

s c u l p t r i c e

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'It is a basic property of waves to create connections. Through antennas we get access to Hertzian space. One could therefore use electromagnetic waves to create wave-sculptures, real-time connections in space[time, or portals of the imaginary or liminal, that function as portals, allowing one to enter another space. Those connections can go both ways from formlessness to form and structure and back -- the materialisation of the inconcrete and its opposite.'

iie.lemurie.cz
m3me.wordpress.com

[double me]

on my way home, someone called my name, and added 'how are you. haven't seen you in a while.' since i had never seen this person before (and i have a good facial memory), i thought of this as a coincidence..

just a week prior though, i was faced with another such 'coincidence'. someone believed me to be their finish-australian musician friend. not only did i look like her - but we shared the same name. once asked, i had to agree..

i [am] curious who could this other me be..

a search on the internet did not come up with much. then again, what exactly am i searching for? and how might [she] be indexed?

Frida Kahlo, The Two Fridas, 1939
René Magritte, La Reproduction Interdite, 1937

'Most of us have two lives.
The life we live, and the unlive life within us.
Between the two stands Resistance' [1].

Duplications of self are most often seen as twins (or future-clones), one's shadow, a reflection from a mirror or water surface, a double or doppelgaenger .. which might be the case here.

[Yet there is the analogy to photons.]

Twin studies are a fascinating way to determine heritability, or to understand the nature/nurture ratio. in other words, what forms us? the inherited, genetic material or the social surrounding? i expected it to be half/half, studies are inconclusive, but they provide fascinating examples, that [identical] twins separated at birth end up living almost identical lives [2].

The shadow, really, is a two-dimensional casting of the physical body, but it is most often associated with the suppressed side of oneself, the 'shadow personality'. A reflection, or refraction, akin to the Narcissus' myth, could be looked upon as a reversed duplication, or as a hint at another dimension, like Alice's journey down the rabbit hole. An influential science-fiction story relates the story of Lars Lennart Westin, who by entering the 4th dimension, returned with his left and right side inverted, more so, it changed his world view from pessimistic to optimistic [3].

A double is a look-alike, acting on your behalf during public appearances [4] or in a photo-shoot, substituting an actor for scenes of nudity or in stunts.

A doppelgaenger then.. and i am assuming it is 'not' the evil twin, nor is [she] without shadow or reflection as folklore knows. would i believe in the tales, i should not find her, as this might be the harbinger of my (her? our?) death.

'In September 2006 it was reported in Nature that Shahar Arzy and colleagues of the University Hospital, Geneva, Switzerland, had unexpectedly reproduced an effect strongly reminiscent of the doppelgänger phenomenon via the electromagnetic stimulation of a patient's brain. They applied focal electrical stimulation to a patient's left temporoparietal junction while she lay flat on a bed. The patient immediately felt the presence of another person in her "extrapersonal space". Other than epilepsy, for which the patient was being treated, she was psychologically fit.

The other person was described as young, of indeterminate sex, silent, motionless, and with a body posture identical to her own. The other person was located exactly behind her, almost touching and therefore within the bed that the patient was lying on.

A second electrical stimulation was applied with slightly more intensity, while the patient was sitting up with her arms folded. This time the patient felt the presence of a "man" who had his arms wrapped around her. She described the sensation as highly unpleasant and electrical stimulation was stopped.

Finally, when the patient was seated, electrical stimulation was applied while the patient was asked to perform language test with a set of flash cards. On this occasion the patient reported the presence of a sitting person, displaced behind her and to the right. She said

1] Steven Pressfield, The War of Art', taken from http://www.stevenpressfield.com/books/war_art.asp#excerpt
2] James Lewis and James Springer, who had each married and divorced women named Linda and then remarried women named Betty; who named their dogs Toy and their firstborn sons James Alan or James Allen, are among the more spectacular examples.
3] Lars Gustafsson, Death of a Beekeeper, 1978; based on the earlier H.G. Well, The Plattner Story, 1896
4] f. ex. Saddam Hussein or Michael Jackson use(d) them.

that the presence was attempting to interfere with the test: "He wants to take the card; he doesn't want me to read." Again, the effect was disturbing and electrical stimulation was ceased.

Similar effects were found for different positions and postures when electrical stimulation exceeded 10 mA, at the left temporoparietal junction.' [5]

Not much is known about the parietal lobe, but it integrates sensory information, in particular, visuospatial processing. Damage to the left parietal lobe can lead to the 'Gerstmann's Syndrome': right-left are confused, verbal and mathematical memory affected, and objects cannot be perceived normally [6].

In the above (rather incidental) experiment, that I cited at length, we cannot really talk about a doppelgaenger, but something(s) was perceived by the subject, and she did not like it. Did it come out of her imagination, her shadow, a lost memory or a hallucination.. the fact remains it was her's only. An experience entirely [invisible] to her attending doctors and staff, and an experience brought about through electromagnetic stimulation of her brain.

[bee hives]

Viktor Stepanovich Grebennikov, a Russian entomologist, discovered in 1988 the 'Cavernous Structures Effect' (CSE) [7]. What interests here is the observation that trees (roots) are 'aware' of an underlying cavernous structure such as with beehives, and grow around it.

'As for bees that nest underground, their "knowledge" of the CSE is vital for them first of all, because it enables the builder of a new gallery to stay away from a neighboring nest. Otherwise the entire bee-city cut through with intersecting holes would simply collapse. Secondly, plant roots cannot be allowed to grow down into the galleries and honeycombs. Thus roots stop a few centimeters away from the honeycomb, or else, feeling that nests are near, they start growing aside.

[..]

Based on the structure of bee nests, I created a few dozen artificial honeycombs-of plastic, paper, metal, and wood. It turned out that the cause of all those unusual sensations was not a biological field, but the size, shape, number, and the arrangement of caverns formed by any solid objects. And as before, the organism felt it, while the instruments were silent.' [8]

The physio-perceptual sensation here is quite different, not detectable by instruments and measuring devices, but through the skin, or touch, a much neglected sense.

We need to make sense of our environment, its interaction with our selves and the technologies with which we increasingly control it. Since the rate of current innovation is unsurpassed, the necessary adaption to 'new' modes of interfacing physical space and information space are ever shorter [9]. To do this requires awareness, acuity and (inter)disciplin(arity). It means questioning contemporary forms of knowing, and testing others. It involves less certainty in way of gaining a view of the whole. It will be different for everyone.

Ian Milliss' 'Walk along this line' is a work is about the physical sensation of being in your own body. He was using the audience's body, making it perform in order to achieve the work of art. Using just a strip of masking tape two inches out from the wall, any attempt to follow the instructions on the wall - to walk along the line - immediately overbalanced the participant, pushing them backwards, away from the work. It was a kind of repulsion (an anti magnetic force) with an instruction to obey against the laws of physics - a piece which in the end proves what everyone already knows - which is simply that you can't always do what you are told to do. [10]

5] <http://en.wikipedia.org/wiki/Doppelg%C3%A4nger>; original text published in Nature, September 2006.

6] <http://www.neuroskills.com/tbi/bparieta.shtml>

7] sometimes referred to as 'Cavity Structural Effect'

8] 'But alas, the instruments - either thermometers, or ultrasound detectors, magnetometers and electrometers-did not respond to them in the slightest. We conducted a precise chemical analysis of the clay-nothing special. The radiometer was also silent... But ordinary human hands, and not just mine, distinctly felt either warmth or a cold draft and a tingle, or sometimes a thicker, stickier environment. Some people's hands got heavier, others felt theirs were pushed up; some people's fingers and arm muscles got numb, they felt giddy and had profuse salivation.' The results may be found in my article "On the physical and biological properties of pollinator bee nests" published in the Siberian Bulletin of Agricultural Science, no.3, 1984. Grebennikov describing his discoveries

9] I read somewhere that by the time a student graduates, the teaching he received has become obsolete, I assume not in all fields, but remarkable - and an argument 'for' continous education.

10] The Invisible Artist, from his website

All around us things happen that we are not aware of, our brains either render them out [11], or we simply do not have the sense organs to perceive them in the first place [12], We recognize only a tiny part of the energy vibrating from the pervading physical world. And, since the advent of radioactivity, it is clear that 'what is around us' has a fundamental impact 'on us'. But what we do not see, we tend to ignore.

sense perception : physical]

Commonly when we speak of the senses, we refer to the five human sensory inputs: vision, hearing, taste, smell, touch. In addition to these 'outer senses', there are the lesser known 'inner senses' such as heat, balance, kinestesis.. [13]. Other species sense in a similar or extended range, but they are also senses 'alien' to us, such as orientation through sonar or detection of electric fields, as used by eels [14].

An overlap of two senses, 'synaesthesia', is a rare condition experienced when one 'sees' the music, or words take on a quality of colour.. Synaesthetics seem to have a more complete sensing of reality, and are able to combine inside from various sources into new concepts or ideas [15].

In Seiko Mikami's upcoming 'On the Continuum of Perception and Interfaces', the audience is invited to experience their (state of) perceptions. Using interfaces as extensions of 'what we already have--a network that mediates our subjectivity, that synthesizes what we perceive and the world that is perceived. Mikami explores the 'in-between' or 'inter-medium' of the information interchange, through perception, between the body and the surrounding space.' [16]

sense perception : mental construct]

We 'see what we want to see' not necessarily what is there. Much of what we consciously are aware of is 'filtered' or 'tinted' by personal history and memory, expectations and attributed values [17]. When the sensed world is reflected upon, an image is created that consists as much of what is in front of us, as what our past history wants to make of it.

Larry Stark [18] looked at the construction of reality through the analogy of vision: we only ever see fragments. An obvious example would be that we have a continuous world view even though we 'blink'; but the blinks are cut out and merged by our minds, and we get a continuous film. Now, similar to re-constructing the blink, we look at the fragments of our visual reception, and create a movie in our heads. We create it with our memories, experiences, expectations. Therefore we all seem to live in our own reality bubble, that nevertheless seems connected to all those bubbles that we touch.

sense perception : fields]

In groups, 'charisma' has a profound influence on social context and interaction. In this case, the 'conscious' (or not?) setting of a space for personal interaction strongly determines its nature. Social groups are organized by fields, as in schools of fish and flocks of birds. Memories are transmitted through group culture and ritual reenactments. Charism, a form of attraction or, negatively, repulsion, emanates from people (but also from objects or buildings), a force of which we are semi-aware, but which influence us deeply [19]. The sense of being stared at, which is a quite common experience, should not occur if attention is just inside the head. As it stretches out and links us to what we are looking at, then our looking could affect what we look at [20].

11] The Visual Illusion - Attention Experiment shows this very clearly.

12] If we look at the wavelengths' spectrum, 'light' is visible between 380nm -780 nm or 450-750THz, our ears perceived within the range of 20Hz - 20,000Hz, heat can be sensed just below the visible range in the ultraviolet (the UV of sunlight).

13 These senses function on more unconsciously; respectively: Thermoception, Equilibrioception, Proprioception.

14] others include, Magnetoception (detection of magnetic fields), Electroception (detection of electric fields), Echolocation (sonar orientation through reflected sound)..

15] Nikola Tesla 1856-1943; See in this context Amanda Steggell's 'Emotion Organ', a synaesthetic simulacrum machine where players can explore the sensational interplay of the senses.

16] Seiko Mikami - On the Continuum of Perception and Interfaces, TESLA salon, Berlin, September 28, 2007

17] Interesting work is done here in the field of psychology, such as on repressed memories by Dr. Elizabeth Loftus.

18] Vision research pioneer from the Vision Lab at UC Berkeley (1926-2004).

19] see Malcolm Gladwell 'The Tipping Point'

20] Sartre gave a wonderful example leading to consciousness/awareness, when we sit in the park and see someone see us, then we know we exist. See also Rupert Sheldrake's 'morphogenetic fields',

electromagnetic spectrum]

The electromagnetic spectrum contains 'the range of all possible electromagnetic radiation. (...) The electromagnetic spectrum of an object is the frequency range of electromagnetic radiation with wavelengths from thousands of kilometres down to fractions of the size of an atom. (...) The short wavelength limit is likely to be the Planck length, and the long wavelength limit is the size of the universe itself, though in principle the spectrum is infinite.' [21]

Or to use military terminology, 'full spectrum dominance includes the physical battlespace; air, surface and sub-surface as well as the electromagnetic spectrum and information space.' [22]

The electromagnetic spectrum can, then, be seen as (one) encompassing model for reality, from the macro to the microcosm, from the universe towards the atom. Several contemporary artists explore these precise aspects of the 'unperceivable' electromagnetic energies.

'Anthony Dunne extends the physical interactivity between device and person into an architecture he calls "Hertzian Space." This space encompasses not only the form and function of a device, but also how people react and relate to it. Hertzian Space is a holistic view of the electronic device and its cultural interactions.' [23]

into the multiverse]

In the 19th Century, scientists realized that energy consists of continuously flowing waves [24]. With Maxwell, science took a whole new direction when he 'postulated' in his famous equations electromagnetism through mathematical formulas, leaving thus the field of science referential to nature and initiating a new era of speculative-constructivist science [25]. Max Planck saw that energy is composed of quanta, individual units, opening the field to quantum physics, where two particles that have been part of the same quantum system and are separated in space, retain a mysterious connectedness. A change in one separated part of a system can affect another instantaneously, a phenomenon known as quantum non-locality or non-separability [26]. The demonstration that physical reality, as we know it, is a manifestation of energy and vibration, the dynamics of which are rooted in the conception of a hyperdimensional continuum, was one of Einstein's most significant contribution to physics. A paradox arose from these mathematical descriptions: it was impossible to visualize a world implied by these equations.

Quantum physics sees a wave function as a probability field. Wave functions can, then, be thought of as clouds of possibilities from which only one possibility manifests when observed or experienced. It is one facet of the all, of the hologram, which is being projected. [27]

A continuously splitting universe is the solution provided and quintessence of Hugh Everett's 'many world theory' .. inside the 'multiverse'. The multiverse is really any possible outcome realised. On an individual level that would mean that one took every major decision and went down with it on a bi/trifurcating history-line. An example would constitute whether one went to this university or that one, or to none - took a year off, or went into the workplace. Here four lines develop. Now imagine this happens at every major crossroad in life.. every minor one, all, aware and unaware. And imagine this for your family members, friends, community.. for other species, plants and stones.. independent of consciousness (as we define it).

The multiverse is, therefore, the sum of all (im)possible (un)imaginable universes.

[Back to photons, they seem to interact between the 'many worlds'.]

21] http://en.wikipedia.org/wiki/Electromagnetic_spectrum

22] http://en.wikipedia.org/wiki/Full-spectrum_dominance

23] Taken from 'Luna[nau]tic Twilight', project proposal for idensitat 07, by Jack Anderson, foam and partners.

24] Just as light, electricity and magnetism.

25] Otto Roessler, in one of his latest speeches 'Endonomadology' alerts to the dangers of abandoning frameworks, published in [the] xxxxx [reader], 2006

26] These particles behave oddly: one does not know where they are, they are not exactly measurable, or predictable, they might behave as waves or as particles; they might interact at distances without any clear connection.

27] Light and electromagnetic radiation are not only waves but also act as particles. The same wave-particle duality applies to matter. The relationships between wavelength, mass, energy and speed are some of the factors to take into account should we wish to understand a 'relative' reality, conceptualized last century. Since then we can not take the 'physicality' of the world for granted anymore and live with-in an understanding of spacetime that is not really intuitive anymore.

[hybrid art] | [technological art]

'Hybrid art' is defined by Roy Ascott, as 'art plus cognitive science, neural networks, genetic manipulations, physics of consciousness' [28]. The diagram by mxhz.org on 'technological art' covers an even wider range of subjects, such as: remote sensing, silence, change, brains, weightlessness, complexity, viruses, chaos, electroluminescence, collaboration, social behaviour, r-evolution, art, ecology, spatiality, nonlinearity, animal consciousness, prime numbers, reality, aesthetics, lies, sensors, creative commons, disturbances, bio-robotics, feedback, self-emergence, noise, cognitivism, processing++ [29].

Similar to science which adjusts its theories with new discoveries and insights [30], experimental art practices have to adjust to new insights and tools from all ranges as well:

'Hinterding's Aeriology has been described as a project for the unfolding of the ethereal as a 'machine for a techné of the invisible'. The installation presents twenty kilometres of wrapped wire to form an energy gatherer. The coils reveal through sympathetic amplification the activity of the unseen. Literally the 'line' of the wire is gathering and reconfiguring energies, turning refuse static to potential by a process of realignment of the subtle bodies of particles (Hinterding 1995).' [31]

[2 directions]

Over the years, there have been two separate developments in the cultural area: the commercial and the cultural-artistic approach. While the first was able to invest enormous amounts of money into development and expertise, the latter followed a DIY approach (do it yourself):

The commercial development gave birth to the game industry, where manufactures such as Sony or Nintendo were able to develop some of the most powerful machines available, and then produced software-games to play. Simulations of all kinds started being an immediate success, from the early flight simulators to the later Sim Series. Over the last few years, 'distributed computing' [32] helped develop into the increasingly popular multi-user platforms. 'Second Life' is interesting in this context, since its content development comes from the community that accesses it in their freetime, using their own resources. A similar debate is applicable to 'youtube' and the like, where self-cost production seems counter-balanced by access to free distribution [33]. With these softwares and/or networked environments, alternative life lines can be played out following somehow pre-established storylines. In Second Life, one can fly to shop at GAP. This makes it a rather poor repetition of the existing world. Earlier text-based forms of MOOs and MUDs, enabling truly different worlds/rooms, sprang out of imagination. They were evoked through words - following a literary tradition we are more acquainted with. For newer, audio-visual-experiential forms, we still lack the language and/or modes of behavior:

'and one of these is the development of an imaginary of technology, an understanding of its poetics and a testing manifestation of those poetics' [34]

The non-commercial approach brought forth a variety of creative - though less advertised - solutions. Among the most important was the development of graphic development environments with shared libraries such as MaxMSP, or the Open Source Version PD and others, interface between input devices and 'to make your computer do things that reflect your individual ideas and dreams' [35]. Open Source and Creative Commons became trademarks for the art community in response to the commercial world. Currently, there is a trend towards 'participatory design', which implies getting users involved in the software development for interactive/participatory

28] Roy Ascott, taken from Media Art Histories, ZKM, Prestel, Munich/NY, 1997

29] x.med-a. - experimental media arts publication, by fo.am, nadine, okno, iMAL, p.9

30] In an ideal world, this is, in fact the case; unfortunately, many new discoveries are being ridiculed when they arise, since they threaten the status quo. Sometimes this is a threat to a field that expands beyonds its imagination, sometimes a technology that might change society. Nikola Tesla's work - recently en vogue - is such an example; so was Galileo's.

31] Nina Czegledy, abstract for 'Bioelectromagnetism: discrete interpretations', p.139

32] Distributed computing is a method of computer processing in which different parts of a program run simultaneously on two or more computers that are communicating with each other over a network, http://en.wikipedia.org/wiki/Distributed_computing

33] interesting: G.H. Hovagimyan states in a discussion on empyre, that 'A Swiss art collector who invested \$250,000 in 2nd life approached me in 2004 when 2nd L was empty. He was trying to get people to inhabit the space to protect his investment. He thought I could be like Warhol and open a studio. I said I'd be interested in doing performance art bots that would interrupt people while talking. I of course wanted to get paid to produce original art. The "developers" didn't feel like paying an artist was necessary. This is what I feel about all "democratic" art spaces. They exploit a persons natural desire for a creative outlet while at the same time they devalue a trained artists unique talents and point of view. It's the same thing with you tube and all the other virtual spaces. In Marxists analysis it's perfect. You the consumer produce the content and pay to consumer yourself. Amazing!', april 22nd, 2007

34] Matthew Fuller, Towards an ecology of media ecology', in x.med.a, p5

35] <http://www.cycling74.com/products/maxmsp>

projects. Another aspect involved hacking devices to make them into something else, or reverse engineering, or re- and trans-appropriation of technology. 'You don't own it until you open it', Michel Waisvisz's lema, became the leitmotiv for Steim, one of the main research and development centers for new media [36]; in part with Nicolas Collins, currently 'hardware hacking' at harvestworks. The Vasulkas (Steina and Woody), helped develop 'software instruments', namely LiSa and Image/ine, and created devices for image manipulation, that altered the perception of viewing video and environments.

[installations > environments]

Installations as controlled environments, even if open in their outcome, to the extent that the artists 'who are intensely conscious of their work as extensions of the self, the physical presentation and surroundings of their art have become part of the art itself. Context, for these artists is paramount; and they wish to exercise control over the context by explicitly creating an environment which, in its totality, constitutes the art' [37].

Installations may include audio-visual installations, interactive environments [38], 'environmental installation' [39], immersive environments, holograms [40], networked installations or streaming events [41]. But it can also be conceived conceptually as 'Artscape Nordland' in Northern Norway by artist Anne Katrine Dolven, a sky-roofed gallery of 40.000 sq miles.

More and more part of the art scene, interactive or responsive environments re-act to the user in varied ways. A mix of art and technology, most are being programmed, and use an array of capturing devices and/or sensors, that interface between the actual space and whoever is inside following the more or less open parameters that have been programmed. Rafael Lozano-Hemmer , for example, 'uses interactive systems to enhance public space through participation' [42] by developing large-scale interactive installations that combine architecture with performance art. His work uses technologies such as robotics, surveillance and telematic networks to create platforms for audience participation, creating 'anti-monuments for alien agency' [43]. In 2007, at the 25th anniversary of the V2, Edwin van der Heide's 'Laser Sound Performance' used smoke and different-coloured lasers; he created a space just above the audience, its reflection projected bidimensionally on the walls. The same night, Sensor_Sonic_Sights used ultrasound sensors, the biomuse and theremins to create a dynamic audio-visual work, the image here being modified by the sensors. The works of Jan-Peter E.R. Sonntag or Aernoudt Jacobs' 'Phantom Melodies', even though quite different, use technological principles in custom-build environments, as

'In the closed circuit of Catherine Richards' Curiosity Cabinet, the participant/ visitor is supposedly shielded from magnetic interference, and becomes 'unplugged' from the 'plugged-in' state of our contemporary surroundings. The visitor climbs inside the cabinet. By closing the doors a closed circuit is created. The cabinet becomes a secure space, an impervious skin from electronic and magnetic currents. Radio signals, microwave and TV frequencies prefer to travel through the metal of the box rather than our bodies inside. The current seeks to return to its source; thus a thick copper wire providing a pathway for the energy to the earth grounds the box.' [44]

[towards electromagnetic art]

Electromagnetism, etymological, derives from the late 18th Century, to describe a radical new understanding of life and reality: energy penetrating everything, body and universe. It brought about the 'relative' or 'intrinsic' observer dilemma, meaning that there can never be an objective observer as he partakes in the observation, therefore influencing it [45]. Linearity and even the perception of light were challenged and multiple viewpoints introduced. Faraday proved that electromagnetism was the universal principle of life: electromagnetic interactions, seen as the closest to life, consist of two particles, matter and energy.

Used mainly for commercial development in the West (even though Tesla had other visions), the

36] There are other centers, that worked in this way, such as Metronome in Barcelona (now closed), Banff in Canada, the Fraunhofer in Germany, or the art school KHM in Cologne. It is out of this scope to name the many places/approaches, I refer to some of the experimental artistic-scientific collaborative labs here.

37] Michael Rush 'New Media in Art', 2nd ed, Thames & Hudson, London, 2005, p. 124

38] See, f. ex. Alexandra Dementieva

39] Hans Op de Beeck

40] Dieter Jung's interplay of visible light, build environment and space around

41] Baku 2022 Foundation

42] Scott Page and Brian Phillips 'Urban Interfaces: Designing In Between', p.70

43] x.med-a. - experimental media arts publication, by fo.am, nadine, okno, iMAL, p.9

44] Nina Czegledy, abstract for 'Bioelectromagnetism: discrete interpretations', p.138

45] After 1968, when the first picture of earth was taken from space, mankind 'stepped out' of its celestial body or spaceship and perceived it from above. I argue that it was not the step on the moon but the glimpse from outside of the planet that made us a global society, allowing for a possible objective observational perspective.

Russian artists and scientists took its research component more serious. Leon Theremin, then invented the first electromagnetic instrument, the theremin [46] (which later became the base for the synthesizer). In the visual arts, the invention of video art can be attributed to Nam June Paik's Magnet TV (1965), who placed magnets on the television screen, thereby distorting the image.

[The heart is our own electromagnetic field generator.]

[research = cultural activity]

Stephen Wilson [47], looking 'at research as cultural activity', names the following areas for emerging research of media arts: biology and physical sciences, mathematics and algorithms, kinetics, telecommunications and digital systems. In the first pair he includes experiments on electromagnetic relationships, which leads artistically, to experiments with external impulses that stimulate and modify the body, like Stelarc,

Developments related to high-power electronically controlled systems are leading to the creation of sensor interfaces that re-lay the body's electromagnetic vibrations to external electronic systems. Other artistic research focuses on electromagnetic rays to create a spirit to interact with, such as Eve Andree Laramee's 'Apparatus for the Distillation of Vague Intuitions' [48], spirits that where tried to capture in the photography of ectoplasm fashionable around the turn of last century [49].

Quantum mechanisms and metaphysics will lead the way to the edges of known reality. Henri Bergson believed intuition to be the way by which we best perceive reality.. just before intuition got numbed by the continuing atrocities affecting millions worldwide/everyday.

Skin conducts electricity, measurable in biofeedback. Didier Combatalade sees a future in which human biomagnetic activity is used to regulate the movement of urban masses. Growing public awareness can be seen around the electromagnetic effect radiating from transmitters, most publicly cell phone towers. Tests have shown that living close by such an antenna generate cell change, possibly leading to cancer. Radioactivity and its weapons are substituted by electromagnetic weapons that target living organisms and electronic systems.

For the first time ever, more then half the world population habits in urban areas, having abandoned the rural landscape, and therefore nature, that is left to 'complete' exploration, thereby jeopardizing our 'biological' existence. In former times, we had space around and for us, we now stand shoulder by shoulder at traffic lights, clustered in trains, and apartments. The fields our bodies generate overlap, we retreat within our ever diminishing spaces, which will be cut in half by 2050, should the current predictions for population growth remain unaltered. A population control through 'psychotropic weaponry' a close possible, as bureau d'etude show in their diagram, nominally the 'Electro-magnetic propaganda' [50].

With the 'continuing degrading of the earth's magnetic field' (Kyochi Nakagawa) and a wide range of electronic tools surrounding and pervading the body, diseases yet unknown are on the rise, the latest maybe the mysterious disappearance of the bees [51].

[The body vibrates to the heart's rhythm, the body's voice expresses the heart.
The voice, articulated breath, is a resonating sound from within.]

By entering in the realm of the invisible, more and more of reality is being discovered, the interrelation between life and beyond unveiled. Art can bridge between science, technology and nature. Many fields, lost for answers, have turned to art and artists for creative solutions to understand the world, or at least, make sense of something: since it is them who invent worlds.

Take the 'Resonance the Electromagnetic Bodies Project' [that] explored the nature of invisible yet discernible material forces and the impact of these vibrating energies on our environment and the human body. In response to Nikola Tesla's pioneering concepts, based on the principles of vibration and resonance in the fields of electricity and electromagnetism. Echoing Tesla's concepts the primary aim of this interdisciplinary collaboration is to consider the human body (as well as other living organisms) simultaneously as a source, a transmitter and as a point of resistance to electromagnetic waves'.

46] Which creates a field between the antennas, the performer, by moving his hands, controls parameters: pitch and volume. A limitation is the proximity needed between the artist and the instrument.

47] Stephen Wilson 'Information Arts', MIT Press, 2002

48] She is interested how 'cultures use science and art as devices or maps to construct belief systems' from: <http://home.earthlink.net/~wander/>

49] Leading to kirlian photography of the aura, whereas the aura is a subtle field of luminous multicolored radiation surrounding a person or object as a cocoon or halo, and may reflect the moods or thoughts of the person it surrounds.

50] This diagram (from 2006) is excellent in many regards concerning this field, excerpt

51] Even though organically maintained bees seem unaffected.

[the] xxxxx [reader][the] xxxxx [reader]. (2006).
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