

Philippe Parreno and the Exhibition as a Multimodal Aesthetic Experience

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Abstract

A mode is how something is. Modality is the possibility of an object, person or event to be in a certain way. Multimodality is the possibility of being many things at the same time. Perception is not a passive reception of stimuli, but an enactive, embodied and embedded action. Through perceptual action, actors create the presence and absence of their lifeworld. Perception functions in a multisensory way and with all senses simultaneously. This advantage is that information from different sensory channels about the same object or event can be better integrated. The event or object can therefore be identified more quickly and reliably. The information from individual sensory channels is synchronously integrated in different brain areas. In multisensory integration, the brain has to fulfil two tasks simultaneously. It must bring together the different sensory informations that come from the same object or event and it must separate and distinguish the informations that come from other objects or events. Using the example of two extensive exhibition installations by the French artist Philippe Parreno, it will be shown how the multimodality of perception and action can be transferred to algorithmic or biological machines that are able both to register and process sensory inputs and to carry out motor controls in the objects of the exhibition. In this context, Philippe Parreno has developed a new form of choreographed exhibition. In it, individual artworks are no longer lined up next to each other. His exhibitions function as hyperobjects. They are controlled by various multimodal sensory inputs, algorithmic intelligences or biological organisms and its motor output. They trigger the behaviour of the exhibition objects, make certain forms appear temporarily and make others disappear again. His art is an example of how not only the aesthetic experience of the exhibition visitors functions multisensory, but also how the choreography of the exhibition functions multimodally.

Introduction

The text presented here brings together two different lines of thought that have already been prepared and developed in several earlier publications by the author.¹ The first idea is that experiences that someone has when visiting an exhibition are made with all senses and the whole body. Aesthetic experiences are a form of active, explorative action that explores the environment. The second line of thought has developed from an intense engagement with the work of the French artist Philippe Parreno. He choreographs exhibitions as a deliberate sequence of aesthetic experiences, as a scripted space² containing various time codes along which objects appear, are set in motion, change their behaviour or disappear again. The behavioural changes are triggered by environmental events or by the behaviour of biological organisms. The choreography of his exhibitions is multimodal (Figure 1). It engages the senses of the exhibition visitor in different ways, at different times and in different places in the exhibition. Parreno is an artist who does not simply string together individual works in different rooms chronologically or thematically, but conceives of the entire exhibition park as a score, symphony, choreography or scripted space through which viewers are guided in a non-authoritarian manner. The exhibition as a whole becomes a hyperobject³ in which individual works stand in relation to an overarching spacetime choreography and to the social group of exhibition visitors.



Figure 1. *Exhibition view Hyundai Commission 2016: Philippe Parreno: Anywhen, Tate Modern, Turbine Hall, London, 2016 - 2017. Courtesy of the artist; Pilar Corrias, London; Gladstone Gallery, New York; Esther Schipper, Berlin. Photo © Andrea Rossetti*

People enter into a time zone where they are exposed to things in a sort of a non-authoritarian way. You don't know exactly what will happen if you enter an exhibition space. And then you may miss something, a form appears and disappears. My work is all about that. Trying to set up the condition in which the form that exists starts to dissolve. And that flickering effect between being and not being produces in a way these synchronicities where you can encounter a person or a person can encounter a form. I start sometimes in an exhibition looking at people looking. When we open a show I stay with that show. I don't leave the day after. I stay and I start to understand the way it functions. Because it's a creature, it functions. And sometimes it doesn't really function yet. It has to be tuned a little bit. And the show also changes over time. That happened in the Tate. It changed over time. It is very nice to be in the space with people looking at things. It is the only time when they can see it. I sit when people sit. Before that it doesn't exist. It only exists on paper. It has to exist in the space when it plays and lives.⁴

Definitions

If one wants to talk about multimodality, it seems reasonable to first clarify what is meant by the term's mode, modality and multimodality and then to ask whether modes or modalities are given or generated. A mode is the way something is. One can distinguish many types of modes from each other. A temporal mode, a spatial mode and a social mode of being. The concept of modality represents a linguistic specification of the mode concept, which shifts the meaning to another aspect. By modality we understand the possibility of an object, a person or an event to be in a certain mode. A modality is thus the way in which objects are potentially given and currently appear or are brought forth. The concept of modality is more strongly linked to the concepts of potentiality, actuality and necessity than the concept of mode, which rather denotes the actual state of an object.

If an object is given in temporal mode, it concerns its embeddedness in the present, the past or the future. An object can be temporally related to the past. Then it is given in the mode of memory. But it can also be temporally connected with the present of an observer. Then the object is given in the mode of presence. If the object is modally connected to the future, then it is an expectation. In spatial terms, spatial modes can be positional relations in relation to an observer, i.e., front, bottom, top, side or back. The social mode of an object is determined by its use by others. The moment certain objects are used for purposes and actions, the object is in a social mode.

Multimodality usually refers to the use of different modalities for communication in the form of visual, acoustic or linguistic media. If a particular communication system uses more than one sensory channel for communication, for example, vision and hearing, it is multimodal. This also applies to the sensory channels of human perception. Normally, actors use all senses for their orientation in everyday life, which they integrate into a unified spacetime experience.

So far, we have not said anything about whether a mode is given or produced by an observer. Does it exist, as some theories assume, as a property in the object itself, independent of any observation, handling and use? Or do modes and modalities only emerge through observers, actors or agents who generate different aspects of objects through their distinctions and judgements and act with them in different situations? For me, modes and modalities only emerge through an observer who distinguishes different aspects of an object, to be, and designates them linguistically or figuratively. From there, there are an infinite number of modes or modalities of an object. There are as many as an observer can distinguish, discriminate and use. It is impossible to predict from the object how its modality should be possible in and of itself without a discriminating and signifying observer. We can never perceive the object "in itself". For this would presuppose the possibility of being able to form an infinite and complete series of all appearances or views of an object.⁵

If we transfer these considerations about the multimodality of objects into art, we realise that the way a work of art is depends on how it is distinguished, perceived and interpreted by an observer. In art, in addition to a temporal, spatial and social mode, there is also an aesthetic mode a work of art or a design object can be. This mode is created by the aesthetic attitude of an observer. Thus, when one speaks of the multimodality of art, one points out that art objects are not given in only one way, but in many different and possible ways. This forces us to turn more closely to the question of how observers observe, create differences, evaluate and thus generate the specific modalities of art.

Modes of Perception

Perception itself is always multimodal. Every human being perceives simultaneously through all his senses at any time of his life, unless he is impaired by a disease of one of the sensory channels. What role do the senses play in the constitution of a multimodal object?

It is still a widespread assumption that perception is something passive, something we take in through our eyes, ears or noses, something that enters us, something that happens or happens to us. It is often said that perception is a reception of sensory data or stimuli.

But it must be said clearly that nothing is “taken in” by the senses. It is a translation. All sense systems are operationally closed systems.⁶ The direct absorption of a perceptual object into our organism would lead to a physical destruction of the organs of perception. Therefore, a medium is necessary that mediates between the objects of perception and the sense organs. The intervening ambient medium translates certain properties of the object of perception into the properties of the ambient medium, such as coloured structured light, structured pressure differences or unevenly distributed gas molecules. In perception, therefore, it is not the object “itself” that is perceived, but the structured dynamics of the surrounding medium. These are perceived. On the closed sensory surfaces of living systems the states and events of the surrounding media are translated into the discontinuous code of synaptic discharges.

Perception as Active Action

We must therefore describe perception as an autonomous self-activity of a living system. But that is not enough. For perception is not just an activity or a behaviour. Perceiving is acting, acting with the whole body, with the legs, the arms, the upper body and the head. When we want to perceive a work of art more closely, not only all our senses work together. Our motor apparatus is also active. We approach an art object through our body movements, scrutinise its presence and appearance by stepping back and forth or to the side to observe it more closely in its surrounding. In doing so, we have visual, acoustic, haptic, olfactory and proprioceptive perceptions.

Perception as Embodied Action

Every perception of objects, events or persons is embodied. Perception in an environment is accompanied by a perception of one’s own position, movement and inner, somatosensory states. There is no perception of the world without an environmental medium and without a body. One cannot perceive the world without simultaneously perceiving oneself. By shifting attention to ourselves, we notice that our body is not only a constant companion, but also the condition of the possibility of self-perception and perception of the world. When we turn our attention to the outside world, somatosensory self-perception runs along as the unconscious background of perceptual action. There is no world-perception without self-perception and no self-perception without world-perception. The world and the self are structurally coupled in sensorimotor action.

Perception as Embedded Action

Embodied, sensorimotor action takes place in a specific lifeworld. The perceiving and acting body is not only embedded in various environmental media. It acts in a continuous *structural coupling* with its environment.⁷ A closed operating system

such as a living organism can only do what it does, for example perceiving, acting, feeling or thinking, within the boundaries of its own body. The operations of a living system are only possible within that system. No system can operate outside its own boundaries. On the other hand, closed systems must also be structurally coupled with their environment in certain respects. The environment provides the living organism with resources such as oxygen, heat or food as affordances.⁸ If the structural coupling of a living organism to its environment falls away, this means the death of the living being.

The Production of Presence and Absence

Through embodied, embedded and enactive action, world and self become present. The presence of things, events or other persons depends on the sensorimotor contingencies of the actors.⁹ For the action of an actor is always possible in another way. Decisions to act are always surrounded by alternative possibilities for action in a situation. The presence of the world and the self is brought about by sensorimotor skills. Sensorimotor action is a form of performative world production.¹⁰

Each production of presence through sensorimotor action splits the world into two parts, an accessible and an inaccessible part, a present and absent part of the world. Since every perception of the world simultaneously implies self-perception and vice versa, the argument can be extended accordingly. Through the production of presence, the self is also split into two parts, namely one accessible to self-perception and one inaccessible to it. Presence is the sensorimotor production of the accessibility of world and self. Absence, on the other hand, is the sensorimotor production of the inaccessibility of world and self. Actors create presences and absences of objects, events or other persons by making them appear or disappear in a situation through their active actions and sensorimotor skills. The specific relation of presence and absence is always temporary and can change from moment to moment. An object becomes present when it is produced as an object by the sensorimotor skills of an actor. Those things or parts of objects become absent that cannot be produced with the specific sensorimotor skills of an actor.

The relationship of a living and acting organism to the world and to itself is therefore primarily a question of its sensorimotor skills. Depending on these particular skills, a unique access to the things of the world and to itself opens up for the living being. This access depends on sensorimotor skills, which one has acquired in the course of life through experience, routine or training. In the case of limited sensorimotor skills, such as a physical handicap, access to the world and to oneself can also be limited or altered.

To be able to access the world through our sensorimotor skills, we need media. The difference between presence and absence is therefore always a difference created through media. It is never direct, immediate or given. On the one hand, it is generated by the biological media of sensory systems and body motor skills, and on the other hand, it is extended by technical media. The sensorimotor skills and technologies of an actor are the condition of possibility for the production of presence and absence within his or her current range.¹¹ Presence is thus firstly actively generated, secondly embodied and thirdly embedded into a specific lifeworld.¹²

The Multisensory Integration of Perceptual Action

The way we conceive of the world and ourselves is based on our sensory experiences.¹³ Perceptual research has been dominated in the past by research approaches that isolated individual senses, such as vision or hearing, from its association with other senses and focused its attention on the functional properties of these isolated sensory modalities. However, there is no doubt that our senses are structured to function together and that our brain uses the neural activity patterns it receives from different sensory channels in a cooperative manner. This increases the likelihood that objects, people or events can be perceived more quickly and identified more correctly. The collaborative use of all available sensory channels is a strategy that has a high survival value, which is crucial for the evolution of species.¹⁴ It is therefore not surprising that multimodal processing of neuronal signals can be observed in virtually all animal species.

Everyday perception generates a constant stream of sensory perturbations that hits all sensory channels simultaneously. The brain's task is now, on the one hand, to sort these massive and diverse neuronal signals and to connect those that should be related to each other regardless of their respective sensory modality because they originate from a common event or object. At the same time, however, the brain must also separate those signals that originate from different perceptual events or objects. In multisensory processing, therefore, the brain has to perform two tasks simultaneously, namely to relate those perturbations that describe one and the same perceptual event and to separate those signals that relate to other perceptual events.

Deciding what is perceived as a single object or as a related event is an operation that requires a synthesis of different perturbations originating from different sensory channels. Multisensory convergence can amplify the parts of individual sensory modalities so that they become dominant. But it can also suppress or weaken them.

Certain sensory modalities can be processed entirely without involvement of the conscious mind, which means, that they are processed and integrated unconsciously. However, multisensory integration in the brain is not limited to sensory processing. Rather, it is a fundamental process of the brain that also occurs in areas traditionally thought of as cognitive or motor domains.¹⁵

Three principles guide the multisensory integration of sensory information. First, *the temporal rule*. It states that maximum multisensory integration occurs when the different unimodal stimuli that constitute the perturbation are presented at the same time. Second, *The spatial rule* states that maximum multisensory integration occurs when stimuli from different sensory modalities originate from the same location. The third principle of sensory integration is the *principle of reverse effectiveness*. Maximum multisensory integration occurs when at least one of the unisensory inputs in the excitation of a neuron is only weakly effective.¹⁶

Multimodal Aesthetic Experiences

In traditional aesthetic situations like in a museum or an exhibition, the viewer is usually faced with aesthetic objects such as paintings or sculptures. They are separated from the wall, the floor and the ceiling by a frame or a closed form. It is often additionally emphasised by special lighting. The viewer constitutes the aesthetic object through his multisensory perceptual activity. He apprehends, creates, interprets and judges it. Based on his previous experiences, he knows that in most cases it is not about the smell of the painting, unless it is an exhibition by Sissel Toolas, or about the sounds made by other actors. In a traditional aesthetic experience, he purposefully fades out those senses that are not relevant to the experience and, in the multisensory integration of the incoming activity patterns, gives the sense of sight priority over the other sensory channels.

As exhibition visitors we always go to an exhibition with all our senses and all our physical equipment. Every visit to an exhibition is therefore fundamentally multisensory. It takes place with all our senses simultaneously. The various unimodal activity patterns of the neurons, which converge in different areas of the brain, are integrated into a unified spacetime experience. Their relevance to the aesthetic experience can be of varying importance and lead to a different weighting of the individual sensory modalities. Something fundamentally different happens, however, when the exhibition itself, is not an addition of artworks but is, as a whole, the aesthetic object to be produced by the exhibition visitor.

Exhibitions as Scripted Spaces

In recent years, the French artist Philippe Parreno has repeatedly staged exhibitions as unified aesthetic objects that address the different sensory channels of the visitors at different times, in different places and in different ways.¹⁷ In 2019, Philipp Parreno realised an extensive installation in the entrance lobby of the Museum of Modern Art in New York, in which he used complex machinery to control the individual elements.¹⁸ It is entitled *Echo*, which on the one hand refers to the reverberation that occurs when the reflections of a sound wave are delayed by more than 20 milliseconds and are thus perceived as a separate auditory event. But the work also alludes to the name of a mountain nymph from Greek mythology who distracts the goddess Juno with her chatty talk while Jupiter pursues his amorous adventures. She is therefore punished by Juno in such a way that when someone is silent, she is neither the first to speak, nor when someone speaks, she is silent.¹⁹ Parreno has transferred this paradox to a complex machinery. It cannot become active by itself in silence. But on the other hand, it cannot remain silent either as soon as certain parameters of the environment change.

The installation is equipped with numerous sensory devices. Air pressure, humidity, temperature, sounds and the number of visitors in the lobby are registered. On the roof of the museum, cloud cover and wind direction are measured, including changes in the steel structure of the building. This sensory data is transmitted to a complex computer network that can process these signals. They are used to generate a series of non-periodic and unpredictable visual and acoustic events using a random algorithm. The behaviour of the *Echo* installation is based on the various sensory inputs that the algorithmic automaton receives in real time from its immediate environment, converts into DMX signals, which then control the individual units of the installation and change their behaviour.²⁰ *Echo* thus responds in a multisensory and multimotor way to its environment, through various objects placed in the lobby. The installation consists of two movable, highly directional speakers, a large *marquee* suspended from the ceiling and a smaller *marquee* mounted on the wall above a mirrored chrome *shutter* that opens, closes or remains in a partially open state. Both *marquees* play different light sequences that depend on the sensory input. In addition, the ceiling and wall lamps mounted in the foyer go on or off irregularly or sometimes flicker as if electric power is breaking down or the light bulb is going wrong. Furthermore, a screen has been mounted on which coloured lights and various films by Philippe Parreno can be projected. These different units are coordinated and articulated by the computer network.²¹

In 2020, the MoMA work was complemented by a new work, *Echo Radio* and its internet variant *echo.world*, in which Parreno used a newly created artificial intelligence to control the soundtrack. He asked Alejandra Ghersi, stage name Arca, a Venezuelan non-binary musician, to develop a soundtrack for the automaton.

Arca proposed to work with experimental *granular synthesis*. Granular synthesis works in a similar way to film, where the rapid succession of static frames creates the cognitive experience of movement in the human brain. In granular synthesis, a continuous sound is perceived, but in reality it is composed of individual micro-particles, some of which are below the time duration for the complete cognitive processing of a single, definable sound event. These micro-elements, the so-called *grains*, consist of very short or even longer digital sound fragments whose duration is usually between 10 and 100ms.²² The method of granular synthesis offers, among other things, the advantage that the speed can be varied independently of the pitch.²³

For the realisation of *echo. world's* soundtrack, a newly developed artificial intelligence called *Bronze* was used, which enables musicians to compose music that is generative rather than static. It was developed in 2019 by London-based musicians Lexx and Gwilym Gold and scientist Mick Grierson.²⁴ Every time you hear the piece *echo.world*, it sounds different. The units run through the AI system and produce constantly changing new versions of the piece. Every time you play the soundtrack, it's a new version, performance, mix or performance put together by the AI.²⁵ It creates an abstract, three-dimensional space that symbolises the space of the automaton.²⁶ On the one hand, *Echo Radio* and *echo.world* react to the external inputs of the sensory system at MoMA. On the other hand, they also rest within themselves in a nocturnal state that is triggered when there is no longer an audience in the museum. During this time, the soundtrack is transmitted to the city via an FM radio station.

Controlled by Biological Organisms

In 2018, Philippe Parreno installed, among other objects, a bioreactor in his exhibition at the Gropius-Bau in Berlin (Figure 2).²⁷



Figure 2: Philippe Parreno, Exhibition view, Gropius Bau, Berlin 2018. Bioreactor and probes, peristaltic pump, scales, air compressor, air filter, silicone hose and seals, electrical devices, servo controller, plexiglass box. On the walls: Wallpaper Marilyn, 2018 Fluorescent ink on paper, dimensions variable. Courtesy of the artist; Pilar Corrias, London; Gladstone Gallery, New York; Esther Schipper, Berlin. Photo © Andrea Rossetti.

This complex input-output system, which is in a homeostatic equilibrium, is set up in a display case like in a natural science museum. One can view the bioreactor from all sides and follow its functioning in real time. In the showcase, which is freely accessible from all sides, there is a table on which a large number of objects are placed. In the middle stands the glass bioreactor, which is equipped with a series of measuring sensors. These sondes provide data on various process parameters. Above the reactor are two large Duran glass bottles, which are connected to the reactor by tubes. They contain a yellowish medium that can be pumped into the reactor by means of peristaltic pumps. In the glass reactor itself, the yeast cultures live in a liquid medium. Yeast are single-cell organisms whose DNA is very similar to our human DNA. As a scientific or aesthetic observer, one initially thinks one is confronted with an experimental set-up. However, it takes explorative curiosity to understand how this system works. You are confronted with a wired, living organism - a sympoietic machine (Figure 3).²⁸

To the left of the bioreactor are four peristaltic pumps on height-adjustable pedestals, which, depending on the internal state of the yeast-medium mixture, supply the glass bottle with certain substances such as medium, vitamins and micronutrients, or acid and lye to maintain the pH value of the medium. Basically, in order to grow and reproduce, yeast needs a certain pH value and temperature in addition to nutrients and oxygen. As it grows and reproduces, it absorbs the nutrients in the medium, metabolises them and excretes so-called metabolites, as well as CO₂, into the medium. If the system were left to itself, the yeast would eventually have metabolised all its nutrients, so that no more nutrients, vitamins or medium would be available. The yeast would starve. Therefore, nutrients have to be supplied. However, the production of metabolites would also lead to the accumulation of toxic substances in the medium, the yeast would poison itself. Therefore, parts of the medium have to be removed from the bioreactor by means of peristaltic pumps and replaced by fresh medium. In addition, the release of CO₂ into the medium leads to a lowering of the pH value, which in turn affects the vitality of the yeast cells. This is prevented by adding lye to the medium. To maintain the system, one must therefore continuously monitor and supervise the entire conditions by measuring critical process parameters. The data is collected and the process is controlled by means of process software installed on the computer on the right of the picture.

The probes in the glass bioreactor are used to measure various parameters such as optical density (OD₆₀₀), reduction potential (RedOx), oxygen partial pressure (pO₂), pH value and temperature (Figure 4). If the pH value exceeds or falls below predefined target parameters, the programme controls the countermeasures. If, for example, the pH falls below a certain value, lye is added by a peristaltic pump to make the medium, which is becoming increasingly acidic due to the yeasts' food intake and excretions, more basic again and thus in turn to stimulate the yeast's reproduction rate. Parreno says that one can influence this system by two measures, by adding or withdrawing nutrients. Both measures change the state of the biochemical system and thus the behaviour of the yeast cultures. In addition, one can influence the yeast cells by specifically manipulating the environmental conditions. If, for example, the temperature and/or the oxygen partial pressure increase and/or the pH value is adjusted to a more basic value, the yeast begin to bud and produce daughter cells.

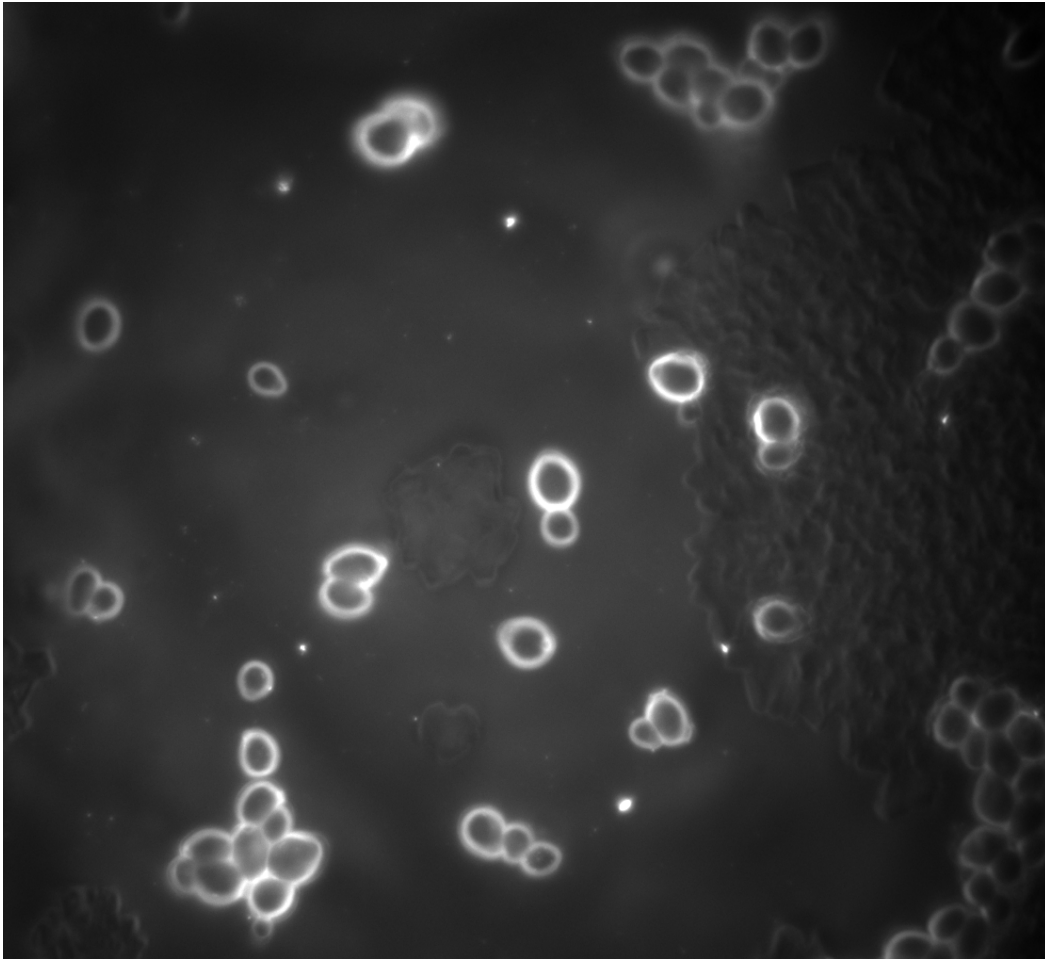


Figure 3. Yeast cells of the bioreactor budding and forming daughter cells.
Courtesy of the artist. Photo © Philippe Parreno.

If, on the other hand, the temperature is lowered, the pH value becomes more and more acidic, and if the optical density and the oxygen partial pressure are too high, then the reproduction rate of the yeast cultures, which is normally exponential, is reduced.

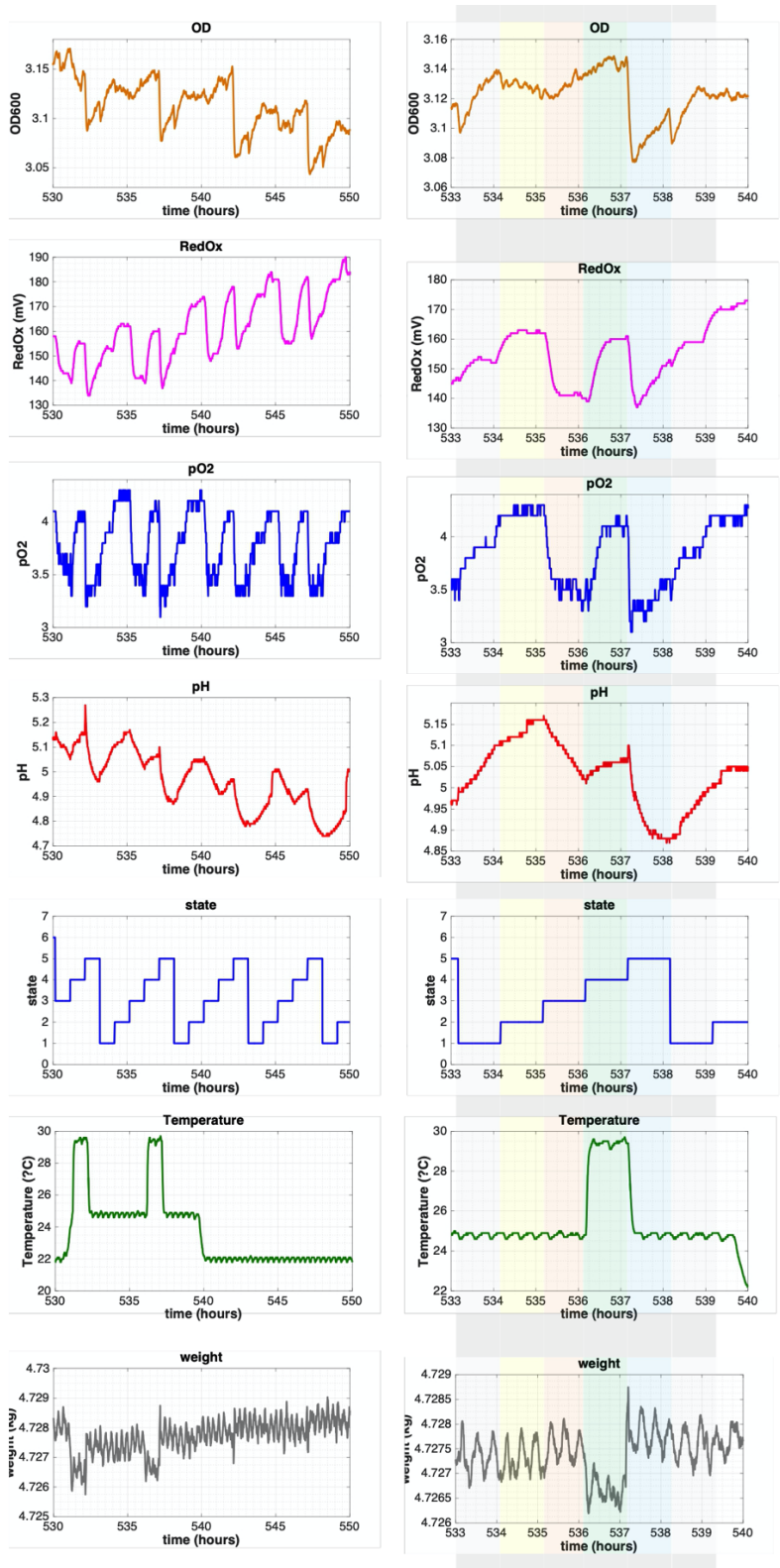


Figure 4: Recording of various parameters of the bioreactor, Tate Modern, London, 2016-2017. Time duration 20 hours (left column) and 7 hours (right column), OD600 [optical density at 600nm]; RedOx [reduction potential]; pO2 [oxygen partial pressure]; pH value; temperature. Photo © Philippe Parreno

The correlation of the system behaviour with the timing of targeted nutrient additions and manipulations of the temperature can be observed in the diagram. The left column shows a time lapse of 20 hours (hours 530-550) and the right column a detailed action sequence of 7 hours (hours 533-540). For example, it can be seen from the temperature curve that the temperature was raised twice from 25° to 30° and lowered once to 22°. ²⁹

Within the exhibition, the bioreactor assumes the function of an autopoietic system that generates its decisions or actions from its own internal states, i.e. from its own behaviour. This mode of operation is completely dissimilar to the electronic network computer at MoMA, which bases its decisions on a random algorithm. Now the environment no longer provides data for the behaviour of the exhibited objects. The bioreactor's own behaviour provides the sensory information that is used to control the exhibition. Parreno says:

The only way for us to communicate with the yeast was to deprive them from sugar or feed them with sugar, to deprive them from oxygen or to dilute them with water. We had a couple of small and tiny little things that we could do to force them to do things and that was according to the events that were sent by the machine around that was in fact given to the bioreactor and that the bioreactor would send back a signal to us. ... this is what happened. The yeast was digested and the signal was sent back to us. ³⁰

The bioreactor is a sympoetic machine within the scripted exhibition space. The sensory data no longer come from the outside, but from within. They are generated by the bioreactor's own behaviour. While in New York the behaviour of the multimedia installation depended on external environmental data, in Berlin the behaviour of the exhibition was dependent on the eigenbehaviour of the biological input output system.

Another difference comes into play. While weather data is contingent, i.e. always possible in a different way, the bioreactor can be specifically stimulated or throttled by external influence. By adding or withdrawing nutrients or by changing the framework conditions such as temperature, pH value or oxygen partial pressure, deliberate stress can be exerted on the yeast cultures. This leads to an altered state and in consequence of this to a change in the exhibition choreography. The motor control of the exhibition by environmental events is replaced by a deliberate stimulation of living organisms.

The sensorimotor system of the bioreactor is a visible part of the exhibition choreography. It is openly staged and displayed like a scientific apparatus in a technical museum. The bioreactor controls the behaviour of individual objects in the exhibition. Lamps are switched on and off or made to flicker with the help of the DMX protocol. The blinds of nine windows (*Nine Blind Sisters*, 2018) move up and down at different speed, music is suddenly played from a Yamaha disklavier and stopped again. A chrome-plated shutter opens its mirrored slats, closes them again or leaves them in a partially open state. A Marquee begins to play an abstract sequence of light bulbs turning on and off, as if communicating in a language unknown to us. The black water surface of *Sonic Waterlilies*, 2018 is seemingly set into concentric motion by an invisible hand, as if it begins to rain or water fleas scurry across the surface. A round seating landscape covered in black felt and made of triangular elements of different heights (*Bleachers*, 2018) slowly sets itself into spinning motion (Figure 5).



Figure 5: Exhibition view, Philippe Parreno, Gropius Bau, Berlin, 2018.
Top: *With a Rhythmic Instinction to be Able to Travel Beyond Existing Forces of Life*, 2018; LED panels, MacMini, speakers, amplifier, powder-coated steel, 2 parts each: 350 x 200 x 100 cm. Below: *Bleachers*, 2018; MDF panels, foam, cotton, motor 90 cm x ø 700 cm Courtesy of the artist; Pilar Corrias, London; Gladstone Gallery, New York; Esther Schipper, Berlin.
Photo © Andrea Rossetti

Exhibitions as Medium and Form

The artist does not consider his work as a collection of individual artworks that he arranges chronologically or thematically, but rather as a medium in which forms can emerge temporarily, but also disappear again. The units of an exhibition exist in different modal states: latent-overt, potential-actual, present-absent. Parreno himself speaks in this context of *scripted spaces*, a term he borrows from the book *The Vatican to Vegas. A History of Special Effects* by Norman M. Klein.

By scripted spaces, I mean primarily a *mode of perception*, a way of seeing. ... Scripted spaces are a walk-through or click-through environment (a mall, a church, a casino, a theme park, a computer game). They are designed to *emphasize* a viewer's journey — the space between — rather than the gimmicks on the wall. The audience walks *into* the story. What's more, this walk should respond to each viewer's whims, even so each step along the way is prescribed (or should I say preordained?). It is gentle repression posing as free will.³¹

This means a fundamental shift in the understanding of exhibition making from a more or less static and contingent addition of individual objects to a dynamic and holistic approach. Parreno's work thus intervenes in a very innovative way into the history of exhibition display. As a medium, an exhibition exists in the form of potentiality. Only through a specific arrangement, assembly or display of objects does an exhibition space emerge as a specific form with a limited duration.³² The exhibition appears in its actuality. As a medium, the objects exist only in their potentiality. They are *loosely coupled*.³³ They are potentially connectable and disconnectable.

In the form in which they become visible in an exhibition, in a specific city, a specific institution and for a specific period of time, they are *tightly coupled* to each other both spatially and temporally for the duration of the exhibition.³⁴ The interactions between the objects exist precisely for this period and for this place. Afterwards, they are uncoupled again, dissolved into their individual parts, put into storage, disposed of or recycled.³⁵ In their stored form, exhibitions are a medium. If the objects are on show, they are a specific form in which the interactions between space, time and visitors have a strictly coupled, temporary duration.

The form of an exhibition scripted by Philippe Parreno therefore has two sides, namely an *inside* that can be perceived with all senses and a latent, unobservable *outside*. On the inside of the exhibition, various forms, objects or events emerge or pass away. The whole exhibition can be understood as an aesthetic situation, spatially as well as temporally and socially.³⁶ The exhibition units are transformed into a spatial, temporary and social mode of existence that can always be re-

assembled and re-dissolved anew.³⁷ The concept of the exhibition as medium or form is intrinsically coupled with the temporalisation of the art work. Many of Philipp Parreno's works therefore do not exist forever. They only exist in the mode of actuality when a certain combination of sensory input, algorithmic or biological processing and digital or analogue motor output brings the work into presence - from potentiality to actuality, from the mode of possibility to the mode of appearance.³⁸

Conclusion

Perception is not a passive reception of stimuli or sensory data, but a complex translation process that takes place at the boundary between the surrounding medium and the closed surfaces of the sensory organs. Furthermore, perception is always multisensory. All senses are always active at the same time. The neuronal activity patterns converging from individual sensory channels are integrated in different brain areas to form a unified experience of space and time. A visit to an exhibition takes place with all senses. Aesthetic experience is enactive, embodied and embedded. In a traditional aesthetic experience, the neural activity patterns from a particular sensory channel, such as the sense of sight or the sense of hearing, take precedence over the other senses in multisensory integration. They possess greater relevance in aesthetic judgement. In an exhibition designed by Philippe Parreno, all of the visitor's sensory channels are simultaneously involved in the aesthetic experience. The exhibition itself is an aesthetic hyperobject, which a visitor must produce himself through his enactive perceptual action. Parreno choreographs the aesthetic experience either through multimodal sensory inputs, originating from the environment and processed with the help of algorithms or artificial intelligence, or from the intrinsic behaviour of a bioreactor, which performs a non-periodic, non-repetitive control of the individual exhibition units. In this way, the exhibition itself becomes a sympoietic form that switches back and forth between potentiality and actuality, between presence and absence in an unpredictable way, thereby generating a unique, non-repeatable, multimodal, aesthetic experience.

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Notes

1. Huber 2018a; Huber 2018b; Huber 2021a; Huber, and Parreno 2021b; Huber, and Parreno 2021c; Huber 2023.
2. The term "scripted space" was coined by Klein 2004. See for further details footnote 31 of this text.
3. The term "hyperobject" stems from Morton, 2010. It was suggested to Philippe Parreno by Hans Ulrich Obrist in an interview in Obrist, and Parreno, 2017, 119. For a definition of the term see The term hyperobject comes from Morton, Timothy, *The Ecological Thought* (Cambridge, Massachusetts: Harvard University Press, 2010). It was suggested to Philippe Parreno by Hans Ulrich Obrist in an interview in Obrist, Hans Ulrich, and Parreno, Philippe, "Beyond Ideas." in Philippe Parreno. *H (N)Y P N(Y) OSIS HYPOTHESIS*. Exhibition catalogue Park Avenue Armory, New York, 11.06.-02.08.2015, Pirelli HangarBicocca, Milan, 22.10.2015-14.02.2016. (Milan: Mousse Publishing, 2017), 119. For a definition of the term see Morton 2013, 1f:
"... I coined the term hyperobjects to refer to things that are massively distributed in time and space relative to humans. A hyperobject could be a black hole. A hyperobject could be the Lago Agrio oil field in Ecuador, or the Florida Everglades. A hyperobject could be the biosphere, or the Solar System. A hyperobject could be the sum total of all the nuclear materials on earth; or just the plutonium, or the uranium. A hyperobject could be the very long-lasting product of direct human manufacture, such as Styrofoam or plastic bags, or the sum of all the whirring machinery of capitalism. Hyperobjects, then, are >hyper< in relation to some other entity, whether they are directly manufactured by humans or not. Hyperobjects have numerous properties in common. They are viscous, which means that they >stick< to beings that are involved with them. They are nonlocal; in other words, any 'local manifestation' of a hyperobject is not directly the hyperobject. They involve profoundly different temporalities that the human-scale ones we are used to. ... And they exhibit their effects interobjectively; that is, they can be detected in a space that consists of interrelationships between aesthetic properties of objects." One cannot escape the feeling that Morton means systems when he speaks of hyperobjects.

4. Huber and Parreno 2021c, 8.
5. Sartre 1957, xlvii.
6. On the notion of operational closure, see Varela and Goguen 1976; Maturana 1982, 282-284; Luhmann 1995a, 12-24; Luhmann 1995b, 13.
7. For an introduction to the term, see Baraldi, and Corsi, and Esposito 1998, 186-189 or Jahraus, and Nassehi 2012, 121-123.
8. See Gibson 1979, 127: "The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill. ...I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment."
See further Huber 2021b, 135-157.
9. Noë, and O'Regan, 2002, 567-598..
10. This is a reference to the title of a famous book. See Goodman 1978..
11. On the concept of range, see Schütz, and Luckmann 1979, 64.
12. Cf. in more detail Schumacher 2000, 94-103; Huber 2009, 97-103; Umathum 2011; Divjak 2012.
13. Stein, 2012, XI.
14. Stein, 2012, XIII.
15. Schroeder 2012, 97.
16. Spence 2012, 243.
17. Parreno, 2014; Lissoni 2016; Parreno 2017a; Parreno 2017b; Oberender, and Rosenberg 2018.
18. For illustrations of this work see the text by Keny, and Reed, and Girma, 2020.
<https://www.moma.org/magazine/articles/378>
19. Ovidius, 1922, Book III, 356-358.
20. "DMX512 is a standard for digital communication networks that are commonly used to control lighting and effects. It was originally intended as a standardized method for controlling stage lighting dimmers, ... DMX512 has also expanded to uses in non-theatrical interior and architectural lighting, at scales ranging from strings of Christmas lights to electronic billboards and stadium or arena concerts. It can now be used to control almost anything, reflecting its popularity in all types of venues."
<https://en.wikipedia.org/wiki/DMX512>; 22.2.2022.
21. Keny/Reed/Girma 2020: "... all these things come together and feed the machine that then responds randomly." [without page]
22. Roads 2001, 86.
23. Roads 2001, 85-118; Reck Miranda 2006, 101-111.
24. <https://bronze.ai>.
25. An internet version of this work can be seen and heard via the WWW by typing in the URL *echo.world*. 3D glasses would be helpful as this is a 3D space. The moving image that one perceives is, according to the artist, a 3D visualisation of Artificial Intelligence.
26. Huber, and Parreno 2021a, 2: "That's a visualization of the AI, projecting a sort of space, the space of the automaton."

27. The bioreactor was developed in collaboration with Jean-Baptiste Boulé of the CNRS Centre national de la recherche scientifique and Nicolas Desprat, Institut de Biologie de l'Ecole Normale Supérieure, and two other scientists from London. See Parreno 2018, p.70. In 2016, it was used for the first time in his solo exhibition IF THIS THEN ELSE at Gladstone Gallery, New York, then in the exhibition "Anywhen" at Tate Modern, London, and in 2017 in the exhibition "La Levadura y el Anfitrión" at Museo Jumex, Mexico City.
28. As far as I know, Philippe Parreno used the notion of a sympoietic machine for the first time in my conversation with him from January 28, 2021. On the concept of sympoiesis see Dempster 1998; Dempster 2000; Haraway 2016.
29. I owe my understanding of how the bioreactor works to a detailed conversation with Dr Harald Sobek, Biberach an der Riss, a biologist and biotechnologist. I would like to take this opportunity to thank him most sincerely.
30. Huber, and Parreno 2021c, 6.
31. Klein 2004, 12 and 20.
32. Luhmann 1997, 198.
33. See further Glassman 1973, 83–98; Weick 1976, 1–19; Luhmann 1993, 223; Luhmann 1997, 195–202.
34. Luhmann 1997, 200.
35. Luhmann 1997, 199.
36. See in more detail Huber 2019 and Huber 2020.
37. Luhmann 1997, 201.
38. Goodman 1977.

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