

From Signal to Signal

## Pulse on pulse: modulation and signification in Rafael Lozano-Hemmer's *Pulse Room*

Merete Carlson  & Ulrik Schmidt

Article: 18152 | Published online: 25 Jan 2017

### Abstract

This article investigates the relation between signifying processes and non-signifying material dynamism in the installation *Pulse Room* (2006) by Mexican Canadian artist Rafael Lozano-Hemmer. In *Pulse Room* the sense of pulse is ambiguous. Biorhythms are transmitted from the pulsing energy of the visitor's beating heart to the flashing of a fragile light bulb, thereby transforming each light bulb into a register of individual life. But at the same time the flashing light bulbs together produce a chaotically flickering light environment composed by various layers of repetitive rhythms, a vibrant and pulsating "room". Hence, the visitor in *Pulse Room* is invited into a complex scenario that continuously oscillates between various aspects of signification (the light bulbs representing individual lives; the pulse itself as the symbolic "rhythm of life") and instants of pure

material processuality (flickering light bulbs; polyrhythmic layers). Taking our point of departure in a discussion of Gilles Deleuze's concepts of *modulation* and *signaletic material* in relation to electronic media, we examine how the complex orchestration of pulsation between signification and material modulation produces a multilayered sense of time and space that is central to the sensory experience of *Pulse Room* as a whole. *Pulse Room* is, at the very same time, a relational subject-object intimacy and an all-encompassing immersive environment modulating continuously in real space-time.



[PowerPoint slide](#)   [Original jpg \(25.00KB\)](#)   [Display full size](#)

**Merete Carlson** is Ph.D. Fellow at the Department of Scandinavian Studies and Linguistics, University of Copenhagen. Her current research focuses on

corporeal issues of sensory and affective engagement in contemporary media art. Carlson's Ph.D. thesis is entitled *Towards a Responsive Aesthetics: Sensation, Self-Movement, Affect* [in Danish].



[PowerPoint slide](#)   [Original jpg \(18.00KB\)](#)   [Display full size](#)

**Ulrik Schmidt** is postdoctoral fellow, Ph.D., at the Department of Arts and Cultural Studies, University of Copenhagen. His main research is in cross-aesthetic issues within modern and contemporary art, film, sound and media culture. Schmidt has published in Danish and English on various topics including music, sound and design in Phil Spector, mass comedy in Buster Keaton, ubiquitous computing, digital art, and minimalism in art and music. His dissertation investigates

ambient aesthetics in modern art, film, music, and architecture (*The Ambient*, Aarhus University Press, 2012 (forthcoming) [in Danish]).

**Keywords:** electronic media, signaletic material, signifying processes, modulation, Rafael Lozano-Hemmer, pulse, sensation, space, time

---

According to art historian Edward Shanken “[o]ne of the most interesting developments over the last four decades has been the use of electronic media by artists to transform or translate between various forms of energy.”<sup>1</sup> Unlike static forms such as photography, painting, and sculpture, the electronic artifact—in the broad sense including film, electronic light art, sound media and digital media—is essentially processual, “energetic”. It does not merely record or reflect energy, but “transforms” and “translates” it from one source to another and throughout the entire medium as a total “field of energy”.

Hence, the material nature of the medium has not only changed with electronic media from something that merely records energy in a static form and reproduces information by analogy, to something that has become essentially dynamic and continuously effective in our own surroundings. Apart from its ability to “transform or translate between various forms of energy” the electronic medium has itself become the source of

a *new* energy, produced in and by the medium alone as an incessantly pulsing, flickering, vibrating matter.<sup>2</sup>

The understanding of electronic media as generator or producer of energy entails significant implications for the aesthetic experience and conceptual understanding of electronic art in general, including digital art. For instance, the production of energy cannot be understood as a result of external processes outside or before the situation in which the energetic material is being produced. The energetic production is not the result of a representational or signifying process that has now taken form in the electronic material, but something that has its sole origin in the medium. It is produced and transmitted *in* the medium, and the changes taking place are due to variations in the material distribution *in* the electronic medium in question.

The production of new energy in electronic media is thus comparable to what Gilles Deleuze, in specific relation to the cinematic image, has called a *signaletic material*.<sup>3</sup> A signaletic material constitutes a first, a-signifying production of energy. This material may potentially become representational or signifying. But utterances, narrations and representations “only exist in [their] reaction to a *non-language-material* that [they transform].”<sup>4</sup> In D.N. Rodowick's words, movement

images, including electronic images, are being produced “anterior to all signification. The most that can be said about them is that they do not yet signify. However, they are ‘signaletic,’ producing signals or representama, since matter is already ‘luminous’ or a fundamental appearing.”<sup>5</sup>

No matter what the electronic medium signifies or transmits, its representational elements will necessarily manifest themselves through basic modulations in a signaletic material. This energetic production, which constitutes the “fundamental appearing” of the electronic medium, is continuously transforming and varying the image displayed in the medium, but it does so in a continuous variation that is taking place in *real* space-time. The signaletic material is characterized, says Deleuze, by a “modulation of the object itself”,<sup>6</sup> and modulation “is the operation of the Real, in so far as it constitutes and never stops reconstituting the identity of image and object.”<sup>7</sup>

Thus, the material properties of electronic media—i.e. electromagnetic energy (light) and mechanical vibrations (sound)—have themselves not only become sources of a pure, energetic production taking place before any representation or signification. Because of its material dynamism alone, the electronic medium will always and in itself organize a *specific spatio-temporal situation* by

way of a modulatory variation in the real object as energetic medium: the electronic medium produces its own space-time. When the electronic medium becomes an object of sensation, it therefore has a capacity—unlike non-electronic media such as sculpture and painting—for producing at least three different spatio-temporal situations simultaneously, three “worlds”, each with their own characteristics and origin: first, as already suggested, the electronic medium is capable of what we, by slightly expanding a formulation by Deleuze, could call a *direct presentation of real-space-time* produced by and in the signaletic material as a “plastic mass”.<sup>8</sup> Second, it has the capacity for a spatio-temporal *representation in real-time* (real-time mediation); and third, it is able to produce an *indirect representation of space and time* (recording, narration, playback). What is often referred to as real-time electronic media, e.g. television or the webcam, may transmit images and information in real-time, but they will still only present real-time indirectly through a spatial representation. What real-time mediation produces is a *relative* real-time, determined by a temporal connection in the medium between two disparate spatial conceptions—real and mediated space. Real-time in the electronic medium is only *produced directly* by the spatio-temporal modulations of the real that are taking place in the signaletic material. This

is the real real-time aspect of electronic media: the modulatory flow of a signaleitic material, filling up and resonating throughout the experiencing subject's own time-space; the pure, immanent production of energy that sets the real world in mediatized vibration.

Because of this triple production of space and time, electronic media have a strong potential for creating complex and layered aesthetic situations. Many recent art works have explored this potential thoroughly, especially within interactive media-installations. *Pulse Room* (2006) by Mexican-Canadian artist Rafael Lozano-Hemmer is a profound example of this.

---

## **PULSE ROOM**

*Pulse Room* is a large-scale installation featuring 100 clear incandescent light bulbs suspended from the ceiling in a regular, grid-based structure at a height of 3 m. Each bulb flashes in an individual, repetitive pulse. Together the bulbs compose a coherent event characterized by the tension between the grid-based order of the bulbs and the dazzling chaos of light generated by their random, non-synchronized pulsations. *Pulse Room* displays a “total” spatio-temporal event under continuous variation, a pulsing “room” of light surrounding the visitor.<sup>9</sup>



In a dark corner of the exhibition room, however, one bulb stands out from the grid.<sup>10</sup> It is suspended lower than the others (about 1.7 m off the ground) and positioned in front of a metal sculpture with two handles. When the visitor grips the two handles, the pulse is detected by a computer and sets off the single bulb in front of the sculpture.<sup>11</sup> As long as the visitor holds the handles, it flashes in the rhythm of his or her pulse. After letting go of the handles, there is a momentary blackout in the entire room. When the flickering field of light comes on again shortly afterwards, the pulse representing the heart pattern of the visitor has been transferred to the first bulb in the grid where it now beats in unsynchronized irregularity with the flashing pulses of the other most recent 100 participating visitors. Each time someone touches the handles, a new heart pattern is sent to the first bulb pushing the other pulses in the grid on step forward.

This overall structure of the installation enables various perceptual relations between the visitor and the work, which accordingly will affect his or her sense of space and time. These experiential differences are the result both of specific, often quite subtle, compositional nuances in the work and of perceptual variations in the visitor's perspective on various aspects of the work. Of greatest significance here is the difference

between the visitor's experience by the sculpture-interface in the dark corner of the room, and when he or she is situated out in the flickering field. At the most basic level, the visitor's experience by the sculpture-interface is characterized by a subject-object relation to the static sculpture with its firm handles and the single bulb isolated from the rest of the grid, potentially producing a sense of *localization* in the room. In the total field of flickering light, however, this sense of local subject-object relation will most likely dissolve into a more ambient experience directed towards the entire, large-scale installation as a flickering surround.

In this way the spatial experience in *Pulse Room* is intricate, marked as it is by a tension between a relational subject-object experience by the sculpture-interface and an ambient sensation of the work as a flickering whole.

However, this tension is not alone due to contrasts between different spatial properties of the work. It also depends strongly on the work's production and distribution of electric energy and the sense of time it organizes. Indeed, the distribution of luminous energy in *Pulse Room* has quite different aesthetic potentials by the sculpture-interface and in the space-at-large: While the subject-object experience by the sculpture-interface orchestrates the temporal distribution of electric energy as a

process of signification and representation, the ambient sensation of the work is rather related directly to the temporal experience of luminous energy as the non-signifying modulation of a “pure”, signaletic material. Hence, as aesthetic potential in *Pulse Room* tension is basically organized around the simultaneous perceptual effect of spatial contrasts *and* of differences in the organization of its energetic material as a tension between two different spatio-temporal modes of energetic production.

---

## **INTIMATE RELATIONS AND SIGNIFYING PROCESSES**

The ambiguous co-presence of signifying aspects and material modulation is present on various levels of the installation. The semiotic ambiguity is in fact already a basic, phenomenal quality of the pulse itself. A pulse is indeed a multifaceted phenomenon: it is a repetition of short-duration stimuli measuring time without symbolic reference. It is a regular beat with a strong rhythmic potential. It is a paradigmatic example of a signal transmitting simple information. And it is a fundamental sign of life, an index of the living organism. In *Pulse Room*, Lozano-Hemmer activates all these semantic, formal and material properties of the pulse so as to invite visitors to

engage themselves in the sensory complexity and semiotic ambiguity of the situation.

On the one hand, *Pulse Room*, as described, produces a chaotically flickering light environment of pure, energetic modulation. But at the same time, *Pulse Room* is strongly imbued with symbolic meaning. When biorhythms are transmitted from the energy of the beating heart to the flashing of the singular light bulb, it gives the individual visitor a clear and unmistakable impression of being represented directly and in real-time in the flickering display. In addition, this direct link between the body as living organism and the “organic” light patterns formed by the flashing bulbs further charges the installation as a whole with unambiguous metaphysical connotations. Thus, apart from the a-signifying, modulatory repetition on a material level, the pulse in *Pulse Room* is furthermore articulated through a double representation: a subjective signification—with each light bulb representing the individual lives of the visitors—and through a symbolic reference to mankind in general where the pulsations as a whole represent a fundamental “rhythm of life”.<sup>12</sup>

Thus, the visitors in *Pulse Room* are invited to take part in a complex event that continuously resonates between different layers of modulatory and signifying repetitions. At the very same time, *Pulse Room* is profoundly subjectified as a sign of

life and a machinic generator of its own space-time.

The events with most evident symbolic meaning are produced around the sculpture in the dark corner of *Pulse Room*. The encounter with the sculpture immediately calls on an action—reach out, touch—and when the visitor grips the two handles, there is a certain physical sense of proximity, which strengthens the experience of directly handing over the pulse of the beating heart. The signifying process initiated by this action has several stages or levels.

During the initial transmission of biometric data, there is a sense of ephemeral enclosure or intimate space prompted by the physical contact between subject and object. The defined light is right in front of you and occupies your field of vision, thereby intensifying the pulsing contrast between light and darkness, and contrary to the total field of pulsing light in the room, this beating effect arises from just one point. Furthermore, another signifying level is added during the transmission as soon as the bulb flashing in front of the visitor is understood as a representation of his or her actual heart pattern. The act of touching is now realized as the starting point for a *real-time mediation* of energy, which is projected on to the medium by the visitor as a perceptual effect.

During this process there is a change in the subject-object relation that is crucial to this feel of subjective mirroring. The visitor's relation to the work from this particular position began as an encounter with the sculpture as physical structure (object), but has now evolved into a subject-interface situation, by means of which the visitor projectively animates the light bulb and creates an intimate situation of facing a visual appearance of his or her pulse.<sup>13</sup> The flashing of the bulb is thus not just initiated by the visitor's touch, but displays in symbolic form a direct, energetic transformation of a qualitative property of this touch: the measurable pulsation in the palms, the rhythm of the body. This representation is heavily loaded with symbolic meaning: What you see in front of you is a copy of your own pulsing heart.<sup>14</sup>

The bulb only flashes as long as the visitor holds the grips. Thus, as soon as the visitor has (actively) taken hold of the grips, she has to stay in the same (passive) position in order to prolong the situation and maintain the sense of proximity with the sculpture-interface. To begin with, the relation established in the visitor's encounter with the sculpture is not itself temporally structured, but merely launches the registration process as an open interval in time, an "empty moment", a waiting for something (else) to happen. But as soon as the singular bulb in front of the visitor

starts to pulse with light and the sculpture becomes an interface, a distinct and specific temporality is constituted.

At this point, the visitor has a significant sense of having *impact*: your presence matters, you affect the room. A rhythmic structure, originally present latently in the body, has now started to resonate in the medium. The real-time effect produced here is thus relative, derived from and essentially defined by the physical presence of the subject. The experience in front of the flashing “mirror bulb” is an experience not only of *proximity* (space) but also of *simultaneity* (time) between the subject and its close surroundings, which intimately anchors the subject in a local, particular time-space. *Now-here*, something is added to the piece and the subject enters the circuit, thereby articulating the situation as a specific *place* and a particular *moment*.

---

## **SPACE-AT-LARGE AND THE MODULATION OF THE REAL**

The process of real-time registration as a generator of a particular time-space (“place” + “moment”) is ephemeral and will end as soon as the participant takes his or her hands off the handles. Yet the *effect* of proximity and simultaneity is prolonged into the medium through a representation of the particular

situation. The repetitive flashing of the singular bulb has become a sign of the now lost intimacy between closely synchronized pulses. As such, the visitor's bodily presence, and the very particularity and locality of it, is projected into the medium as a recording.

Accordingly, the temporal focus shifts from an experience of real-time mediation to a recollection of it as a past situation that is now being continuously repeated; that is, from a representation in real-time to what we previously called an indirect representation of space and time. This "pulse-loop" becomes a reminder of the particular interaction process as a past, subjectified situation, a former now-here.

In this subtle transition, the sense of impact and participation diminishes. When the visitor releases the handles and triggers a transitory darkness, the subjective quality of the situation weakens and a third experience of time and space is initiated. The movement from simultaneous representation to delayed reproduction is also a movement from a time defined and shaped by the subject and the computer-organized interaction program, to a less subjectified and less organized time. As soon as the pulse in the grid becomes a continuous loop, its possible future ending no longer has any obvious effect in the temporal formation of the process. The looping of the recorded pulse has



made way for both a less teleological and less subjectified time. What before was a restricted duration defined by the subject, an intimate being-with, has made way for the experience of an objective, unrestricted duration as the pure passing of time: a direct presentation of time.

This experience of a direct presentation of time is, at least potentially, greatly intensified as the visitor leaves the local place of registration and enters the larger space with the multiple pulsing bulbs. The subject-object-relation established during registration now dissolves into an a-figurative, subject-field-relation between the visitor and the pulsing environment as an open, dynamic whole with no obvious figure-ground-segregation. When the visitor leaves the sculpture and moves into this flickering field of light, the local feel of proximity and impact changes for a basically *environmental* experience, an ambient sense of being *in* space-at-large as a vibrant whole.

Here, the visitor will no longer relate so much to the pulsing of each of the bulbs, and their signifying potential, but rather constitute an ambient experience of being surrounded by the entire field of energy as a pulsing mass, a “pulse room”. What before was a series of (recorded) particular situations initiated by the subject, has now turned into a coherent and complex mediatized whole encompassing the visitor with

no reference to anything outside itself as spatio-temporal duration.

What pulses in the room is no longer a collection of subjectified representations, each with their particular spatio-temporal origin and symbolic identity, but the signaletic material itself. What before was an isolated sign of a past now-here, is now taking part in a pulsing production of a new energetic mass by way of a modulation of the real. However, in experience this direct relation to the signaletic material will not necessarily replace the signifying qualities of the pulses entirely. The pulse room as a collection of subjective reproductions, as an “anthropomorphic archive”, is present as a potential, which the visitor at anytime may project into the pulsing material through his or her recollection of the subjective registrations. However, the dominating effect in the space-at-large is the sensation of flickering light as a modulatory field of material energy.

This argument differs from the common understanding of *Pulse Room*, where signifying and representational properties are read into all aspects of the work. Beryl Graham's reading is a prime example:

In *Pulse Room* the human presence is particularly elegant: each small personal spectacle of electric energy slides gently

into the community pool, and when each flicker shuffles off the end of the grid, there is a sense of loss and evanescence. The tension between individual egoistic spectacle, and cooperation, is a fascination in Lozano-Hemmer's work...[15](#)

In this understanding, *Pulse Room* solely creates variations on the experience of human presence; as respectively a personal spectacle and a community pool. But as our analysis indicates, the transition from the sculpture-interface situation to the environmental situation in the room at-large is potentially more radical than this. At the sculpture-interface every detail of the event is directed toward the experience of human presence, but in the flickering environment you will have to *recollect* and focus intentionally on this sense of presence to maintain the experience of it. More likely, the dominating effect when being situated in a field of flickering light is not that of signification. The environmental experience of being surrounded rather constitutes itself without any relation to subjective presence. It is a concrete, non-anthropomorphic sensation of the electronic medium in its fundamental appearing as energetic material pulsing in space and time.

## PULSE ON PULSE

The difference between signifying aspects and a-signifying modulation persists as a fundamental tension during the visit to *Pulse Room*. This article has emphasized the importance of recognizing how the continuous separation and interlacing of these levels is the main factor in the constitution of *Pulse Room* as an ambiguous aesthetic situation: a “pulse on pulse” experience.

Initially, the article discussed the different representational and material properties of electronic media in general. What the analysis of *Pulse Room* shows more profoundly is how these different properties call for various ways of engaging with the work. We simply relate differently to signifying processes than we do to a-signifying modulation. They facilitate divergent sensations of space and time, different modes of experience.

When focusing on signifying aspects, the energetic material is assigned with a *relational* order. The signifying event becomes teleologically and chronologically structured. This is not only the case in narrative structures. Interactivity generally accentuates a relational order because it orchestrates variations in the medium in relation to the acting and performing subject. The event becomes a sequence of hierarchically organized

sections that continuously refer back to its origin in the particular moment and place of its initial becoming, whether the sequence represents this moment and place in real-time or reproduces it as a former situation.

Although signifying aspects in the electronic medium are the direct result of modulations in a signaletic material, as described by Deleuze,<sup>16</sup> signaletic modulation is essentially of another kind. It is generative, emergent. Modulation in the energetic material is an open process without beginning, climax and end to define the formal structure of the actions and movements in the medium. It is fundamentally decentred, flowing, vibrating, pulsing, with no determinable cause or by becoming its own cause (self-generation, emergence). It produces what Deleuze and Guattari have described as an in-between; a flowing, pulsing or vibrating intermezzo.<sup>17</sup> No matter what might change in the medium on the signifying level, taking the relational process from (the representation of) one particular moment to another, the energetic flow of the electronic medium does not change. It modulates. It does not produce anything new, but perpetually modifies itself into the new in continuous variation.

The crucial difference between material modulation and signifying aspects in this sense is thus not so much that between representation and

non-representation, but rather their different, but simultaneous spatio-temporal organizations. This is the complex parallelism present not only in the experience of *Pulse Room*, but also in electronic media in general. On the one hand electronic media may translate and transform energy from a local, spatio-temporal situation to another, confronting the subject from somewhere outside his or her own time-space. And on the other hand it produces its own energy and spreads it out around the subject and into the surroundings as a continuous modulation of the real.

---

## Notes

1. Edward A. Shanken, *Art and Electronic Media* (London: Phaidon, 2009), 21.
2. This process has an historical origin in pictorial projection and the development of the screen causing what Peter Weibel has described as “a paradigm shift” in painting in the last half of the nineteenth century “away from the representation (of light) to the reality (of light). [...] A picture represents light, a screen receives light and radiates it. Light was no longer captured but diffused. The artwork became the generator or emitter of real light.” Peter Weibel, “Zur Entwicklung der Lichtkunst/The Development of Light Art”, in *Lichtkunst aus Kunstlicht/Light Art from*

*Artificial Light*, ed. P. Weibel and G. Jansen  
(Ostfildern: Hatje Cantz, 2006), 86–87.

3. Gilles Deleuze, *Cinema 2: The Time-Image*  
(London: Continuum, 2005), 28. For full citation see  
Bodil Marie Stavning Thomsen's introductory  
article

4. Gilles Deleuze, *Cinema 2: The Time-Image*  
(London: Continuum, 2005), 28.

5. D.N. Rodowick, *Gilles Deleuze's Time Machine*  
(Durham and London: Duke University Press,  
1997), 42.

6. Deleuze, *Cinema 2*, 26.

7. Deleuze, *Cinema 2*, 27.

8. Deleuze, *Cinema 2*, 35ff.

9. By using the term “visitor” we wish to emphasise  
the multi-sensorial aspects of experiencing *Pulse  
Room* in contrast to visually oriented terms such as  
viewer, beholder or spectator.

10. *Pulse Room* has been exhibited several times in  
different settings and the aesthetic effect varies  
slightly according to the particular exhibition  
space. This article describes the setting of the  
installation in Manchester Art Gallery in 2010–  
2011. For further information, videos and pictures  
from the various exhibitions see:

[http://www.lozano-hemmer.com/pulse\\_room.php](http://www.lozano-hemmer.com/pulse_room.php)

(accessed May, 2012).

11. We refer to the structure of the two handles as “the interface” or “the sculpture” with reference to “Pulse Room's manual” available at:

<http://www.lozano-hemmer.com/texts/manuals/Pulse%20Room.doc>

(accessed May, 2012).

12. Lozano-Hemmer himself refers to the end scene from the Mexican film *Macario* (1960) by Roberto Gavaldón—where the protagonist Macario visits Death in a dark cave filled with candles representing the individual lives of all mankind—as a direct inspiration for *Pulse Room*.

[http://www.lozano-hemmer.com/pulse\\_room.php](http://www.lozano-hemmer.com/pulse_room.php)

(accessed May, 2012).

13. This “mirror effect” in the medium is augmented considerably by the very form of the incandescent bulb. The fragile organic form of the bulb connotes the shape and size of the heart and the “body” of the bulb resembles the human body with its exterior surface and a core of a beating pulse. Likewise the bulb is suspended between heart and eye level encouraging a sensation of direct mirroring.

14. Visitors frequently express this immediate impression of being directly reflected in the pulsing light by saying “that's me”, “I'm all heart”.

[http://www.lozano-hemmer.com/pulse\\_room.php](http://www.lozano-hemmer.com/pulse_room.php)



(accessed May, 2012).

15. Beryl Graham, 'Delicate Controls', in *Recorders: Rafael Lozano-Hemmer*, ed. R. Lozano-Hemmer (Manchester: Manchester Art Gallery, 2010), 16.

16. Deleuze, *Cinema 2*, 28.

17. Gilles Deleuze and Félix Guattari, *Thousand Plateaus* (Minneapolis: University of Minnesota Press, 1987).

---