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Seeing art as RAW DATA - Artistic Transformation
by Koenig, Schild & Hufschmid

What does it mean to be artists-in-residence at a sub-atomic physics lab on the Pacific westcoast of Canada? Two Berlin artists and one from Vancouver have been navigating the landscape of theoretical physics, encountering the startling ideas shared by scientists, creating a field (an encampment) for artist explorers, swimming in the turbulent metaphors of particle collisions.
One can easily say that science enters contemporary culture with great impact these days. In the winds of ever increasing discoveries, news like the existence of the so-called Higgs Boson particle spread like wildfire around the world last summer. (Predicted over fifty years ago, this particle could finally explain why subatomic particles acquire their mass.[1]) The news resonates well beyond scientists, the unknown becomes “visible”, it becomes part of a collective story, and changes the shape of how contemporary humans understand the universe. The complex landscape of scientific knowledge gains force to inspire further than its stratified boundaries. Beyond those perimeters the inherent language also transforms.

When physics is transported into the field of metaphors and analogies then that overlap of theoretical physics and arts becomes a potential ground for new ideas. Significantly, the terrain opens to thinking of new ways to regard a problem or an idea. For both disciplines it can be proposed that the “artful mind“[2] processes information through intuition, associations and emotions. A multiciplicity of views forms a space from which new ideas can be drawn as “the imaginative intellect knows no borders“.[3]
For some discoveries in science, a theory would first be thrown into the scientific community for discussion, a theory drawn from years of scientific research but also based on the imagination and creativity of the scientist. The “artful mind“ of the scientist, while using the inherent language of mathematics, may also seek metaphors as a means of communicating complex and abstract correlations in their respective field. Experiments would later – sometimes after a very long time – prove a theoretical implication right or wrong.

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[1] Randall, Lisa: „Knocking on Heaven´s Door. How Physics and Scientific Thinking Illuminate the Universe and the Modern World“, New York, HarperCollins, 2011.

[2] Sullivan Graeme: Opening plenary Remaking Research Symposium, Emily Carr University of Art and Design, Vancouver, Nov 1, 2012.

[3] ibid.

(Img 1: Sonnet L´Abbé, performing her poems „Untitled“ 2012, as a response to David Khang´s artwork. „The Vast Majority“ 2012, print on aluminum, of Randy Lee Cutler in the background.)

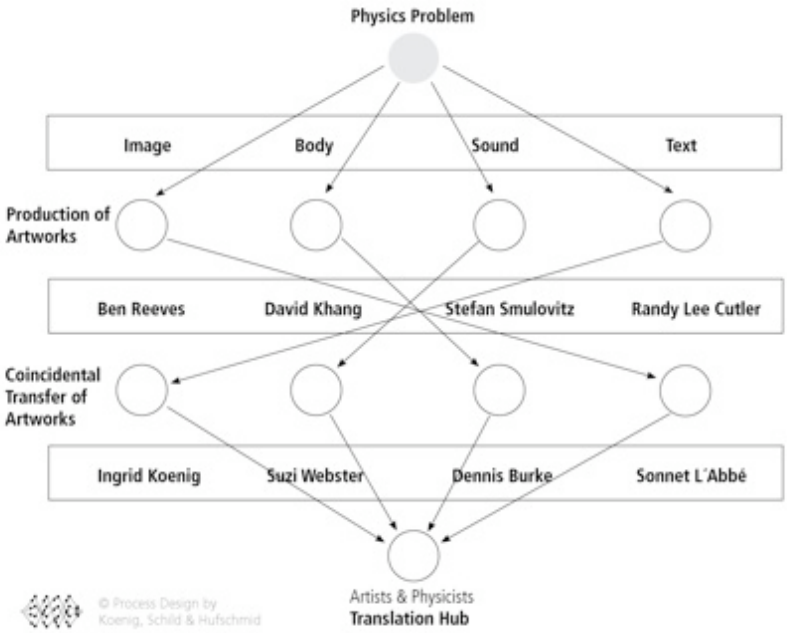
RAW DATA

If there is an overlap –a common ground – between physics and art, the question is, to what extent can this creative field become a subject for reflection and research itself? How does this shared space function as a platform for a dialogue between physics and arts?

The arts and science project “RAW DATA. Artistic Transformation“ contributes to the generation of a collective, creative field with a strategy that ventures to bring arts and physics into a joint creative process by weaving both disciplines into a fabric of associations and images, from which new ideas spread.

The strategy, called “Artistic Transformation“, is here considered as a specific art practice which facilitates different protagonists to interact across disciplinary boundaries: a number of participating artists are organized into a sequence and asked to produce works that pick up on that of their predecessors. The gesture of give and take from one protagonist to the other, as well as the process of translation from one work into the next, are the central momentums of this creative process - new works derive from another discipline and the work of another artist respectively.[4]

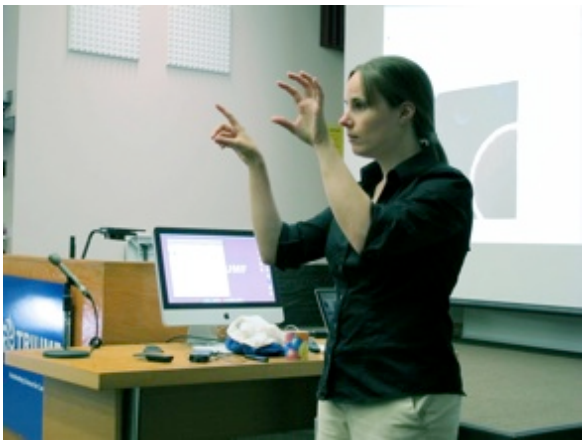
[4] „Artistic Transformation“ serves as a definition of a specifically initiated transformation process within the context of an artistic project where participants take their inspiration from the work of a predecessor to create their own work. The process is marked by the strategic application of rules and restrictions, for the reception and transformation of predetermined works within a fixed time frame. A number of steps defines the artistic activity pattern and generates an intentionally transforming form of art production. The participating protagonists are systematically organised into a sequence provoking a series of artistic-creative actions that in turn result in a combination of works.



(Img 2: Koenig, Schild & Hufschmid, Transformation Process Diagram)

RAW DATA started out as a pilot project by TRIUMF Artists-in-Residence Koenig, Schild & Hufschmid[5] in Vancouver in 2012 and initiates a process of transformation between artists and physicists. A chain reaction of works is generated and hence a concrete problem from physics is translated to four aesthetic media - sound, body, text and image. In this way, diverse forms of artistic works are developed and artistic »raw data« is provided which in turn is to be re-translated into the scientific realm. Is it possible for physics and art to work together, in order to discover new ways of understanding physics (problems)? If yes, what is discovered, and what kind of knowledge is produced?

[5] Ingrid Koenig (Vancouver), Margit Schild (Berlin) and Elvira Hufschmid (Berlin): Goethe Satellite@Vancouver 2012, http://blog.goethe.de/satellite/archives/86-RAW-DATA-the-origin-for-a-new-set-of-questions.html



(Img 3: Physicist Dr. Kendall Mahn explains the topic of Neutrino Oscillation to the artists, Sept 2012 at TRIUMF laboratory, Vancouver)

When the RAW DATA transformation process was launched in September 2012, four artists from different fields met physicists at TRIUMF - Canada's National Laboratory for Particle and Nuclear Physics, Vancouver. Artists were informed about a specific quantum physics problem to which they responded with an artwork. In an all day workshop held at TRIUMF, artists Randy Lee Cutler, David Khang, Ben Reeves and Stefan Smulovitz were involved in an actual physics research project on "Neutrino Oscillation"[6] to gain knowledge on what is a current "hot spot" in the physics world. Within the following three weeks the artists each developed an artwork as a response to the specific problem and passed it on to the next round of artists who could not know what the original topic was: Dennis Burke, Ingrid Koenig, Sonnet L´Abbé and Suzi Webster.[7] The presentation of this particular physics problem had set the pace for a spread of inspiration, leaping from one creative mind to the next, resulting in a net of artistic works, all referring (knowingly or blindly) to the same initial subject.

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[6] "Neutrino oscillation" is a term used in physics, describing an extraordinary behaviour of subatomic particles called Neutrinos. On their way from the sun to earth they frequently change their state of mass and – simplistically stated – we don´t know why that happens.

[7] The RAW DATA process finally resulted in a public „translation hub" workshop with physicist and artists after a two month process. The art works were reviewed in the context of the „AICAD Remaking Research Symposion" at Emily Carr University of Art & Design, Vancouver, in November 2012.

(Img 4: Artists David Khang, Ben Reeves, Randy Lee Cutler and Stefan Smulovitz listen to the lecture on Neutrino Oscillation, Jennifer Gagné, TRIUMF communications,in the background, Sept 2012 at TRIUMF laboratory, Vancouver)

In a joint endeavour, the curators, physicists and artists met in a “translaton hub“ workshop at the end of the process. A group of physicists who had been kept from knowing the original physics topic, viewed the art works in regards to their potential of carrying relevant information. Following their readings of the work, the original physicists who had presented the topic of “neutrino oscillations” reacted both to the artworks as well as to their “blind” peers’ readings.[8]

[8] The physicists pursued a „cold reading“ of the art works which means they described what they perceived and noted their immediate associations.

(Img 5: RAW DATA, Physicist Dr. Anadi Canepa (particle physics) viewing the RAW DATA art works,)

Artistic Transformation

The practice of Artistic Transformation offers a special form of collaboration, utilising the inspirational momentum of the predecessor and finally results in an outcome of interconnected works. This is basically the condensed form of creative work: it is a process of “give and take“, a process of mutual inspiration and rejection“[9]. The course of the game serves as a tool of quick motion since “what takes place in the history of art, music, and literature over far greater periods of time happens here in one swift exchange”.[10] To put it clearly: neither collaboration, working in outcome interdependences nor the conscious process of taking one’s inspiration can be perceived as marginal phenomena in artistic contexts nor are they exclusively reserved for social or participative projects. They actually represent the core activities that, in more or less varied form, address and reflect what is happening in the arts anyway: the process of referring to other people and what they create. But in this case, the processes do not remain hidden within an invisible and anonymous net of references because the practice of transformation formalises the production process of art and renders it at least in parts (more easily) observable. This reflexive aspect opens up application possibilities in various contexts of research and teaching that go far beyond artistic creation.

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[9] Mattenklott, Gundel: Spiele in ästhetischen Bildungsprozessen. In: Thomas Anz/ Heinrich Kaulen (Ed.): Literatur als Spiel. Evolutionsbiologische, ästhetische und pädagogische Aspekte. Beiträge zum Deutschen Germanistentag 2007. Berlin, New York: Walter de Gruyter 2009

[10] ibid.

Referring to artistic games such as “Cadavre Exquis” or “Chinese Whispers“[11], the setting of rules supports a playful approach to the production of new works. Similarly to other creative associative methods such as “mind mapping” or creative coincidence techniques, the playful procedure carries the idea generation activity by limiting conscious decision-making processes. With each project’s time constraints (eg. RAW DATA’s time frame of three weeks), it does not allow for elaborate concepts and thoughts.

In RAW DATA artists and physicists pass on their works to each other, and in turn transform the implicit ideas. Simplistically spoken: it works because inspiration trespasses the boundaries of disciplines in the form of metaphors and analogies. Weaving disparate disciplines into a fabric of associations and images is based on the assumption that associations never emerge singularly but always exist in relation to something similar. This “similarity relationship“[12] appears to be a specific quality of the artistic results produced in a creative chain reaction. Associations which seemingly emerge by chance, are based on the mind´s capability for analogue thinking: apparently unconnected phenomena are connected alongside principles of similarity. This process does neither require an „understanding“ of the material, nor is it bound to language.[13] To put it in another way: interpretations are based - at least in part- on the fact that the artists adapt their own experiences, memories and their knowledge to the physics material in the form of detecting or constructing similarities. „Fabricating similarities is not kept to any limitations. In principle, everything can be set into a correlation of similarity with everything else“.[14] The „shared space“ between art and physics, mentioned earlier, becomes apparent: it is a relational space of similitude which allows for developing associations from which in turn an artistic work is generated. This ensures a connectivity between (content wise) far-distant protagonists.[10]

If we look at the transformation process as a mind map we see the graphic presentation of works in relation to each other. Similar to mind maps, the course of associations can be tracked. The links created by the persons acting one after the other become visible in the result. The recipient, being the last chain link, is able to put the individual artistic results into context. References to the predecessor’s work can afterwards be (re-) constructed by the recipients regardless of whether they are negative, continuative or corresponding. They are enabled to approach a chain and the individual works it contains inquiringly and to compare, look for differences and similarities, trace the course of reaction or “infection” by going back or, following the chain in the opposite direction, trace the course of topics, forms and contexts and put them in relation to the initial subject. Therefore, the outcomes of the individual transformation steps not only represent a communicative act on a pictorial level but they also point to a specific characteristic of the transformation process: the protagonists practice a collective form of art that generates a narrative overall result.
In other words: “The map moved by association becomes an animated mind map that, like a Petri dish, makes visible the cognitive processes between inspiration, exertion of influence, differentiation, processing, adaptation, quotation, and innovation.“[15]

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[11] ibid.

[12] Brandstätter, Ursula (2008): Grundfragen der Ästhetik. Bild-Musik-Sprache-Körper, Köln, Weimar, Wien, S. 22

[13] ibid.

[14] ibid.

[15] Kaestle, Thomas: Keeping mum. Stille Post im Amt. In: Kaestle, Thomas (Ed.): Mind The Park. Planungsräume. Nutzersichten. Kunstvorfälle, Oldenburg 2009, P. 123

(Img 6: RAW DATA, Exhibition view at Concourse Gallery, ECU Vancouver)

As a result of this search movement, the aspects of inspiration and influence that usually remain obscure in other artistic creative processes are focussed on and can be questioned: what was referred to? Where does an idea run all the way through? Where has a subject been dropped? How does an idea expand? And, looking back at the original subject: what was its impact?

Thus several artists acting one after the other and each referring to their predecessor's work achieve more than the mere generation of multiple approaches to interpretation. The resulting outcome interdependence, be it in the form of a chain or net, allows the recipients to detect the progression of topics and to witness a possible dramatic composition of changing perspectives.

Furthermore, the links can detect and continue both unconscious meanings in the works as well as those that are consciously perceived. This is because „in particular the ambiguous and vague parts of an artwork are suitable for transformation by other artists. (...) Particularly these characteristics of something partly undefined appeals extremely well to artistic continuations."[16] This is what Walter Benjamin called the "cloudy spot"[17] in a work „that points towards something inconceivable and articulates the most virulent

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[16] Busch, Kathrin: Grafting, contaminating, parasitizing. On the aesthetics of transformation. In: Jäger, Dagmar; Franke, Vera; Schild, Margit; Hasselbach, Julia v.; Hufschmid, Elvira et al. (pub.): Artistic Transformation. Models of collective production of art and the dialogue between the arts,
Berlin 2010, P. 25

[17] Walter Benjamin, „Franz Kafka. On the Tenth Anniversary of His Death", trans. by Harry Zohn, in: Iluminations: Essays and Reflections, New York 1969, p. 122., cited in Busch, Kathrin 2010

questions.“ [18] And, cultural theorist Katrin Busch states: „First of all, ... (the artwork) meets its own relevance through the reactions“[19]. Thus, looking back at the original work within a genealogical line, insight regarding the subject is inevitably heightened. Meanwhile, the original topic can be seen in a different light at the end.

(Img 7: RAW DATA, Translation Hub Workshop with artists and physicists at „Remaking Research“ symposium at Emily Carr University of Art and Design (ECU), Vancouver, Nov 2012, Nuclear physicist Dr. Ania Kwiatkowski (TRIUMF) speaking)

In RAW DATA, the original research topic fans out through the body of produced art works into different representations, always losing content and gaining information at the same time by paraphrasing, re-phrasing and re-shaping the respective starting point. This variation process places the initial research topic into new context, questioning and reflecting the existing notions while enabling new ideas to emerge. Artistic Transformation builds on the exploratory and the discovery of former unknown spheres, resonating the variables and changing parameters of what we thought we knew.

An unpredictable Outcome

On many levels, Raw Data is an experiment which resonates through various realms and presents both challenges and unexpected results. The possibility for inquiry of the overall structure shows two aspects of Artistic Transformation: as an art practice it is collaborative and relational to the core, and as a research tool it provides insights on „impacts“ - an initially activated content processed through different creative minds.

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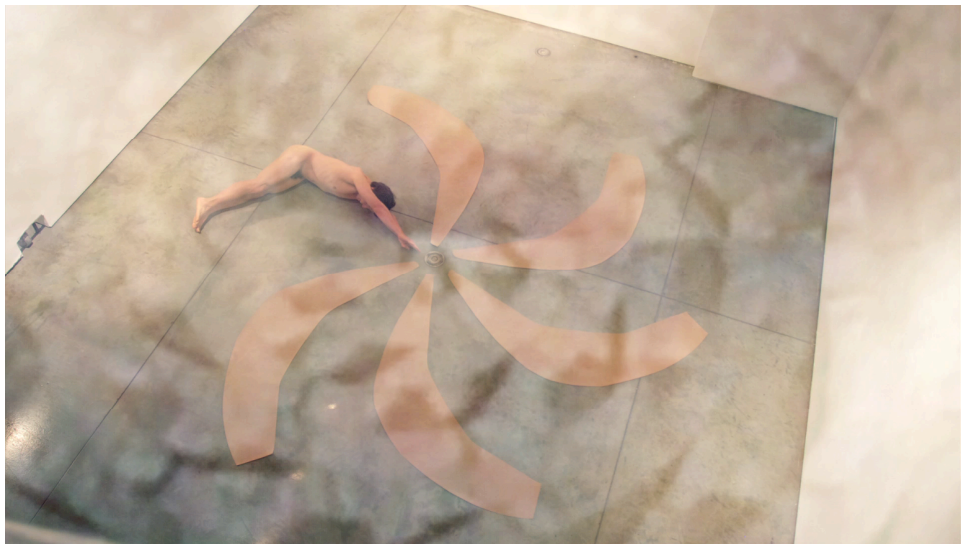
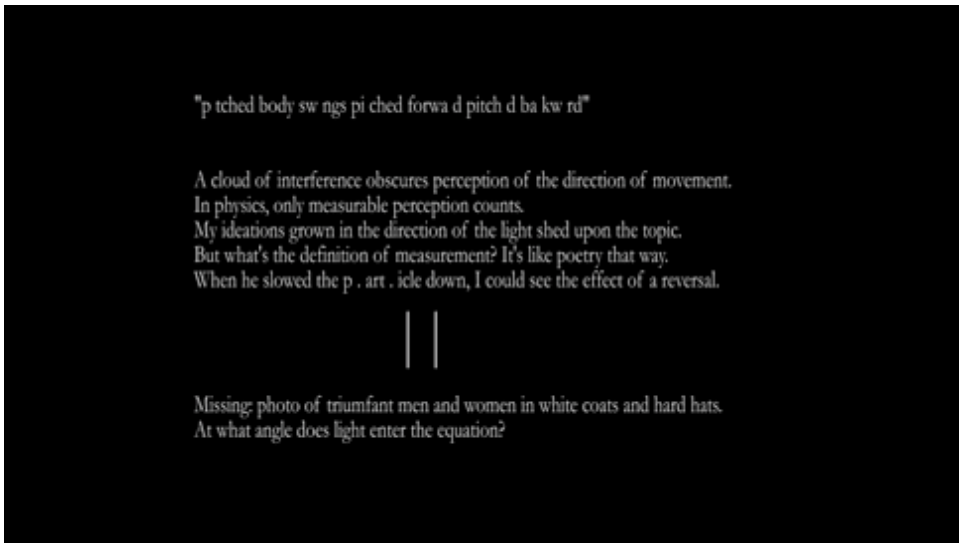
[18] Busch, Kathrin: Grafting, contaminating, parasitizing. On the aesthetics of transformation. In: Jäger, Dagmar; Franke, Vera; Schild, Margit; Hasselbach, Julia v.; Hufschmid, Elvira et al. (pub.): Artistic Transformation. Models of collective production of art and the dialogue between the arts,
Berlin 2010, P. 25

[19] ibid.

We discovered that experimental physicists did not take much from the transformation process to help their own research, whereas theoretical physicists saw the artworks as possible impulse triggers for their complicated thought experiments. The discussion revealed another fascinating difference: generally, art is made relative to other disciplines serving as inspirational triggers, or generators of associations. Most often, artists work individually, and references to their sources of inspiration are more or less rare. Art - unless as an explicit conceptual approach - doesn´t cite.
Physics, in contrast, is a collaborative discipline. Results are achieved in a joint endeavour. The imperative of proper citing in science applies to physics as well: the naming of references to what others have created is mandatory for a good practice.
Art as a legitimate source for ideas and inspiration is a rather rare phenomena in physics hitherto. (On a lighter note during discussions, one of the artists voiced this specific question: Will you cite me or share the Nobel prize with me if it happens to come to pass?)



(Img 8: 1.a David Khang, Response to the physics problem, Video still from installation, „Centripetal/ Centrifugal“ 2012)



(Img 9: 2.a Sonnet L´Abbé, Response to David Khang, „Untitled“ 2012, from a series poems)

The net of artworks offers insights which might change our understanding of a specific problem but not necessarily explain it. Besides their definite qualities in visualizing and communicating this certain topic, artworks can probably not “solve a problem" but can contribute to "surrounding the problem“[20]

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[20] Gloria Steinem in a radio interview, quoted by Graeme Sullivan: Opening plenary Remaking Research Symposium, Emily Carr University of Art and Design, Vancouver, Nov 1, 2012.

In contrast to other approaches of scientific research where a plausible theory is developed in a logical and linear process of intervention and inquiry that builds on what we already know, artistic research is based on concepts that embrace the probable, plausible and possible as a search or an open ended process. Research responds here to issues and problems by interpreting them in different contexts. It assumes that new insights can be revealed through creative and critical practise. „Creative inquiry is therefore a reflexive form of research that emphazises the role of imagination, visualisation, representation and action.“[21]

(Img 10:2.a Ben Reeves, Response to physics problem „blind spot (red, green, blue)“ 2012, conté on rice paper)

(Img 11: 2.b Suzi Webster, Response to Ben Reeves, „the mind´s ear“ 2012, performance in three parts: red (inscription), green (sonification), blue (erasure) and:

(Img 12: 2.a Ben Reeves, „blind spot (green)“ 2012, conté on rice paper)

(Img 13: „Silent Records“ 2012, mixed media installation cast wax record and turntable, video, Suzi Webster)

RAW DATA is an experiment. One could even say it is thought experiment[22] that was publicly performed and that continues to exist as reverberation, as such, leaving us with knowns and unknowns – that will further unfold over time. The hypothesis that knowledge could arise from the transference of physics to art is being pursued, and whether practical applications arise cannot be known yet. But that does not mean they will not come to fruition. What is known out of this process is that fruitful and inspiring dialogues can occur between the arts and physics. What is clear is that the public exhibition of this process, which included the opportunity of a public to view the physics problem, shows a great interest for these ideas, and that, just as art can exist and function as a relational work, so too physics can enter the public realm of art to prod a great many non-scientific “viewers”

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[21] Sullivan Graeme: Opening plenary Remaking Research Symposium, Emily Carr University of Art and Design, Vancouver, Nov 1, 2012.

[22] *Gedankenexperiment: - term used in science and philosophy - imaginary, explores the potential of a concept - eg. in physics:* Schrödinger's cat of 1935.

to enact change of consciousness, and to convey knowledge in round-about, indefinable ways. In the larger idealist move to democratize knowledge, this encounter in RAW DATA activates the permeability between different bodies of knowledge. There is a democratization of knowledge possible, but the outcome is uncertain. At the end of the “translation hub” event, one of the physicist collaborators Tim Meyer made the following observation: what artists wrestle with here is like doing science - trying to approach the underlying “theory”. He went on to say, when scientists try to access an underlying theory they try to extract a “signal” out of the static. And they try to separate out the human element in this process. In contrast, he said, the artists in RAW DATA brought the human elements back into science.

At this stage of RAW DATA’s experiment, to consider this in the cultural context of relational aesthetics[23], then what is usually held apart is brought back together, and here the artwork becomes a linking element. The question of what knowledge is produced, as if there could be a dominant answer, is perforce discovered to be the wrong question. The expectant perspective of a landscape of knowledge arising from these linkages offers the view of transformations, and the possibility of new paths, that is certain. But true to the inevitable link to quantum reality, the knowing remains unpredictable, open-ended, in flux[24], and necessarily (if surprising to a world that wants the concrete) uncertain in order to continue this experiment of transformation – this moving – between different worlds.

Photo Credits: all photos by Koenig, Schild and Hufschmid, if not otherwise noted.

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[23] Bourriaud, Nicolas: Relational Aesthetics, Dijon, Les presses du réel, 1998, p. 21.

[24] see Pickering, Andrew: Mangle of Practice.Time, Agency and Science, University of Chicago Press, 1995.