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THE LOGIC OF LIGHT. TECHNOLOGY AND THE HUMEAN TURN. Mirjam Schaub

Because the essence of technology is nothing technological, essential reflection upon technology and decisive confrontation with it must happen in a realm that is, on the one hand, akin to the essence of technology and, on the other, fundamentally different from it. Such a realm is art.¹

Lucius Annaeus Seneca the Younger—philosopher, feminist, asthmatic, son of the Roman rhetorician, Nero's luckless/lucky tutor—who, after the Pisonian conspiracy was uncovered in 65 A.D. thoroughly and without complaint complied with the Emperor's order to kill himself by slitting his arteries, drinking the cup of hemlock, and taking a steam bath, was wont to completely cast off his equanimity in the face of human cruelty when it came to the beauties of non-human nature:

Are you telling me not to investigate the natural world? Are you trying to bar me from the whole of it and restrict me to a part of it? Am I not to inquire into the identity of the artist who created that universe? Or the process by which the huge mass became subject to law and order? Or the nature of the one who collected the things that were scattered apart, sorted apart the things that were commingled, and when all things lay in formless chaos allotted them their individual shapes? Or the source of the light (is it fire or is it something brighter?) Am I supposed not to inquire into this sort of thing?²

Olafur Eliasson—weather maker, frequent flyer, artist of the impossible—has picked up the thread, in a thoroughly philosophical way, of Seneca's restless questioning, which formed such a necessary contrast to the latter's stoic forbearance. Eliasson is also concerned with sorting apart "the things that were commingled," but—and this is what makes up his wit and verve—only in order to make an art of conjunctions out of these "commingled" things, that is: the nature in us and the nature outside of us.

"Conjunction" derives from the Latin *conjungere*, meaning to join or to forcefully yoke together, and is a term used in both grammar and astronomy. (A) As different as these two uses of the term are, in neither case does a conjunction function as a leveler. A conjunction does not imply a value judgment, nor does it weight its relata on one or the other of its poles. It is rather the independence of both relata that gives a conjunction the power to discover something new in itself by way of the other.

Olafur Eliasson's art of linking engages that which separates in an entirely literal, direct way when he connects what seems to be a transparent and simple technical apparatus (like a room completely saturated

¹ Martin Heidegger, "The Question Concerning Technology" in *The Question Concerning Technology and Other Essays*. Harper and Row Publishers, 2 Seneca, "Letters from a Stoic", Letter LXV, Penguin Books, London, 1969/2004 p. 123.

with monochrome yellow light in *Room for one colour*) with our own organic perceptive apparatus (which remains opaque to us) in such a way that forces us to project ocular afterimages in the complementary color violet on what are actually white walls in the next room.³

It is clearly our own eyes that create this color sensation as a retrograde connection with the color yellow, but only because we first separated and detached ourselves from a room with an unusually one-dimensional spectrum of light. The predictable nature in us (here the physiology of afterimages) and the "nature" outside of us, unpredictable for us despite being created, manipulated, and invested with intention by the artist (the wave physics of complementary colors, etc.) form a quite forced conjunction here, unanticipated by David Hume in his *Treatise on Human Nature* (1772/77): a working conjunction between physiology, organic effect and inorganic impulse, and physics. It is less phenomenology with its natural chiasmus between body and world and rather, as Carolin Meister has shown, the "phenomenotechnics" of Gaston Bachelard that are the inspiration here. Bachelard uses this term to describe a turn in the scientific understanding of technology itself (which radicalized Heidegger). A natural science that suspects it can no longer get hold of the phenomena it is trying to track down by natural means has to produce in the first place those experiences it wants to investigate. Science thus becomes, first and foremost, a "phenomena factory":

Experience in the sense of an immediate observation of nature is then no longer the starting point of scientific inquiry; it rather becomes the goal of a technical experimental set-up. Nature becomes—and here the epistemologist meets the artist—the object of a technical-experimental experience. Experience thus enters into a remarkable solidarity with construction.⁴

Eliasson is not interested in a new mastery over nature, and the natural phenomena discovered in the process of creating his art are all the same to him. He makes strategic use of them, not in order to find out more about the nature outside of man, but in order to bring these phenomena into conjunction with human sensory physiology, which becomes the vanishing point of interest in his intractable "phenomenotechnical" apparatuses. The point is not to make the physiological somehow more "human," but, on the contrary, to think it from the perspective "of the objects," the "things" and their "colors" that it produces as if they actually existed outside of one's own retina: an art of afterimages, trick images, of the reversal and immobilization of movement.

We can call the disjunctive synthesis that results from this kind of conjunction of physiology and wave physics a "natural spectacle," typical for Eliasson. He artificially sets it before our eyes in the form of an apparatus as "our nature," which we perceive physiologically as being "outside" of us although, to be precise, that is not its proper place. Interestingly, this "natural spectacle" evoked by Eliasson is hardly inferior, in terms of structure, to the mechanism Hume describes as a purely intra-mental process. Eliasson's technical apparatuses, designed in an exemplary way for human physiology, can be said to have turned Hume from his head onto his feet.

It is in the spirit of conjunction that Hume discovers the "gravitational forces of the imagination" (in the work of Eliasson these are the constants of human perception) when he distinguishes between four possible mechanisms for turning atomized perceptions into impressions and ideas connected to each other: natural,(B) arbitrary, associative, and habitual/conventional connections. Hume suspects that we automatically take all of our perceptions to be de facto "connected," even if, de jure, they may not be. He describes "connexions or associations of ideas" as forms of involuntary correlation specifically created by the imagination. These combine individual ideas with each other

- 1. in an active, spontaneous, and arbitrary (that is, unregulated) way (arbitrary connection);
- 2. associatively, whereby the imagination is here also indebted to the "autonomous associative power of the ideas" (associative connection);

Gf. Carolin Meister's analysis, "Phänomenotechnik. Ästhetische Erfahrung und Konstruktion bei Olafur Eliasson" in: Bildforschung und Geschlechterkonstruktion, Studienjahr 2006/07, Kunsthalle Wien, 2007, pp. 84–98, especially pp. 94–97. Cf. also "Konvulsivische Natur. Olafur Eliassons Phänomenotechnik" in: Werner Busch, Oliver Jehle (eds.), Vermessen. Landschaft und Ungegenständlichkeit. Zurich/Berlin, 2007.
Carolin Meister, op.cit., pp. 90f.

3. constant repetition leads to both kinds of connections solidifying into habitual or conventional connections. This last form of connection is the most interesting. It has the most far-reaching consequences because it is precisely those conjunctions between perceptions that could have no causal connection whatsoever that are determining for cognition. Not unquestionably connected and yet connecting, even constraining, they define for Hume why the mind moves from one idea to the next, constantly creating new relationships. "Internal" and natural "principles of gravity" of the impressions and ideas on the one hand, as well as "universal" and yet dynamic "associative powers" of the imagination on the other are yoked together *without* our being conscious in any way of these mechanisms.

Eliasson's work is most interested in these conventional connections, which Hume already understood as effects of repetition. He has recently been busy freeing them from their intra-mental ghetto by idiosyncratically applying them to the apparently "natural" connection of sensory physiology and wave physics—a connection, of course, that is based on their natural separation, as his work precisely shows.

Why does wave physics (particularly light and water waves, but not sound waves, which in Eliasson's work are passed over so ostentatiously because they cannot be separated from the world of conventional and narrative meaning) rather than solid-state physics lend itself to this kind of conjunction? For one, as Seneca already knew, there is no art without movement, and what is more kinetic and at the same time more subliminal than light waves? Water waves are already visible in *another* way (i.e. by means of other waves), and Eliasson likes to stage them in connection with artificial light, whether it be Fresnel lamps (as in *Beauty*, 1993), HMI projectors (as in *Your welcome reflected*, 2003), or strobes (as in *Untitled*, 1998). For another, it is precisely human perception in its shameful stasis that here becomes the "dramatic" content of the artistic mise en scène, and competition with other meaningful systems would only mean an unwelcome distraction from the essential. The solidification of what is most supple (such as water) as antipode to the universal suppleness of light plays a role in many of Eliasson's works, as Carolin Meister has shown,⁵ but not only in nature itself (such as the veritable *Ice pavilion*, 1998 or the water film appearing only as ice under the strobes as in *Your strange certainty still kept*, 1996). It is also the rigidity—predictability, calculability—of the involuntary physiological reactions that are an important conditioning moment of the dynamization of the human standpoint in view of its own *condition humain* as evoked by the artist.

It must be admitted that Hume's reflections about the nature and genesis of the fundamental forces—the laws of association and principles of conjunction—remain scanty and strangely speculative. He discovers a new philosophical concept in the conjunction as *synthesis post factum*, but methodologically he remains rooted in skepticism, whose consistent aim is to rigorously separate the different from the same. Rather than working with his discovery, Hume relativizes it by withdrawing to a skeptical position.

This is precisely the point where Eliasson's objection can be located side by side with Gilles Deleuze's turn to the conjunction. Both of them are interested in the same question: what follows from Hume's conviction that human understanding with its capacity for connection—its associative activity—systematically learns to bridge the abyss of not-knowing and not-being-able-to-know? How can the loose collection of individual things (partes extra partes) dispersed throughout nature result in coherent perception? How can diversity be meaningfully connected in relationships, and how can a philosophical subject or even an artistic system be constructed upon it? Is it possible to develop a particular type of judgment from a series of additive conjunctions?

Olafur Eliasson's work can be read as a quest to find answers to these questions. Like Deleuze, he is astonished—and persuaded—by the simplicity and straightforwardness of Hume's answer. Deleuze writes:

La conjonction constante [de l'esprit] est *toute* la relation nécessaire. [...] La relation n'est pas ce qui lie, mais ce qui est lié, ⁶

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⁵ Cf. Carolin Meister, op. cit p. 89.

⁶ Gilles Deleuze, Empirisme et Subjectivité, Paris 1953, p. 7; p. 6. "The constant conjunction [of the mind] is the entire necessary relation. [...] Relations are not doing the connecting, but rather they themselves are connected." Gilles Deleuze, Empiricism and Subjectivity. Trans. Constantin V. Boundas. New York, Columbia University Press: 1991, p. 26.

The human mind, programmed to make conjunctions, owes its inventive power to nothing other than circumstances and the habit of making connections whenever intense sensations are experienced. Seen this way, "and" should not be thought of as purely "integrative," because it neither has "the same nature" as the individual relata that it connects, nor does it coincide with their totality. Deleuze understands a conjunction like "and" to be both analytic/separating *and* synthetic/combining. This paradoxical finding leads Eliasson as well as Deleuze to adopt the conjunction—in terms of its power of bridging but not of leveling separation—as their own characteristic method.

One of Eliasson's early works provides a good example of the genuinely experimental character of this initially still "imponderable" method. In the catalogue raisonné of his light works in the publication *Your Lighthouse*⁷it is listed as number 21, dated 1996. The Joanneum in Graz, a rococo ballroom richly decorated with mirrors, was host to the first showing of Eliasson's

Die organische und die kristalline Beschreibung⁸

This—at first blush somewhat strange—title comes straight from a distinction Deleuze makes in his second cinema book, *L'image-temps*. *Cinéma* 2|*The Time Image*. *Kino* 2 (first published in French in 1985):

A description which assumes the independence of its object will be called 'organic'. It is not a matter of knowing if the object is really independent, it is not a matter of knowing if these are exteriors or scenery. What counts is that, whether they are scenery or exteriors, the setting described is presented as independent of the description which the camera gives of it, and stands for a supposedly pre-existing reality.⁹

The hall of mirrors, or the "gold cabinet" as it is also called, is located on the second floor of the former Palais Herberstein, which today houses the Neue Galerie of the Landesmuseum Joanneum in Graz. Enormous crystal chandeliers hang low from the white and gold ornate rococo ceiling. Whatever is not a window (draped by Eliasson with blue lighting gel filter) is a mirror and whatever is not a mirror is crystal glass. The glass acts as a fractal, refractive surface, a multiplier for every form of light and its reflections. Just as the room would appear to the naked eye as a sparkling (but still describable) jewel, just as a film camera would "portray" the decorative splendor of the room as organic (i.e., in Deleuzian terms, a reality that can be staged independently of the camera), so the room would probably still appear if the light projected by the HMI projector would simply throw a spotlight at a corner of the room.

Eliasson, however, couples this light with a simple, convex traffic mirror, which casts reflections on the walls behind the projector. Not only does a slide coated with different colors (blue, green, transparent, and yellow) make colorful stripes appear on the walls, but there is also a wave generator (first three transparent glass panes grinding against, in front of, and on top of each other; later the slide itself is moved up and down) in front of the color slide, so that the light from the projector meets the slide split into different angles of incidence. The effect is now no longer organic.

In contrast, what we will call a crystalline description stands for its object, replaces it, both creates and erases it – as Robbe-Grillet puts it – and constantly gives way to other descriptions which contradict, displace, or modify the preceding ones. It is now the description itself which constitutes the sole decomposed and multiplied object. (Deleuze, TI, p.126)

Thus the whole hall of mirrors is set into motion. Delicate strips of color move in waves against each other, begin to dance on top of and over each other, intensified by the gold and white coloring of the inlaid doors

⁷ Olafur Eliasson: Your Lighthouse; Works with Light 1991-2004, Hatje Cantz Verlag, Ostfildern-Ruit, Germany, 2004, p. 76.

^{8 &}quot;The organic and crystalline description." With an HMI projector, built-in wave generator, color filter, and color slides aimed at a convex traffic mirror from a distance of approximately one meter.

⁹ Gilles Deleuze: "The Powers of the False" in *Cinema 2 – The Time-Image*. University of Minnesota Press, Minneapolis, 1989, pp. 126-155. Here p. 126.

and windows, multiplied by the manifold reflections that hit the wall mirrors and the chandeliers and are reflected yet again: blue-yellow-white-gold-white-yellow-blue.

In fact, organic descriptions which presuppose the independence of a setting serve to define sensory-motor situations, while crystalline descriptions, which constitute their own object, refer to purely optical and sound situations detached from their motor extension: this is a cinema of the seer and no longer of the agent. (Deleuze, TI, p. 126.)

We do indeed find ourselves in a purely optical situation in Eliasson's hall of mirrors. There is nothing to do in this dancing, sumptuous light, there is nothing expected of us and we can only stand amazed. But we are not only amazed at the bewitching beauty of a ballroom sent spinning, we also experience intellectual pleasure.

Deleuze sums up his position in a conversation with Claire Parnet:

I don't believe the imaginary is at all specific, but that there are two systems of images: a system one might call organic, that of the movement-image, which is based on rational cuts and linkages and itself sets forth a model of truth (truth is the whole...). And then a crystalline system, that of the time-image, based on irrational cuts with only relinkings, and substituting for the model of truth the power of falsity as becoming. ¹⁰

Explicating the concept of truth with the idea of the one light and the concept of becoming as a fanning out in individual colors has immediate relevance for Eliasson's work. Organic description refers to localizable (interpretable, verifiable) relationships between natural colors, knowledgeable human eyes, and conventional natural phenomena, to lawful, i.e., causal or logical connections. But, as Deleuze writes:

The crystalline regime is completely different: the actual is cut off from its motor linkages, or the real from its legal connections, and the virtual, for its part, detaches itself from its actualizations, starts to be valid for itself. (Deleuze, TI, p. 127).

For Deleuze, the virtual refers, in the narrow sense, to an image that was generated in relation to an actual object (such as a mirror image or a silhouette, but also the traces of light on a photograph), which itself is not the object of (another) image. The virtual image then appears as a complete surrogate of an actual image: not until the figure in front of the mirror moves away or the camera suddenly shows the edges of the mirror, does it make good on its existence as a secondary appearance. But if it can only be decided case by case whether something is actual or virtual, if the boundaries of these categories become interlaced ad infinitum by means of interlinking mirror effects—like the surfaces in a hall of mirrors full of windows, facing and reflecting each other—then this does not invalidate the distinction, but we can no longer tell with definite certainty which is which.

These are two stylistic forms, and one can't say one is "truer" than the other, because truth as a model or as an Idea is associated with only one of the two systems. (Deleuze, N, p. 67) The two modes of existence are now combined in a circuit where the real and the imaginary, the actual and the virtual, chase after each other, exchange their roles and become indiscernible. (Deleuze, TI, p. 127)

Here it is again, the power of the conjunction "and," which turns the organic as well as the crystalline description into a loop in which both sides begin to change and exchange their affiliations without losing their disjunctive character. Due to the positioning of the HMI projector at the end of the hall, the hard shadow of Eliasson's chandeliers looms distorted and larger than life against the ceiling, making them appear to be in

¹⁰ Gilles Deleuze. "Doubts about the Imaginary" in Negotiations. Columbia University Press, 1995, pp. 62-67. Here pp. 66f. Hereafter cited as N.

motion themselves. Trying to focus on the movement surrounding you in the middle of the room throws above and below, floor and the ceiling, off balance.

It is here that we may speak the most precisely of crystal-image: the coalescence of an actual image and its virtual image, the indiscernibility of two distinct images. Passages from one regime to the other, from the organic to the crystalline, can take place imperceptibly or there can be constant overlapping. (Deleuze, TI, p. 127)

Eliasson takes advantage of this effect, perhaps in hopes that "crystalline narration will fracture the complementarity of a lived hodological space and a represented Euclidean space." (Deleuze, TI, 128).

I grew up in solitude and silence 11

is the title of one Eliasson's first works. A (real!) burning candle is placed in the center of a round mirror lying face up. Seen from a low angle, the candle extends its basis, straight as an arrow, into the virtual depth of the mirror image and seems to be burning from both ends at the same time. The initial effect of the mirroring is that the real candle stump temporarily appears as a reflection of its virtual base. The virtual image with its artificial presence is always more attractive (to the human mind) than the image-giving object itself (in this case the candle), precisely because we scent out its vexing natural presence and sense its artificiality at the same time. Perhaps so that he could gear his later working titles to "You", Eliasson needed a space of untouchability—an essential prerequisite for idiosyncrasy, artistic as well as human. I grew up in solitude and silence—what a programmatic title for an artist who set out with a candle and a mirror to conquer the globe. Many of his rooms, even those obscured by fog and sheets of water and with chambers isolating the observer, have this quiet, compelling, meditative touch.

Your welcome reflected 12

In Your welcome reflected, 2003, two round panes of glass of equal size hang from the ceiling, approximately one meter from each other, and slowly turn around their own axis. "Their" colors (but are they really theirs? And not rather ours?)—luminous yellow, azure, magenta, light blue, yellow-white—could have been painted by Geiger. But the color space in Eliasson's work is real and virtual at the same time, in that we do not only see natural colors on the slowly turning discs, but also patches of color of different sizes, along with their intersections, on the surrounding walls.

A powerful HMI spotlight is aimed at the scene; the light, screened off by side flaps, throws a large bright rectangle on the opposite wall. (The work must be displayed in a closed room or one with at least three walls to catch the reflections.) Depending on the duration and repetition of the procedure, the crystalline surface of the glass discs, which have been dipped into a bromine bath, causes them to refract the light with varying intensity, filter out the yellow or blue spectrum, and throw it on the closest wall. The remaining, surplus light passes through the rotating shape and only then hits the second sheet of glass, which, in turn, filters out the complementary color of the first. Since the panes, which are connected to each other from behind, generate the filter effects of two complementary colors, the effect is doubled, multiplied, and reversed. We can no longer tell which filter is which. Since the filters are semi-transparent, we cannot tell which colors belong to the glass surfaces and which are created by their mutual permeation. Thus the first glass pane, when viewed from any other but the head-on angle of incidence, appears in other colors, primarily in complementary blue.

12 Number 134 in the catalogue raisonné of the light works, dated 2003. 2 colour effected filter glass (blue, yellow), steel wire, two motors, HMI spotlights, tripod. The two panes are both 75 cm in diameter.

¹¹ In the catalogue raisonné of the light works this is number 3, dated 1991: "A burning candle stands on a round mirror, which is placed on the floor." Olafur Eliasson: Your Lighthouse; Works with Light 1991-2004, Hatje Cantz Verlag, Ostfildern-Ruit, Germany, 2004, p. 60.

Only the yellow reflection on the side wall reveals that the yellow colors could have been reflected and separated out here. The second pane, which in turn only reflects blue light from the head-on angle, appears to the observer to be magenta, since the yellow light was already filtered out by the first pane. Only that part of the yellow stray light that hits the revolving second pane from the side by way of the wall reflection momentarily generates—itself complementarily intensified by the blue filter of the second pane—a yellow half-circle on the first pane.

Keeping the hall of mirrors work in the Joanneum in mind, this rather complicated, retrospective description can however be better understood in terms of a realization of a "reciprocal" image (l'image biface), in which virtual (the temporary blending of colors generated by reflections and movement) and actual (provoked by calculable filter reflections) effects replace and are superimposed on each other in such a way as to form a "zone of indiscernibility" (zone d'indiscernibilité). If you enter into this revolving, intense color space, your own body—your jewelry, your shining eyes—introduces additional refracting effects into the play of color, amplifying what are now no longer peripheral effects. Your welcome reflected is an accessible color sculpture and an open stage.

Your black horizon¹³

The architect David Adjaye and the artist Olafur Eliasson developed a work together, a special kind of pavilion, for the 2005 Venice Biennial. It was first built on the Venetian island of San Lazzaro, then dismantled and rebuilt in the hilly, rocky, and olive-tree covered landscape of Lopud Island off the coast of Dubrovnik in Croatia. A long corridor leads into the artwork; light from the side exposed to the weather and the sea falls through staggered, vertical, untreated wooden slats. On the other side of the corridor, however, the color black and the opaque pattern of the slats announces what seems like an ironic commentary by Adjaye aimed at the metallic sheen of the Rieck Hallen at the Hamburger Bahnhof, ¹⁴ which for a long time housed Eliasson's Berlin studio behind a similar exterior. Strolling through the strips of sunshine running along the floor and the wall (your own naked legs turning into a zebra crossing), you are inevitably led into a black cube that nonchalantly leaves beautiful Lopud and beautiful Venice to their own devices. And yet there is still a small strip of light between ceiling and wall, which the observer at first automatically takes to be natural light breaking in from outside. But the light is changing, first slowly, then at a tremendous speed. The light and what is left of it after the many hours of diurnal darkness passes through, in time-lapse, all the colors of the day in a quarter of an hour. Eliasson, who likes to work with such measuring devices, used a photometer to record, analyze, and condense the light conditions in Venice and later Lopud. He then generated a computer application that activates and dims bundles of LED lights (which are hidden behind a partition) up and down: the result is a subtle natural theater using the best artificial means.

Sunrises and sunsets that take place in the narrowest space against a dark background and in the shortest amount of time provoke the most varied sensations, depending on the mood you are in when entering this insular and yet completely cosmic world. Just as in Room for one colour, everyone brings something of her own to the experience, something indispensable, an afterimage not in the literal but in the metaphorical sense. Space refracts into an emotional afterimage of the landscape (the external one, but also the mental, inner one that reflects it) from which one entered the dark cube, the product of a singular conjunction of memory, expectation, and something unpredictable: amazement and astonishment on account of the darkness, perhaps a feeling of strangeness, or a rush of happiness at the gift of a small flash of light, a sensation of transience and futility, or simply—the comedy of the situation. Is this your idea of horizon? Do you even have one? Don't you need one?

¹³ Cf. Eva Ebersberger and Daniela Zyman (eds.), Your black horizon Art Pavilion. Olafur Eliasson und David Adjaye, Thyssen-Bornemisza Art Contemporary, Köln: Verlag der Buchhandlung König, 2005. 14 Designed by the architects Kühn/Malvezzi.

As grammatical copulas, conjunctions ascribe entirely different terms to each other, without, interestingly enough, diminishing their significance, and regardless of whether the link is additive ("and"), adversative ("but"), disjunctive ("either-or"), explicative ("i.e."), causal ("because"), concessive ("if-then"), or comparative ("as"). In astronomy a conjunction refers to a coincidental encounter of two planets that appears, from the perspective of the earth, to be the greatest possible (and thus ominous) convergence of two main celestial bodies suddenly beginning to float "on top of each other" in the firmament. These stellar conjunctions, which are temporary but recur at long intervals, have historically been interpreted as harbingers of political upheaval.

(B) In A Treatise of Human Nature (vol. 1), Hume calls natural those connections between impressions that are perceived close together or simultaneously even if their encounter is only coincidental. The concept of the conjunction covers this class of events alone. Similar to its meaning in astronomy, then, Hume uses this term to refer to the coincidental convergence of entirely heterogeneous things or events as they come together in the moment of common perception "in one experience."