

Here everything breathes, a lost contact is established again. Those shadows in the cornice; the room has lungs, it palpitates. Yes, electricity is eleatic, it turned our shadows to stone. Now they are part of the furniture and the faces. But here, on the other hand... Look at that moulding, how it's shadow is breathing, that volute that rises and falls. In those days man lived in a soft and porous night, in a continuous dialogue. The terrors, what a luxury for the imagination.<sup>1</sup>

—Julio Cortazar

# Spatial Melancholia: The Construction of Sensitive Machines

Uwe Schmidt-Hess

*Starting from a forgotten machinic site in London I introduce the idea of shifted spaces whose investigation is the purpose of this work. Shifted spaces are seen as the deconstructed territory of the object where the subject is revealed. They provide the potential to act as an urgently necessary counterweight to the technological revelation in a Heideggerian sense. He sees technology's revealing is a transformation of things as they are by a self-assertive and calculative mode of thinking that excludes the subject. To establish a methodology for dealing with shifted spaces the theory of a sensible geometry by Jean Nicod is discussed. In his geometric order which is built around a perceiving observer, the fragmentation of sense data and the notion of a sensible time form the core aspects. Furthermore the power of poetry is examined to open spaces beyond fixed objects. Both, poetry and the idea of an intuitive geometric order, are then applied to the ultimate operator of technological revealing—the machine. This leads us to the construction of sensitive machines as site for shifted spaces.*

Over the following pages a second layer is floating—quotes from Julio Cortazar's novel *Rayuela*. These lines act as displaced pieces of text—the leakage of another realm—and shall insinuate the power of poetry.

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## *The Wet Disengaged Place*

### *An ecology of machines*

It starts with a shift in time and a specific site: we are looking at the dockland area in London at 1850. The picture we see is determined by instrumentalized water: the Thames filling a network of canals and basins, steam in the air and many sweating men. To master the shiploads coming from all over the world they form a symbiotic relationship with heavy working machinery like cranes, pumps, and capstanes. The power of water injected into a hydraulic system is used to drive these over the site dispersed

machines. By a network of pipes, a wet joint, they are also connected with their ultimate energy source—the steam engine.

The hydraulic system is not only the means to transmit power, it is also the means for the transmission of information—a communication system between the machines. By the pressure of water information is passed on from one machine to the other. For regulation of the pressure state of the art technology in form as a device called a weight-loaded hydraulic accumulator is used. This accumulator acts as a battery, buffer, and feed back mechanism. It comprises a large weight supported on a long ram mounted in a tower. If a machine starts up and water is drawn out of the system faster than can be supplied from the engine, the weight descends, forcing water back in under constant pressure. When the power demand slackens off, the water from the engine drives the weight up again. Fully raised, the engine is automatically shut off by a trip valve.

The hydraulic system with its components—input and output elements, control and feed back mechanisms, is a cybernetic system. The site is an ecology of machines.

At the Regent's canal dock a hydraulic power system was introduced in 1852 but already 70 years later, after electric power is generally available, it is out of date. The steam engine which is the motor of the system is also the motor for the whole age. Leading to many new technological inventions it eventually causes its own disappearance. Today most of the former equipment has no visual presence anymore. First the hydraulic working machines were replaced by electrical ones which today are replaced by abstract ones. Buildings were knocked down, pipes dismantled. The memories of the hydraulic power generation at the London docklands have faded. Over time the site has been transformed and overwritten. Scattered relicts are the only remains we can find today.

### *Searching of the Concealed*

The forgotten machinic site is the point of departure. Three moments of the place need have our special attention: firstly the former ecology of the machines; secondly its decline to the relics; and thirdly the question concerning technology which is illustrated by the site. The hydraulic system was used to drive working machinery which enabled man to handle the enormous powers involved in the loading and unloading of ships. It was used as a tool. However, we should not reduce technology to the status of

just being man's instrument. Doesn't it also incorporate an active notion? Therefore it is rather a way to look for the hidden. Martin Heidegger defines the essence of technology as "a way of revealing ... The revealing that rules throughout modern technology has the character of a setting-upon, in the sense of challenging-forth. Such challenging happens in that the energy concealed in nature is unlocked, what is unlocked is transformed, what is transformed is stored up, what is stored up is, in turn, distributed, and what is distributed is switched about ever anew. Unlocking, transforming, storing, distributing, and switching about are ways of revealing."<sup>2</sup>

The hydraulic power system at the Regent's canal dock unlocked the energy concealed in water and coal, transformed it by turning water into steam causing the motion of the steam engines into the high pressure of the water pipe system, stored up the energy in a lifted 80 tons weight, and distributed it to the connected working machineries, which switched about the energy anew. Thus, the essence of the hydraulic system was revealing what is hidden in the world which is the potential of water to animate heavy machines. However, how many endless qualities of water are not revealed by this technological approach?

Technology has changed from being just an instrument and a product of applied science to become a force of revealing. It incorporates the human desire to change by challenging forth. It is a human condition. Technology has its origin in man's nature and is orientated towards nature trying to extend the borders of the actual. However, technology reveals what the thing is only after being ordered, produced, or simply enclosed in a concept by man. Thus, it has a character of revelation that does not allow anything to appear as it is. The technological thinking is calculative, it is a cold revelation. This way of thinking contains a danger. We enjoy the speed and dynamics involved but we get blind for the direction of revealing. Furthermore technology "conceals that revealing which, lets what presences come forth into appearance."<sup>3</sup> It is an ambiguous subject. Technology aims at revelation, however, it is concealing at the same time. A new critical position towards technology is inevitable if we intend to use it as a human condition for human purposes.

Technology has a counterweight, which is art. Their linkage is the characteristic of revealing. Let us quote Heidegger again who speaks about the same etymologic Greek root of art and technology. "There was a time when it was not technology alone that bore the name *techne*. Once that revealing which brings forth truth into the splendor of radiant appearance

was also called *techne*. Once there was a time when the bringing-forth of true into the beautiful was called *techne*. The *poiesis* of the fine arts was also called *techne*.”<sup>4</sup>

As technology, art is a way of looking for the concealed. However, the origin for this search is in the virtual—the realm of ideas, thoughts, imagination, language—following a meditative mode of thinking. Art’s direction of revealing is oriented—oriented towards the search for a warm truth. This truth must be conceived in the same way as the Greeks conceived of it: as “*aletheia*”—unveiling, unconcealedness and openness. The essence of the artistic revelation is the appreciation of the openness—the nonobjective.

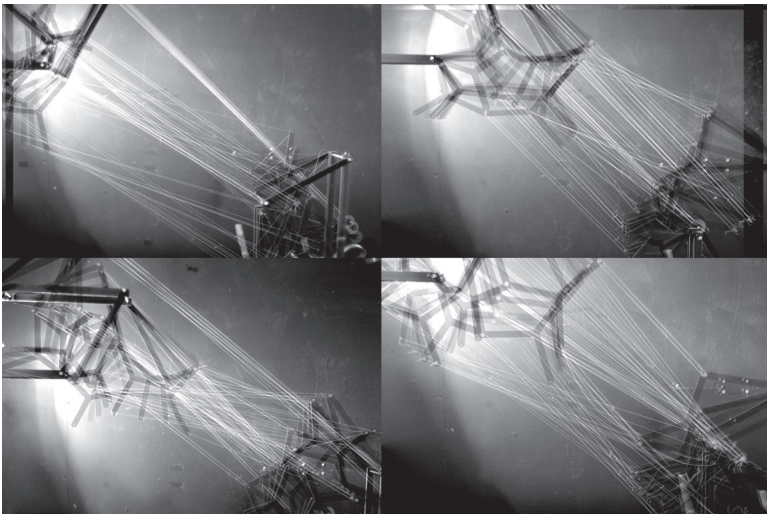
Since art is similar and different from the essence of technology at the same time, it is the realm where the investigation and the critique of it can take place.

### *Spatial Shifts*

Scattered relicts are the remains what we can find today—insinuations of the former ecology of machines. Considering them just for themselves, these relicts are just objects without shadows, witnesses which lost their voice, mixed up lines of a poem. No meaning is contained by the pure body—it is just dead matter. The animated spirit of the site has gone off together with the machines. Parts of it, such as mechanisms or methods of link-work, could escape into texts providing hints for the reconstruction of the past. It is fragmented conserved knowledge in an encoded form. By means of our senses we can perceive the relicts. By means of our knowledge and imagination we can read them and create new relationships between the pieces, listening carefully we can hear their missing voices which tell from other realities.

My interest lies in the gap space between the vanished system and the displaced objects. A conversation is established stretching the overwritten site and deconstructing the territory of the object. Conventionally space is divided in actual and virtual. We have to abandon this position and think space as unity. The technological is confronted with the artistic—a second order of revealing inside the means of revealing—to look for a hidden poetry of the machine as well as the machinery of poetry. The surface between time and objects is stripped off revealing the subject. Object spaces shift beyond the boundaries of the physical realm opening other spaces. These shifted spaces are elastic, fluid, ephemeral, and vagrant.

Like a tarot figure, something that has to resolve itself, a polyhedron in which every edge and every facet keeps its immediate sense, the false one, until the mediating sense is integrated revelation.



*Fluctuating objects in transitory conditions**Shifting Axioms*

An examination of the field of geometry is suggested, in search of a method to deal with spatial shifts. Generally spoken, geometry is an abstract language to describe spatial terms of our world. It reduces the visible to length, breadth and height. This reduction is needed to get more clarity of the relation between objects—their boundaries, continuities and contacts. Thus, geometry could help us in the attempt to strip off the surfaces of objects. In such a realm the subject is needed for their completion. The creation of impressionistic objects is possible.

For 2000 years Euclid's five axioms were the foundation of geometry.

These are:

1. Exactly one straight line can be drawn between any two points.
2. A straight line can be continued indefinitely.
3. With any point as center, a circle with any radius may be described
4. All right angles are equal
5. Through a given point outside a given straight line, there passes only one line parallel to the given line; that is, such a line does not intersect the given line.

However, in the early 19<sup>th</sup> century some mathematicians demonstrated that it is possible to establish other systems which are as valid and consistent as the Euclidean by replacing one or two of the axioms.

For a moment, let us consider the world as a complex picture in which certain conditions are hidden. By the definition of one geometric system we would group certain elements of the picture according to defined axioms. Doing so would reveal one hidden condition of the picture. However, looking for a different way of grouping, another geometric system, would reveal another condition which is also contained in the original picture. How many different conditions are hidden in our complex picture which we could be reveal by different systems of geometry?

Geometry works as a reflexive spatial tool of revealing. It is a site of potential since different ways of grouping open various spaces inside the same structure. The grouped elements are interfaces representing the

relationship between the structure to read and the overlaid system. By juxtaposing the interfaces we could find the space between the systems, or in other words, the leakage between different languages.

### *A Sensible Geometry*

Especially useful seems to be a closer look at the theory of the French mathematician and philosopher Jean Nicod (1893 – 1924). The conventional approach that geometry is based on axioms, whose consistency is guaranteed by arithmetic, is abandoned by him. He rather tries to find solutions of a group of axioms outside the domain of numbers. Nicod introduces sense data into geometry. Data like sound, points of view, or taste is normally excluded from geometry which hence stands in big contrast to the physical world. His system is a remarkable attempt to bridge the gap between the physical world and geometry.

Nicod refuses the classical commitment to points, lines, and planes and considers instead extended regions like bodies, solids, or volumes as primitive geometrical entities. “Let us imagine such a world, in which volumes and their fundamental relations alone have simple meanings. The geometry of volumes is the only one appropriate.”<sup>5</sup> In distinguishing his geometry from others Nicod observes the entities of former geometries are “everywhere perfectly transparent including the body of the observer himself.”<sup>6</sup> In those geometries an observer does not exist, and the planes and forms therein do not reflect light and cannot be seen. Nobody is moving around who could open up new points of view.

The striking new issue in Nicod’s theory of a new geometric system is the introduction of an observer who is perceiving sensory data. Meanwhile this perception leads to the introduction of the notion of time. Between two perceived sense terms the observer is establishing temporal relations, namely durations, which become a composite of three distinct relations: the sense datum a is linked to a duration, this duration is linked to a second duration which is finally linked to the sense datum b. This construction is the concept of a sensible time. It conceives duration no longer as a simple datum but as a class of simultaneous data.

Nicod’s concept of a sensible time in an intuitive geometry leads to the fragmentation of the fixed object. In such an intuitive geometry: “any sensible element is classed in three ways: the class of elements which resemble it temporally, to the class of elements which resemble it locally,



and to the class of elements which resemble it qualitatively.”<sup>7</sup> Members of the last class of elements which resemble each other qualitatively form the appearance of an object.

Let us apply this system to a simple example: We are perceiving a shiny object reflecting rays of the sun into our eyes. However, in the next moment the reflection disappears because a cloud is covering the sun. The shining quality reemerges in the moment the cloud is no longer blocking the sun rays. When we start to walk closer to the object to examine its shining quality this vanishes again. The angle between the reflecting surface and us is changed and hence the sun rays no longer meet our eyes.

Where is the shininess located? We have to recognize that it is not included in the characteristics of the object or, in other words, in the elements which define the object's appearance. The shininess has rather to be discussed in the context with our view (as temporal condition) and our position (as local condition). They define the field conditions in which the shininess can emerge.

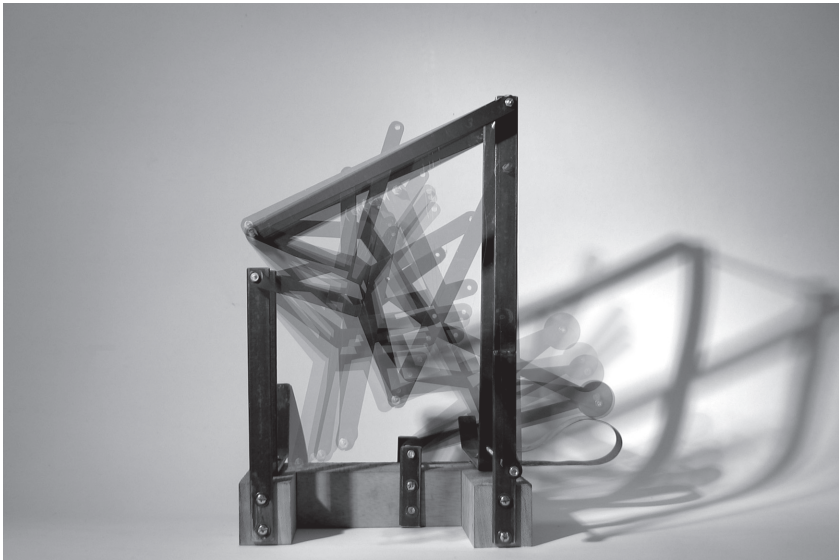
The characteristics we conventionally attach to objects lie outside the object. They shift in the space which is created in virtue of the relations between the object and observer depending on temporal and local conditions. Thus, this shifted space in between is full of vagrant qualities. Furthermore there is not only one shifted space but various. There are four defined by Nicod: the space of view, the space of sensible position, the space of the object, and the space of views. When we now consider that space is subjective, as i.e. Kant or Leibnitz already stated, we are confronted with at least as many spaces as subjects.

These spaces do not resemble each other perfectly. However, Nicod sees a geometric order among the different views apprehended by the various subjects which is established by the systematic differences of the perceptions they have as contents—simultaneous variations of spaces. Thus, we can conclude that reality is presented in spaces which underlie a continuous flux of transitory worlds composed of ephemeral scenes.

By creation of a sensible geometric order two contrasts are unified. Geometry on the one hand is based on objective axioms, whereas on the other hand the sensible refers to the intuition of the subject. This melting notion of Nicod's method as well as its content is applied in the following. The approach of splitting perceived data into fragments and multiples and focusing then on the new established relations between those, forms a possible methodology for the investigation of spatial shifts.

“You believe in the principle,” said La Maga.  
“How complicated. You’re like a witness.  
You’re the one who goes to the museum and  
looks at the paintings. I mean the paintings  
are there and you’re in the museum too,  
near and far at the same time. I’m a paint-  
ing. Rocamadour is a painting, Etienne is  
a painting, this room is a painting. You  
think that you’re in this room, but you’re  
not. You’re looking at the room, you’re not  
in the room.”

An overlaid mathematical system establishes new  
relationships in the territory.



*(De)construction of the machine**Evolution of Machines*

What is the relation between human beings and machines? We could argue that machines are tools used by man to reach certain desires, and that the development of machines would be a mirror reflecting inner human conditions. This argument would imply that the whole process could be controlled; however, that is impossible. The mirror metaphor is a very romantic view.

The relationship between human beings and machines is much more complex in virtue of its reflexivity. Machines do have concealed potential power. New technological developments follow certain human desires on the one hand, but on the other they cause effects on man in return which are not predictable beforehand.

Machines are getting closer and closer to man. They have crept already into the human body and determine our inner and outer world. However, let us first have a look back into history to become aware of the reflexive territory on which man and machine interact.

The machine had the first enormous impact on the human culture in the age of the industrial revolution. Machines were developed which were much stronger than humans and acted as substitutes for their muscles. The foundation for these developments was already formed earlier—during the intellectual fermentation of the 18<sup>th</sup> century. People like Newton introduced new methods for scientific research. However, there was a lack of opportunities for application. The potential of the new scientific approaches were revealed only decades later. The fields of their first usage, the avant-gardian ground of the revolution so to speak, were those of shipping and watch making.

There was the urgent need for a navigation device which would enable the sailor to calculate his position on sea. Furthermore the admiralities were powerful and rich enough to announce various competitions in order to stimulate the search for a solution. Finally a precise chronometer was constructed based on Newton's mathematics which could hold the time in spite of turbulent motions of the ship on heavy sea. Together by means of precise tables of the movement of the moon it was now possible to exactly determine any position on water.

The pioneers of the new machine age were the watch makers. They had the right instruments on hand for the making of new automatons and machines. It is very interesting to see that every tool and machine has a genealogy and evolved from tools by which it was constructed itself. The evolution of machines is a second order movement; it is a self-inclusive process. How do we construct a machine for cutting steel without having an instrument by which we are already able to cut steel?

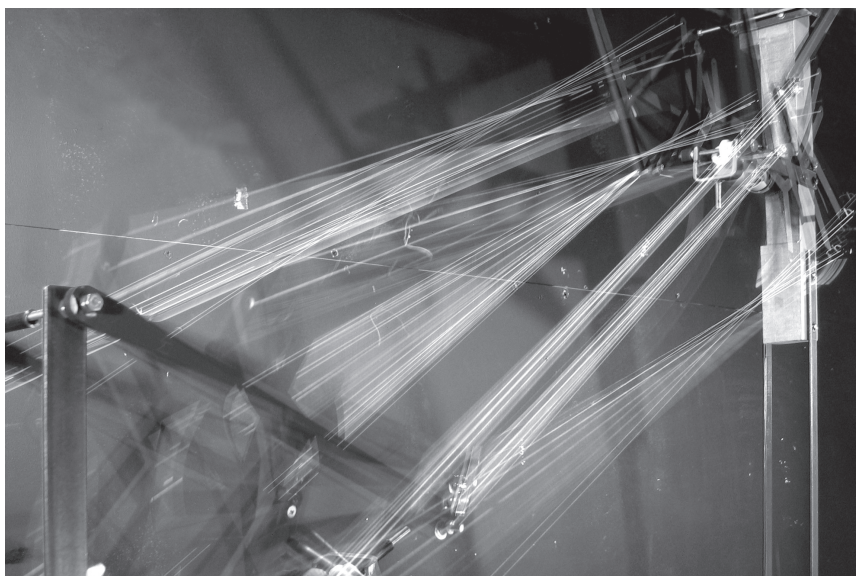
The new instruments and developments in the realm of shipping led to the invention of that machine which changed everything after—the steam engine. Its earliest appearance was the Newcomen machine which was used in mines for water supply. Its successor was Watt's steam engine which was introduced everywhere in the realm of industry. In the first appliance the steam engine substituted human and animal power in its purest form: for the pumping of water. This was without doubt a great achievement and certainly the result of a controlled development. However, there were others which could not be predicted.

Perhaps the biggest impact of the steam engine was the change of our notion of time. Life accelerated enormously. All of a sudden after the development of the railway it was possible to move between two distant towns faster than ever before with the speed of about 35 mph. To manage the time shifts caused by this “rapid” movement local time was substituted by standard time.

Since then “standard” is the word which is indivisibly connected with the machine. Standardized was the day of the workers in the spinning factories according to the stroke of the machines which produce standard stylized clothes in standard sizes. According to Marx, labor was mutilated into a fragment of the machine and man degraded to the level of an appendage.

At the end of the 19<sup>th</sup> century the invention of the electrical motor made it possible to give every machine its own power source, however, they were still sitting in a factory. This changed after the computer – this abstract, slippery meta-machine—was developed: the machines got legs and left the factories. Now they are sitting in almost every spot of our environment—even inside us. By means of nanotechnology they will delve into us even deeper. Today we are forming symbiotic relations with machines everywhere, not only at specific sites as 150 years ago.

Before going back to sleep I imagined (I saw) a plastic universe, changeable, full of wonderful change, an elastic sky, a sun that suddenly is missing or remains fixed or changes its shape. I was anxious for the dispersal of the fixed constellations, that dirty luminous propaganda put out by the Divine Watchmakers' Trust.



Reanimation of a forgotten mechanism. Its choreography discusses notions of time and duration.

*The Need of Watch Makers*

Today the impact of technology is covered under shining surfaces. We are not sitting in the shadow of the flywheel of the steam engine anymore. However, our way of living together and our attitudes have changed dramatically under the influence of the machine. We attribute value to things not for what they are, but for what they can become through a process of production. General intellect is operating according to the fluxes of economy. Community turned into society. We lost the realm of goals, and live instead in that of means where the utilized subject is sucked into syntheses.

Matteo Pasquinelli states that “we are at the point of convergence between different historical planes; the inheritance of historical vanguards in the synthesis of aesthetics and politics; [there are] new spaces for conflict outside of the factories and inside the imaginary and communication; the hypertrophy of the society of the spectacle and the economy of the logo; the information revolution and the emergence of the internet; the net economy and the network society; utopia turned into technology.”<sup>8</sup>

To respond to the new syntheses, let's turn into watch makers and develop new devices against synchronization for the navigation through the territory of shifting spaces.

*Endless Repetition and Fluid Language*

As the relation between geometry and sensibility was discussed earlier, we now confront the machine with poetry. The machine implies the notion of the rational, functional, and purpose oriented. As a fixed agent it produces under constant frequency in endless repetition standardized outputs neglecting the subject.

Poetry, on the contrary, is characterized by phenomenological and subjective qualities. It is a beautiful, purpose free, and reflecting play. Interior conditions of the poet are projected into the exterior and induct subjective reactions. The space of language shifts from the writer to the reader insisting of waywardness and opening rifts. Our reception of things is transformed, things stand out of themselves.

Poetry as resistance of closure and as the stimulation of contact with the other involves identity and difference. We are reminded of Jean Nicod's theory of individualized spaces—the simultaneous variations of spaces

– which are linked by systematic differences of perception. His sensible geometry is a poetic system. Poetry becomes a new geometry. Gerald Brun supports this thought by saying, poetry is the “renunciation of meaning as that which grasps and fixes, that which produces determined objects.”<sup>95</sup>

Poetry has to struggle with the boundaries set by language. The strategy to deal with it, is the process of making language fluid and establishing new relations between letters and words by metaphors. In fact, the struggling and the successful overcoming of those boundaries is the actual appealing element of poetry and ultimate source of joy and potentiality for the writer as well as for the reader.

Machine and poetry, so very different they are, have nonetheless a common point. The former as embodiment of technology the latter as a form of art are both ways of revealing. The first one doing it in a cold, calculative way, the second in a warm, meditative one. By machines man transfigures things, by poetry his perception and reception of things. Let us establish a conversation between them. They share the same language but are using different dialects. We have to make them understand and develop this potential new romance between endless repetition and fluid language which eventually can lead to a new type of machines—poetic vagrant machines, where the imagination of the subject is influencing the objective, where phenomenological conditions displace steel, where imagination is produced and space is existing. In them the subject is liberated and the arising of identity, autonomy and autopoiesis is truly possible.

### *The Anatomy of the Machine*

The essential parts of a machine, the ones which define its identity, are hidden behind a case. It could be seen as the interface between subject and machine, however, it is rather a shield for protection. To reveal the essence of a machine we have to remove its case and delve into the interior.

What do we see? Bolts, nuts, levers, gears, coils, valves, axles, belts, jets, pistons, rivets, and so much more. They are assembled to form the intestines of a machine. However, we have to admit that we still haven't found its essence. We get closer to it when we consider the difference between a working and broken machine. In the broken one all parts are there, however, the machine is useless—just dead matter. In the working machine the parts of the assemblage are in move establishing steadily new relations in a dynamic process. Here we find, spoken with Descartes'



Stripping off the surface: a machine without shell. Vagrant geometries displace objects.

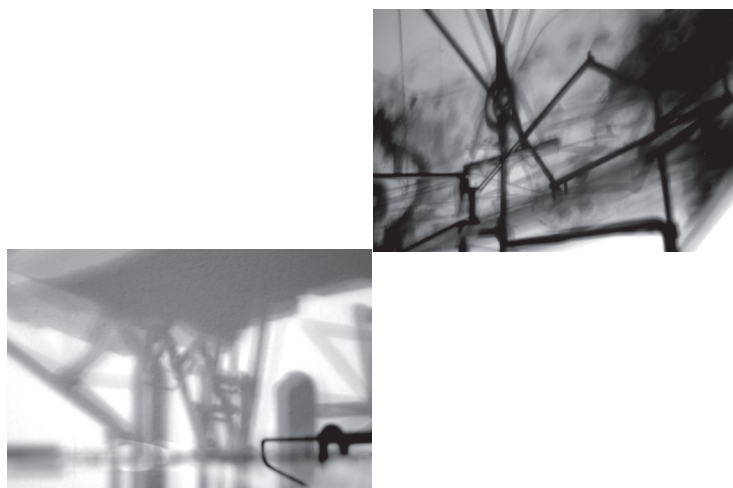


“This light is so much like you, something that comes and goes, always moving.”

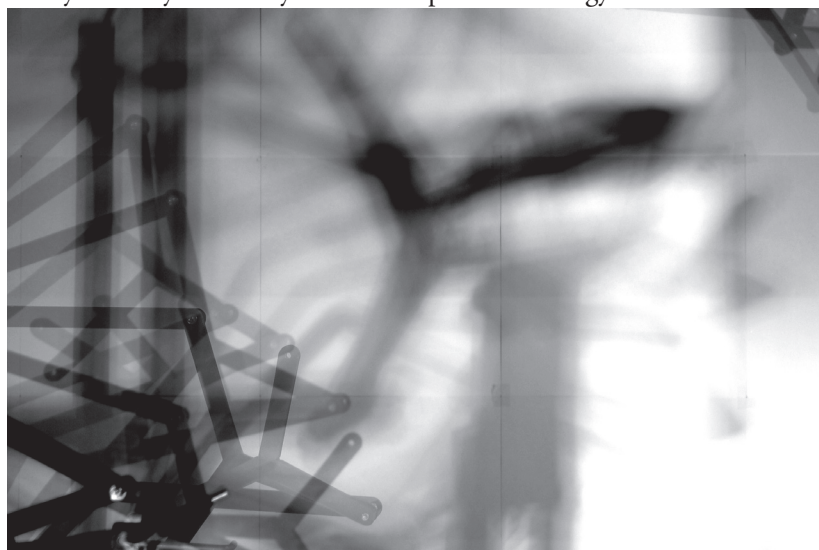
“Like Horacio’s shadow,” La Maga said. “His nose grows and shrinks. It’s amazing.”

“Babs is a shepherdess of shadows,” Gregorovius said, “she works in clay, concrete shadows...”





The system beyond the system where phenomenology substitutes steel



words, the machine's animated spirit. But what does this animated spirit depend on?

We delve into it even deeper and find the protocol of the machine. Generally spoken there are two types of protocols that can be revealed. One is defining the machine as trivial machine, the other is defining it as non-trivial. The trivial machine connects directly and non-variably by an operation of a certain kind of input with a certain kind of output. Therefore a trivial machine is analytically determinable, past independent, and predictable. This type of machine we have in mind when associating with machine the notions of repeatability, monotony, and boredom.

The big contrast between trivial and non-trivial machines is that the operation of the latter machines depends on inner conditions which are influenced by previous operations. Hence they contain a much higher complexity making them analytically indeterminable, past dependent and unpredictable.<sup>10</sup> The processes of these machines are open, influenceable and interpretable by the subject. When we combine this type of machine with the notion of poetry and an intuitive geometry we see the possibility for the construction of ...

### *A Sensitive Machine*

It is a machine which is constructed against the trivial mechanism, without a case enabling the subject to enter the territory of the machine and alter its protocols. We are inside the text. The dynamic processes of these machines are really dynamic producing outputs beyond the realm of the machine in an outer interior where reassimilation is allowed and imagination provoked.

Sensitive machines will give back meaning and create spaces in the region of question where we pay homage to the moment. Spaces that are pluralistic, participatory, prophetic, visionary and ... melancholic.

### *Notes*

1. Julio Cortazar, *Hopscotch*, Pantheon Books, New York 1987
2. Heidegger, Martin, 1953. The Question Concerning Technology. In *Basic Writings*, ed. David Farrell Krell, New York 1993
3. *Ibid.*
4. *Ibid.*
5. Jean Nicod, *Geometry and Induction*, Routledge & Kegan Paul Ltd, London 1969

6. *Ibid.*

7. *Ibid.*

8. Matteo Pasquinelli, *Radical Machines against the techno-empire*, 2004, published on [www.rekombinant.org/article.php?sid=2264](http://www.rekombinant.org/article.php?sid=2264)

9. Gerald Brun, *Heidegger's Estrangement's: Language, Truth and Poetry in Later Writings*, Yale UP, New Haven 1989; quoted in James McCorkle, *Prophecy and the Figure of the Reader in Susan Howe's Articulation of Sound Forms in Time*, 1999, published on [www.iath.virginia.edu/pmc/text-only/issue.559/9.3mccorkle.txt](http://www.iath.virginia.edu/pmc/text-only/issue.559/9.3mccorkle.txt)

10. A full discussion of these ideas is presented in Heinz von Foerster, "Entdecken oder Erfinden. Wie lässt sich Verstehen verstehen?" in *Einführung in den Konstruktivismus*, Piper Verlag, München 1992

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