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ORDER + NOISE
RALF BAECKER

NOME

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RALF BAECKER
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DOLZIGER STR. 31
10247 BERLIN

NOMEPROJECT.COM

INTERFACE:
AN EPISTEMOLOGICAL OPERATOR

When Jack Burnham first wrote about system aesthetics in an essay for *Artforum* in 1968, his fascination with the possibilities of new technologies and the potential of kinetic and cybernetic art expressed belief in a form of art based on processuality and the transition from an object-oriented to a systems-oriented culture. Change, claimed Burnham, emanates "not from *things*, but from the *way things are done*."[1] The concept of system aesthetics made the artist a critical observer of social and technological systems, a facilitator of interaction between energy, information and material. System aesthetics enable kinetic situations to organize the structures of evolving events, and allow the viewer to observe the tensions in evolutionary systems instead of contemplating predefined or preformed information. The form of a work of art would be defined in terms of system and process rather than geometry and meaning. Such aesthetic operations had less to do with the social functions of art, and more to do with increased awareness of the phenomenal instabilities and inevitabilities of reality, revealing different approaches to the organization of spatial and temporal processes. The physical characteristics of interaction reveal the essence of motion and its perception; the incoherence and asymmetries of the contingent.

Philosophical and hypothetical, as in his previous works, Ralf Baecker's *Order+Noise (Interface II)* is a kinetic installation made of highly complex parts, which investigates the shifting boundaries between two interacting systems. Their rendering into the physical does not address intentional actions. The horizontal arrangement of motors, strings and elastic bands reveals how the rules of operation make manifest inherent rhythms, processes, and intra-system variability. Like in a tug of war, two motor units face each other vertically, each motor connected to its opponent with a string, and each pulling their string in the opposite direction. At the meeting of these strings, Baecker explains, a mesh of elastic bands connects each string to its neighbors and couples each element to its

surrounding elements in order to achieve a local emergent behavior. The arrangement is a manifestation of the tensions that exist in the relationships between the units. The random impulses of different pulling strength fed into each motor stimulate systemic behavior and processual fracturing. While the two separate organizations are brought together in an interface, their workings oppose any representation: physical processes materialize the artistic concept and inform the viewer's interpretability.

The installation reproduces space and time in ever variable configurations. It allows visitors to access intermediate states of perception by means of a material continuum defined by mechanical and symbolic components. Baecker has often emphasized the material substrate of computing machines and media technologies, as well as the distributive agencies at work in material computing which allow one to re-appropriate the digital. As Baecker once explained in an interview, by reducing everything to wireframes and simple geometric shapes, concept and representation seem to touch each other more intimately and dynamically.[2] The kinetic interpretation of algorithms makes *Order+Noise* a metaphorical machine where the conceptual relations of space and time reveal their materiality and plasticity.

Interfaces are designed to mark the transition between different frames of reference. The spatial and temporal limits they set distort forms in order to facilitate an alternate perception of them. As such, interfaces can function as boundary surfaces between the human and the system. For all their embedded meaning and ideology, interfaces mediate between systems and recipients, either by covering the workings of a system or exposing its functions. They make information perceivable and enable considerations of the material - both in a physical sense and in terms of insubstantial materiality; the purely perceptible qualities of materiality. Physical and mechanical components are intimately related to their immaterial, animated configurations. When formal systems are translated into physical processes, observers perceive the variations and evolving distribution of the components in order to understand

the forces at work in the network of digital and analogue elements. *Order+Noise* could thus be seen as a synthesized field of variations where kinetic differentiation allows the observer to apprehend the diverging agencies of interacting components. Such a configuration of processuality makes this "interface" a mediator designed to transform perception. The manipulation of information in variable configurations and the mechanical translation of the electrical reveal the tensions that shape our aesthetic and emotional experience of interaction.

By focusing on motion and its perception, Ralf Baecker proposes a processual experience that cannot be understood as an historical artifact or the product of a finite creative process. The data reliefs are neither formal manifestations nor temporal landmarks, but transformable conditions of material and immaterial multiples. Baecker's Interface I is a system of variable formations constantly reconfiguring perceptual experience; its topology opposes physical and cognitive perception, resisting immediate analysis. Any instantaneous interpretation or formulaic proposition of purpose or meaning is bound to miss the fact that the interface is engaged in its own processual existence. When understanding the visual aspects of the machinery, one becomes aware of the complementarity and complicity between the material and its interpretation. Irritations and conflicts arise in this tension and effect epistemic processes in the observer's act of exploration. The artist thus disrupts a conceptual exploration of the installation by forcing the viewer to reckon with its physical mediality. Because describing processes is more difficult than describing static artifacts, observers must explore the rules, operations and parameters that define this cumulative construction of variable experiences. The artist calls upon cognitive reasoning and triggers cathartic transformations as the multi-layered forms of action, systems of reference, and levels of reality are discerned. What enables an aesthetic experience of *Order+Noise*, allowing viewers to differentiate between what is constitutive, what is operational, and what is implicit rather than (self-)evident, is precisely this nexus of instrumental conditions, processual activities, and material staging. In these contradictions of movement, observers generate their own subjective perceptions.

The computational, kinetic and sculptural characteristics of *Order+Noise* advert visitors to the simple fact that the aesthetics of such interactions are not to be thought of in terms of abstract theory, but rather as an applied or operational aesthetics that has nothing to do with consolidated formal structures or the ability to interpret an artifact. What underlines this aesthetic experience is the materiality by which action produces knowledge, transforming data space into real space. The installation's mechanical workings and network of strings allow us to explore the poetic potential of technology via its materiality, so that Interface I sits on the boundary between an imaginary field and an epistemological condition. The restriction of processes by operative rules and control mechanisms, which, in their workings, uncover their structural composition, also exerts aesthetic attraction. The artist's intention to make viewers emotionally and perceptually aware of interaction and non-intentional manifestations; the variable and operational transformations of information in various media; or the materiality of digital computing, draws on his view that computing is characterized by chaos, incoherence, and emergence. As a cultural phenomenon, it is a construction in a continuous state of development. The dialogic function of his installations works against utilitarian uses of technology to make manifest the raw materiality of everyday digital machineries. Ralf Baecker allows the viewer to perceive the inter(-)actions of matter. His Interface is an epistemological operator which enacts the limits of mechanical computation, the tensions between elements, and their dynamic equilibrium.

Sabin Bors
March 2016

[1] "Systems Esthetics," *Artforum*, September 1968.

[2] Mitchell Whitelaw, "Proto-computing, an Interview with Ralf Baecker," http://teemingvoid.blogspot.de/2013/06/proto-computing-interview-with-ralf.html.

How would you define "complexity"?

Complexity is always observed from a subjective position, without a comprehensive knowledge of the environment and the internal states of every involved part. There is a famous quote by Gregory Bateson: "If I kick a stone, the movement of the stone is energized by the act, but if I kick a dog, the behaviour of the dog may indeed be partly conservative — he may travel along a Newtonian trajectory if kicked hard enough, but this is mere physics. What is important is that he may exhibit responses which are energized not by the kick but by his metabolism; he may turn and bite."

If we know Newton's law and have information about the physical conditions of the environment (like ground constitution, wind speed and direction, gravity etc.) we can very precisely calculate where the stone will finally arrive, and we are able land a satellite millions of kilometres away on a comet. But we know not much about the internal conditions, the mood and the motivation of the dog - it is not easy to predict what the dog will do.

But the interesting thing with systems and machines is that even if they are free of noise, disturbances and situated in a perfectly clean and structured space, e.g. a computer simulation, we observe behaviour that we can not estimate before we run the system. This is what we call emergent behaviour, the kind seen, for instance, in cellular automaton but also in the interplay of various software elements in an operating system. Complexity arises from the simple and a lack of knowledge.

In your work you render processes taking place under the surface of technological devices, unfolding their abstract internal relationships. How do you see the dialogue and the tension that seem to exist simultaneously in the components in these systems? What kinds of values emerge from this?

If we look at one element of such a system, for example, at a lever of my installation "Rechnender Raum", which represents one single bit, it can take two positions - pulled or not-pulled.

From this we are able to understand, with our own experience of the world and its physical behaviour, how it will influence the parts that it is connected to. But if we expand our view we get lost in the interacting movements with the other parts. It becomes very hard to track one event.

One thing that I'm interested in is the effects of the digital on our psyche and consciousness, but on a very elementary level in contrast to the very obvious effects that networks and high-level technological systems have on our lives. The digital is a hybrid of the formalisation of mathematics that originated in the early 20th century and the mechanistic tradition of machine building. Every digital component, mechanical or electronic, is based on an analogue machine. I'm interested in this idea: our perfectly structured digital tools are running in this noisy analogue world. The digital allows us to domesticate the analogue world in the same way as formalized mathematical thinking, which is decoupled from the physical world, is transgressing into our daily lives. Digital technologies have fulfilled Leibnitz's idea of an universal language system (characteristica universalis), aiming towards the mechanization of every thought or argument.

Is there any machine from the past (real of fictional) that you'd like to construct, or test? And in this respect, what role does media archaeology have in your work and research?
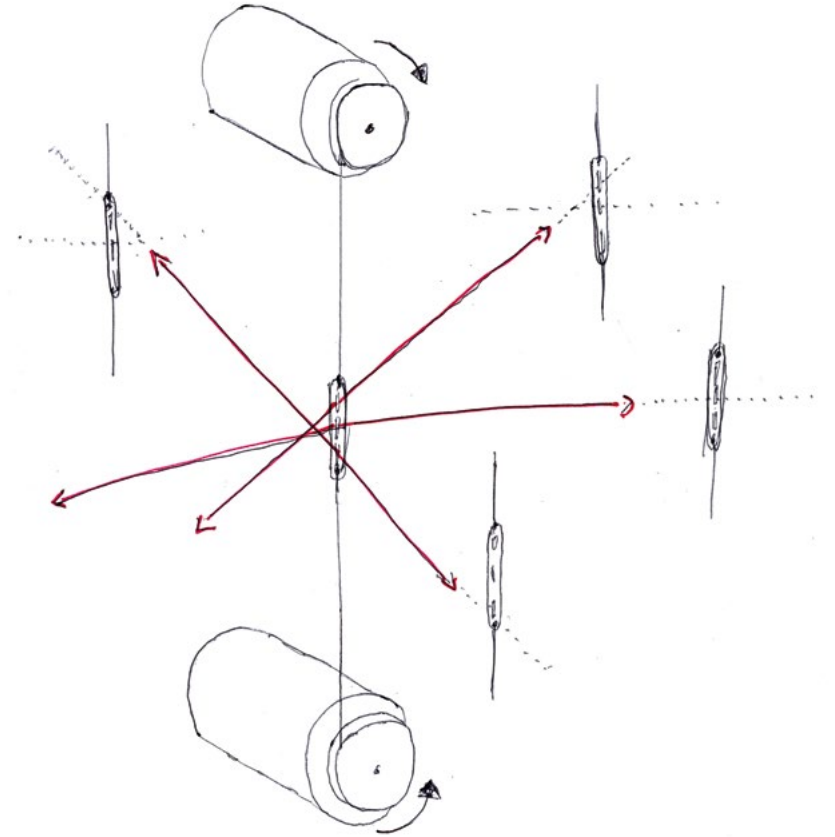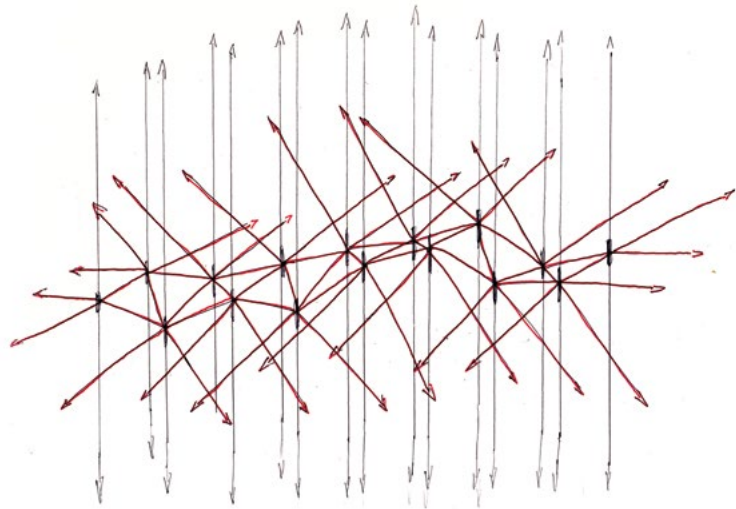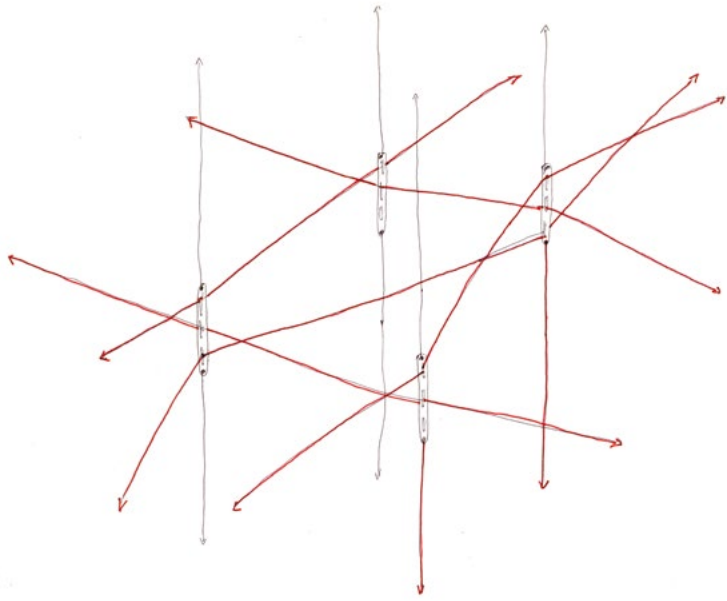
I'm usually focusing on single aspects of machines from the past, for instance, memory: I have a small obsession with different memory systems. The first memory systems appeared in radar system in the 1930s, such as the mercury delay line. The idea is very simple: If you want to draw the vector of the movement of an object (plane) you have to know its current position and the position where it was before. Then you can draw a line between these two points: you get a direction vector. The delay line memory makes use of the slower propagation of wavefronts in mercury. Let's say you have a 10-meter-long pipe filled with mercury. A little activator creates waves on one side, eventually data is encoded into the wave fronts. The waves propagate through the mercury and arrive eventually 1 second later at the other and of the pipe. We could read the arriving waves and translate them back into coordinates. Now we have the data that was collected 1 second ago simultaneous with the currently measured
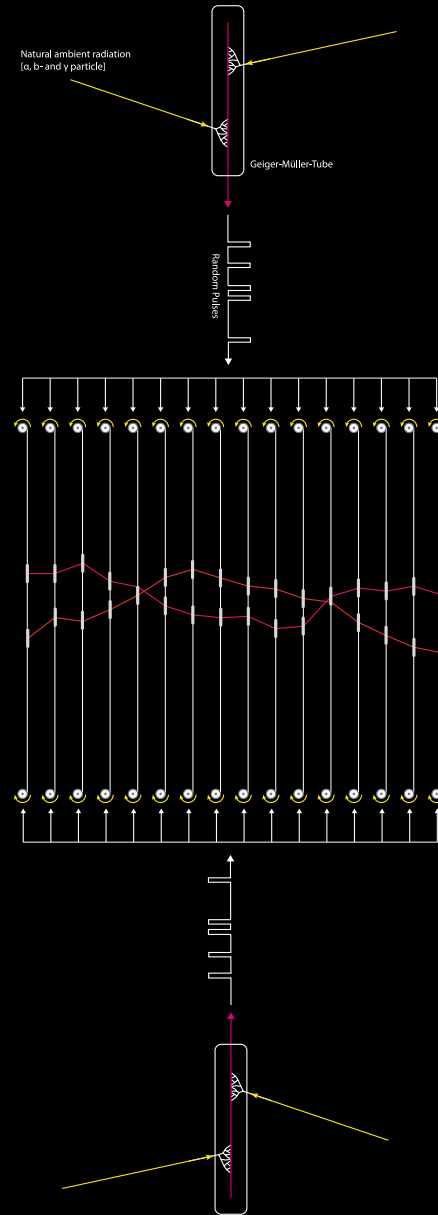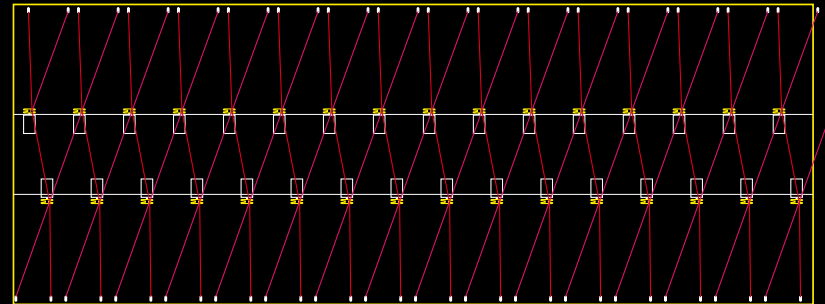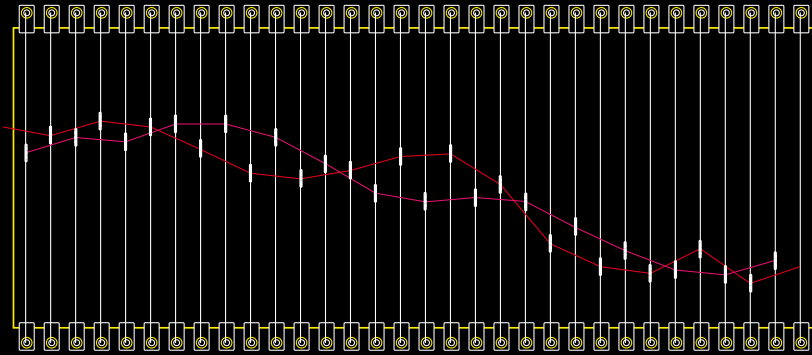
coordinates. We can draw a line between these two points. In these old, sometimes obsolete principles, there is a lot of beauty and poetry. Memory is in a technical sense nothing rigid or stable but something fluid and fragile.
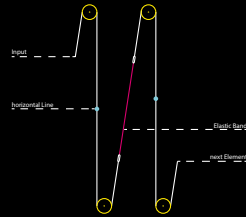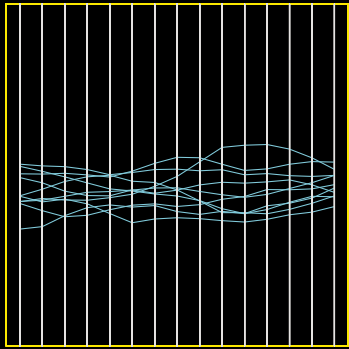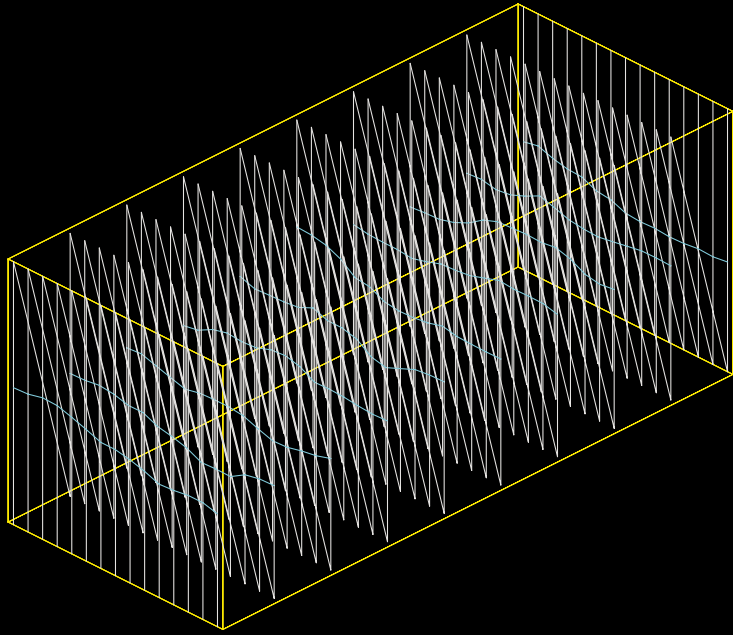
You said you want to "get rid of the display" and in fact, if I'm not mistaken, you have very rarely used screens in your works. Do you think that screens in general are a preponderant and distracting visual mediation that prevents us from gaining better understanding the real world? And do you think that the kind of "hidden disclosure of the machine" you perform in your installations can be metaphorically considered as a strategy to take over such mesmerising mediation processes?

I think displays work like filters, they translate things into a perceptible scale for humans. They allow us to communicate with these machines with the metaphors that we are used to, because the abstract notion of a pure digital is way too obfuscating to interact directly with. But I think these metaphors, e.g. a file, a cursor or a desktop also limit our way of understanding things. But the idea of "getting rid of the display" has a different origin for me. 10 years ago I was mainly working with software, writing generative visuals for performances. In this generative practice I was working a lot with complex systems, like Lindenmayer-System, cellular automatons etc. My aim was to create some kind of transparency. But I had the feeling that through these layer of software and hardware I'm was not even close to it. If we see a generative tree structure growing on the screen, we don't see the structures and progresses behind these systems. So I started to build my own kinetic or physical implementations of such systems.
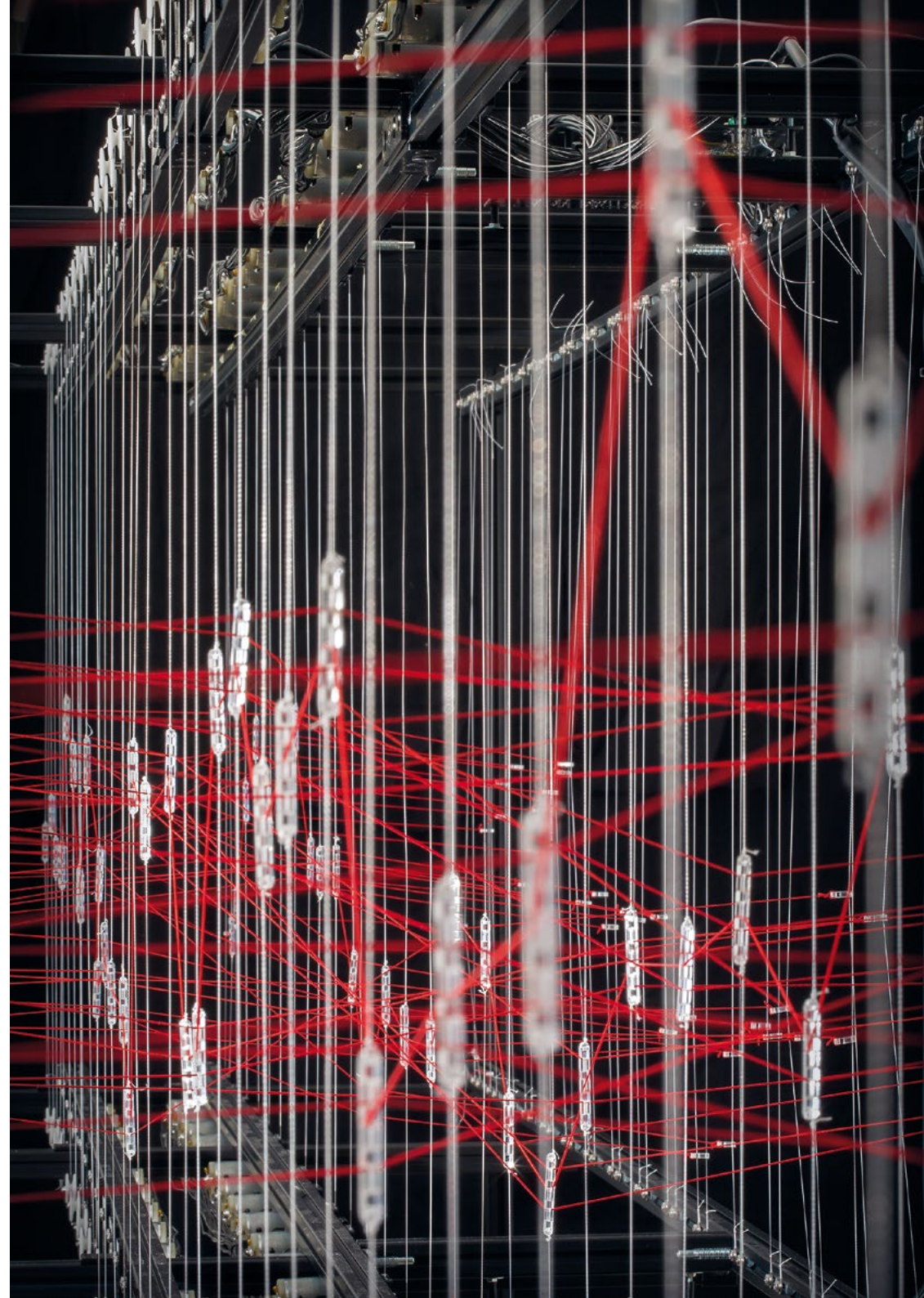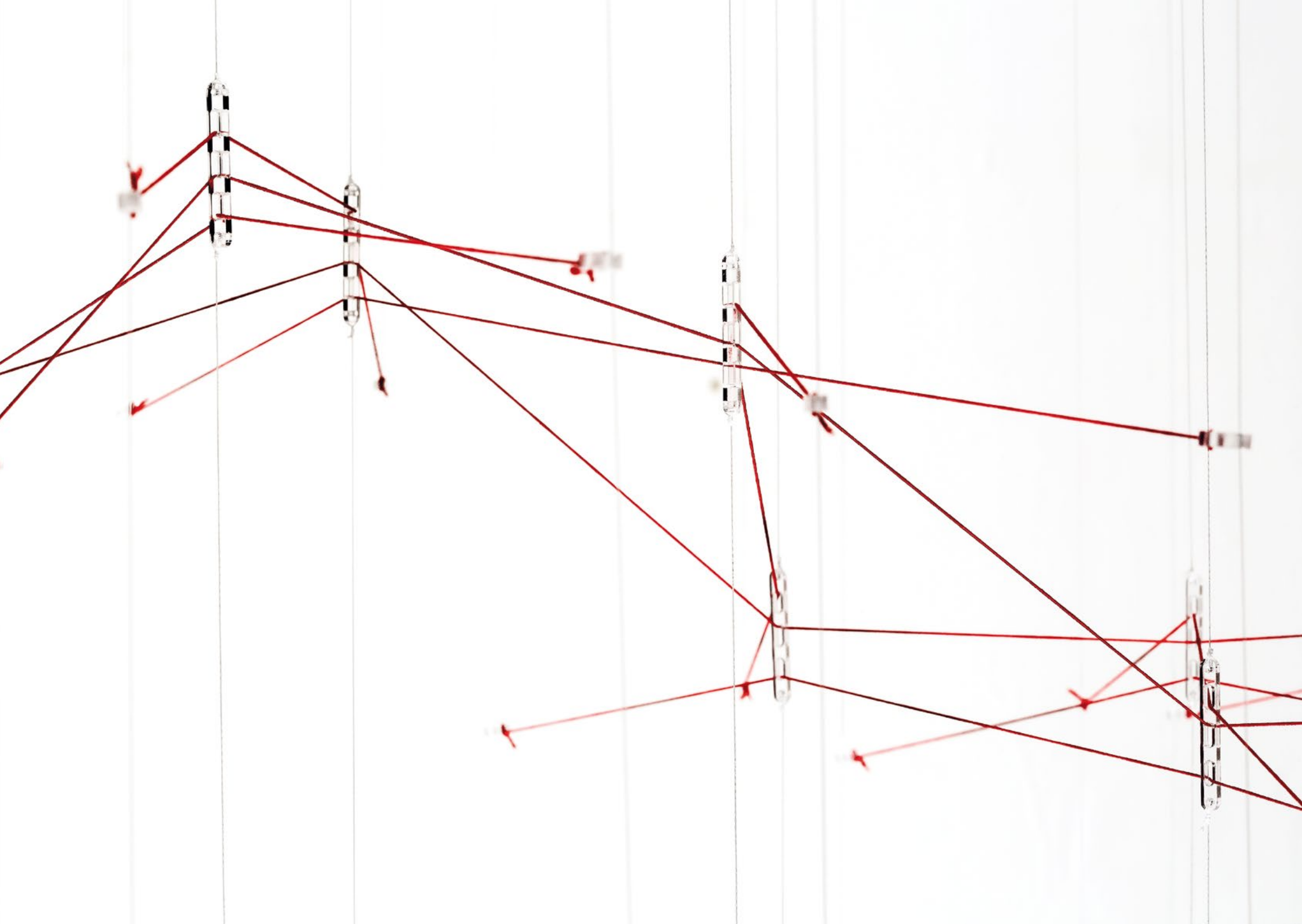
R E S E A R C H

Natural ambient radiation
(α, b- and γ particle)

Geiger-Müller-Tube

Random Pulses

A R T W O R K S

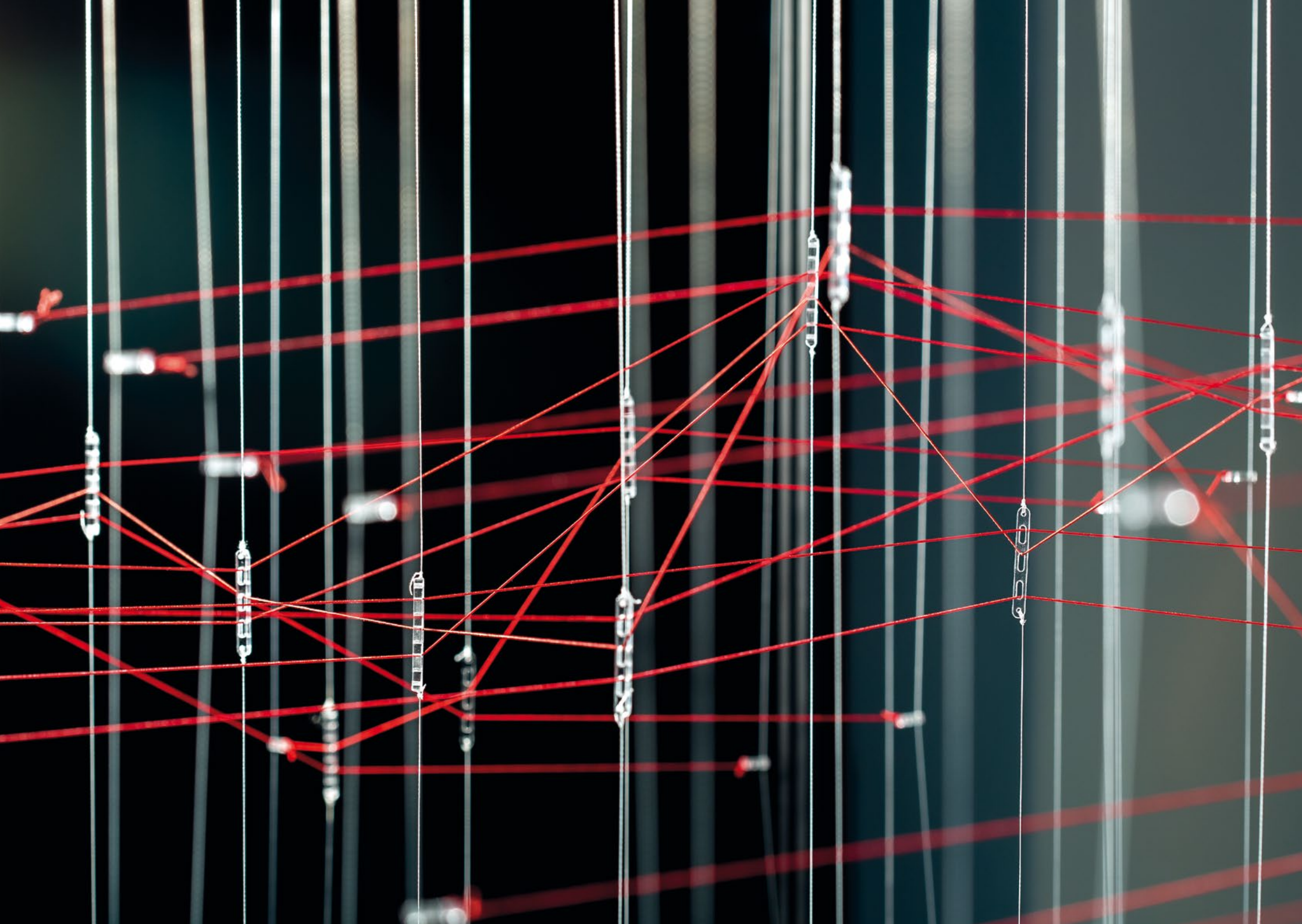Input

horizontal Line

Elastic Band
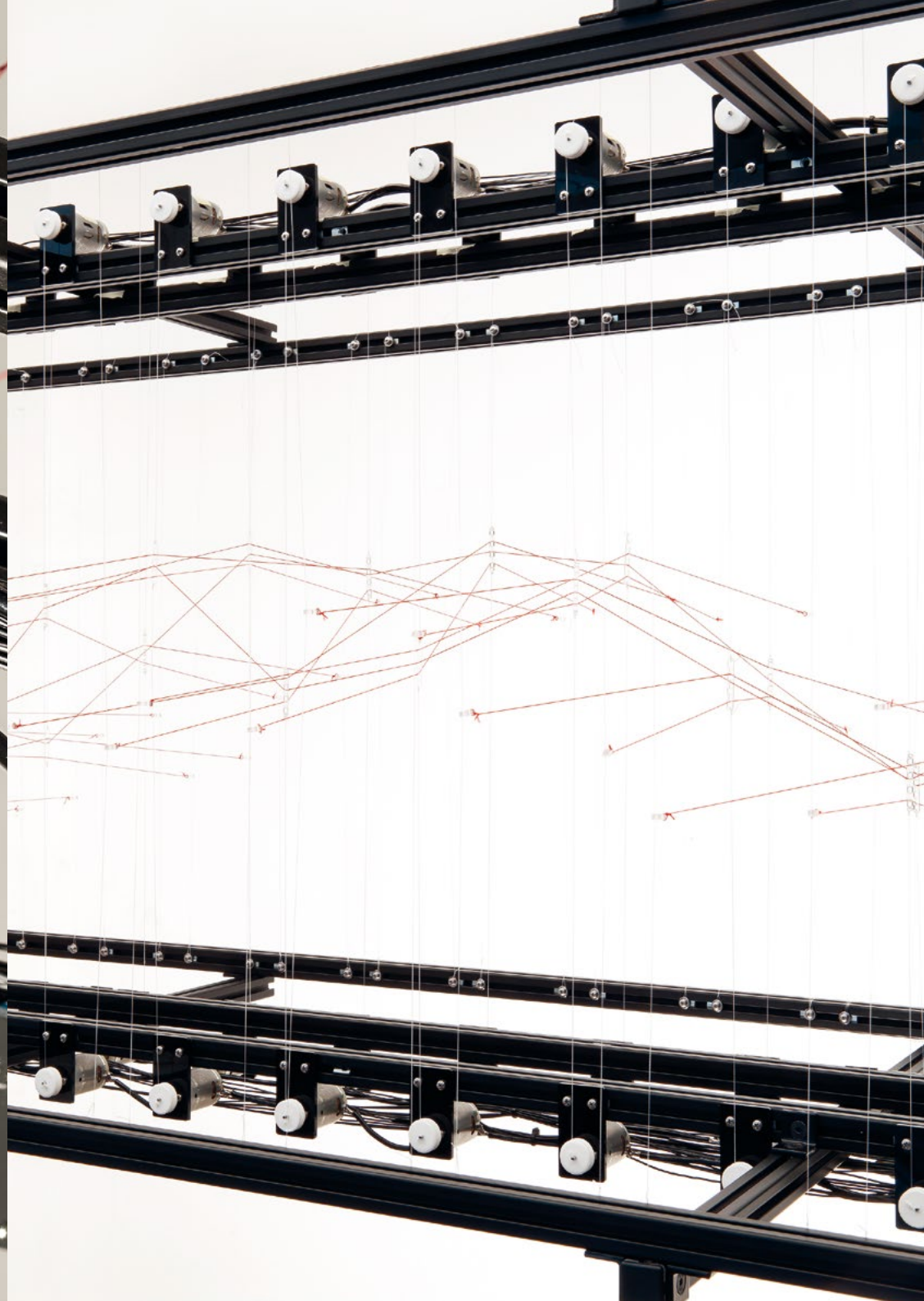
next Element

ORDER+NOISE (INTERFACE I), 2015

Ralf Baecker
Aluminum profiles, dyneema strings, elastic bands, DC motors,
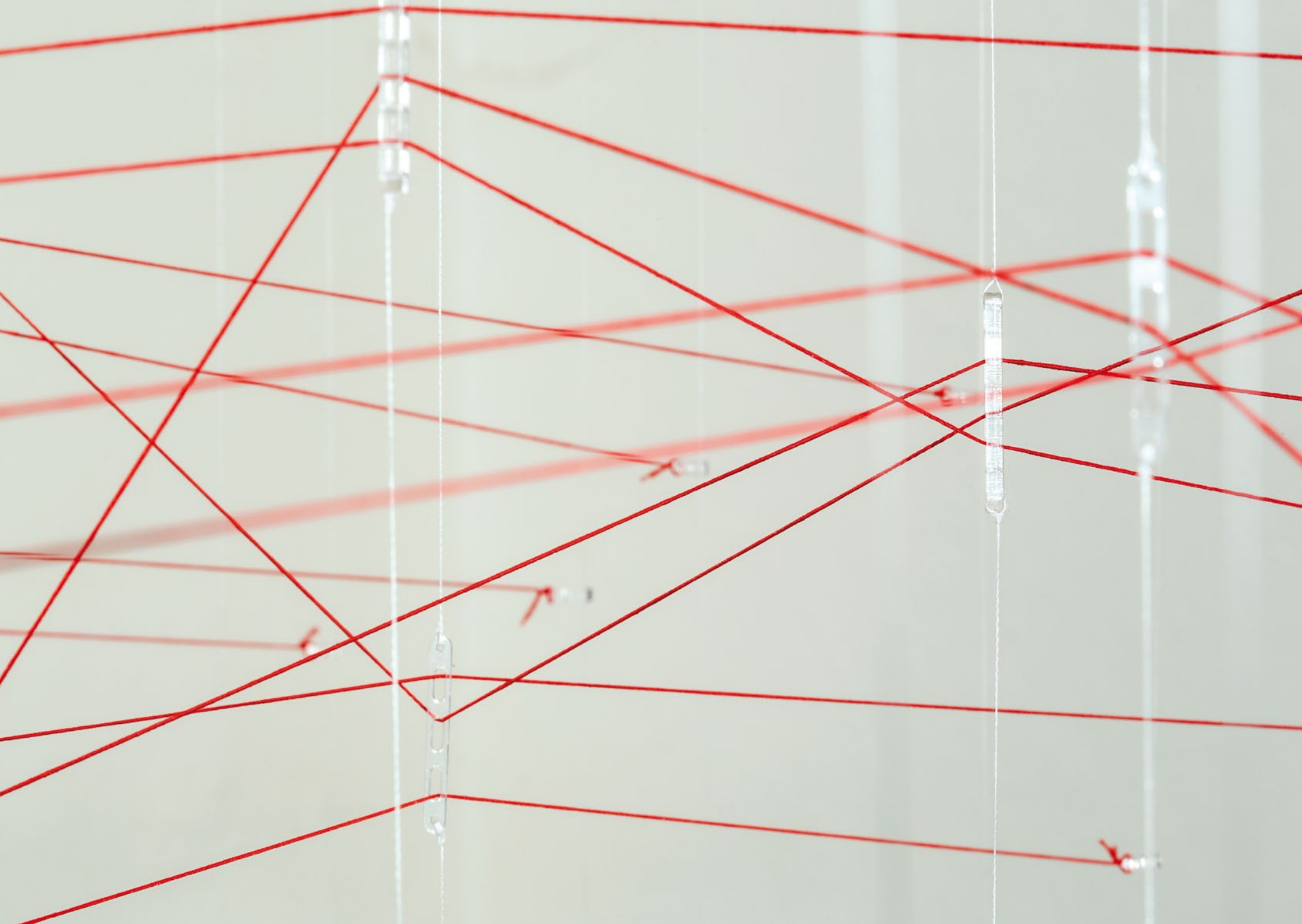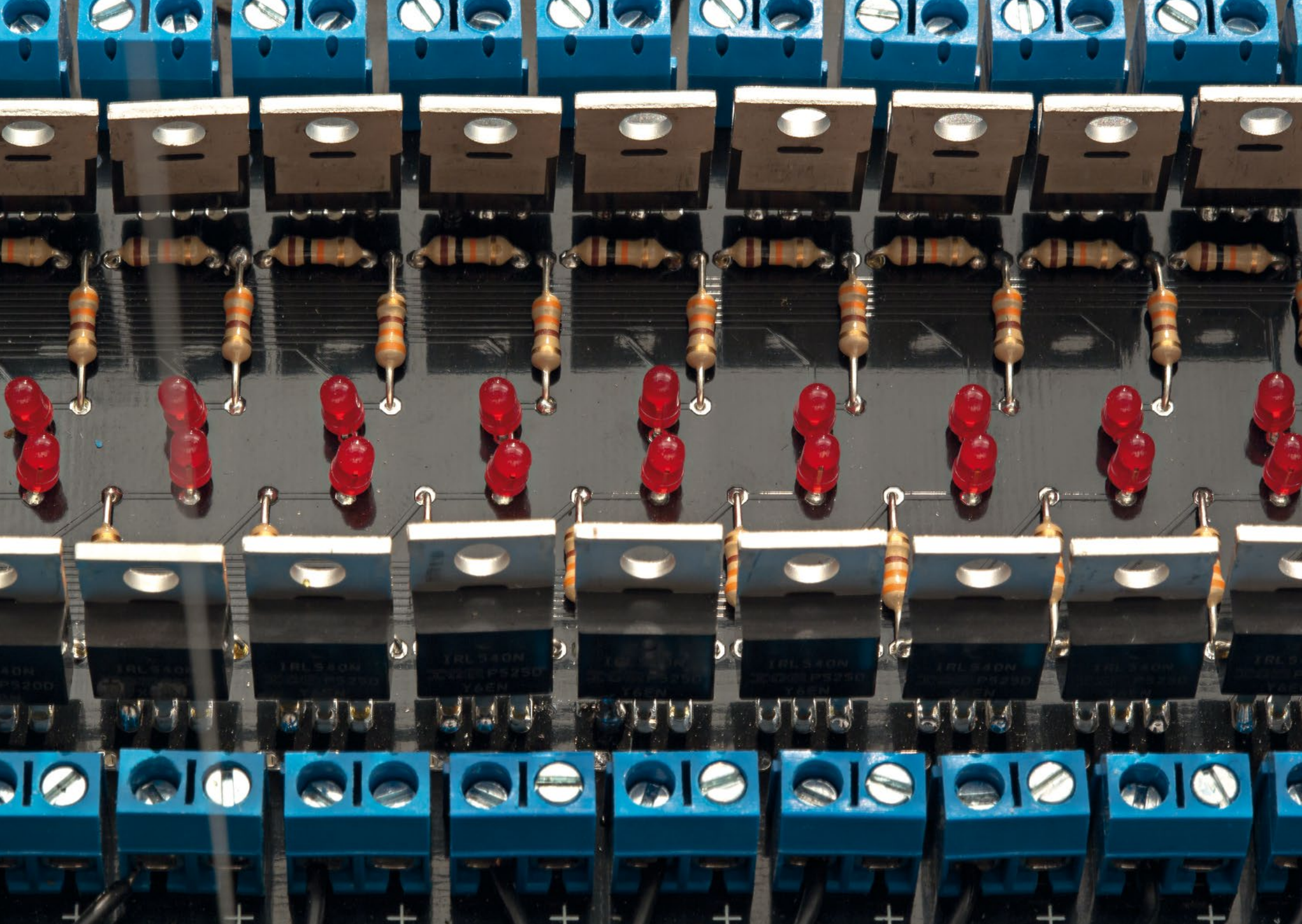Geiger-Müller tubes and custom electronics.

RALF BAECKER

Berlin-based artist Ralf Baecker has worked at the intersection of art, technology and science for more than ten years.

Through installations and machines, Baecker explores fundamental mechanisms of action and the effects of new media and technologies. In his representations and spatializations of microscopic processes he seeks to completely disrupt our perception. At the core of his objects lies the entanglement of the virtual with the actual, or rather, with the world. With a media-archaeological outlook, Ralf Baecker digs within obsolete devices for traces and functions that are still detectable in technologies today. His work seeks to form a hybrid between current digital aesthetics and an historical understanding of materials. As a result, he understands technology not as a tool but rather as an epistemological instrument, in order to pose elemental questions about a world perceived through technological impressions.

Baecker has been awarded multiple prizes and grants for his artistic work, including an honorary mention at the Prix Ars Electronica in 2012 and 2014, and second prize at the VIDA 14.0 Art & Artificial Life Award in Madrid for "Irrational Computing," a sound and light installation that relates to the disappearance, or rather invisibility, of materiality in contemporary information technology. The artist developed the project during a three-month-long residency at DOCK e.V. in Berlin with support from the Schering Stiftung.

His work has been presented in international festivals and exhibitions, such as the International Triennial of New Media Art 2014 in Beijing, Künstlerhaus Wien, ZKM | Center for Art and New Media in Karlsruhe, Martin-Gropius-Bau in Berlin, WINZAVOD Center for Contemporary Art in Moscow, Laboral Centro de Arte in Gijon, and Malmö Konsthall.

Born in 1977 in Düsseldorf, Ralf Baecker studied Computer Science and Media Art at the Academy of Media Arts Cologne, and has taught at the Bauhaus University in Weimar and the University of the Arts in Bremen. Baecker is currently a fellow at the Graduate School at the University of the Arts Berlin.