germ: their DNA. In addition, another dimension comes into play: living organisms not only emerge as a solution to or resolution of pre-individual tensions or of impersonal structural germs, they also evolve with and within processes of decision-making—processes whereby the resolution “is not a *solution*, but a *decision*” (Stiegler 2012, 187). Within somatic transductions there is a special type of “structural germ,” which is motivated by decision and proactive action in the midst of doubt and uncertainty. Simondon referred to it as *fluctuatio animi*, a term obviously of Spinozan lineage: “This condition of the mind arising from two conflicting emotions is called ‘vacillation,’ [Lat. *fluctuatio animi*] which is therefore related to emotion as doubt is related to imagination, and there is no difference between vacillation and doubt except in respect of intensity” (*Ethics* III, Prop. XVII, Scholium, as translated in Spinoza 2002, 288).

Simondon invokes this Spinozan notion in relation to the innumerable ways of “being-in-the-world.” The notion of “adaptation” gains important weight as a qualifier of living forms of individuation: “adaptation is a permanent ontogenesis” (Simondon [1954–58] 2013, 211, my translation). Being in a world that does not coincide with itself, which can only be but apprehended through a fundamental “disparation,” living organisms have to take decisions to survive, acting resolutely in the midst of chaos and uncertainty. Such actions do not happen on one single level or field of potentialities, but on many different levels and scales at the same time. As Simondon writes: “The *fluctuatio animi* that precedes any resolute action is not a hesitation between different objects or different paths, but rather between a changing collection of incompatible sets, nearly identical but still disparate. Before acting, the subject is suspended between diverse worlds, diverse orders; his action is a discovery of the meaning of this fundamental disparity, of the reason why the particles of every set join together in a richer, more far-reaching set, gaining a new dimension” (Simondon [1954–58] 2013, 210, my translation).

4. CONCLUSION

This chapter was conceived as a contribution to the establishment of a foundational ground for my ongoing theoretical and artistic work towards a dynamic theory of musical works and their performance. Gilbert Simondon’s concept of transduction plays a major role in this theory, offering a varied set of operational strategies and suggesting new modes of conceptualising and doing musical

performances (including composition). Crucially, it enables musical studies to move beyond not only formalist, analytical, historiographic, organological, or philological approaches (which deal with *res extensa*), but also sociological, psychological, and subjectivity-based investigations (that are concerned with a *human, all too human* “I”). With transduction the energetic dimension and the non-human parts of intensive musical processes gain visibility and can be addressed. To compose or to perform a musical work is to enter transductive processes; and the human body implicated in such activities functions sometimes as a transducer and other times as the individuated entity, both within the larger event of ongoing music-making.

Within Simondon’s overall project to articulate a theory of individuation for physical matter, biological organisms, psychic and collective agencies, technology, and the arts, the latter gain a privileged position. Pre-individual clouds of potentiality are present in all modes of individuation, but the artistic ones make them experienceable, or at least almost experienceable. Individuation results from a potentially infinite set of topological possibilities that emerge in the finite actual world as an event; at the same time, this event disrupts the here-and-now of the empirical present, projecting it into new fields of future, infinite, topological singularities. As Deleuze and Guattari (1994, 197) famously proposed: “art wants to create the finite that restores the infinite: it lays out a plane of composition that, in turn, through the action of aesthetic figures, bears monuments or composite sensations.”

Simondon’s notion of transduction allows us to think of the plane of artistic creation as the material individuation of complex assemblages of forces, rather than as a deterministic or aleatoric stratification of monist and hylemorphic conceptions. Between art and philosophy, “the role of art turns out to be crucial and paradoxical: it is from art, in so far as it is real experience, that philosophy awaits theoretical renewal, but this renewal is not produced conceptually: it is elaborated on the plane of artistic work” (Sauvagnargues 2016, 68). It is from here that I started, as a performer, and it is from here that I wish to continue: from the production of artistic works and events, and continuing through artistic means the intensive discourse developed in this essay. Even if this chapter is simply a transient individuation within a longer transductive process, it is a crucial moment, reinforcing the profound and necessary implications of making research in, through, and for artistic practice.

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Alchemistic Transpositions:

On Artistic Practices of Transmutation and Transition

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PREFACE

Transposition seems to be in the first place an undefined term. It addresses various relations of displacement as well as processes of transition and transformation, all of which have slightly different meanings; however, the question remains, what kind of relations are meant here, and, even more importantly, what modes of relations come into play because all relations only exist in practical modalities. Thus, transpositions pertain to vectors and relational trajectories within spatial orders to which the carrier or medium and thus the material background also belong; at the same time, this makes them possible and restricts them. With respect to the frame of their material placing, we should thus take into account that there is no transposition without a transmutation. This is even truer with regard to creative processes in the arts, where a combination of things or their weird and unusual associations literally *trans-poses* them into new relations, which *transits* their structural significance and hence *transforms* their meaning; and, during the whole process, the individual elements undergo a complete *transmutation* in the sense of their entire conversion. Hence, all different “trans”-notions blend into one another so that there is no clear separation. Instead, each reveals certain aspects of creation—the passage from one to another. The considerations in this chapter point to this precisely: not just at nomadic relational shifts or erratic variations but at the mutational impact of every transition that is able to change both the structural and substantial basis of the world. Art, specifically, deals with this transformational power. It is related to its peculiar way of work, of *poiēsis* and the poetic, understood as a permanent transpositional creation.

ART AS A TRANSMUTATIONAL CHALLENGE

“Thinking *in* painting is thinking *as* paint,” James Elkins (1999, 113) writes succinctly in *What Painting Is*, stating then even more succinctly, “Painting is *alchemy*” (ibid., 9). With his muddy fingers sticking in material, the artist performs the instant of a metamorphosis or transposition, more precisely a *transmutation*, converting the material of paint, based in soil, raw earth, and colours,

into the presence of a meaningful face, a desired object, or an uncanny landscape—like the alchemists, who famously tried to turn base metals into gold (*chrysopoieia*). Since thinking in painting almost resembles madness, psychosis, or mere delusion, Elkins (1999, 147–52) continues, it deals at the same time with the strange and weird “gift” of matter, its vitality or poison, undergoing a constant evolution of new forms and unknown substances through testing their inherent powers and possibilities. Solid materials and liquids are active, they unfold their expressive force, go through different states of transformation, and transgress their boundaries.

Working in an artist’s atelier is like cooking in an alchemist’s kitchen; substances are continually being remixed and boiled down in the *testum*, working like independent agents that react with one another to shape new things. This also holds to a certain extent for musical composition, where the material is sounds or noises, and where things seem to scream or whisper, releasing their inner voices and silences. I therefore propose the idea of art as an alchemistic transposition and excessive passage, the basis of which is *transmutation*, a concept not only true for painting, but for artistic labour in general.

Art is first an action, it is *making art*; as such, it is rooted in both the transformational and the transmutational challenges, related to both form *and* matter. Here the different notions—transition, transformation, and transmutation—hint at different aspects of a constant work on conversion and metamorphosis in which arts creativity is rooted. However, alchemy’s practices are less based in substantial transitions or quasi-chemical reactions that turn material into another state than in assembling and collecting things together, forcing them into rupture or disturbance to cause unexpected events and gain new access to the real. Transmutation, hence, is not linked to the reorganisation and invention of material matter or its mere transfiguration, but to association and montage, which shape things anew. Association includes separation, and tying different objects together also means revealing their fissures and differences, as well as the glue or stitches between them. Art implies blending substances or conflating and cobbling phenomena into complex fabrics or figures to be touched by the senses, or to be seen or heard. They affect us in their own manner.

LANGUAGES OF “CONSTELLATION”

Rather than being a “language” to communicate propositions or meaning, the artist’s approach induces an incessant mutation that never comes to an end or an aim. However, the *ethos* or immanent stance of its confluences is, by producing interferences or sudden breaks and leaps, to make the yet unseen or unheard perceivable and, hence, aesthetic reflexivity possible. Art is thus both a practice of arrangement and a “constellation” in the Adornian sense of the notion (Adorno 1997),¹ as well as a critical intervention and self-consideration

¹ “Constellation” is one of Adorno’s basic concepts and can be found throughout his entire work. On the multiple meanings of words in Adorno, see also Lehr (2003, esp. 133–83).

using various materials and their conversions to show something that otherwise cannot be shown. This also means that self-referentiality is not an exclusive characteristic of avant-garde artworks or postmodernity; rather, it exists in any artistic installation of materials, including sound or images.

Every colour, performance, and noise are related to the sensuous, affecting our use of them, showing themselves and showing their showing, referring back to their position and “op-position.” Whether they want to present or expose something, they first present or expose themselves, along with their own life and agency. Every manifestation of aesthetics therefore implies a showing of itself, a reflection on its own action or material, the means used, and the gaps and caesura in the chain of their interconnections and relations.

The term “con-stellation,” which we place thus at the centre of the process of artistic transmutation, means something different here than the more specific term “configuration,” even if Adorno tended to use them synonymously (Lehr 2003, 135): it rather signifies the process of an exceedance of the figurative. While the “figure” always addresses the poetic and the symbolic, *constellare* is, literally, no more than dispersed dots or points, a series of *stellae* within which a cluster or accumulation can be made out. In other words, it is something without closure, something exuberant and excessive that tends towards a constant dissolution or shift of its shape and a transgression of form in order to exceed any symbolic order or hermeneutic sense. In it, a play of differences is expended and accelerated to enhance sensibilities and instate a non-interchangeable reflection *through* these differences. Transition, transposition, and transmutation, as well as critique and reflexivity, belong together—the true labour of art is the event of their taking shape and being made apparent.

CONJUNCTIONS/DISJUNCTIONS

Alchemy serves as a paradigm for this ongoing process. Alchemy also represents a different way of thinking than classical metaphysical discourses or thinking in the rational sciences. We take it as a model or metaphor for what we call “another thought,” or an other-than(-linear) thought. Therefore we see transmutational processes of transition, moving from an assembly of objects and material to the event of rupture and excess, as an act of thinking differently from concepts or propositions. The aesthetic rests rather in a non-conceptual or non-discursive “language” that at the same time can hardly be addressed as language. It is a category unto itself. The paradox of a “language” without language is what marks its self-will and obstinacy.

Adorno (1993, 32) spoke about a “synthesis without judgement” (my translation; *Synthesis ohne Urteil*), the contradiction of which aims at a saying without a said. We also can relate it to “another kind of language,” a language not based in the copula “is” or the predication of something *as* something but in conjunctions that by combination produce separation. Obviously, conjunction and disjunction belong together; they rest in differences where aesthetic synthesis does not create identity but rather deviation and discrimination.

To examine this more thoroughly, we first have to take into account that the practice of artistic thought bears mainly on connections that work with appearances and their own substrates. The “con-nection” “com-poses,” using the elementary acts of *con-iungere*, “binding together,” without however being binding. Second, conjunctions have many forms: and, or, either or, as well as, and so on. Their breadth comprises all set theory operations and even more—with the exception of the complement—and produces diverse logics of continuity and discontinuity. This need not have the structure of a “gathering” (Heidegger 2002, 266–69),² nor must it always have a clear goal. Rather its modus is the affect, the *passio* of perception as contained within the original meanings of *aisthēsis* and *empeiria*—absorption, or reception and observation. For it is not preceded by a dreamlike *idea* as if the act of connecting were, rather than a continuous practice of experimentation and testing, guided by a thought that comes from somewhere else and is realised afterwards. Instead, the Latin word *con-iungere* means to work things out with the experimental power of performativity, which itself becomes a medium. Here, thought is genuinely the act of combination. It is observation, tentatively following spurs, fumblingly, with an openness to touch and to be touched. It is not the brain that thinks, nor a tiny subject within it—an imaginary homunculus—but also the hands, the body, its movements, and so on.

However, it would be going too far to draw a linguistic parallel between this kind of “conjugation” and the propositional copula “is,” reading it as an aesthetic analogy to the linguistic statement and turning art and labour in the aesthetic realm into nothing more than a kind of pre-linguistic language. Rather we are dealing with the experimental speculation of gathering and of combining or of montage that simultaneously generates “juncture” and “dis-juncture.” That is also the reason why Adorno (2011, 1) claims that specific music has only a “similarity to language” but is not itself language; if you take it as language, it will trap you, he continues, and it will escape. Were it to *become* a language, or a form of communication, it would no longer be an aesthetic instant or *event*. In contrast to discourse and conceptual thought, “aesthetic thought” thus culminates in constellations that do not aim at the *synthesis* of a unit but merely at an ensemble of points, an *assemblage* or series of elements that need not have come together to form an identity or symbolisation but that—when it becomes art—transgresses them and includes a moment of necessary reflexivity.

SYNCATEGOREMATIC LANGUAGE

Admittedly, the prefix “con” (or “com”), as in constellation, combination, and connection, seems to be “a very sparse category in the history of our thought” as Jean-Luc Nancy (2010, 21) has noted. According to him there is only one philosopher who has “sketched a particular position” towards it, namely Heidegger. But Heidegger (2010, § 26) looked at it only in connection with his

² On the joining jointure see Heidegger (2002, 266–69). See also Derrida’s commentary on the same (Derrida and Roudinesco 2004, 80–81).

thoughts on *communitas*, on “being-with” and the community. There has as yet been no systematic reflection within philosophical discourse on the role of this prefix or its roots as a preposition. Discourses about the prepositions “con” or “com” are even scarcer. First considered “syncategorematic,” or without independent meaning, working in conjunction with “categorematic” expressions that precede them and impart signification (Husserl 1976, 2:55),³ their importance was later elevated by Michel Serres (1992, 189), and in particular by Bruno Latour (2011, 2013), who insisted on the extraordinary relevance of these linguistic particles. Their function is to order relationships spatially and temporally; hence they reveal and impart location and direction. They also mediate and transform, thus specifying modalities. They not only *say* something, but *do* something (Bexte 2013). “Doing something” is of course the keystone of the concept of the performative, bringing us back to the link between performativity and the medial that we have explored elsewhere—namely the difference between through/*dia/per* and with/*meta/trans* (Mersch 2010a). It is also connected with the *diabolē* and the *metabolē*, the diabolic “throwing apart” and the proliferating productivity of life, a symbol of which is also transmutation. Furthermore, it is notable that performatives are always marked by prepositions. J. L. Austin and John R. Searle, by delineating “illocution” and “perlocution” as the two main modes of the practice of speech, privileged speech acts with the forms “in saying” and “by saying” (Austin 1975, 121–22). We should also note that the prefix “per,” which is prepositional in origin, marks, in contrast to con/com, the modality and mediality of the speech practice it is based on. Hence, to describe the non-conceptual “language” of art properly, we have to stick to syncategorematic particles like through/*dia/per* and with/*meta/trans*, as well as prefixes such as “con-”/“com-” and “de-”/“dis-,” which address assemblies and figurations and their passages and transformations on the basis of their disruption and decomposition.

TWO OPERATIONAL MODES

Thus we are confronted with two different operations—two key forms or conceptualising connections—that are decisive for “aesthetic thought”: first, the conjunction/disjunction that connects (*con*) and separates (*de*) and, second, the prepositional mode that shows the type of this being-together (through/*dia/per*) through transition. Through or *dia/per* is based on figures of immanence, the material, and *poiēsis* within, and furthermore deals with practices that have consequences by working *through* (*per/dia*) temporalities and matter in order to take their effects to their outer limits.⁴ This can be done for example by the successive fragmentation of series of words on the basis of chance (John Cage), by deleting a sketch and preserving its traces on a canvas (Robert Rauschenberg), through the specific effect of jump cuts (Jean-Luc Godard), or

3 Husserl discusses syncategorematic expressions as “non-independent meanings,” a characteristic they share with the prefixes and suffixes used in inflexion.

4 In the English language the preposition “through,” as it is underlined here, intersects with “by” and “by means of.”

through a rhapsodic or delirious narrative style (William Burroughs), to name only a few methods.

Con/com however focuses on the conjunctive function of constellation, and centres around strategies, to put it tautologically, of “correlationality,” the dispersion or concentration of which at least opens the *possibility* of a relationship that, no matter how provisional, *can* after all constitute the *potential* of an “as” through which significance first comes into the world.⁵ Potentiality differs from the actual; therefore, the conjunctive function does not lead to distinct determinations but to openness or oscillation between non-fixed states, a chronic restlessness, and discomposure that offer different meanings. Sometimes, as Nancy has shown, contingency alone is sufficient; that we are “together in one place . . . creates—infinately fine—relations that can appear in the context of an event.” This means even the “juxtaposition” of objects is “always able . . . if not to ‘make’ sense at least to intimate sense. Painters have always known how to use this method” (Nancy 2010, 23).

ART AS PRODUCTION OF KNOWLEDGE

My main thesis therefore is based on the following: “con”/“com” implies knowledge without a synthesis, a clear “as” founded on “together” that, however subtly, appears at the very beginning and allows for the possibility, the idea, or a whiff of meaning. This is however only an eventuality: signification does not necessarily grow from a connection; rather, the latter creates the conditions for the former. And because sense is inescapable and nonsense always also produces the sense of nonsense (Barthes 1985), there can be no such thing as pure a-significance in art. Rather every net or web of differences, however diffuse, can become part of a symbolic order, even when it negates the same. We should however not forget that the opposite is also true; every relation holds within itself the possibility of a non-relation, of a resistance to or refusal of relationships and, as a result, of the crossing out of meaning. Every formation or symbolisation includes an abyss, the nothingness of its foundation, and thus grazes the dialectics of *symbolon* in the sense of “thrown together,” and of *diabolon* in the sense of “thrown apart.” Order and chaos as well as arrangement and derangement are balanced equally in this equation. It comprises sense as well as non-sense within sense—its opacity or strangeness (Mersch 2010b, 131–99). Accordingly, composition and decomposition always belong together, throwing the process of symbolisation into a permanent *krisis*. “Con”/“com,” because it operates in the realm of the senses with bodies, substances, and materials, colours or sounds, and noises, delineates the movement of this crisis. Art, we must add to Nancy’s thoughts, participates in this act. It knows the endlessness of the symbolic, which can only be held together by the constellation, con-

5 Usually “as” is associated with predication, the principle of which is synthesis through use of a copula. If, however, subject and predicate are connected by a copula, a shift of perspective takes place in the transition from “A is p” to “A as p.” While “is” is always bound to language, “as” can take place in a variety of media. There has not yet been sufficient philosophical investigation of the varying modes of “as” in different media.

junction, or stringing together of elements, in which the break or aberration is always also present, and, thus, the potential for transposition and mutation. Art therefore always also participates in a diabolic, subversive act, or a “de-participation,” in order to bring something unknown to the fore.

To better understand aesthetic thought and its specific form of knowledge, we must however also look at the entanglement of “con”/“com”—the source of “as” and of the duplication and splitting of something into “something as something”—with the practices of through/*per/dia*, and the techniques that impart their specific modality. While in principle this entanglement exists in every form of making sense,⁶ unique to aesthetics is both art’s status as genuinely singular and the fact that it can set both of these movements—the associative conjunction and the medial performance—against one another. No composition formulates a thought just as no picture reveals a general truth; rather, they present individual sounds, silences, and rhythms, or lines, colours and background materials, just as a text links its specific words, even if it is a copy or a technical reproduction. Even when innumerable monitors show “the same thing” they do not have identical contents because of the gaps between them and because no technical assembly, no exhibition space, and no audience function are exactly the same. The artwork’s difference or disunity proves to be a vehicle of “not as” or “other than” and inserts a break to reveal, as Marcel Duchamp put it, *inframince* (Tono 1984, 54–58),⁷ a reflection or unsettledness. Every act (*drama*), as theatre perhaps demonstrates best, seems for this reason to be burdened with the risk of failure from the start. It depends upon the specificity of its “dialogue” with other similarly interwoven—or cut and fragmented—acts for an argument or critical reflection to emerge (Mersch 2002).⁸

ONE PLUS ONE EQUALS THE OTHER

This is why James Elkins brusquely distinguished between artistic and mathematical arithmetic. While the later calculates with formal units, and their addition is always subject to the same rules, the former counts “obscure” *singularia* that can always be put together differently and nevertheless result in $1 + 1 = 1$,

6 This entanglement means in the end a joining of “meaning” and “mediality” or “performativity” as the practical modus of the medial. It shows the necessity of mediation for the constitution of meaning. This means that meaning cannot be reduced to the “as” function of the copula, but is always modulated by the medial in which “as” is articulated. See also Mersch (2015b).

7 Art is particularly well suited both to activate such *inframinces* and to sensitise its audience to them. This goes hand in hand with the concept of “microperception” found in Deleuze and Guattari, and especially in Brian Massumi. Aside from the implications Massumi’s theory of affect carries for the reception of art, it is important to note that Duchamp’s *inframinces* are at the threshold of perception, while, for Deleuze and Massumi, “microperception” is just below this threshold. For Massumi, microperception “registers only in its effects.” He speaks of “cuts” or “microshocks” in an “interval smaller than the smallest perceivable.” How then can we perceive and talk about them? Evidently, microshocks or microperceptions are infinitesimal. Clearly then, this is a purely theoretical concept, especially when Massumi says intervals are cuts in “infinite division.” Massumi is attempting to think something that is literally too small to name; microperception can at best be theorised indirectly, a project for which Massumi unfortunately offers no conceptual framework. It is an attempt that remains on the level of a philosophical goal (McKim and Massumi 2009).

8 “Argument” is meant figuratively here, not as the basis for an idea, but *argumentum* in the sense of a “small drama” or a figuralisation or theatricalisation of thought. On this, see Mersch (2002).

whereby each 1 is an Other:⁹ “Every mark is a different beginning: one, one, one . . . and so on forever . . . Each mark is unique. . . . They form a set or a group or a composition that consists of two unique elements, two ones, existing together and making something new, which is another one” (Elkins 1999, 41). The same equation holds for the processes of transmutation on which alchemistic research is based. Constellation and the resulting composition/decomposition are strangers to identical repetition, but iteration and adding at least one new element is necessary in order to connect, to link one to one while also allowing each one to stand apart. Dick Raaijmakers spoke similarly about music: “Placing one single point is not enough for expressing something. At best it would be a demonstration. . . . This situation changes when a second pin is added because that creates a relationship between these two needles” (Raaijmakers 2005, 85). This is classical counterpoint—*punctus contra punctum*—albeit in a modern sense and beyond tonality.

Arnold Schoenberg in contrast falls back upon old models when he speaks of three constitutive elements and uses terms such as “tension” or “balance” to address the entire composition as the “compositional thought.” Since John Cage at the latest, it is not simply the difference between tones or notes that counts, but the underlying difference between sound and silence, and between notes and noise. Yves Klein illustrated this radically in his “Monotone-Silence” Symphony, in which one consonant chord held for twenty minutes is followed by a silence of the same length, and nothing else.¹⁰ Each reprise, each iteration, is the piece’s “alter.” As a result, iteration is founded on an elementary disjunction sufficient to awaken the hieroglyphic magic of the composition (Schoenberg [1946] 1984, 123).¹¹ The number not only functions as a mystical parameter—important too for alchemy—but within the aesthetic realm itself becomes a material, a corporeal living being, the metaphor of which might be the homunculus, or “little man,” as a mediator for magic processes. The mystery of the constellation is its unsystematic structure, the zone of incompleteness that points in many directions, opening an indeterminate field of figurations.

9 It is possible to go one step further, as Alberto Giacometti did, and write the equation as $1 + 1 = 3$, so that each singularity as well as the conjunctive “+” is counted. On this, see Didi-Huberman (2015).

10 The “Monotone-Silence” Symphony was famously part of the 1960 anthropometry performance at the Galerie Internationale d’Art Contemporain in Paris. In a certain way, it was a parallel programme to his monochromes. Klein later said this had been his key work; he had tried to devote his life to the theme of this symphony.

11 In particular, Schoenberg ([1946] 1984, 123) writes: “Every tone which is added to a beginning tone makes the meaning of that tone doubtful. If, for instance, G follows after C, the ear may not be sure whether this expresses C major or G major, or even F major or E minor; and the addition of other tones may or may not clarify this problem. . . . The method by which balance is restored seems to me the real *idea* of the composition.” This means the number “two” creates instability and a third thing is needed to settle it. This third element creates balance, or *harmonia*, but only the whole gives this balance a meaning.

ART'S REFLEXIVITY

However, we named one further criterion. For it is not enough to just put something together or associate it with something else in order to do art. Artistry is something more, which goes beyond mere collecting and assembling, even beyond metamorphosis and transmutation. Rather, what is important is the “event of situating” (Mersch 2003, 2004, 2015a)¹² the individual “face” or the unmistakable hue that it takes on. Crucial is the way in which each respective composition is able to come back to itself by “de-composition” and rupture, produce something “in-between”, de-mark and re-mark it, and thus create self-reference.

This is why it is too little to study, as most “media ecologists” do, only the formation of relationships and their networks (Hörl 2013). Formalism, the ordering of knots and edges, is not of interest here, but rather the concrete performance, the frame and contextualisation, as well as a *capability for self-reflection*. An amorphous black object in a white cube evokes a dual contrast—between white and black and between geometry and formlessness—and therefore stirs up numerous connotations concerning space and place, foreground and background, transparency and opacity, form and deformation, and so on. In the same way, two identical objects placed in the furthest corners of an exhibition stand out as an opposition whose “communication” incites speculation on proximity and distance, inclusion and exclusion, and so on, just as a solitary building, an architecture, gains meaning as a gesture of negation through (*per/dia*) its uniqueness as a facade in time, breaking through the surface and in this way setting a difference or separating. Nevertheless, two things can also be placed too far apart to allow associations to arise, just as hushed tones very far apart from one another in an environment full of sounds do not necessarily garner attention.

CONDITIONS OF ARTISTIC THOUGHT

There is thus no way of guaranteeing the success of artistic interventions or positionings, but we can name some minimal conditions that contribute to success. To these belong, first, that “something”—an object, a sound, a phrase, a picture, and so on—must place a border or difference together (*con/com*) with an Other, whether a background, a word, an action, or an entity. This first characteristic of aesthetic thought is an instantiation of strategies of difference, just as artistic labour is beholden in general to an economy of difference or “*partage*” (Rancière). This is what first makes the “con”/“com” of constellations possible as *the* constitution of the composite.

Second, the type or modus of connection and disconnection seems to be important—the respective play of its “togetherness,” the specific way elements are juxtaposed, the role of the fugue or distance “between” the elements, and how the interstices, the emptiness, and the relationship of proximity and distance, or amplitude and dynamics, takes on its own weight. This second charac-

12 On the concept and use of the term “performativity,” see Mersch (2003, 2004, 2015a).

teristic of “aesthetic thought” concerns that which goes beyond putting things together side by side and manifests a transgression or a surplus that exceeds its elements. Most important seems to be that the juxtaposition of things puts something in the world in a performative sense, which creates a shift, a *metabasis* or transposition, a passage towards something different—that is to say the specific *how* is key, not *that* (*quod*) it exists or subsists.

DIS-CONCERTS OF TRANSPOSITION

It appears necessary, third, that it have the ability to re-mark itself, as I have called it, to show or exhibit itself and to dis-concert (*Ent-Setzen*) at one and the same time. This self-exhibition brings about an exposition, disturbing the composure of its transposition. Both point towards that which we have found to be the core of artistic thought: *its power to induce reflexivity*. Its means are exposition and transposition. These can work in many ways: by stretching the interstices, the distances between, the dislocation or incommensurability of the *relata*, by exhibiting a conflict or “rift,” or through a contradiction or discord in the “togetherness” of its elements. Each of them causes certain transmutations. Their excess or surplus is then perhaps the ability to dislocate, to leap *to the side*, like Joseph Beuys’s smartly sidestepping hare that has leapt ahead and is somewhere other than it seems to be. “Aesthetic thought” is based on such leaps. Paradoxical interventions to disclose what is hidden are their silver bullets. This can happen for example when the juxtaposition of elements documents their mutual strangeness, so that bringing them “together” at the same time “separates” them and repulses us. It also means thinking in experiments in transformation and hyperbole with unknown results, to lure out that which the “labour of the concept” leaves chronically under-said. In this manner, “artistic thought” is always already critical thought, and contradicts rational thought and its regimes of truth and discursiveness. It undermines the implicit metaphysics of philosophical systems and, in a kind of “parallel action” (Robert Musil) to the many philosophical critiques of the twentieth century—which, not accidentally, make use of aesthetic, and especially literary, strategies (one need only think of Nietzsche, Heidegger, Adorno, and Derrida, each in his own way)—allows “another thought” as well as “thinking the Other” to assert itself. “Something” extraordinary catches our attention and breaks the threads of ordinary observation. This is also exactly what it means to trigger reflexive events of perception: they cannot be deduced, but are effects of the paradoxes and aporia that arise from the entanglements or disarrays of the texture itself.

For this reason, fourth and finally, “artistic thought” is in many ways connected with evidence, with wit, with the incident of a sudden break. Transposition is based in the moment of this suddenness, as transmutation originates in spontaneous transformation processes from one state into another. Rather than being an ontological “spring,” in the double meaning of both “jump” and “source,” it produces epistemological leaps. Artistic thought at once changes perspective, opens up the perceivable in the realm of the non-perceivable, and lets things appear in a strange and alien way.

We spoke therefore about reflexivity as the very criterion for art, in contrast to everyday aesthetic practices or flat popular genres—reflexivity, however, not as reflecting on, the foundation of which would be intentional consciousness, but verbatim as a turning back on itself or mirroring; an inversion not only in relation to an object and its content but also in relation to the form, the processes used, as well as the work's means, materiality, mediality, or conditions of perception, and much more. It is a *reflectio in re*, a medial or performative self-reflexivity within the thing's constellations and their constant alterations. It is neither the artist nor the recipient who reflects; rather reflexivity takes place as an event within the compositional process and its transitional impact in order to, *through* it, draw something out that could not otherwise be elicited. The concomitant movement is a leap (*Sprung*) without causality or derivation. The aesthetic reflexivity in which we are interested follows such leaps and bounds—passages without origin or finality. It is like an opening about which one can only say that it exists and that it happens—like a rift that suddenly and unexpectedly reveals something that had previously been hidden. At the same time, it is also, in my view, the moment where the by no means obsolete differentiation between art and not-art again comes into play. Not until the figures are broken up in equal measure by a de-figuration, and the constellation turns in upon itself and exposes a dis-concertedness whose discord or “dissensus” (Rancière) creates a conversion, are we dealing with something that can be signified as the very “artness” of art.

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Alchemistic Transpositions

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Ineffable Dispositions

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Writing, in other words (and here we don't have recourse to anything other than words), involves transposition. This text is composed of words that will have found their final places through numerous steps of editing. I will have written in fragments. The ensemble of words will have found its shape in a close relationship with my presence in distinct places, in different cities, in separate rooms. Right now I am sitting on a balcony in Bremen (and now as well). This sentence was born on a gentle summer evening on that balcony (the parentheses were added a couple of weeks later in Helsinki). Other sentences might be formulated on a chilly morning (actually today is that kind of day) or in the night, in a completely different mood, probably in some other place, perhaps even under an umbrella in an outside location. At the end of the day, only what remains counts. But the words will not cease to be fitted together again and again in the wake of layered acts of reading. In the process, recognisable tropes, argumentative modules, and gestures of ventriloquism start to strike sparks off one another. At some point, the afterlife of the text outweighs the history of its origins.

Since the matter of this writing is words, special attention should be drawn to those words from the outset. If putting words after one another in a carefully weighed order has the purpose of constructing or reconstructing a communicable movement of thought, it also involves a passage across something that might be called “positions,” local arrangements with relational particularity. In a word: it involves *transposition*. In the course of this movement, there will have been kinds of holds or footings followed by each other, since “trans-” is actualised in the middle of intervals, differences, and points of reference. Here, in this text, the relational arrangement is composed of words. Whenever the movement of thought, instead of being organised in chains of words, is arranged in another medial setting, different kinds of passage take place. When these passages, in turn, become a matter of verbal articulation, as is often the case at the border zone between the arts and academia, they might be called “intersemiotic transpositions” (see Jakobson [1959] 1992, 151). In the process, both “trans” and “position” have to be addressed in more detail.

The encounter between art and academia taking place in the variegated intersemiotic settings of artistic research makes us face two compelling issues: (1) The multi-dimensionality of sense. Sense cannot be reduced to meaning. Neither an author's verbalisable intentions (so-called subjective facts) nor discursively established interpretations (so-called objective facts) can serve as ultimate points of reference. All facts are made; they imply selection and reduction in regard to an excess of sense. (2) Non-human agencies. Artworks

have agency of their own. Artistic research gestures do not take place only on the level of (verbal) argumentation or thematic content; and they cannot necessarily be followed back to the author. Together these two issues hint at what Derrida calls the “graphematic structure” of communication (see Derrida 2000, 19). They point at the necessity of medial embeddedness and the iterability of all impartable sense and call for generalising the notion of writing. Artworks can become a site of a “revelatory negotiation” that highlights and weighs its own conditions of existence with regard to the prevailing horizon of communicability (Elo and Laakso 2016). Insofar as artworks have the capacity to effectuate shifts in perspective within various discursive formations, they can be said to function as “boundary objects” that change their ontological and epistemic nature depending on the context in which they are made operative (see Borgdorff 2012, 117).

These two insights result in a complication. Questions of writing and documenting, that is, various ways of articulating and converting sense, become questions of negotiation and legitimation. Here, we have to keep an eye on the multiplicity of senses of the word “sense.” Besides rationality and meaning “sense” refers also to awareness, feeling, and perception. What I call “articulating and converting sense” refers to processes that take place in all these registers of sense and between them. Against this background, the negotiations of sense at the interfaces of arts and academia—in Henk Borgdorff’s (2010) terms, “boundary work”—concern also the registers of sense and the questions of whether, how, and why some of them are prioritised over others.

In many Romance languages, the presence of the Latin *trans-* in the vocabularies of conversion of sense marks the process of moving from one domain to another: *translation*, *transmission*, *transmutation*, *transduction*, *transference*, *transposition*. A multiplicity of words is available for grasping something of the mode of conversion and its medial setting. This rich repertoire, however, incorporates culturally conditioned hierarchies. In a tradition where the written word has been for centuries the dominant form of reproducing sense, translation appears as the paradigmatic representative of these trans-operations. In many contexts, not least in those of research, the dominance of translation is hypostatised by the valorisation of signification and verbalisable meanings over other dimensions of sense, such as feeling. This legacy is present in variegated forms in the ideas of “culture as text” (Geertz) and “cultural translation” (Bhabha) and “translation as invention” (Latour). The term “translation proper” (Jakobson) referring to “interlingual translation” is particularly revealing. The Finnish word for “translating,” *kääntää* (literally, “to turn”), adds an interesting twist to the Romance scenario of trans-operations. It hints at a key element in translation as a trans-operation: in the process of passing from one language to another, something that is slumbering beyond the meaning-oriented chain of words comes to the fore, turns present, *kääntyy esiin*. This chapter will concentrate on pondering this “something” with regard to artistic research as transpositional activity.

ARTISTIC RESEARCH SYNDROME

My approach to transposition is informed by the hypothesis that an ongoing destabilisation of the culturally conditioned hierarchies between different dimensions of sense can be discerned through a symptomatic reading of artistic research activities. This starting point is necessarily selective and it can produce only partial diagnoses. From the chosen point of view, artistic research appears as a sensitive frame for testing various trans-operations and contesting the hierarchies between them. In a wider cultural theoretical context, the transformative potential of artistic research that is at stake here, is closely related to what Erich Hörl (2015) has outlined in terms of “displacement of sense” and to the ongoing re-evaluation of cultural techniques highlighted for example by Sybille Krämer and Horst Bredekamp (2013).

Hörl describes, with a media aesthetic emphasis, the displacement of sense in terms of an emerging object culture that operates in micro-temporal regions and makes use of cybernetic processes. In his exposition, this new culture ends up shattering the entire sense culture, which is based on processes of signification and a hermeneutic type of subjectivity (Hörl 2015, 3). Hörl’s account indicates the increasing cultural relevance of sense-making processes beyond linguistic signification.

In their critical account of the current state of cultural techniques, Sybille Krämer and Horst Bredekamp (2013, 22) describe the discursive concept of culture in polemical terms: “the direction of our changing meaning of culture goes from technique to text, from things to symbols, from processing to interpreting.” They highlight the misjudging of the epistemic power of images, the disavowal of mathematical formalisms, and the lopsided focusing of media theoretical research on the relationship between orality and literacy as the essential features of this textual view of culture that was dominant until the 1980s (*ibid.*, 21–22). During the past few decades, however, the textualisation of our culture has reached its limits. Krämer and Bredekamp (*ibid.*, 23–24) note that the idea of culture-as-text is currently eroding at four frontlines at least: we are successively recognising that (1) culture-creating practices are fluid, (2) there are “silent processes” of knowledge, (3) notions of “mind” and “sense” need to be dehermeneuticised, and (4) imagery has an epistemological dimension. All four of these frontlines are strikingly familiar from the discussions around artistic research.

Krämer and Bredekamp summarise their account in the form of an explication of the different dimensions of cultural techniques. This concise passage is worth quoting here in its entirety, since it reads like a description of artistic research practices and thus highlights the key elements of the transformative potential of artistic research:

Cultural techniques are (a) operative processes that enable work with things and symbols; (b) they are based on a separation between an implied “know how” and an explicit “know that”; (c) they can be understood as skills that habituate and regularize the body’s movements and that express themselves in everyday fluid practices; (d) at the same time, such techniques can provide the aesthetic and

material-technical foundation for scientific innovation and new theoretical objects; (e) the media innovations accruing in the wake of changing cultural techniques are located in a reciprocity of print and image, sound and number, which, in turn; (f) opens up new exploratory spaces for perception, communication, and cognition; and (g) these exploratory spaces come into view where disciplinary boundaries become permeable and lay bare phenomena and relationships whose profile precisely does *not* coincide with the boundaries of specific disciplines. (Krämer and Bredekamp 2013, 27)

Point (b) is especially interesting with regard to the transformative potential of artistic research. Insofar as artistic research processes involve heightened sensitivity towards their own mediality (see Elo 2014a), artistic research can be seen as transpositional activity that tests and contests the criteria of the separation between “knowing how” and “knowing that.” It questions the conditions of explication—that is, processes of unfolding, foregrounding something with the help of something else. Point (b) also reveals the tensional relation between functionality and invention implied in all points of the quoted description. A cultural technique that works is a transparent vehicle for the operations it enables at the same time as it incorporates a certain opacity or friction that offer starting points for transformation and opens up exploratory spaces.

With this culture-theoretical scenario in mind, I consider artistic research practices as a set of transformative cultural techniques, that is, as operative processes that deliberately touch upon their own opacity. From the symptomatic point of view this set can heuristically be presented as a syndrome. Analogically to medical uses of the word “syndrome,” *artistic research syndrome* is a cultural condition characterised by a set of loosely associated symptoms. From the chosen point of view, all the symptoms concern shifts in the hierarchical relations of dimensions of sense: the crisis of theory-driven models of research and the revival of pragmatogonic research settings, the radical relativisation of human-centred conceptions of world, and the recognition of previously underestimated forms of cognition. The terms “symptom” and “syndrome” do not refer here to any features that might be seen as pathological. Rather, they signal that the “issue” or epistemological core of artistic research is not fixed and that it appears only indirectly at the intersections or boundaries of different contexts (see Borgdorff 2012, 120–21). Further, the symptoms highlighted point at the successive recognition of the medial embeddedness of what in the discussions around artistic research, under the pressure of the neo-liberal knowledge economy, is often called “knowledge production” (see Holert 2015, 281–84). They testify to the “mediality of sense” (Elo and Luoto 2014, 8).

To avoid a normative and limited view of the symptomatic phenomenon of artistic research it needs to be acknowledged that a privileged point of view from which the set of symptoms could be described in an objective way does not exist. “Artistic research syndrome” is a contingent constellation of symptoms that becomes readable only from selective points of view. In other words, the scenario that I am outlining here is a heuristic construction.

MAGICAL WRITING

Artistic articulations that are not based on propositional statements can gain the status of research only in a situation where the instrumental supremacy and functionality of the most widely established medium of research, that is, verbal language, has become radically questionable in its relation to other media. Until now, however, words have remained indispensable in the communicative processes of artistic research as well as in their theoretical and institutional framing. Even if artistic research clearly implies a transpositional horizon of writing beyond verbal language, it seems to me important to unfold the question of transposition from within verbal language in order to avoid blunt oppositional diagnoses of the symptomatics of artistic research.

For a symptom to appear, a certain sensitivity to the medium of its appearance is required. Walter Benjamin, who cultivated an extraordinary sensitivity to the medium of his thinking—the written word—offers a fecund point of reference for pondering the “artistic research syndrome” with regard to verbal language.¹ Benjamin’s letter from July 1916 to Martin Buber is a thought-provoking instance of his uncompromising ethos as a writer. In this letter, Benjamin gives a negative answer to Buber’s request for a contribution to the journal *Der Jude* (Benjamin 1994, 79–81). He explains why he refuses to write in this particular context at that point of time. His refusal is principled. For the theoretical concerns of the present text, it is necessary first to show how this decision stems from Benjamin’s peculiar understanding of the political potential of writing, and then to consider what kind of implications this might have when transposed into the context of artistic research.

Benjamin distances himself from a certain understanding of politically engaged writing that was dominant during the years of war in Europe. The critical issue for him is the use of words as a means of motivating action. His answer to Buber revolves around problematising the widespread opinion “that writing can influence the moral world and human behavior, in that it places the motives behind actions at our disposal” (Benjamin 1994, 79). In Benjamin’s view, Buber’s journal was about to adapt to this mainstream too well. The problem for Benjamin is that this widespread view of political writing takes for granted that political motivations can, and therefore should, be verbalised. This problematic starting point suggestively prepares the ground for motives of action, both in terms of their rationale and thematic scope. At the same time, it completely fails to see the possibility of a non-instrumental relation between language and action. Politically engaged writing guided by this kind of ethos, in other words, instrumentalises language. In the same gesture, action for which words prepare the ground for is rendered instrumental as well, since the use of language as a means of motivating action implies that goals can be put into action only within the realm of linguistic representations: “these motives can be discussed; others can be juxtaposed to them, and thus the action is

¹ It is plausible to consider Benjamin even as an artistic researcher *avant la lettre*. I have presented this argument at length in Elo (2014b).

(fundamentally) placed at the end as the result of an arithmetic process, tested from all sides” (Benjamin 1994, 80).

This kind of apparatus of political writing psychologises the political. In Benjamin’s view, its mechanism is that of a syntactical chaining of words that relies on understanding words as carriers of shared meaning. This apparatus knows writing only as the writing of something that lies both in the realm of the possible and that is compatible with what is generally argued for or against. In other words, it is an apparatus that determines the conditions of communication; it formats communicability. As Samuel Weber (2006, 604) notes, in contemporary vocabulary we can say that Benjamin formulates here his radical critique of “political correctness.” With regard to artistic research we might also interpret Benjamin’s critique of thematically political writing in terms of a critique of productivity. In light of Benjamin’s critique, writing that is meant to serve artistic knowledge production instrumentalises both artistic practice and its output, at the same time as it emphasises the value of linguistic representations. If the thematically political writing criticised by Benjamin psychologises the political, that is, narrows down the scope of the political, writing that focuses on serving knowledge production in artistic research—I am tempted to call this kind of writing *artistically engaged research writing*—risks losing touch with itself as a medium of transposition. It risks positing itself as the realm of explicitness—as the realm of “ultimate unfoldings,” as the etymological root, *explicitus*, implies. It risks numbing the feel of its own mediality and measuring itself against other, supposedly more opaque, modes of articulation. The distinctive character of Benjamin’s critique, its essential embeddedness in written language, underlines the importance of “media sensitivity” in the processes of explication (see Elo 2014a).

The alternative proposed by Benjamin is *magical writing*. Instead of being a means to something, magical writing is un-mediated (un-*mittel*-bar), it is its own medium. In contemporary vocabulary, one might call it “performative,” insofar as the term refers to the force and unmediated efficacy of bringing into being by writing (see Bolt 2016). Language may prove to be effective in many ways, but its efficacy, according to Benjamin, will never be essentially determined by transmission of content; it is conditioned by its self-relation that makes up “the purest disclosure of its dignity and its nature” (Benjamin 1994, 80). It is a question of “touch” (see Elo 2014a).

This emphasis on mediality echoes Benjamin’s language-philosophical reflections collected in his working notes stemming from the same year as the letter to Buber. In these notes, later published under the title “On Language as Such and on the Language of Man,” Benjamin summarises his philosophical account of language. Here, the term “language” must be understood in a broad sense. According to Benjamin, “every expression of human mental life can be understood as a kind of language” (Benjamin [1978] 2004, 62). His list of examples includes the languages of technology, justice, music, and religion (*ibid.*, 62). For Benjamin language is a historical process distributed in many kinds of medial settings, and it is characterised by a tensional relation between mediation and immediacy (Elo 2007, 143–67). On the one hand, language is liable

to processes of instrumentalisation. It tends to become a means of communication, that is, technics. On the other hand, by its own means, it is essentially communication or, more exactly, “imparting,” *Mitteilung* (Weber 2008, 38–44). Insofar as language communicates, it does so immediately; it is in this sense “magical” (Menninghaus 1995, 78). This polarity between technics and magic inherent to all languages (both verbal and non-verbal ones) becomes tangible whenever a language comes in touch with another language. Benjamin underlines that languages relate to one another; in all their differences they show a “peculiar convergence” (Benjamin [1968] 2004, 255). This implies that the task of translation emerges at the interface of two languages not only as the task of negotiating between their different ways of making sense but also as the task of constructing a viable relation between linguistic technics and magic.

This language-philosophical position informs Benjamin’s answer to Buber. The key idea of Benjamin’s “magical writing” that he also calls “highly political style” can only be understood against this language-philosophical background. Its concept is to “awaken interest in what was denied to the word [*das dem Wort versagte*]” (Benjamin 1994, 80). This is effectuated through “crystal-pure elimination of the ineffable in language” (ibid.). Instead of channelling the linguistic powers to a meaning-oriented chaining of words, magical writing plunges into the depths of language that words tend to fail to reach. Only where the “sphere of wordlessness [*Sphäre des Wortlosen*]” within writing reveals itself “can the magic spark leap between the word and the motivating deed . . . Only the intensive aiming of words into the core of intrinsic silence is truly effective” (ibid., translation adjusted).

In this short letter, Benjamin’s extraordinary sensitivity to the medium of writing comes to the fore in an exemplary way. It shows Benjamin’s “poetic art” to which he remained faithful in all his writings (Lacoue-Labarthe [1992] 2002, 12). In the letter, Benjamin not only describes his concept of magical writing but also performs it; he diverts his writing from the syntactical chains of meaning towards the “core of words” (Weber 2006, 605). This transposition is a passage towards that which individual words fail to say but nevertheless contain. Samuel Weber (ibid.) highlights the word “elimination” (*Eliminierung*) and points out that we need to read it literally to recognise that it includes the term *limen*, “threshold.” In light of Weber’s reading, Benjamin doesn’t use the word “elimination” in the sense of “getting rid of something once and for all,” but rather in the sense of pushing the limit, e-elimination. Consequently, the “crystal-pure elimination of the ineffable in language” involves a passage over a threshold of meaning actualised in syntactically ordered word strings, a passage into the core of words, into the sphere where words become mute. The effect of this passage is a kind of shortcut between different registers: what could not be said finds its place in writing. This operation does not, however, efface the ineffable. Furthermore, it makes readable something that actually was never written. With regard to the references that I have taken up earlier in this text, this might be called *intralingual boundary work*. As a transpositional operation of conversion of sense, Benjamin’s way of creating shortcuts between unfolded meanings and unspoken dimensions of writing destabilises culturally condi-

tioned hierarchies between speech and writing as well as different dimensions of sense. Benjamin shifts the emphasis from what might be called homeostatic tendencies of discourse to the diastatic processes operative in it—the rhythmic patterns, physiognomical details and infinite reconfigurability of sense. He does not eliminate the ineffable, he shifts boundaries of sense-making and thus prepares the terrain for artistic research as transpositional activity, or “writing,” beyond linguistic signification.

To sum up, Benjamin’s magical writing is not effective in terms of establishing a causal relation between language and action or within the horizon of instrumentality. Its efficacy consists in a passage into the sphere where words fail to signify what they nevertheless incorporate. This passage gives rise to a magical spark between word and deed; it is a performative spark, indeed. It makes the cultural technique of writing opaque by blurring what Krämer and Bredekamp (2013, 27) call the “separation between an implied ‘know how’ and an explicit ‘know that.’” This effect is never long lasting, but rather local, transient, and punctual. Whenever tangible, this magic effect complicates the criteria according to which we tend to posit oppositions such as content/form and figure/background. Even a clear demarcation between means and ends becomes impossible.

APPARATUS OF ARTISTIC RESEARCH

The theoretical implications of Benjamin’s “magical writing” to artistic research can be explicated here a bit further (even if further unfoldings might need to take place somewhere beyond words). As a way of doing this I will attempt a conceptualisation of artistic research beyond any limited disciplinary setting as a historically variegated apparatus consisting of technics, practices, and discourses. The conceptual move needed here finds its parallel in Giorgio Agamben’s way of expanding the Foucauldian notion of *dispositif*. For Agamben (2009, 14), an apparatus (*dispositivo*) is “literally anything that has in some way the capacity to capture, orient, determine, intercept, model, control, or secure the gestures, behaviors, opinions, or discourses of living beings.” For him, the key issues at stake in such apparatuses are “processes of subjectification,” “humanization,” and “the possibility of knowing the being as such,” that is, construction of a world (ibid., 12–14). In short, an apparatus is an assemblage of material circumstances and technical arrangements that disposes—as the etymology of “apparatus,” *apparare*, “make ready for,” suggests—the phenomenal horizon of experience.

Against this background, the “peculiar convergence” of different languages that Benjamin writes of can be rephrased in terms of an inherent tendency of languages to assemble with each other into apparatuses. The approach suggested here involves considering the intersemiotic encounter between different modes of articulation in terms of an “assemblage,” that is, as a moment of reconfiguration through relations of exteriority, both material and expressive in kind (Deleuze and Guattari 1987, 88 *passim*). This move highlights the

relevance and historical variability of the intersemiotic processes operative in artistic research practices.

A note concerning the relation between the notions of language and apparatus is needed, since both Benjamin's "language" and Agamben's "apparatus," serving here as the main points of reference, are rather plastic notions. For Benjamin, any kind of expression counts as language: in fact, "we cannot imagine a total absence of language in anything," not even in the world of things (Benjamin [1978] 2004, 62–63). Agamben, in turn, expands the notion of apparatus beyond the historical specificity of Foucauldian Knowledge/Power settings to include virtually all kinds of cultural techniques. In his exposition, verbal language turns out to be, in terms of its ontological effects (subjectification, humanisation, and construction of a world), a metonymic model of apparatuses in general (see Agamben 2016, 111–45). As such, it comes very close to Benjamin's notion of language—in so far as it concerns human beings.

It is important to note that both Benjamin and Agamben insist on the multiplicity of languages/apparatuses. As medial settings of sense they never appear alone, they are embedded in each other's co-appearance, they intersect and intermingle in multiple ways. Exposed to this multiplicity they are impure. In media theoretical terms relevant to artistic research, this condition has been described as a "post-medium condition" (Krauss 1999).

Benjamin's idea of "pure language" helps us find another footing for "linguistic purity" of the apparatus of artistic research. Benjamin ([1968] 2004, 257) emphasises that all languages aim in their own singular ways at one and the same thing. His term for this is "pure language"—a dimension of language that cannot be attained in any single, separate language, but only in the multiplicity of different languages mutually supplementing one another (*ibid.*). In short, "pure language" becomes a name for the origin of sense. "Origin" here, however, is not a ground or a stable point of reference. Rather, it is an eddy or maelstrom (*Strudel*) that brings heterogeneous elements together according to a logic that is historical (Benjamin [1998] 2009, 45). As sense-making apparatuses, languages are assemblages both in terms of their supplementary relations and in the sense that instead of speaking of things they speak on the same level as things they bring together. For Benjamin language is essentially *in medias res*; it participates in the world of things. His notion of language is both wide and abstract but "in no way metaphorical" (Benjamin [1978] 2004, 62). Deleuze and Guattari show a strikingly similar understanding of language in *A Thousand Plateaus*. For them, language is an abstract machine that does not appeal to any extrinsic factor. When conceived in terms abstract enough, a language machine is no longer a matter of verbal language only; it appears as the machinic aspect of the collective assemblage of acts, statements, and incorporeal transformations attributed to bodies (Deleuze and Guattari 1987, 87–91).

In short, language apparatuses are always impure; they are assemblages. This applies also to the language apparatus of artistic research. The imagined unity of it is an effect of its consistency, its capacity to originate sense. It makes up a "distributive unity," to use Peter Osborne's (2013, 122–23) apt term. Osborne

develops the notion in relation to the Kantian idea of aesthetic unity of experience—that is, a unity without any rational ground other than the fact of its practical continuity and contiguity. For Osborne, “distributive unity” is the “logical form of the historical unity of empirical forms”; it is a pragmatic unity (ibid.).

ARTISTIC RESEARCH AS A TRANSPOSITIONAL FRAME

During the past few years, “artistic research” has gained—rather pragmatically—the status of an overarching label referring to various research activities within the arts and art universities. In its broadest sense, the label refers to a wide range of research activities and approaches, for which the arts do not constitute the object of study but rather the practical and methodological terrain of research. In a more strict sense, it refers to a specific methodology or a field of research. In both cases, the question of its status as a discipline arises (Arlander 2014).

I prefer shifting the focus from questions of disciplinarity to dispositions beyond the logic of representation. Against the language-philosophical background discussed above, the apparatus of artistic research appears as a distributive unity of processes, technics, arrangements, material circumstances, regulations, and articulations that format the experiential horizon of artistic inquiry. With regard to this scenario, one of the key challenges of theoretical discussions concerning artistic research is to grasp this assemblage, this set of symptomatically related arrangements and agencies, in terms of its capacity to convert sense.² Attention has to be paid to the transpositional consistency of distributed processes instead of the proprieties of a conceptually or institutionally delimited field of research. This implies considering artistic research as a transpositional frame rather than a discipline.

To unfold further the idea of artistic research as a transpositional frame, a shift in the vocabulary is needed. In light of the analogy between thematically political writing and artistically engaged research writing discussed above, “artistic research” is a problematic notion. The problem lies in the qualifier “artistic” and its implied counterpart “academic.” The key issue is not whether particular research is “artistic” enough to qualify as *artistic* research or “academic” enough to count as artistic *research*. Supporters of this kind of view end up reproducing normative conceptions of art. The real question is, how to conceive a frame where multiple forms of inventive processes fostered in the arts can be recognised, discussed, evaluated, published, and developed further in terms of research. We need to divert our reading of the term from its disciplinary connections to the sphere of its dispositional surplus: the commitment to transform “knowledge production” into transpositional space or a “space of thinking,” as Michael Schwab (2012, 243) puts it. I emphasise that it is necessarily a question of *multiple* forms of research, not only because there are multiple

² In Tuija Kokkonen’s terms this distributive unity can be seen as an experiential effect of “weak action” distributed across the divide human/non-human (Kokkonen 2017, 84–90).

arts, and not because different artistic research projects might recognise a vast range of motivations behind themselves, but due to the transpositional character of the whole constellation that I call “artistic research syndrome.” The very horizon of boundaries to be negotiated, tested, and contested is an effect of distribution and difference, and thus embedded in multiplicity. Further, as Benjamin’s idea of magical writing suggests, at points where practice and its motives are inseparable, artistic research takes place as an iteration of singular events, magical sparks.

MANIFESTOS

One of the key insights of the so-called “linguistic turn” was that thought is inseparable from language. What cannot be articulated in a language cannot be thought. The positivistic conclusion of this was to cut off from the scientific parlance everything that cannot be stated in clear terms. Continental philosophy, in turn, was urged to ponder the limits of conceptualisation within the medium of verbal language. More recently, in the wake of the so-called “medial turn,” questions of whether and how philosophical problems could or should be rearticulated in terms of medial embeddedness of sense beyond verbal language appear ever more compelling (Münker 2009, 7–29). Here, the borderline between a philosophy that reflects its own conditions of possibility beyond verbal language and artistic research that testifies to the philosophical tendencies within the arts gets extremely delicate. Being positioned at this borderline tends inexorably to turn into a question of commitment, choosing a task. Insofar as such choice is induced by a heightened sensitivity towards mediality of sense, as in Benjamin’s case, it becomes a question of style. Rather than a mere decoration, style, in the strong sense, involves essential intertwinement of the “what” and the “how” and commitment to work with the tension between these two. It is again Benjamin who offers us an apt formulation here. For him, “style is the jump-rope [*Sprungseil*] thought must take in order to push forward into the realm of writing” (Benjamin 1991, 202, as translated in Weber 2008, 115). In writing, thought must pull all its forces together, though without rigidifying into regularity. Style responds to this concentration of thought, offers hold, and yet at the same time stays loose in its recurrence like the skipping rope in the hands of the children swinging it, “always leaving room for the *Sprung*: the leap, to be sure, but also the crack,” as Weber (2008, 115) puts it. Insofar as thought “pushes forward,” the “what” and the “how,” in other words, never coincide. This transpositional tension is the demand of style.

According to Karl Marx’s famous slogan, the task of philosophy is not to explain the world but to change it. Marx and Engels’s *The Communist Manifesto* (1848) has been singled out as the text that sets the tone for this transformative ethos with its remarkable imaginative power and prophetic qualities (Danchev 2011, xx). It is no wonder, then, that this particular text has been a seminal model for artists’ manifestos. Its strategies and phrases have been recast and recycled in numerous artists’ manifestos of the twentieth century (*ibid.*, xxi). In terms of the imaginative power of words and phrases and its transformative

legacy, *The Communist Manifesto* figures also in Julian Rosefeldt's film installation *Manifesto* (2016).

Manifesto transposes a large number of historical artists' manifestos from their original contexts to that of a singular work of art. The words and phrases of the original manifestos are unchained from their semantic contexts and transplanted into new intersemiotic settings. In a series of twelve films, excerpts of the original texts are collaged into poetic monologues presented and embodied by the Australian actor Cate Blanchett. The result is a rich mixture of variegated gestures of interpretation, accentuation, recitation, indication, perversion, deconstruction, and parody that together revive the multifaceted reference materials, both textual and visual, in unexpected ways. The afterlife of the work overweighs the history of its origins.

Manifesto is not explicitly about artistic research, nor is it presented as artistic research. However, the strategies of displacing and collating the referential elements and composing them into the texture of the final presentation used in this work, *perform* the work as a transpositional arrangement that *could have been* pushed further and presented as artistic research. This distance in proximity cannot be appropriately measured in terms of any formal qualities, chosen methodologies, or institutional framing. It is a question of style.

Manifesto, even if it is not presented as research, reveals—regardless of its author's actual intentions—something essential of the function of words in artists' manifestos. At the same time as many of these words and phrases openly call to action, and in this sense tend to instrumentalise language, as Benjamin might say, they also perform a transformation of the horizon of action. Read through this Benjaminian lens, *Manifesto* demonstrates how writing becomes part of that horizon. As an intersemiotic assemblage it opens up an explorative space for experiential transformation where artworks appear as writing.

Darkness. A large exhibition space partly divided by walls with video projections. Spoken words discreetly fill the space. Recognisable tropes and unfamiliar ones are fitted together, again and again. I am involved in layered acts of reading. Right at the entrance: the burning and sparking fuse cord of a large firework rocket, in close-up and extreme slow motion. Hundreds of sparks out of focus, drifting away, until the rocket ignites in a spray of fire . . . Somebody says off-screen: "All that is solid melts into air. To put out a manifesto you must want: ABC to fulminate against 1, 2, 3; to fly into a rage and sharpen your wings to conquer and disseminate little abcs and big abcs; to shout, swear; to prove your non plus ultra; to organize prose into a form of absolute an irrefutable evidence. I am against action; I am for continuous contradiction: for affirmation, too. I am neither for nor against and I do not explain because I hate common sense" (Rosefeldt 2016, 5).³

Another screen further down in the exhibition space: A newsreader in a TV studio is waiting for the countdown before a live broadcast starts. She is checking her look and going through the texts of the different news items. She seems even to be rehearsing the lines

3 The line includes excerpts from *The Communist Manifesto* (1848) and Tristan Tzara's *Dada Manifesto* (1918).

quietly to herself. . . . When the managing editor ends the countdown, she starts reading her news with the typical voice of a newsreader. Intonation devoid of detonation. After a while she starts questioning a reporter via live conference. The questions concern originality and art. The reporter (embodied by the same actress as the newsreader) is standing under an umbrella in pouring rain reporting live from an outside location: “Art does not come from ‘nowhere’ or for that matter anywhere. Creativity does not pop into the head. There are grounds, forces, powers that create and make art a hazardous journey of leaps, crevasses, errors, daring and courage” (ibid., 49).⁴

If artistic commitment involves exposing oneself to a “hazardous journey of leaps,” in turn, it is tempting to see one of the key characteristics of a commitment that is “academic” in something like “the willingness to engage oneself in critical discussion with peers.” Associative freedom contra argumentative rigour. In terms of the transpositional demand of style, any demarcation between these two is, however, a rather complicated matter, since context is never only an external factor; it is also at work from within an endeavour, be it “academic” or “artistic.” Rosefeldt’s *Manifesto* stages this entanglement. It manifests that art and research show peculiar convergence: as transpositional activities, they relate to each other like the inside and outside of a glove; they are incongruous with one another. They show the most intimate relationship of reversibility, even though they cannot occupy the same space—except when they strike sparks off each other as writing.

As transpositional activity, artistic research, in other words (and otherwise than in words), involves writing—magical, to be sure.

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Without Remainder or Residue:

Example, Making Use, Transposition

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It happened as an epiphany. A transposition—in fact, more than one—had taken place and with it came an exposure of the functioning and control of a power that constitutes itself by separating something from it. And it begins with me being beckoned to see and think the peculiar existence of the example . . .

I

I'm at the threshold of a doorway between two rooms. I move from the threshold and enter one of the rooms. This much I can tell you: the place is abandoned. But wait, it is not empty at all. Just inside the doorway there is a small pile of sawdust and over there a shaft of sunlight is pouring in from a window, holding dancing particles of dust in its beam and illuminating a flattened cardboard box, which is a show of the geometrics of its construction. And look over there, almost in the corner of the room—it's a photograph that has been pinned carefully to the wall besides which an arc has been drawn (soft pencil mark) that extends from floor to ceiling. Let's say the room is thick with details. For sure, these details could be easily left to their individual or collective abandonment but, at this very moment, I'm being asked to consider these things as paradigmatic cases; that's to say, as examples.

At this point, everything in that room remains just as it is yet a little different. The Greek word *paradeigma* means “that which shows itself beside” and this is precisely what an example does: the example is found in a *para*-position. And in that abandoned yet not empty room where the sight of examples makes everything a little different yet exactly the same, it is this very position that is (again) demanding my attention.

What needs to be said straightway is that every example, no matter what, has to stand as a real particular case. There is no play of absence and presence, no question of representation: for every example has to generate and show that of which it is an example. Here it is—here is an example of sunlight.

In the room of examples in which I am standing, the movement asked of me is to go from the particular to the particular, and this is precisely the movement

that Aristotle gestures in the few words that he wrote on the example: “the paradigm [example] does not function as a part with respect to the whole, nor as a whole with respect to the part, but as a part with respect to the part” (Aristotle, *Prior Analytics* 69a13–15, quoted in Agamben 2009, 19).

Every example is a real particular case and it could not stand as an example if this were not so, yet no one example is the only possible example. There are always other examples, which means a real particular case has to hold for all other possible examples. Indeed, to be an example, a particular case has to stand for all other cases of the same type and, hence, can’t stand as *this* particular existence. Given as an example, sunlight is not sunlight but it is nothing other than sunlight—it is sunlight, as it were, besides (*para*) itself.

An example shows a particular case but it can’t serve in its particularity; it is through the suspension of this “immediate factual reference,” *this* particular existence, that the example can serve for all, of which—and this is crucial—it is also to be included as a particular and singular case. At this moment, things become paradoxical, in particular the distinction between the particular and the universal. “The example stretches the distinction between the universal and the particular, the general and the individual; it is, characteristically, neither one nor the other. And what is also characteristic of the example is that it exhibit that of which it is exemplary. The example makes an exposition” (Lomax 2010, 88).

As I go from the particular to the particular, I see the example giving an example of transposition; however, consequences emerge as it becomes undeniable that the example abandons the dichotomy between the particular and the general that has for so long—too long—dominated Western logic.

In the room in which I’m standing a shaft of sunlight still pours through the window, holding particles of dust in its beam. I walk through this beam and across the floor to inspect that photograph pinned carefully to the wall. Here is an exposition. Here an example *showing*. I look hard. I look long. And what doesn’t come with this looking is a general photograph. However, a question comes and I can’t ignore it.

—What has generality (the general image, the general artist, art in general) done for us?

Stay with the question long enough and what comes to be called into question is the (dichotomous) logic that would have language always speaking in generalities. Here is the dominant story and I say it without sophistication: it is through the general rule and the universal applicable to all cases that the world becomes intelligible and we can speak of it, for the particular case in its singularity is ineffable. It is here that the logic of a dichotomy forces a choice: either the ineffability of the singular and the particular or the intelligibility of the universal and the general. However, with the example there simply is no such choice; the relation of particular to universal is changed.

The example is neither particular nor universal and Giorgio Agamben (1993, 9) would have us find this existence in language and upsetting the dichotomy that has had us choosing between ineffability and intelligibility. He calls it “lin-

guistic being” and it is all to do with the name, with “being called.” The name “tree” serves to designate a particular case, a singular tree—this tree, that tree, a tree—at the same time as it names the class or set to which all trees belong. The so-called “tree” is an example.

To act as an example, a particular case has to deactivate its immediate and empirical existence—*this* existence. It is by virtue of this very deactivation that the example can make an exposition of—generate and define—that of which it is an example. Through deactivation, the example stands beside *this* existence, *this* sunlight pouring through the window, and it is there, in that para-position, that it makes both the singular case and indeed the group or class to which it belongs knowable and intelligible—this is what sunlight can be.

An example has to be a real particular case yet each time *this* particular case deactivates itself in order to generate, produce, and show that of which it an example. At that moment, the example becomes the exemplar of a general rule or norm. Yet each time it is a matter of *this* singular case making an exposition. Hence, the intelligibility that comes each time knows no pre-existing general or universal rule.

The example goes from the particular to the particular and in this movement gives an example of transpositions, but what is crucial, for the example and the transpositions taking place with it, is that a general rule, norm, or universal is profoundly inapplicable. The movement “across and through” never leaves the singular as we go from one particular to another; and what the example or paradigm does, through the singular exposition it makes, is to transform every singularity and every particularity into an exemplar of a general rule, but this rule or generality simply can’t be stated beforehand. It can’t be presupposed. It is not already in place waiting to be applied.

As we move from the particular to the particular there is a move from one position to another; however, things are not that simple: because the example cannot serve in its particularity means that, with all those other possible examples for which it stands, not only is a “community” formed where part and whole, particular and general, cease to coincide with themselves but also transpositions take place that radically call into question the very idea of having a place or position. At this point, the example and the transpositional become consequentially political.

To be called an example, which anyone or anything can be, is to assume a position that is essentially vicarious. Indeed, to live the life of an example means that at any time another can be substituted for you, as you are yourself a substitute for another. As an example, “your place is going towards and opening into all those other possible examples, each of which knows no place of its own and is immediately cast into another’s” (Lomax 2010, 94).

It is nothing other than transposition that takes place as one example opens onto the “community” of all those other possible examples; yet the example occupies a place that is profoundly in question, and it is here that the full affect and radicality of transposition can be felt. Trans-position: not at all the taking

up of place, not at all the setting down of a foot; rather, a movement that goes across and passes through.

Trans.

And here a world of places, positions, and substantives-to-be-known is abandoned for a world that is encountered *only* in its coming-into-being-known:

The example doesn't show the phenomenon of which it is an example established once and for all; rather, it shows it in its coming-into-being-known. The example shows the phenomenon being-such; it shows us the phenomenon as what it *can* be. And what this *can* does is to expose the phenomenon to its possibilities—this example is one of its possibilities. But there is more. Through its life of substitution, this possible example is opening into all those other possible examples for which, at any time, it can be replaced, which means that the phenomenon is being exposed to *all* its possibilities. And it must be said that with all these possibilities there is no one that is definitive. Indeed, no one example of what a tree can be is definitive of the identity of a tree. (Lomax 2010, 94)

With the example of sunlight that is before me, the very thing of sunlight is “beside itself” touching all its possibilities, and what is crucial is that not one of these possibilities is fixed and final and exhaustive of it. *Can* is characteristic of the example: the example shows the world not established once and for all but, rather, amid its *potentia*.

This is what the world *can* be.

This is what sunlight *can* be

This is what a photograph *can* be.

This needs repeating: with the example there is no archetype, *arche*, or beginning that stands in the past as already having happened and as such can be presupposed. No pre-existing general rule, no universal that can be taken as given: each example—each transposition—is a moment of arising and as such constitutes an *arche* or beginning. And this has consequences for that photograph pinned so carefully to the wall, which for what seems an aeon I have not taken my eyes off.

What does it mean to apprehend a photograph as an example?

In a previous work I took the question seriously. On a single page I reproduced a photographic image accompanied by the single word *Example*; it constituted a whole chapter in itself, and fifty-odd pages later, as an annotation, the following can be read:

For this photographic image to be held up as an example, I first have to say—*This is an example*. With that being said I am saying that this photographic image shows you what a photographic image can be; it is, as such, a *potentia*, in itself a possibility that opens onto all those other possibilities, no one of which is definitive. Having said this, there comes yet another thought: What if the photographic image was to be considered as existing in the paradigmatic position of the example? Here the photographic image would be showing the world beside itself; the photographic image would not be it, yet the photographic image would be nothing other than it. As an example, the photographic image would give a view, yet this view—this *image*—would not be bound by something that is already established. It would not

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be a representation. For with the example there is no play of absence and presence. But there is exposition, and this shows not what the world “has been” but, rather, what the world *can* be. (Lomax 2010, 150)

As an example, each photographic image is itself a moment of arising and, as such, constitutes an *arche* or beginning. In short, the past ceases to be found in the past. In a sense, what comes is that which has never happened.

Agamben (2009, 28) puts this beautifully as he asks us to consider a plate from Aby Warburg’s atlas of images called *Mnemosyne*. This plate is made up of twenty-seven images and the name “Nymph” (as *Pathosformel*) is given to the whole. But I would be mistaken to take this as iconographic repertory that allows us to return to an archetype or original from which they all come to exist.

The images are wholly diverse. Here a photograph of a peasant women taken by Warburg; there a figure from a fresco. Simply put, each image is a paradigm—an example. Again: there is no archetype or original that has already happened and what every image called “Nymph” presupposes. Agamben (2009, 29): “Every photograph is the original; every image constitutes the *archē* and is, in this sense, ‘archaic.’”

As we move across the twenty-seven individual images that make up the plate there comes an elucidation of transposition: something is carried across and shows itself in various appearances, yet this something can never be isolated as the pure phenomenon and, what’s more, isn’t a matter of a sensible likeness. At this moment, at least for me, “transposition” and “example” show the abandonment of a world of places, positions, and substantives-to-be-known for a world that is encountered without recourse to a separate realm and is, moreover, known without presupposition, remainder, or residue.

A small pile of sawdust; a shaft of sunlight pouring in from a window holding dancing particles of dust in its beam; a flattened cardboard box exposing the geometrics of its construction; a photograph pinned carefully to a wall; an arc scratched from floor to ceiling; here are sensible objects, concrete phenomena and empirical situations, yet my attention is beckoned to apprehend examples and paradigms and see moments of arising. And as I go to and from each particular example, I experience an intimate and radical connection between transposition and examples, which brings a movement away from considering any of these examples as substantives (the stuff of nouns) taking up a place or fixed position in the world. And here comes what I can only call an ontological shift: everything is as it is but the being of the world and the knowing of the world has profoundly changed.

But there is more and this is where “research” enters: each concrete phenomenon is open to a paradigmatic use to make something, which could be an idea, a function, or concrete design, knowable and intelligible, and—who knows—problematical.

Call it a paradigmatic method.

Through the acknowledgement (I could also say, appreciation) of examples, the paradigmatic method seeks to make “whatever” knowable and intelligible. We use examples to show things and explain things; for example, weaving as a

paradigm for “the art of governing people or operating the State apparatus” (Deleuze and Guattari [1987] 1988, 475). And sometimes we can only arrive at an understanding or comprehension of the “object” of a theoretical or historical investigation by constructing paradigms, examples.

In using or constructing paradigms, the paradigmatic method comes to a “whatever” without the presupposition of, the acceptance and application of, a pre-existing general rule. This something could be the functioning of a “society of control” made knowable through a singular example (smartphones), which, as paradigmatic, opens onto a broader context and all those other possible examples.

The paradigmatic method doesn’t take as given that which it seeks to make knowable, which is often the case with a *hypothesis*, which in Greek means “presupposition.” *Hypotithemi*—“I lay down as a base.”

Let’s say a hypothesis is put on the table. The hypothesis has an idea and an investigation is to be undertaken, which intends that the hypothesis will give an explanation. The investigation starts with the hypothesis’s explanation, but it is here that it makes a presupposition; for, the explanation posits its own idea as a given reality. What is forgotten is that what appears as given is in reality only a presupposition of the explanation hypothesis that would explain it.

In the sixth book of Plato’s *Republic*, immediately prior to the allegory of the cave, a passage addresses presupposition and speaks of treating the hypothesis as truly a hypothesis. In “What is a Paradigm,” Agamben speaks of Plato wanting us to treat a hypothesis not as a basis (presupposition) but rather as “stepping stones to take off from, enabling it to reach the unhypothetical [*anyprotheton*] first principle of everything” (Plato, *Republic* 6.511b, quoted in Agamben 2009, 25).

The passage has been considered obscure and difficult, but Agamben asserts that to treat the hypothesis truly as a hypothesis may simply mean to treat it as a paradigm: the difficult passage in Plato becomes clearer if we read it as an exposition of the paradigmatic method.

The paradigmatic method makes intelligible without taking “whatever” as already given, as already set down, in place and occupying a position; indeed, it is about reaching, in the words of Plato, the *anyprotheton*. Be it called scientific, philosophical, or artistic, is this not what lies at the heart of research, its fundamental gesture, as it were?

I’ll say it as simply as I can: artistic research can make an exposition of that which is reached without presupposition. That is to say, it can use a paradigm or construct an example to make a moment of arising that situates knowability and opens out intelligibility, even if for the (dominant) order of things the “epistemic status” remains unclear. At *this* moment in artistic research, the particularity before me can never be fully separated from exemplarity. Transposition is most certainly in operation, but that which is to be “knowable” as continuous across a series of phenomena is shown and embraced as a paradigmatic case.

For one more time I look at those concrete phenomenon as examples: a small pile of sawdust; a shaft of sunlight pouring in from a window holding dancing particles of dust in its beam; a flattened cardboard box exposing the geometrics of its construction; a photograph pinned carefully to the wall; an arc drawn from floor to ceiling. And what I see is a room quivering with beginnings and arisings and there is nothing stopping these beginnings from coming into contact with one another and making time become—I have no other words for it—musical. In this room, everything is as it is yet everything is changed: a world of places, positions and substantives-to-be-known has been abandoned for a world that is encountered without recourse to a separate realm.

What is key with the example—as it were, its ontological gesture—is that in taking place no substantive place is assumed and, moreover, nothing remains external to or separate from it. There is no residue, no remainder; nothing preceding is left behind.

II

I turn around to cross into the room beside the one in which I'm standing and, apprehending nothing other than examples (including the room itself), no sooner than I'm at the threshold there comes a flurry of questions . . .

Doesn't the very idea of transposition bring possibilities other than the rigid inscription of things in particular spheres, and are not such possibilities something—whatever—that is capable of showing itself across and within a series of appearance but that can never be isolated? For sure, the transpositionality that the example has made intelligible has shown me this, yet there comes the question of these appearances raising the matter of use; that's to say, the possibility that, through transposition, "whatever" is "making free use of itself."

I cross a threshold and "making use" is making itself heard.

If transposition brings the possibility of something showing itself across a series of appearance, then is not each appearance, as a "free making use," the arising of a new use?

A new use?

A new use most certainly speaks of potentiality not becoming exhausted with transposition, but there is more: each possibility that is other than the rigid inscription of things in a particular sphere and which is a "free making use" brings a use that doesn't "serve for," which augurs instrumentality and, bluntly put, ties use to utility.

A new use: a non-instrumental, non-utilitarian use.

The example has made transposition intelligible to me, and now, as I myself make a transposition and cross a threshold and enter that other space, what is heard is a *new* use. And I hear it as nothing other than a call: a call for a use with which instrumental and utilitarian use is *as not*.

A new use: instrumental and utilitarian use as not.

As not.

“... the earth ceasing to be transformed into a ‘standing reserve’ that is material to be ordered, exploited and used up” (Heidegger 1993, 322). “. . . those buying *as not* possessing, and those using the world *as not* using it up” (1 Cor. 7:30–31, quoted in Agamben 2005, 23, emphasis added).

Let’s say I’ve entered a space of new use, which is precisely a place where “to use” or “make use” brings a use that is untied from prescribed or compulsory or rigidly inscribed ends or particular spheres; and what needs to be added is that in this place there is nothing that is a possession to be owned. Indeed, what is consequential with this new use is: with that which makes use of itself (and here “self” is not to be confused with or presupposed or substantiated as a subject) or makes use of things in the world there comes a “relation to an inappropriable” (Agamben 2016, 81).

Use is made, but there is no appropriating. No taking as one’s own. No ownership—possessing is *as not*.

So, I’ve not crossed a threshold and entered a place that is littered with objects to be possessed or owned. No, I am not standing in the field of property. But what is happening is that the “use” transpositionality is making heard is calling for relations with the world (or the self) “insofar as it is inappropriable” (Agamben 2013, 144).

At this moment, use and inappropriability are immediately in contact with each other, but there is more: this contact recalls an older sense of “to make use of” that, for example, can be found with the Greek verb *chresthai*. This verb bears no relation to the modern-day meaning of the verb *to use*, “to make use of: to utilise something.” For that meaning, the world comprises separated subjects (users) and objects (what is used); but not so with *chresthai*, which is a verb that draws its meaning from the term that follows it—make use *of* language. “The process does not pass from an active subject toward the object separated from his action but involves in itself the subject, to the same degree that this latter is implied in the object and ‘gives himself’ to it” (Agamben 2016, 28).

Simply put, the subject and object are never separable. *Chresthai* is an example that shows “use” and “to use” as bringing a relational unity—a bond—between the object used and the subject using it.

With the utilitarian relations that have come to dominate the earth, it goes almost without question that in using something you’re someone independent of the object (which could well be language, some bright sparkling concept, or a musical refrain) that is going to be put to use. It goes something like this: in making use of something, the process starts from someone going out toward something separate that is to be appropriated, grasped, grabbed, or even caressed and with which an action is performed, resulting in an accomplishment, which of course might not happen. But the situation is quite different with the older and unified sense of “to use,” where the subject is not separate at all. There simply is no prior subject, no independent agent, for “to use” never starts with nor rests upon a subject or agent that is already constituted. Putting something—whatever—to use you are found only in the middle of a process and, moreover, your very existence is affected by it.

Not a subject that uses an object but rather a subject that constitutes itself only through the using.

Example: speaking makes use of language. Language is put to use and an action manifests—I speak. And this very action can only take place through the use; what is more, I am, as a speaking subject, only constituted through the using. It is an interdependent relation and, with it, use and inappropriability are truly tied to each other: making use of things is never to take as one's own, and that also goes for the subject that constitutes itself through use.

“To use” is to enter into a relation with something: “I must be affected by it, constitute myself as one who makes use of it. Human being and world are, in use, in a relationship of absolute and reciprocal immanence; in the using of something, it is the very being of the one using that is first of all at stake” (Agamben 2016, 30).

A *new* use recalls an older and unified sense of use, with which subjects and objects are “deactivated and rendered inoperative.” And there follows, in their place, “use as a new figure of human praxis” (ibid.).

* * *

I have crossed into a space of use and in this place transposition shows and demonstrates a use that is immediately in contact with inappropriability and, at bottom, a radical deactivation of subject and object relations, instrumental and utilitarian use.

And what of artistic research?

This much I can say, for transposition to be “in use,” better still, that transposition is enabled to be “in use”—that a mathematical phenomenon or philosophical creation can appear within an artistic endeavour—would be an instance of such deactivation. And let's understand that this deactivation means not only the one using does not, in using, go unaffected (his or her being is at stake) but also that a space opens up that is nothing other than “a place of pure praxis” (Agamben 2005, 28). And the reason for “pure” is simply that this space and practice of use, this new use that is an old figure of use, has nothing separable—as subject, agent, or object—from it. For the relational unity that takes place between what is being used and who or what is using it are never wholly separable—there is no recourse to a separate (prior) realm.

I've crossed a threshold and gone from one space to another. I have spoken of rooms, but the space I'm in now is bigger and more open than any room I've ever known. In this space (should I call it a landscape?) using is taking place *as not* using up, subject and object have become deactivated along with instrumental and utilitarian use, and nothing prior is left behind in a separate realm. With the example, the universal and the particular are changed and with the making use that is a new use recalling an older unified sense of use, so are subject and object relations, and now I have become acutely aware that there is something going on that is transposable between the taking place of the example and the taking place of making use.

The example has made transposition intelligible to me and this intelligibility—*this* transposition—has brought me, through possibilities other than rigid inscription of things in particular spheres, to a making use that, in taking place, has nothing separated from it and, moreover, bares no resemblance to that practice where an architectural feature or design is transposed, perhaps brick by brick, to another place.

Here it is: what is transposable between the example and making use is not a substantive; it is, rather, a taking place that takes place without remainder or residue—nothing preceding is found or left behind in a separate realm or, for whatever reasons, excepted or excluded. And taking this further, let's say that the transposition that *can* take place between example and making use is that of a mode of being that is not founded upon an act of separation, exclusion, or exception.

It is at this point that the epiphany comes: the transposition that can take place between example and making use shows me—better still, exposes—that which found itself by purposely separating and excluding something from it. Yes, what is exposed is an act of separation that comes to function as foundation, origin, or ground—call it a constitutive exclusion. And what is revealed is a contrivance, a set-up, a mechanism of control, which some would call a monstrous piece of magic.

Here it is: that which constitutes itself through an act of separation and exclusion has the separated or excluded become its origin and foundation and, through this, has it included. And the effect is precisely that of having the separated or excluded or excepted become captured in the form of its exclusion.

Giorgio Agamben (2016, 264) most certainly sees this strategy operating within the governmental machine of Western politics/power and, what's more, he sees it as the apex of Western metaphysics (ontology). "The strategy," he says, "is always the same: something is divided, excluded, and pushed to the bottom, and precisely through this exclusion, is included as *archè* and foundation."

Look at how governmental power founds itself and controls by separating something from itself. Look at how the first act of government, which happens every day, hour, and minute, separates being (what will be called bare life, naked life, mere being, biological being) from the purely practical activity of its management, administration, and government.

And look for as long as you can at the ungoverned—"anarchy"—being produced in the first cut of government, which is a government's first act, by which it founds itself upon something separated, constituting a beginning that is not in the past but today is ever present. The ungoverned called anarchy is placed at the origin and over and over again the governmental machine functions and originates itself through this inclusion of the excluded.

At this moment, anarchy—whatever has been excluded—is captured in the form of its exclusion, and why the operation is truly a work of dark magic is that it is not and never will be a matter of having anarchy (or being or whatever) turn against this very capture. Any act of doing so leads power, the governmental machine, to function ever more so—what returns is the anarchy internal to governmental power itself.

Agamben (2016, 275): “Because power is constituted through the inclusive exclusion (*ex-ceptio*) of anarchy, the only possibility of thinking a true anarchy coincides with the lucid exposition of the anarchy internal to power.”

The example has shown me what “transposition” can be, and through the very idea and movement of something—whatever—showing itself across a series of appearance from which it is never isolatable there has come the possibilities of a “making free use” that is a new (non-instrumental and non-utilitarian use) use. So, the example brings a transposition that brings the matter of use (*a new figure for human praxis*), and what is transposable from example to making use is a taking place without remainder or residue. And this has shown me a beautiful non-activation of—better still, simply *as not*—the working of a power and control that begins with an act of separation constituting a foundation that is, at the very same time, a capture of the excluded.

But there is something else: the transpositions that have appeared show me “transposition” as always a matter of *this* mode. My heart begins to beat a little faster: as I cross a threshold and find myself in a space that is not a property littered with objects and things to be owned and possessed, I become aware that transposition is demanding me to think nothing other than modality; in fact, nothing short of a modal ontology.

Rather than an ontology of substance where we would identify something that is always below and separable from its modes or modifications, what is asking for attention—if not love—is a modal ontology with which being or substance or a substantive or whatever is nothing other than its mode, its “as,” its “thus.”

And this is where the music begins:

One of the fundamental meanings of “mode” is in fact the musical one of rhythm. . . . Benveniste has show that “rhythm” (*rhythmos*) is a technical term of pre-Socratic philosophy that designates form, not in its fixity (for this, Greek prefers to use the term *schema*) but in the moment in which it is assumed by what is moving, what is mobile and fluid. . . . Mode expresses this “rhythmic” and not “schematic” nature of being: being is a flux, and substance “modulates” itself and beats out its rhythm—it does not fix and schematize itself—in the modes. (Agamben 2016, 172–73)

At last I can say this:

No matter the possessive pronoun, “my” life is not an object of ownership; it is not my possession and nor is it anybody else’s. Life, my life, is an example constituted only in use, which is to say that there is no life that can be separated from its form of life, its modes of being; indeed, being is not a substance that precedes the modes or forms that are expressions of the possibilities of being—the world turns and returns without anything being placed in a separate realm.

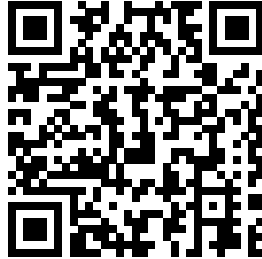
For the transposition of musical notes from one key to another, what matters is music—life—as *this* mode, as *thus*.

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Appendix

ONLINE MATERIALS



As further illustration to Lucia D'Errico's chapter in this publication, an online repository of audio examples has been created and hosted within the website of the Orpheus Institute, Ghent. These examples, which should be viewed in connection with a reading of the relevant chapter, may all be accessed under the URL: www.orpheusinstituut.be/en/transpositions-media-repository.

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Annette Arlander is an artist, researcher, and pedagogue, one of the pioneers of Finnish performance art, and a trailblazer of artistic research. As a theatre director, she received an MA and PhD. She was the first person to be awarded a doctorate from the Theatre Academy, Helsinki (in 1999). In 2001 she was invited as Professor of Performance Art and Theory to create the MA programme in live art and performance studies, which she led until 2013. In 2015–16 she was Professor of Artistic Research at University of the Arts Helsinki and a visiting professor at Stockholm University of the Arts. She is a member of the editorial boards of *JAR* and *Ruukku*. Arlander's research interests relate to artistic research, performance-as-research, performance studies, site-specificity, and the environment. Her artwork is focused on performing landscape by means of video or recorded voice, moving between the traditions of performance art, video art, and environmental art. annetearlander.com

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Lucia D'Errico is a musician and artistic researcher. She performs on guitar and other plucked-stringed instruments, with a particular focus on Western notated art music of the twentieth and twenty-first centuries. A research fellow at the Orpheus Institute (Ghent, Belgium), from 2014 to 2018 she was part of the research project MusicExperiment21, with which she explored notions of experimentation in the performance of notated music in the Western tradition as an expansion of/in opposition to traditional practices of musical interpretation. She holds a PhD from KU Leuven (docARTES programme) and a master's degree in English literature, and is also active as a graphic artist and video performer.

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Yve Lomax is a visual artist and writer. She has exhibited world-wide (including seminal shows such as *On Representation and Difference*, New York, and the first Johannesburg Biennale, South Africa). Her major publications include *Figure, Calling* (2017), *Pure Means: Writing, Photographs and an Insurrection of Being* (2013), *Passionate Being: Language, Singularity and Perseverance* (2010), and *Writing the Image: An Adventure with Art and Theory* (2000). She is a senior research tutor in photography and fine art at the RCA. She is also a director of and editor for Copy Press and its Reader's Union.

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Tor-Finn Malum Fitje is a Norwegian artist currently based in Oslo. He holds an MFA from the Royal Institute of Art in Stockholm, as well as a BFA from Konstfack, Stockholm. He also earned a bachelor's degree in film production from the University of Bergen, specialising in directing. Malum Fitje's work revolves around the language and imagery employed within the natural sciences. His master's thesis, which was published by *Interalia Magazine*, scrutinises the metaphors of modern physics, a topic that has also been the centre of attention in several of his films, including *Phonautograph* (2014), *The Mystery of Bird Navigation* (2016), and *Aleph Null and the Missing Mass* (2017).

Dieter Mersch studied mathematics and philosophy at the Universities of Cologne, Bochum, and Darmstadt. In 2004–13 he was Full Professor of Media Theory and Head of the PhD training program Visibility and Visualisation: Thinking with Images. Since 2013 he is Director of the Institute for Critical Theory at Zurich University of the Arts, Switzerland. His main publications are *Was sich zeigt: Materialität, Präsenz, Ereignis* (Munich, 2002), *Ereignis und Aura: Untersuchungen zur einer Ästhetik des Performativen* (Frankfurt am Main, 2002), *Medientheorien zur Einführung* (Hamburg, 2006), *Posthermeneutik* (Berlin 2010), and *Epistemologies of Aesthetics* (Zürich/Berlin, 2015), and he has also written essays on art theory, artistic research, musicology, image theory, and digital criticism.

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Hans-Jörg Rheinberger is a molecular biologist by training, a historian of science, and a writer. Currently, he is interested in the manifold encounters of the sciences and the arts as they occurred from the early modern period to the present. Rheinberger is Director Emeritus at the Max Planck Institute for the History of Science in Berlin. Besides *Toward a History of Epistemic Things* (1997), his more recent books include *On Historicizing Epistemology* (2010), *An Epistemology of the Concrete* (2010), *Itérations* (2013), *Kunststücke* (2015), *Der Kupferstecher und der Philosoph: Albert Flocon trifft Gaston Bachelard* (2016), and *Experimentalität: Gespräche über Labor, Atelier und Archiv* (2017).

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Michael Schwab is a London-based artist and artistic researcher who investigates post-conceptual uses of technology in a variety of media including photography, drawing, print-making, and installation art. His interests include the epistemologies, methodologies, and aesthetics of artistic research. He is Visiting Professor of Artistic Research at the Academy of Fine Arts, Helsinki, as well as a research fellow at the Zurich University of the Arts, the University of Applied Art, Vienna, and the Orpheus Institute, Ghent. He is co-initiator and inaugural Editor-in-Chief of JAR, the *Journal for Artistic Research*, a senior researcher in the ERC-funded research project MusicExperiment21, and joint project leader of Transpositions: Artistic Data Exploration, funded by the Austrian Science Fund.

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The Orpheus Institute has been providing postgraduate education for musicians since 1996 and introduced the first doctoral programme for music practitioners in Flanders (2004). Acting as an umbrella institution for Flanders, it is co-governed by the music and dramatic arts departments of all four Flemish colleges, which are strongly involved in its operation.

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Michael Schwab is the founding editor-in-chief of the *Journal for Artistic Research* (JAR). He is senior researcher of MusicExperiment21 (Orpheus Institute, Ghent) and joint project leader of Transpositions: Artistic Data Exploration (University of Music and Performing Arts Graz; University of Applied Arts Vienna).

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