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Twin-Touch-Test-Redux:
Media Archaeological Approach to Art, Interactivity and Tactility

The idea of interactive art is intimately linked with the act of touching. As it is usually understood, an interactive artwork is something that needs to be actuated by a 'user'.[1] If the user 'does nothing', it remains just unrealized *potential* – rules, structures, codes, themes and assumed behavioral models designed by the artist and embedded in a software-hardware configuration. An interactive work challenges one to undergo a transformation from an onlooker into an 'interactor', an active agent. A peculiar kind of dialogue develops. In addition to mental interaction that is a precondition to the reception of all art, physical bodily action – one the involves more than just the movements of the eyes - takes place. One touches the work, often repeatedly – either physically, by stepping on a pressure-pad, fingering a 'touch-screen', clicking on a mouse or pressing a custom-made interface, or remotely, via the mediation of a videocamera, sound, light, or heat sensors, etc.. As innocuous as these acts may seem, they have potentially far-reaching consequences for the notion of art as we have known it. Not only does the emphasis on touch run counter to the customary idea of the "untouchability" of the art object; it challenges us to compare art with a whole range of other human activities - from work to play - where physical contact is expected.

It is not just the 'proxemic' relationship between humans and human-made contraptions – a power loom, a mechanical toy, a videogame console - that matters. If the traditional proxemics, as developed by Edward T. Hall and others in the 1950s and 60s, focused on relatively short range relationships within physical spaces, it is increasingly clear that we have entered the era of 'teleproxemics'.[2] Technological systems connect humans with other humans across great distances, redefining the idea of place in the process. As Marshall McLuhan already stated in the early 1960s, the formative development of the

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[1] The juries for the "Interactive Art" category at the prestigious Prix Ars Electronica competition have in recent year made efforts to annihilate this definition – they have given awards to many works that recuire no active output from the spectator at all. For a closer analysis, see my essay "Trouble at the Interface, or the Identity Crisis of Interactive Art", available online at http://www.mediaarthistory.org/ (section "programmatic key texts").

[2] This concept was used by the experimental designers Anthony Dunne and Fiona Raby in their presentation "Fields and Thresholds" at the Doors of Perception 2 conference in Amsterdam, 1995. See www.mediamatic.nl/Doors/Doors2/DunRab/DunRab-Doors2-E.html (last checked Dec.4, 2005).

'global village' (whether it has happened as McLuhan predicted or not) emphasized the role of tactility as part of a more general reconfiguration of the senses. Artists and 'meta-designers' from Kit Galloway & Sherrie Rabinowitz, Roy Ascott and Paul Sermon to Hiroshi Ishii, Anthony Dunne & Fiona Raby and Rafael Lozano-Hemmer have explored the ramifications of what it means to 'tele-touch' at a distance. Although the models they have created have rarely been implemented on a wider and more permanent scale, the transmission, simulation or substitution of the sense of touch have become vital concerns on many fields from personal telecommunications (including 'cyber-sex') to networked multiperson training simulators, tele-medicine and remote-controlled warfare. That such developments run parallel with artists' and designers' explorations of similar issues is enough to warrant an inquiry into such phenomena.

This article develops a media archaeological approach to "touching art" as part of a wider project of a cultural 'mapping' of interactive media.[3] The emphasis here is on technologically mediated situations, where the interaction happens via an interface, a hardware-software complex designed for this purpose. The issue of physical social interactions between human participants, as those in Happenings, body art and experimental dance pieces, all major elements of the 'dematerialized' art scene of the 1960s, is of secondary importance here.[4] The psycho-physical constitution of the human-machine interaction is not a major concern in this essay either. Social psychologists like Sherry Turkle have already done a substantial amount of work to uncover its complex 'mechanisms'.[5] Here the emphasis is more cultural, dealing with questions such as the following, without pretending to provide conclusive answers to all of them: What are the cultural, ideological and historical ramifications of touching an artwork - whether labeled as 'touchable' or not? What are the discursive formations informing such practices? How has the touching of art been related with the acts of touching taking place in other

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[3] For earlier stages of this project, see my articles "'It is interactive, but is it *art*?'", *Computer Graphics Visual Proceedings: Annual Conference Series, 1993,* edited by Thomas E. Linehan, New York: ACM SIGGRAPH 1993, 133-135; "Seeking Deeper Contact. Interactive Art as Metacommentary", *Convergence*, Vol.1, N:o 2 (Autumn 1995), 81-104 (University of Luton & John Libbey, U.K.); "Time Machines in the Gallery. An Archeological Approach in Media Art", in *Immersed in Technology. Art and Virtual Environments* , edited by Mary Anne Moser with Douglas McLeod, Cambridge, Mass.: The MIT Press, 1996, 232-268; "From Cybernation to Interaction: A Contribution to an Archaeology of Interactivity", *The Digital Dialectic. New Essays on New Media*, edited by Peter Lunenfeld, Cambridge, Mass.: The MIT Press, 1999, pp. 96-110, 250-256; "Slots of Fun, Slots of Trouble. Toward an Archaeology of Electronic Gaming", in *Handbook of Computer Games Studies*, edited by Joost Raessens & Jeffrey Goldstein, Cambridge, Mass.: The MIT Press, 2005.

[4] For overviews of these developments, see Udo Kultermann: *Art and Life*, translated by John William Gabriel. New York & Washington: Praeger, 1971; *Out of Actions: between performance and the object, 1949-1979*, edited by Russell Ferguson. New York: Thames and Hudson, 1998.

[5] See Sherry Turkle: *Second Self. Computers and the Human Spirit, 20ᵗʰ Anniversary Edition*. Cambridge, Mass: The MIT Press, 2005 [1984].

contexts – at work, leisure and ritual? How do Western practices differ from non-Western ones? Finally, why does asking questions like these matter at all?

Haptic visuality and the (physical) touch

Before beginning to tackle such complicated issues, certain premises must be stated. First of all, this essay will focus on cases that involve corporeal engagement with an artwork – the use of one's hands, arms, feet, or even the entire body. So far most discussions of tactility in art have concentrated on what Laura U. Marks has characterized as "tactile, or haptic visuality".[6] This refers to a peculiar visual relationship between an observer and an image, whether static or in motion. As Marks explains, the issue concerns both the modes of visual perception and the 'haptic' qualities assigned to the images themselves. The discussion about haptic vision (also known as "visual touch") originated around 1900 in the works by art historians like Adolf Hildebrand and Alois Riegl. As Jacques Aumont has pointed out, Hildebrand identified two tendencies in figurative art, "the optical pole of distant vision" and "the haptic (tactile) pole of close vision".[7] The first tendency emphasized representation, often situating characters and events 'deep' within perspective spaces, while the latter emphasized the 'near' presence of the objects themselves, highlighting their textures and surfaces, in other words, the 'skin' of things.

For Hildebrand, these tendencies were linked with two ways of seeing: 'the nearby image' (Nahbild), which corresponded to the everyday vision of a form in lived space, and 'the distant image' (Fernbild) that corresponded 'to the vision of this form in terms of the specific rules of art'. The former could be interpreted as more informal and intimate, while the latter was more formal and distant, bound by the conventions of representation. However, as it has been pointed out, in actual practices of looking the 'optical' and the 'haptic' can never be absolutely separated. The observer negociates between these modes. These ideas have been developed further by Deleuze and Guattari, and others, elaborating on the ideological implications of this division.[8] The idea of "haptic visuality" implies the transposition of qualities of touch to the realm of vision and visuality. It confronts the issue of the physicality of touch indirectly, through a corporeal operation involving the eyes and the brain. The hands are not part of it, except as an imaginary 'projection'. Although useful, the notion of "haptic visuality" cannot be applied as such to the analysis of phenomena like interactive art, where the body – sometimes coupled with the 'body-image', as in the case of the 'levitating' virtual hands in VR applications – is directly involved. The haptic gaze is supported – and perhaps contradicted? – by other corporeal operations. Quite clearly, any segragation of the senses from each other is out of question. As McLuhan stated, "tactility is the interplay of the senses, rather than the

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[6] Laura U. Marks: *Touch. Sensuous Theory and Multisensory Media*. Minneapolis and London: University of Minnesota Press, 2002.

[7] Jacques Aumont: *The Image*, translated by Claire Pajackowska, London: BFI Publishing, 1997 [1990], 77-78.

[8] Deleuze and Guattari: *A Thousand Plateaus. Capitalism and Schizophrenia*, translated by Brian Massumi. Minneapolis: University of Minnesota Press, 1987.

isolated contact of skin and object".[9] This applies well to interactive art that often engages not only sight and touch, but sound as well.

Like David Howes, I emphasize the cultural nature of sensory perception. "The cultural meaning of the senses [...] is not simply derived from any presumed inherent psychophysical characteristics, but elaborated through their use," Howes writes.[10] In short, it is culturally coded. Codes are not learned and used in mechanical ways, though. In sensory activities a process of negotiation takes place, where internalized 'schemas' are tried out and activated in various ways in response to sensory 'input', sometimes subverting the most obvious meanings.[11] Anthropologists and cultural scholars like Constance Classen and Howes have provided ample evidence about variations in the sensory expressions and responses within different cultures. The most obvious example is salutation; there is a great variety of salutations by touching, but also by non-touching. Far from being haphazard or anarchic, these conventions correspond with social sanctions and divisions, and deeply felt needs within the society. Touching is never just an improptu act, a personal expression of "universal" feelings and intuitions. The meanings of touch depend on the cultural context, within which they are activated and negotiated. In a technological culture, forms of touch have been instrumentalized into coded relationships between humans and machines. Arguably they have been genderized as well, which is reflected in strategies of interface design.

Artists have designed ingenious ways of mediating between humans and machines, and between humans and humans by the *mediation* of machines. But are their solutions always 'original', without precedents? Or could artists rather be seen as transmitters and transformers of sensory traditions rooted in preceding cultural forms? As art historians have shown, artists are not always fully aware about their influences and the implications of their choices. An artist can be an interpreter of one's own creations much like any museum goer. In some cases, however, artists are highly aware of their goals, drawing on cultural models and modifying them to suit their needs. Both alternatives are encountered in the artists' involvement with touch. From the media archaeological perspective artists can be considered cultural agents working within cultural traditions (even when claiming to break with them) and re-enacting existing forms and schemes in their works, either consciously or unconsciously. An artwork can give us clues about the ways how cultural traditions work and recycle their elements in an effort to constantly renew themselves. Of particular interest here are the cultural elements and clichés that appear, disappear and reappear in cultural traditions and provide 'molds' for cultural expressions and experiences. Inspired by the work of Aby Warburg and Ernst Robert Curtius, I have called such elements 'topoi' (topos in the singular).[12] What kind of topoi, if any, can be

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[9] Marshall McLuhan: *Understanding Media. The Extensions of Man*. London: Sphere Books, 1967 [1964], 335.

[10] David Howes: *Sensual Relations. Engaging the Senses in Culture & Social Theory*. Ann Arbor: The University of Michigan Press, 2003, p. xx.

[11] About the use of 'schema', see E.H. Gombrich: *Art and Illusion*. London: Phaidon Press, 1977 [1960] .

[12] For topoi in media culture, see my "From Kaleidoscomaniac to Cybernerd. Towards an Archeology of the Media", in *Electronic Culture*, edited by Timothy Druckrey, New York:

discovered from interactive artworks? How have artists used them? What purposes do they serve?

Art and the (Anti-) Tactile Tradition

How convenient it would be to state that tactile art began with interactive media art. However, this is not the case. Although it has usually be seen as a phenomenon of secondary importance, the idea of "touchable art" was evoked in the context of the historical avantgardes of the early 20th century, and the discourses on touching artworks go much further back in time. To understand the role of tactility in contemporary media arts, one must trace these earlier manifestations. One also has to explore their reverse: the absent touch, and what could be called "tactiloclasms" – cases where physical touching not only has been absent, but expressly prohibited and suppressed. Instead of being a minor issue involving one of the "lower" senses at the fringe of dominant cultural practices, the question "to touch or not to touch" turns out to have wide implications. Far from being marginal, it is linked with important cultural issues - contestations and tensions, rules and transgressions - happening in social spaces. These issues are still – and perhaps more than ever - felt in today's museums and galleries due to the on-going 'crisis' of the traditional art object, the emphasis on interactivity and tactility and the emergence of what Nicolas Bourriaud has called "Relational Aesthetics".[13] Many exhibitions now present side by side works that encourage touching and others that strictly prohibit "fingering".[14] Exhibition visitors often find this situation confusing, yet it is not totally unique or unprecedented.

Aperture 1996, 296-303, 425-427. For an interesting collection of essays on Warburg's contribution to cultural history, see *Art History as Cultural History. Warburg's Projects*, edited by Richard Woodfield. Amsterdam: G+B Arts International, 2001.

[13] Nicolas Bourriaud: *Relational Aesthetics*. France: Les presses du réel, 2002 [1998].

[14] I experienced this on a recent visit to the exhibition Ecstasy: In and About Altered States (MOCA, Los Angeles, 2005). To give just one example, here is a story of my encounter with Olafur Eliasson's Your Strange Certainty Still Kept (1996). The following note had been posted at the entrance to the installation: "Viewers with light sensitivities please be adviced: the artwork uses strobe lights". Entering the darkened space, one noticed a transparent 'curtain' created by water dripping from the ceiling. It was illuminated by strobe lights, which made the waterdrops 'dance' in different formations.[14] The installation was placed close to the entrance, and there was no barrier that would have prevented the visitors from standing right next to it; it was even possible walk around the water curtain to the other side. Because of this it felt natural to stretch out one's hand and feel the running water. In fact, this caused interesting changes to the patterns of light as well as to the surface of the water as it fell to the pool below, and may well have been intended by the artist (at least, there was no notice forbidding it at the entrance). However, when I started playing with the dripping water, a guard immediately intervened and told me that it was forbidden to touch the water. To my question, why it was so he explained that he had 'received instructions'.[14] Exiting from the other side, I began to suspect that the unannounced tactiloclasm had nothing to do with Eliasson and

The emergence of the discourse on haptic visuality in the end of the 19th century echoed both the dominant aesthetics and the academic practices of displaying artworks. "Touching with one's eyes only" was a manifestation of an ideological 'mechanism', where the formation of the aesthetic experience was associated with "stepping back" - maintaining physical distance from the artwork. Touching a sculpture or a painting was not only deemed vulgar, but forbidden. Behind this situation there were multiple determinants that did not always merge seamlessly with each other. The Romantic cult of the genius had emphasized the 'otherworldly' quality of the artwork; as a product of 'divine' inspiration, it had a special 'aura' that made it almost sacrilegious – and therefore also tempting, at least for those longing for a 'touch of genius' - to touch it with one's hands. Art museums and galleries were conceived as 'temples of beauty and the sublime'. Religious connotations associated with behavioral modes were thinly veiled (but not fully suppressed) by secular ones – indeed, touching a statue of a saint to gain power or 'communication' has been part of many religious traditions involving images. However, alongside the 'veneration' of their 'otherworldly' qualities, artworks were also admired for their superior craftmanship, which emphasized their material quality. They were increasingly seen as commercial products – collectables, investments and status objects for the bourgeoisie. Thus the prohibition of touch was linked with the 'untouchability' of private property, as the 'cult value' was gradually replaced by exchange value.

Another development was the democratization of the museum, spurred by the ideology of visual education for the masses.[15] While access to museums had earlier been retricted to privileged visitors assumed to know the proper codes of behaviour, the situation changed in the "age of the masses". Artworks were increasing enclosed in transparent display cases or behind protective sheets of glass and kept under the inspecting eyes of museum guards. Even the *potential* for touch, now seen as a threat of transgression, was eliminated. As Classen has shown, the 19th century museum, where non-tactility reigned supreme, was not a given, but a cultural and ideological construct.[16] In the early museums, stemming from private collections and cabinets of curiosities, touching the artefacts was often not only allowed, but encouraged. Many visitors took it as self-evident and were offended if the right to touch the objects was denied. Not just objects, but even paintings were touched as a complement to the act of looking. The tactiloclasm that came to dominate the museum institution, and in many cases is still valid today, was a combination of factors – ideas about public domain and private property, notions of access and education, social hierarchies translated into relationships to objects, surveillance and protection (the museum could be seen as an ideological machinery to ease mounting social tensions).

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everything to do with the fact that the museum administration was concerned about the floor getting wet from sprinkles. Indeed, I noticed the usual yellow "Cuidado piso mojado / Caution wet floor" signboards, familiar from the entrances to public restrooms being cleaned, at both entrances to the installation (although one of them was folded and leaning against the wall).

[15] See Tony Bennett: *The Birth of the Museum. History, Theory, Politics*. London and New York: Routledge, 1995.

[16] Constance Classen: "Touch in the Museum", in *The Book of Touch*, edited by Constance Classen. Oxford & New York: Berg, 2005, 275-286.

It is not totally inappropriate to compare the museum to another great 19th century institution, the department store. While the museum did its best to eliminate all forms of tactile access to the artefacts on display, the department store looked for a working relationship between tempting haptic visuality (represented above all by the window display) and tactile access to the goods for sale. In the 19th century most merchandise was still kept safely behind counters, only accessed with the help of shop assistants. The right to touch the merchandise had to be carefully controlled, because the department store could inadvertedly encourage kleptomania, 'dangerous' mixing of social classes and sexes, as well as chaotic and even manic behavior during sales events. This did not prevent Emile Zola from characterizing the department store as "a cathedral of modern commerce", while the architect and polytechnician Julien Guadet called it a "museum of merchandise".[17] All three institutions strictly regulated behaviour, although the forms the suppression of the 'tactile dimension' took were by no means uniform. The existence of such more or less strictly enforced institutional "tactiloclasms" provides the backdrop against which the emergence of the "society of interactivity" should be assessed. Popular culture, as well as the works of avant-garde artists, provided early hints of a sprouting phenomenon that only burst into the cultural mainstream during the second half of the 20th century.

The Futurist Art of Tactilism

Although F.T. Marinetti's Manifesto of Tactilism (1921) has been considered one of the minor manifestos of Futurism, it is the most programmatic and explicit early plea for an Art of Touch.[18] It emerged logically from the Futurists' attack on academic institutions and bourgeois culture. The art museum with its static displays of old masters was the embodiment of "passéism" and an obvious targed for the futurist veneration of speed, machines, masses and art turned into a force in society. While proclaiming the destruction of decadent and obsolete cultural forms, the Futurists wanted to renew the totality of contemporary culture by resorting to multisensory and synesthetic strategies. In the manifesto Marinetti outlines the principles of Tactilism as a new art form, including the education of the tactile sensibility, "scales" of different tactile values and models for tactile artforms. Marinetti's list includes various types of "tactile tables", consisting of different materials to be touched, as well as tactile divans, beds, clothes, rooms, roads and even theatres! It is a pity that Marinetti does not explain of all of his ideas in detail. The rooms, however, resemble kind of installations with the walls covered by large tactile boards made of different materials, and the floor providing tactile values by means of running water, stones, brushes, velvet, weak electricity, etc.. All this will provide "maximum

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[17] Stephen Bailey: *Commerce and Culture: From Pre-Industrial Art to Post-Industrial Value*. Tunbridge Wells: Penshurst Press, [1989], 46. For a history of the early department store, see Michael B. Miller: *The Bon Marché. Bourgeois Culture and the Department Store, 1869-1920*. Princeton: Princeton University Press, 1981.
[18] F.T. Marinetti: "Tactilism", in Marinetti: *Selected Writings*, New York: Farrar, Straus and Giroux, 1972, 109-112.

spiritual and sensual pleasure to the naked feet of male and female dancers". In the tactile theatres the audience members will place their hands on long tactile 'belts' that will move at variable rhythms. The belts can also be applied to small rotating wheels, accompanied by music and light effects.

For Marinetti his "still embyonic tactile art" must be kept clearly distinct from painting and sculpture, but also from "morbid erotomania". Its purpose is to achieve tactile harmonies and to contribute to the "perfection of spiritual communication between human beings, through the epidermis". Marinetti does not consider his tactile art as separated from the other senses. Rather, the distinction between the senses is arbitrary; Tactilism can contribute to the discovery and cataloguing of "many other senses". Still, Marinetti remarks that "a variety of colors" should be avoided in the tactile tables lest they lent themselves to "plastic impressions". Because painters and sculptors tend to subordinate tactile values to visual ones, Marinetti suggests that Tactilism may be "especially reserved to young poets, pianists, stenographers...". This statement is interesting. It obviously prioritizes the writer's and the pianist's hand because these are means for evoking non-visual realms of imagination and suggestion beyond the visible. Their touch is both sensual and intrumental. If this interpretation is correct, it corresponds with Marcel Duchamp's famous critique of "retinal" art. For Duchamp, instead of clinging to the surface effects of light as the Impressionists did, art had to become "cerebral", penetrate beyond the retina, the purely visual. Marinetti's reasoning seems to embody an interesting paradox: Tactilism, the ultimate art of the surface, is really about what is beyond it, in the mind of the 'toucher'. It is not a coincidence that he later compares Tactilism with X-ray vision and points out its practical value for surgeons and the handicapped.[19] With Tactilism, "a visual sense is born in the fingertips", one that sees deeper than the skin.

Knowing the Futurists' affectionate relationship with technology, it is striking that the Manifesto for Tactilism says nothing about machines as a new touchable realm. One wishes Marinetti had mentioned at least the hands of the typist (captured in motion in the well known "photodynamism" by fellow Futurist A.G. Bragaglia in 1912) or those of the driver clutching a steering wheel, an image so dear to the Futurists. Such "interface awareness" obviously had not yet developed, although the works of some futurists, like Gino Severini, had indeed contained mechanical parts to be manipulated by the viewer.[20] It had also been implied in Giacomo Balla's and Fortunato Depero's manifesto "The Futurist Reconstruction of the Universe" (1914). This text described varieties of fantastic machines and "Futuristic toys". Depero's *Plastic Complex: Motorumorist Pianoforte* (1915), a mechanical noise-making machine, was supposed to be controlled by a human performer via a keyboard-like interface. Marinetti's reference to weak electric shocks given to the dancers in his tactile room is, however, a lead worth following. It refers to what was arguably the most popular technologically augmented pre-20th century tactile experience. Ever-present from touring popular-scientific lectures to fairground attractions, doctors'

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[19] See Marinetti's "Tactilism" (1924), a re-worked version of his 1921 text in *The Book of Touch*, 331.
[20] See Classen: *The Color of Angels. Cosmology, gender and the aesthetic imagination.* London and New York: Routledge, 1998, 128. Classen refers to Severini's "Dancer with Movable Parts".

offices and even homes, electric shocks were a fad that was considered both exciting and healing. "Electricity is Life" was a famous slogan. The quack machines meant for domestic electro-therapy had their counterpart in the coin-operated "strength testers" at penny arcades and midways; the trick was to hold onto two handles for as long as possible while a constantly increasing electric current flowed through the body.

Marinetti may well have had such experiences in mind. Already in their first Manifesto (1909) the Futurists had promised to "sing of great crowds excited by work, by pleasure, and by riot."[21] It was in the developing mass society that various technology-related tactile experiences emerged during the 19th century, ranging from the work in mechanized factories and offices to the new kinds of pleasures offered by coin-operated devices dotting the cityscape and the mechanical marvels at amusement parks and penny arcades. While the department store windows kept their desirable offerings behind a pane of glass, the strength testers, mutoscopes and other "automated entertainments" invited direct physical contact. Indeed, as one can still experience at places like the Musée Mecanique in San Francisco, the 'user interfaces' of many such devices were molded as hands or feet waiting for contact with the user's corresponding body parts. Some had surrogate metal arms, challenging the visitor to an arm-wrestling match with Uncle Sam or some other mythic figure from the popular cultural imaginary. Operating these devices often required more physical strength than dexterity, which seems to have directed their 'gender-designation' toward males, while a more passive on-looker's role was reserved for women. Other devices, including shooting games and even mutoscope-like peepshows, appealed to females as well; the gender divide was never as sharp as has been earlier assumed. These devices inspired lively discursive manifestations, often evoking tactile issues, a topic dealt with in the author's earlier writings.[22]

There is no lack of evidence about the influence of popular culture on the avantgarde movements of the early 20th century.[23] Sergei Eisenstein's radical intellectual montage, including the principle of "shock attraction" applied in his revolutionary film classic *Battleship Potemkin* (1925), was influenced by the experience of riding on a roller-coaster. This is a striking example, but by far not the only one.[24] It might be claimed that Picasso's and Braque's practice of using found material, including tram tickets, newspaper cuttings, cloth and other pieces of residue from the urban mass culture in their collages was *potentially* tactile, in line with Marinetti's tactile tables, even though they hardly encouraged actual touch. The tactile dimension was enhanced by the soirées, cabarets, city wanderings and other events organized by Dadaists, Surrealists and other radical groups, adamant to break down the barriers between art and life, as well as between artists and non-artists. The sensational boxing match between the Spanish Dadaist Arthur Cravan and the

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[21] "The Founding and Manifesto of Futurism" [Le Figaro, February 20, 1909], in Marinetti: *Selected Writings*, 42.

[22] See my "Slots of Fun, Slots of Trouble. Toward an Archaeology of Electronic Gaming".

[23] See Kirk Varnedoe and Adam Gopnik: *High & Low. Modern Art and Popular Culture*. New York: The Museum of Modern Art, 1990.

[24] See Tom Gunning: "The Cinema of Attractions. Early Film, Its Spectator and the Avant-Garde", in *Early Cinema. Space, Frame, Narrative*, edited by Thomas Elsaesser. London: BFI Publishing, 1990, 57.

reigning heavyweight world champion Jack Johnson (1916), which led to Cravan's predictable knockout defeat in the first round, shifted the focus from the art object to the corporeal tactility of spectator sports.[25] The audience's participation, of course, was limited to the haptic visual sensations from the other side of the ring. The infamous and deliberately provoked scuffles that took place between the performers and the spectators at Dadaist and Surrealist events demonstrated that cracks were beginning to appear to the invisible shield separating art from the audience.

Prière de toucher!

Marcel Duchamp's readymades also belong to this context. Duchamp chose 'indifferent' objects that were normally put to tactile uses without much thought – bicycle wheel and stool, bottle rack, snow showel, the protective cover of an Underwood typewriter. In their mass-produced ordinariness such objects easily turn 'invisible'. Duchamp's idea of displaying these in the gallery as legitimate "untouchable" art objects created a powerful irony. Far from nullifying the tactile nature of these objects, admiring them from a distance may have increased the temptation to touch them as a subversion of their newly acquired 'status'. It should be noted that Duchamp provided some of his readymades with enigmatic texts that may have urged the visitors to come closer to study them, thus further increasing the tension between "to touch or not to touch". Finally, there is evidence that Duchamp himself enjoyed putting the first ready-made, *Bicycle Wheel* (1913), in motion.[26] Whether this was ever done by exhibition visitors is uncertain, but the configuration of the work – the rack holding the wheel upwards from the stool serving as the pedestal - was an invitation to user interaction. This might warrant calling it – without belittling its other possible readings and identities – a "proto-interactive" work. Assessed from this perspective, it went further than Man Ray's *Objet à detruire* [Object to destroy], a modified metronome. Although Man Ray uses mechanical motion, the (destructive) interactive potential is largely limited to the ambiguous exhortation in the title. Meret Oppenheim's *Le Déjeuner en Fourrure* (Breakfast in Fur/Fur Teacup; 1936) is an example of a surrealist object with a strong, suggestive tactile quality, although it clearly is not meant to be touched; it exists more in the realm of haptic visuality, albeit on its tactile edge, almost 'within hand's reach'.

Traditional exhibition design had been an ideological 'mechanism' for maintaining the "untouchability" of art. Therefore it is logical that tactile ideas were probed on this field by avantgarde innovators like Duchamp, Man Ray and Frederick Kiesler. Duchamp's and Man Ray's play with lighting at the opening of the 1938 Exposition Internationale du Surréalisme is a *cause célèbre*. The main hall was nearly dark, and the visitors were distributed flashlights to see the works. Even the flashlights were quite dim, forcing the visitors to get very close to the artworks. This led to a kind of interaction with the

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[25] Roselee Goldberg: *Performance, Live Art 1909 to the present*. London: Thames & Hudson, 1979, 47.

[26] Jeanne Siegel: "Some Late Thoughts of Marcel Duchamp", *Arts Magazine*, 42 (December 1968 - January 1969), 21-22.

environment.[27] Kiesler incorporated touch on multiple levels into his famous design for Peggy Guggenheim's Art of This Century gallery in New York (1942).[28] He created swiveling "baseball bat" wall mounts that detached the artworks from the walls and made them as if rush toward the spectator, as well as "biomorphic displays", systems of strings stretched between the floor and ceiling that held little sculptures in-between, potentially giving the visitor an opportunity of elevating or lowering them. Perhaps Kiesler's most radical – and controversial – gesture was the construction of special peep boxes for viewing artworks in the Surrealist Gallery. André Breton's *Portrait of the Actor A.B.* could be seen by pulling a lever that opened a diaphragm, allowing the work to be peeped at inside the box. Reproductions of the contents of Duchamp's *Boite en Valise* could be inspected by peering into a hole and turning a large "ship's wheel" (obviously an hommage to Duchamp's *Rotoreliefs*). Critics immediately associated these designs with popular culture, calling them "a kind of artistic Coney Island," or "a penny-arcade show without the pennies". According to Lewis Kachur, they also recalled Julien Levy's original plan for a Surrealist nickelodeon arcade for the 1939 New York's World's Fair.[29] Although they hardly created a tradition, Kiesler's designs form an important link between popular "proto-interactive" devices and the interactive media of the future.

However, the most explicit experiment in tactility by Kiesler is the little known *Twin-Touch-Test*, a work created together with Duchamp for the Surrealist *VVV: Almanac* in 1943.[30] It is disguised as a prize competition, complete with a cut-out coupon to be returned with the entry. Returning cut-outs by mail was, of course, a common form of "programmed feedback" in the popular press. The reader is asked to join the palm of one's hands from both sides of a chicken wire fence, and caress it until one is ready to describe the experience "in no more than one hundred words." If there is no access to a wire screen, the back cover on the journal, containing a piece of actual chicken wire in a cut-out slot in the shape of the female torso, could be used. Detailed instructions for conducting the experiment both alone and together with another person are given. Although it has been described simply as an "autoerotic exercise", the fact that a two-person mode is also suggested reminds one of the training for sensual inter-personal communication that Marinetti mentioned as one of the goals behind his tactile experiments.[31] As can be expected, the work contains numerous connotations. As far as I know it has not been pointed out, for example, that the photograph on the Twin-Touch-Test page, showing a young female (Peggy Guggenheim's daughter Pegeen), engaged in the act of caressing the wire fence with her hands, eyes closed, undergoes a transformation when seen through the chicken wire slot of the back cover. Only a part of the photograph

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[27] Lewis Kachur: *Displaying the Marvellous. Marcel Duchamp, Salvador Dali, and Surrealist Exhibition Installations*. Cambridge, Mass.: The MIT Press, 2001, 73-74.
[28] See *Peggy Guggenheim and Frederick Kiesler: The Story of Art of This Century*, edited by Susan Davidson and Philip Rylands. New York: Guggenheim Museum Publications, 2004.
[29] Lewis Kachur: *Displaying the Marvellous*, 201.
[30] VVV, 2-3, 1943. In the journal the experiment is credited to Kiesler. See reproduction in *Frederick Kiesler, Artiste-architecte*, Paris: Centre Georges Pompidou, 1996, 137.
[31] Dieter Daniels sees it as an "autoerotic exercise" in his "Points d'interférence entre Frederick Kiesler et Marcel Duchamp", *Frederick Kiesler: Artiste-architecte*, 124.

is visible as if through a peephole.[32] The most prominent feature are the raised hands behind the wire fence, while the girl's shoulder may be mistaken for her head pushed way back (her real head is framed outside). The connotation may be religious exctasy, but sadomasochistic fantasies, reminiscent of those seen through the peep holes in Jean Cocteau's film *Le sang d'un pôete* (1930), could also be evoked. Ironically, the words "Five Prizes" have also been left visible, increasing the ambiguity of the view.

The gender of the implied user is deliberately ambiguous. Although the photograph shows a girl doing the exercise in the autoerotic mode, the cut-out female figure seems to suggest the male as the implied 'toucher' (as well as the 'peeper' when the back cover is closed). The profuse and fetishistic use of naked female bodies in Surrealist exhibitions and actions – from 'prepared' mannequins and artificial body parts to actual nude live models - would seem to reinforce this.[33] Duchamp himself used the female breast, made of soft foam rubber, in his famous cover design for the de-luxe version of the exhibition catalogue *Le Surréalisme en 1947*, accompanied with the exhortation: *Prière de toucher* [please touch]. The erotic tactile play was made even more explicit in the photograph of a nude model posing in the exhibition hall next to Kiesler's *Totem of the Religions*, wearing nothing but a bandage over her eyes and Duchamp's foam rubber breast covering her sex.[34] Although this action may be interpreted as a typical surrealist prank, it also engages the discourse on tactility by placing a living human body among the artworks and even providing her with a kind of eroticized 'push button'. The 'blinding' of the model further emphasizes the tactile. Enrico Donati, an American painter who helped Duchamp to produce the foam breasts, remarked that "I had never thought I would get tired of handling so many breasts", to which Duchamp is said to have replied: "Maybe that's the whole idea."[35]

It is tempting to link Duchamp's work with Valie Export's seminal *Tapp und Tastkino* (Touch and Taste Cinema, 1968), another work associating breasts with tactility, but in a radically different context. In her action, Valie Export appeared on a public square in Munich wearing a box with curtains covering her naked breasts.[36] Passers-by were invited to fondle them – for twelve seconds. In this "expanded (or rather 'reduced'?) cinema" piece the naked female bodies offered by (mostly male) film producers and exhibitors to the anonymous cinema audiences were replaced by a personalized and proxemic experience not involving representation, but 'the real thing'. Unlike the pornographic

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[32] Obviously this use of the peephole is another anticipation of Duchamp's last major work, Etant données, which was for two decades in the making. Another peephole work was Duchamp's Rayon vert, which Kiesler installed according to Duchamp's instructions in the Le Surrealisme en 1947 exhibition. It displays a photograph of sea bathed in green light (it was seen through a sheet of green gelatin sandwiched between two sheets of glass).
[33] See Kachur: *Displaying the Marvellous*, passim.
[34] Pictured in *Frederick Kiesler, Artiste-architecte*, 124.
[35] Francis M. Naumann: *Marcel Duchamp, The Art of Making Art in The Age of Mechanical Reproduction*, Ghent & Amsterdam: Ludion (distr. Abrams, New York), 1999, 165.
[36] Ironically, Valie Export was escorted with her partner, fellow artist Peter Weibel, who acted as her barker and 'pimp'.

images on a screen, the experience is controlled by the female subject herself. While fondling her breasts, the toucher is forced to directly encounter her gaze. This is the opposite of the voyeristic situation reigning in the cinema, where the characters never look back (although they may pretend to do so). Valie Export replaced the haptic visuality of pornographic cinema with the tactile bodily experience.[37] She made the link even more explicit in *Genital Panic* (1969), entering a cinema theatre showing pornographic films. She wore pants with the crotch cut away and a sub-machine gun on her sholder, offering herself to be sexually used by the audience. Marina Abramovic, another pioneer feminist artist, used a similar strategy in her action *Rhythm 0* (1974).[38] For the duration of six hours, she submitted herself passively to the physical manipulation by the (mostly male) audience, even providing an array of torture and pleasure instruments for the purpose.[39] Like Valie Export, she aimed to expose tabus, desires and inhibitions reigning in the "society of the spectacle", where the relationship to physical bodies has been alienated, virtualized and commodified.

Tactility and Interactive Art

A quick Internet search for "tactile art" produces mostly results that refer to a specific way of defining this concept: aesthetic experiences created for the physically impaired, particularly the blind. There are even museums of tactile art, usually offering replicas of well-known sculptures or three-dimensional renditions of famous paintings (including, among others, Duchamp's *The Nude Descending a Staircase*!). In these cases the sense of touch is meant as an *Ersatz* to the visual sensory values beyond the subject's reach. This sense of "tactile art" is valid and valuable, however, it can hardly be said to encompass all tactile phenomena on the field of contemporary culture and art. Interactive art in particular is tactile almost by definition. Of course, a claim like this forces us to scrutinize

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[37] Laura U Marks does not consider pornographic cinema really haptic. For Marks, pornography is hypervisual, while eroticism in haptic cinema "depends on limited visibility and the viewer's lack of mastery over the image". Marks: *Touch*, 15. In this sense Tapp und Tastkino could be not be haptically erotic, unless Valie Export would not shatter the eroticism by the presence of her direct stare.

[38] Both Valie Export's and Abramovic's actions were anticipated by Yoko Ono's *Cut Piece* (1965), where Ono sat passively on the stage invating the audience to cut pieces of her clothes with scissors. This link between Ono and Export has been made by Regina Cornwell: "Interactive Art: Touching the 'Body in the Mind'", *Discourse*, Vol.14, No 2 (Spring 1992), 206-207. Ono also evoked tactility and anticipated interactive art in her *Painting to Hammer a Nail*.The visitor was invited to pound in nails to a wooden board with a hammer. Different, earlier versions were described in Ono's book *Grapefruit*, New York: Simon & Schuster, 2000 [1964].

[39]   See *Out of Actions*, 100-101. In her work with Ulay also created situations that encouraged audience tactility: in Imponderabilia (1977) Ulay/Abramovic stood naked in the narrow entrance to the museum, facing each other. Visitors could only enter sideways, touching their bodies; they were also forced to decide whether to look at Abramovic or Ulay, thus making a gender-oriented choice (ibid., 101).

the concepts "touch" and "tactile", and re-examine the cultural field they cover. A detailed discussion of this topic must be postponed, in the interest of space, to another essay. It is important to decide, for example, how important the sense – experience, sensation – of touch is to the definition of tactility. There are numerous interactive works where the feeling of touching or being touched plays a central role. In Christa Sommerer's and Laurent Mignonneau's *Interactive Plant Growing* (1993) touching actual living plants initiates algorithmic processes of growth within the computer. Char Davies' *Osmose* used breathing as a way of controlling one's movements within a virtual world. Bernie Lubell's surprising wooden (!) interactive installations often contain pneumatic tubes and soft diaphragms that provide the interactor genuine tactile sensations. In *Cheek to Cheek* (1999) the interactor sits on a specially built wobbly stool; the gyrations of one's bottom part are transmitted through pneumatic tubes to one's cheeks, leading to a mischievous "autoerotic" experience.

Likewise, Kit Galloway's and Sherrie Rabinowitz's telematic art workshops (1980s), Paul Sermon's *Telematic Dreaming* (1992) and Stahl Stenslie's and Kirk Woolford's *CyberSM* (1993) were all in their own ways concerned with exploring the intimate touch between people separated by distance (a topic that has a long and varied history that cannot be discussed here).[40] The tele-touch could be achieved either by a mental transposition of visual impressions (two "body-images" touching each other) or by using a custom-made "tele-dildonic" interface, technologically transmitting the partner's body movements. Numerous art and design projects have explored the real-time transmission of the sense of touch to another location by means of force-feedback interfaces. A well-known example is *inTouch* (1997-98) , created at the Tangible Media group at MIT Media Lab.[41] It used synchronized wooden 'massage rollers' as its telematic interface. Particularly Japanese media laboratories, such as the one led by professor Hiroo Iwata at the Tsukuba University, have created many prototypes for new kind of force-feedback applications, often shown at Siggraph. Recently the possibilities of tele-tactility have also been explored by artists and designers interested in smart clothes and wearable media, which is logical path to follow, clothes being the most intimate and persistent 'interface' everyone uses.

However, there are other works where touching plays a more metaphoric or instrumental role. Marinetti's formulation of "a visual sense born in the fingertips" has been re-enacted in various forms from Nam June Paik's 1960s dreams of "doing television with one's fingers" (using a video synthesizer) to interactive installations like Agnes Hegedues' *Handsight* (1992), where "the hand that sees" was a polhemus sensor looking like an eyeball and held in hand by the user - a literal technological extension of her sensorium. It was used to explore 'manually' the virtual contents of a transparent glass jar. In Rafael Lozano-Hemmer's tele-tactile work *Displaced Emperors* (1997), the user's "hand-image" was projected on the facade of the Linz Castle, exploring layers of history. Catherine Richards's *The Virtual Body* (1992) was a peepbox, where the user could insert her hand. The intrusion of the physical body into the virtual realm affected and disturbed

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[40] Although as an artwork, CyberSM anticipated the explosive interest in "sex machines", high-tech masturbatory devices that have arguably become one of the most titillating forms of tactile cyber-culture. Examples can be easily found from the Internet.
[41] Credited to Scott Brave, Andrew Dahley and Hiroshi Ishii.

its 'immaterial' illusion. Ken Feingold's works, like *The Surprising Spiral* (1991), have not just explored tactility, but also its media-archaeological implications and discursive manifestations. The work has two interface objects, a simulated book (written by "Pierre de Toucher" !) with a transparent touchscreen cover and two plastic model hands inside, and a pile of books with a 3D model of a mouth on top (with a led sensor inside). The work builds a dense network of references around tactile media, from the reminiscences of fairground attractions (also present in Feingold's later works with speaking and animated puppet heads) to Surrealism, Duchamp and Alain Robbe-Grillet's *l'Immortelle* (1963) , a film where sensual touching plays a central thematic role.[42]

These examples by no means exhaust the range of uses and interpretations of tactility in contemporary media art. While exploring state-of-the-art technologies and new ways of linking humans and machines, many artists also draw from a rich pool of shared and stored sensory experiences, discourses and imaginaries. Sometimes this happens unknowingly, but often quite consciously, as Ken Feingold's example shows. The exploration of this pool, the collective and historical sensorium, has only recently began in earnest. The brand new book series Sensory Formations, published by Berg, is a supreme demonstration of this interest. As it happens, the volume about tactile culture, *The Book of Touch* (2005), edited by Constance Classen, has devoted very few of its 450 pages to the topic of interacting with machines and media.[43] The words "interactive" or "interactivity" don't even appear in the index. After hundreds and thousands of years, during which the "(in)human touch" was the most important form of tactility in its myriad manifestations, the practices of touching technological artefacts for self-expression, communication, entertainment or erotic sensation are still a recent phenomenon. Video games, purportedly one of the dominant forms of tactility in the near future, only have a history of some thirty-five years. How these developments will affect the realm of touch as we have known it remains to be seen. How will the 'New' merge or converge with the 'Old'? Interactive artworks can provide us some – strictly imaginary – sneak-previews.

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[42] For an analysis of The Surprising Spiral, see Cornwell: "Interactive Art: Touching the 'Body in the Mind'", 213-214.
[43] *The Book of Touch*, Part IX "Touch and Technology", 399-447. This section is very mixed, and only Susan Kozel's Essay "Spacemaking. Experiences of a Virtual Body" (439-446) analyzes new media art, the experience of using Paul Sermon's Telematic Dreaming.