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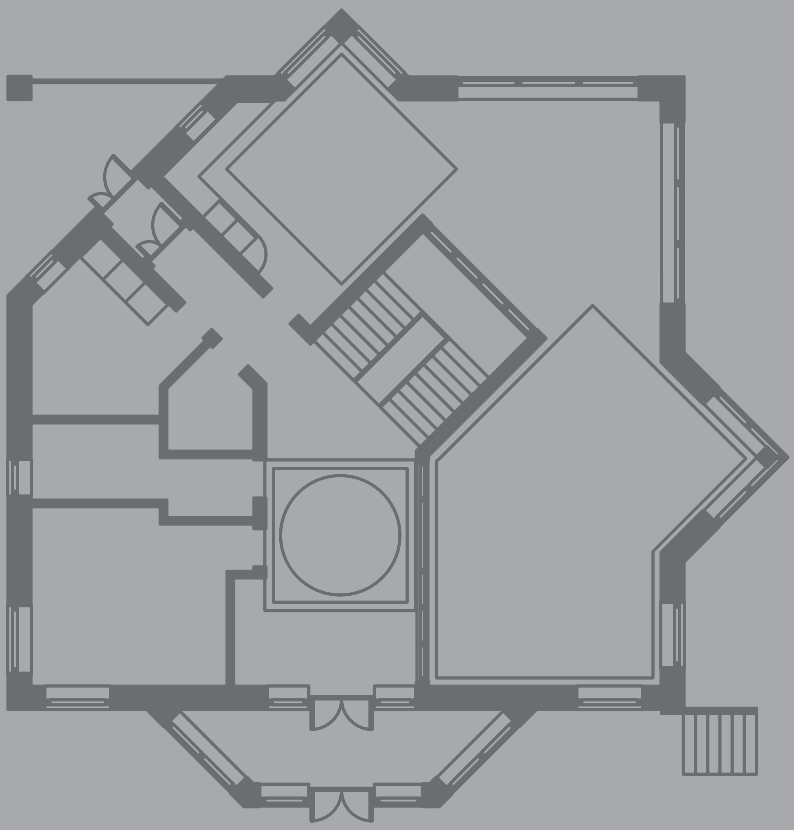
EDITORS **ÖZDEN ŞAHİN**, **JONATHAN MUNRO** AND **CATHERINE M. WEIR**

This LEA publication has a simple goal: surveying the current trends in augmented reality artistic interventions. There is no other substantive academic collection currently available, and it is with a certain pride that LEA presents this volume which provides a snapshot of current trends as well as a moment of reflection on the future of AR interventions.



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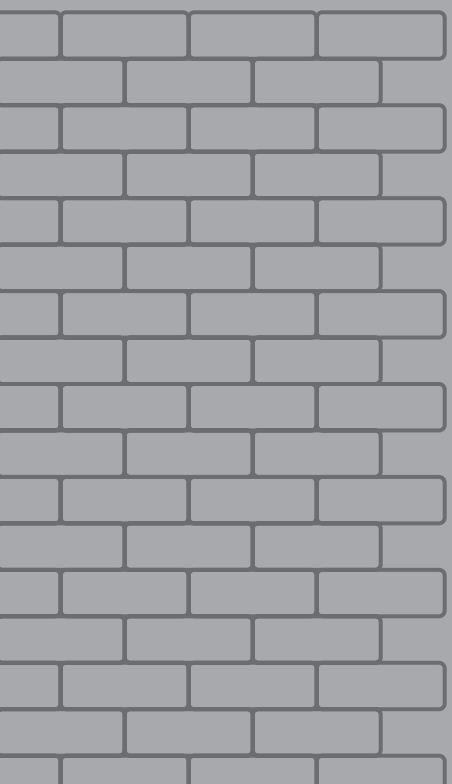

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Not Here Not There

VOLUME EDITORS
LANFRANCO ACETI AND RICHARD RINEHART

EDITORS
ÖZDEN ŞAHİN, JONATHAN MUNRO AND CATHERINE M. WEIR

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KASA GALERİ

Goldsmiths
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Operational & Curatorial Research in Contemporary Art, Design, Science & Technology

Not Here, Not There: An Analysis Of An International Collaboration To Survey Augmented Reality Art

Every published volume has a reason, a history, a conceptual underpinning as well as an aim that ultimately the editor or editors wish to achieve. There is also something else in the creation of a volume; that is the larger goal shared by the community of authors, artists and critics that take part in it.

This volume of LEA titled *Not Here, Not There* had a simple goal: surveying the current trends in augmented reality artistic interventions. There is no other substantive academic collection currently available, and it is with a certain pride that both, Richard Rinehart and myself, look at this endeavor. Collecting papers and images, answers to interviews as well as images and artists' statements and putting it all together is perhaps a small milestone; nevertheless I believe that this will be a seminal collection which will showcase the trends and dangers that augmented reality as an art form faces in the second decade of the XXIst century.

As editor, I did not want to shy away from more critical essays and opinion pieces, in order to create a documentation that reflects the status of the current thinking. That these different tendencies may or may not be proved right in the future is not the reason for the collection, instead what I believe is important and relevant is to create a historical snapshot by focusing on the artists and authors developing artistic practices and writing on augmented reality. For this reason, Richard and I posed to the contributors a series of questions that in the variegated responses of the artists and authors will evidence and stress similarities and differences, contradictions and behavioral approaches. The interviews add a further layer of documentation which, linked to the artists' statements, provides an overall understanding of the hopes for this new artistic playground or new media extension. What I personally wanted to give relevance to in this volume is the artistic creative process. I also wanted to evidence the challenges faced by the artists in creating artworks and attempting to develop new thinking and innovative aesthetic approaches.

The whole volume started from a conversation that I had with Tamiko Thiel – that was recorded in Istanbul at Kasa Gallery and that lead to a curatorial collaboration with Richard. The first exhibition *Not Here* at the Samek Art Gallery, curated by Richard Reinhart, was juxtaposed to a response from Kasa Gallery with the exhibition *Not There*, in Istanbul. The conversations between Richard and myself produced this final volume – *Not Here, Not There* – which we both envisaged as a collection of authored papers, artists' statements, artworks, documentation and answers to some of the questions that we had as curators. This is the reason why we kept the same questions for all of the interviews – in order to create the basis for a comparative analysis of different aesthetics, approaches and processes of the artists that work in augmented reality.

When creating the conceptual structures for this collection my main personal goal was to develop a link – or better to create the basis for a link – between ear-

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lier artistic interventions in the 1960s and the current artistic interventions of artists that use augmented reality.

My historical artist of reference was Yayoi Kusama and the piece that she realized for the Venice Biennial in 1966 titled *Narcissus Garden*. The artwork was a happening and intervention at the Venice Biennial; Kusama was obliged to stop selling her work by the biennial's organizers for 'selling art too cheaply.'

"In 1966 [...] she went uninvited to the Venice Biennale. There, dressed in a golden kimono, she filled the lawn outside the Italian pavilion with 1,500 mirrored balls, which she offered for sale for 1,200 lire apiece. The authorities ordered her to stop, deeming it unacceptable to 'sell art like hot dogs or ice cream cones.'" [1]

The conceptualization and interpretation of this gesture by critics and art historians is that of a guerrilla action that challenged the commercialization of the art system and that involved the audience in a process that revealed the complicit nature and behaviors of the viewers as well as use controversy and publicity as an integral part of the artistic practice.

Kusama's artistic legacy can perhaps be resumed in these four aspects: a) engagement with audience's behaviors, b) issues of art economy and commercialization, c) rogue interventions in public spaces and d) publicity and notoriety.

These are four elements that characterize the work practices and artistic approaches – in a variety of combinations and levels of importance – of contemporary artists that use augmented reality as a medium. Here, is not perhaps the place to focus on the role of 'publicity' in art history and artistic practices, but a few words have to be spent in order to explain that publicity for AR artworks is not solely a way for the artist to gain notoriety, but an integral part of the artwork, which in order to come into existence and generate interactions and engagements with the public has to be communicated to the largest possible audience.

"By then, Kusama was widely assumed to be a publicity hound, who used performance mainly as a way of gaining media exposure." [2] The publicity obsession, or the accusation of being a 'publicity hound' could be easily moved to the contemporary group of artists that use augmented reality. Their invasions of spaces, juxtapositions, infringements could be defined as nothing more than publicity stunts that have little to do with art. These accusations would not be just irrelevant but biased – since – as in the case of Sander Veenhof's analysis in this collection – the linkage between the existence of the artwork as an invisible presence and its physical manifestation and engagement with the audience can only happen through knowledge, through the audience's awareness of the existence of the art piece itself that in order to achieve its impact as an artwork necessitates to be publicized.

Even if, I do not necessarily agree with the idea of a 'necessary manifestation' and audience's knowledge of the artwork – I believe that an artistic practice that is unknown is equally valid – I can nevertheless understand the process, function and relations that have to be established in order to develop a form of engagement and interaction between the AR artwork and the audience. To condemn the artists who seek publicity in order to gather audiences to make the artworks come alive is perhaps a shortsighted approach that does not take into consideration the audience's necessity of knowing that interaction is possible in order for that interaction to take place.

What perhaps should be analyzed in different terms is the evolution of art in the second part of the XXth century, as an activity that is no longer and can no longer be rescinded from publicity, since audience engagement requires audience attendance and attendance can be obtained only through communication / publicity. The existence of the artwork – in particular of the successful AR artwork – is strictly measured in numbers: numbers of visitors, numbers of interviews, numbers of news items, numbers of talks, numbers of interactions, numbers of clicks, and, perhaps in a not too distant future, numbers of coins gained. The issue of being a 'publicity hound' is not a problem that applies to artists alone, from Andy Warhol to Damien Hirst from Banksy to Maurizio Cattelan, it is also a method of evaluation that affects art institutions and museums alike. The accusation moved to AR artists of being media whores – is perhaps contradictory when arriving from institutional art forms, as well as galleries and museums that have celebrated publicity as an element of the performative character of both artists and artworks and an essential element instrumental to the institutions' very survival.

The publicity stunts of the augmented reality interventions today are nothing more than an acquired methodology borrowed from the second part of the XXth century. This is a stable methodology that has already been widely implemented by public and private art institutions in order to promote themselves and their artists.

Publicity and community building have become an artistic methodology that AR artists are playing with by making use of their better knowledge of the AR media. Nevertheless, this is knowledge born out of necessity and scarcity of means, and at times appears to be more effective than the institutional messages arriving from well-established art organizations. I should also add that publicity is functional in AR interventions to the construction of a community – a community of aficionados, similar to the community of 'nudists' that follows Spencer Tunic for his art events / human installation.

I think what is important to remember in the analysis of the effectiveness both in aesthetic and participatory terms of augmented reality artworks – is not their publicity element, not even their sheer numbers (which, by the way, are what has made these artworks successful) but their quality of disruption.

The ability to use – in Marshall McLuhan's terms – the medium as a message in order to impose content bypassing institutional control is the most exciting element of these artworks. It is certainly a victory that a group of artists – by using alternative methodological approaches to what are the structures of the capitalistic system, is able to enter into that very capitalistic system in order to become institutionalized and perhaps – in the near future – be able to make money in order to make art.

Much could be said about the artist's need of fitting within a capitalist system or the artist's moral obligation to reject the basic necessities to ensure an operational professional existence within contemporary capitalistic structures. This becomes, in my opinion, a question of personal ethics, artistic choices and existential social dramas. Let's not forget that the vast majority of artists – and AR artists in particular – do not have large sums and do not impinge upon national budgets as much as banks, financial institutions, militaries and corrupt politicians. They work for years

1. David Pilling, "The World According to Yayoi Kusama," *The Financial Times*, January 20, 2012, http://www.ft.com/cms/s/2/52ab168a-4188-11e1-8c33-00144feab49a.html#axzz1kDck8rzm (accessed March 1, 2013).

2. Isabelle Loring Wallace and Jennie Hirsh, *Contemporary Art & Classical Myth* (Farnham; Burlington, VT: Ashgate, 2011), 94.

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with small salaries, holding multiple jobs and making personal sacrifices; and the vast majority of them does not end up with golden parachutes or golden handshakes upon retirement nor causes billions of damage to society.

The current success of augmented reality interventions is due in small part to the nature of the medium. Museums and galleries are always on the lookout for 'cheap' and efficient systems that deliver art engagement, numbers to satisfy the donors and the national institutions that support them, artworks that deliver visibility for the gallery and the museum, all of it without requiring large production budgets. Forgetting that art is also about business, that curating is also about managing money, it means to gloss over an important element – if not the major element – that an artist has to face in order to deliver a vision.

Augmented reality artworks bypass these financial challenges, like daguerreotypes did by delivering a cheaper form of portraiture than oil painting in the first part of the XIXth century, or like video did in the 1970s and like digital screens and projectors have done in the 1990s until now, offering cheaper systems to display moving as well as static images. AR in this sense has a further advantage from the point of view of the gallery – the gallery has no longer a need to purchase hardware because audiences bring their own hardware: their mobile phones.

The materiality of the medium, its technological revolutionary value, in the case of early augmented reality artworks plays a pivotal role in order to understand its success. It is ubiquitous, can be replicated everywhere in the world, can be installed with minimal hassle and can exist, independently from the audience, institutions and governmental permissions. Capital costs for AR installations are minimal, in the order of a few hundred dollars, and they lend themselves to collaborations based on global networks.

Problems though remain for the continued success of augmented reality interventions. Future challenges are in the materialization of the artworks for sale, to name an important one. Unfortunately, unless the relationship between collectors and the 'object' collected changes in favor of immaterial objects, the problem to overcome for artists that use augmented reality intervention is how and in what modalities to link the AR installations with the process of production of an object to be sold.

Personally I believe that there are enough precedents that AR artists could refer to, from Christo to Marina Abramovich, in order develop methods and frameworks to present AR artworks as collectable and sellable material objects. The artists' ability to do so, to move beyond the fractures and barriers of institutional vs. revolutionary, retaining the edge of their aesthetics and artworks, is what will determine their future success.

These are the reasons why I believe that this collection of essays will prove to be a piece, perhaps a small piece, of future art history, and why in the end it was worth the effort.

Lanfranco Aceti
Editor in Chief, Leonardo Electronic Almanac
Director, Kasa Gallery

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Site, Non-site, and Website

In the 1960's, artist Robert Smithson articulated the strategy of representation summarized by "site vs. non-site" whereby certain artworks were simultaneously abstract and representational and could be site-specific without being sited. A pile of rocks in a gallery is an "abstract" way to represent their site of origin. In the 1990's net.art re-de-materialized the art object and found new ways to suspend the artwork online between website and non-site. In the 21st century, new technologies suggest a reconsideration of the relationship between the virtual and the real. "Hardlinks" such as QR codes attempt to bind a virtual link to our physical environment.

Throughout the 1970's, institutional critique brought political awareness and social intervention to the site of the museum. In the 1980's and 90's, street artist such as Banksy went in the opposite direction, critiquing the museum by siting their art beyond its walls.

Sited art and intervention art meet in the art of the trespass. What is our current relationship to the sites we live in? What representational strategies are contemporary artists using to engage sites? How are sites politically activated? And how are new media framing our consideration of these questions? The contemporary art collective ManifestAR offers one answer,

> *"Whereas the public square was once the quintessential place to air grievances, display solidarity, express difference, celebrate similarity, remember, mourn, and reinforce shared values of right and wrong, it is no longer the only anchor for interactions in the public realm. That geography has been relocated to a novel terrain, one that encourages exploration of mobile location based monuments, and virtual memorials. Moreover, public space is now truly open, as artworks can be placed anywhere in the world, without prior permission from government or private authorities – with profound implications for art in the public sphere and the discourse that surrounds it."*

ManifestAR develops projects using Augmented Reality (AR), a new technology that – like photography before it – allows artists to consider questions like those above in new ways. Unlike Virtual Reality, Augmented Reality is the art of overlaying virtual content on top of physical reality. Using AR apps on smart phones, iPads, and other devices, viewers look at the real world around them through their phone's camera lens, while the app inserts additional images or 3D objects into the scene. For instance, in the work *Signs over Semiconductors* by Will Pappenheimer, a blue sky above a Silicon Valley company that is "in reality" empty contains messages from viewers in skywriting smoke when viewed through an AR-enabled Smartphone.

AR is being used to activate sites ranging from Occupy Wall Street to the art exhibition ManifestAR @ ZERO1 Biennial 2012 – presented by the Samek Art Gallery simultaneously at Bucknell University in Lewisburg, PA and at Silicon Valley in San Jose, CA. From these contemporary non-sites, and through the papers included in this special issue of LEA, artists ask you to reconsider the implications of the simple question *wayn* (where are you now?)

Richard Rinehart
Director, Samek Art Gallery, Bucknell University

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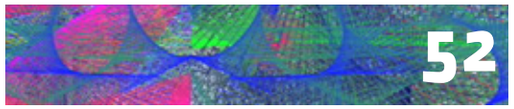
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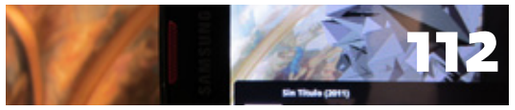
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Discovering the Non-self

The Construction of Language, Trance, and Space

A B S T R A C T

We might conceive of a Language Acquisition Device as a useful abstraction, whether taking it as fact or not. *It is understood for grammars such as those of languages, and can be applied easily to music theory and mythology. Less obvious is that our identification of space, as an active process, can be described syntactically. A constructivist approach offers a useful description of how and why we might make distinctions between self and environs. After all, the universe is a fairly homogenous collection of elements. To what end do we impulsively project conceptual boundaries like* here *and not* there*?*

by

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1. INTRODUCTION

'Space thus becomes something more than a void in which to roam about, dotted here and there with dangerous things and things that satisfy the appetite. It becomes a comprehensive and enclosed scene within which are ordered the multiplicity of doings and undergoings in which man engages.' [1]

To begin, the very concept of location/space is just that – a concept. As such, it is *inseparable* from contextualization. It is also *exclusively* a mental construction. If we feel that there must exist an objective universe, ultimately it is merely a matter of faith. [2] The only world that we can possibly know is the a posteriori world we construct, based on our unique and subjective experiences. Space certainly is part of that mental construction. Moreover, it is an organizing scheme for chaotic stimuli – to arrange them in their proper places, so to speak. The space we occupy, particularly the border between self and environment, is a by-product of associations, trial-and-error experimentation, and sensory stimuli, all within the rigid context of our prioritized needs. [3] This is not to say that the objects that constitute space do not exist, but that we cannot assume that these objects constitute space in similar ways outside of the human mind. More specifically, we tend to view experience as if "site-specific" art, as if the site (and its context) existed independently of the artist and audience. If one takes the constructivist view of modeling the environs, the theory further explains that construction, at least, *tends to* be socially motivated in social settings. The attitudes of a culture plays an important role in how we understand the things we perceive [4][5][6] "It cannot be safely assumed at the outset that judgement is an act of intelligence performed upon the matter of direct perception in the interest of a more adequate perception." [7] Therefore, participating meaningfully in the word as provided, requires that new members negotiate between their own personal interpretations and conceptualizations, and those of the older, established members. [8][9]

A note on constructivism, as it pertains to this paper, is in order. Often when constructivism is discussed (usually in educational theory and on the web) the focus is almost entirely on the social aspect of learning. This is simply a misunderstanding of the underlying concept. Unfortunately, sufficiently hashing out the misinformation goes well beyond our scope. Regardless, our dependency on a dialectic culture is merely an emergent result of centuries of enculturation. We are (benignly) infected with a fiercely self- preserving meme. [10] Language, whether a cause or effect, is a product of that memetic survival strategy, as is our concept of space.

2. CREATING SPACE

Initially, we should make some attempt to describe a non-spacial reality. No doubt this description is not fact. That is fine. One possibility is that, instead of watching someone walk across the room and then out the door, reality *could* be like a film strip. In this model, all points of light on each frame are given equal priority, but in the first frames there appears a recognizable disturbance of pattern of colors. The discoloration subsides and appears again, with slight changes. Then there is no discoloration, but the sound of the closing door (which of course need not be identified as a door, but a medium pitched thump). A conspicuous effect of eliminating a sense of space is the loss of a sense of causality. Is causality necessary in the a priori universe, or is it a convenience for our own comprehension? Moreover, this pattern simply discolors the ground, where all is essentially ground. The ground and subject/s are really just one thing, as a young child would see the world (discussed shortly), and there is no meaning in considering either word. They are not innate, but learned. With the advent of multimedia, a subject could conceivably be drawn into an artificial environment without being distracted from the premise/context/story that puts them there. We do not have to juggle our scrutiny. [11] The sense of space can be and is circumvented.

Of course, our subjective perceptions do adhere to such rigid synchrony, as if imagining such frames was somewhat valid. [12] But physiologically, the shapes, colors and edges arrive, and are processed at rather

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independent schedules. Motion too does exist, but that still need not imply space exists. Might space be another such associatively projected property? We might think of *location* as distinct from *setting*, which is incidentally the case for computers. Space is neither intrinsic nor automatic. The job of a programmer (and artist) is to use code, in some form, to add subjective elements like space.

A frog may see the motion of the fly, aiming its tongue at that spot, without ever considering that the motion detected is a fly or even that it is a subject. This response merely results in less hunger *often enough*. [13] Without this explicit data linking the elements of certain sequential frames, generalizations need to be projected onto the image, to group and prioritize it into meaningful (and irrelevant) objects, including ground. Incidentally, this *is* roughly how a computer/camera sees the world. [14] [15] [16] For robots to see as we do then, they must develop their own sense of space (not simply coordinates dictated explicitly), which is an essential by-product of a *sense of self*.

Figure 2.1., 2.2. These images underscore difference between setting and location.

2.1. Virtual Space

This leads us to discuss virtual space, as if there is non-virtual space, and some vague relationship between them. [17] Space is roughly defined by the purposes of the occupants. But more importantly, it can recede in importance such that, no attention being lavished on the background – as strictly defined by context – the space can easily take on other non-spacial meanings. [18] [19] [20] A white room means something different to a handy-man, who has to buy the precise shade of paint, and a curator who is thinking about how traffic will flow and rest through the space. Consider the handy-man, to whom the walls are not ground but subject. In a sense, to speak of online spaces as literal, simply does not apply. The packets are always the subject of the web is merely a collection of machines that transfer data packets, which serve as instructions to create the graphics one sees on the computer monitor. The 'web surfer' does not move in space/time, the bits do. Yet the metaphor is entirely common and understood.

This metaphor exists precisely because there is a previous conceptualization that is long constructed, and fits well enough with our *contextualized* sensations. [21] Similarly, we can attend to the typeface of words in a book, the layout, etc. However, we can also become so absorbed in reading the story that our chair, lamp and book fade from our reality. Absorbed in reading about a scene and its accompanying sensations activates *mirror neurons*. [22] For all practical purposes, we have adopted a new (fictional) environment. Unless otherwise explained, we can assume that the physical laws we expect from our usual environment , also hold for new environments, concrete or imaginary. Intrinsic to that conceptualization of space, is that when an object is located in one place, then another, it is *understood* to have 'moved.' If we attend to one site, and cut to viewing the next, this is understood using the same metaphor as when we physically move using our muscles. Hence, we have 'travelled' to a web site. And though many might insist that metaphor is simply a linguistic effect, if it activates identical neural circuitry (though in reality activation is far too messy and inconsistent to monitor conclusively), how could we objectively decide that there is some undetectable but real difference between these senses of the word 'travel.'

2.2. The Construction of the Concept of Space

Space is essentially that which is not *self*, with self being a gradually refined and learned notion. [23] In child development, the progression from infancy to adulthood, is quite literally a very cumulative process of differentiating modal impulses. [24] Initially, the sources of many sensations are ambiguous and difficult to distinguish, for instance a mother's smile. Infants must come to *decide* that some sensations are internal, such as hunger, and some external, such as the shape of a toy. These decisions are generally quite conscious, in the form of *cognitive conflicts*, [25] paradoxes that the learner must resolve. Later, for instance, young children tend to believe that the sun is somehow part of them, consciously manipulated (albeit lacking dexterity, similar to their uncoordinated fingers and toes). Piaget and many others stress that this egocentrism is not precisely *solipsism*. Children at this stage have not yet developed a *Theory of Mind* that they will take for granted as adults. [23] [26] Moreover, these children do not recognize their own mind as even being *theirs*, which would require a somewhat developed sense of self. Rather, they assume the universe has but one mind, to which they have privileged access. Children further learn to distinguish between unresponsive space and intelligent, animate *others*. That objects can be categorized as self or non-self, space or non-space, is entirely subjective and a convenience for mentation's sake. Are we correct that there are other minds? The most we can say is that culturally, we are pressured to believe in multiple minds, as interaction ultimately allows for categorization of sensory and conceptual impulses into frames. [27]

> *The real root of the frame problem lies in treating humans and machines as organisms that are both engaged in producing an objective analysis of reality. This viewpoint is not limited to workers in AI... We saw that many psychologists concerned with category perception take a similar view of humans. Now, we may manufacture objects aimed at producing an objective analysis of reality, but evolution manufactures creatures aimed at maximizing their life-chances. We may choose to assume that relevant information is information relevant to a particular task. But for evolved creatures, relevant information is information relevant to a particular type of organism.*

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.. We can even distinguish between what makes it difficult and what makes it impossible. The difficulty lies in furnishing the robot [or primate] with all that eons of evolution have given us. The impossibility lies in teaching a robot what is relevant and what isn't, when there is no autonomous entity there for things to be relevant or irrelevant to. [28]

3. METAPHOR

'The basic mappings in the event structure metaphor include the following; Causes are forces. States are locations (bounded regions in space). Changes are movements (into or out of bounded regions). Actions are self-propelled movements. Purposes are destinations. Means are paths (to destinations). Difficulties are impediments to motion. Expected progress is a travel schedule; a schedule is a virtual traveler, who reaches a prearranged destination at a prearranged time.' [29]

Metaphor is not only applied on a personal mentation level described by George Lakoff et al., [30] [31] but also to myths at a universal cultural level Joseph Campbell describes. [32] [33] The organism and its culture have a symbiotic need to nurture the other, for the sake of both of their own survivals. Trance-induced rituals, even ones that insight members to stab themselves, [34] are a means to keep the culture's membership thriving. Sharing and exhibiting strong devotions to a common iconography becomes a priority for survival. The physical aspect of trance literally alters waves, to allow the trancer to engage in extra-human activity, particularly engagements with the spirit world. [35] This supernatural interaction ultimately allows members of that culture to apply mythology to their lives in ways that are unavailable to the ordinary human. Surely, this trance state is often only an act, but where it does occur, this state coincides with verifiable changes in physiognomy, within the brain. Embodiment is key to metaphor, but in a trance state, the perception of that body, the self, changes radically.

Note that the concepts culled from this metaphoric 'mapping' process are artificial constructs and quite linear. Though robots may be imbued with limbs, casing, sensors, and so forth, their software is written rather independently of these 'bodies.' While the hardware is seldom radically altered by the software. They cooperate, but remain distinct. This is simply an artifact of our distinction of the mind-body.

'We speak of time as though it resembles space – as when a listeners wonders when the speaker will get to some point. Also, we often think of time as a fluid that's "running out." and we talk about our friendships in physical terms, as in "Carol and Joan are close."' [36]

The above quote may at first seem sensible enough, but the question is not in their apparent logical differences *to us*, but that they, as well as our logic, may easily be constructed by similar means *within us*. Even the notion that space is three dimensional is not an absolutely certain assumption, but is *explainable* given our metaphorical understanding of location. If space were, say, twelve dimensional, we might learn to imagine it, but at the severe cost of that extra mental processing. Likewise, we can imagine animals, possibly the nematode worm, [37] who likely do not have our spacial modeling abilities, but conceivably only require a two dimensional view of the universe in order to survive. How are we to say that three is the correct number of dimensions to depict reality? Many organisms do with much less, and thus it is presumptuous not to assume that we too are dealing with a simplified reality, adapted to the limitations of our physiognomy.

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3.1. I/O Functions

Visualization is one useful shorthand way of mapping our mental reconstructions of the environment, such that we avoid bumping into walls and such. Chaotic bursts of impulses, when organized as visualization, may create coherent images for us. [38] [39] Having determined the usefulness of adopting this scheme, the brain will tend to use optical impulses for sights rather than sounds, strengthening the synaptic paths. [40] Or, an alternative theory is that the brain may use every impulse in every way possible, but soon it discards processes that are not successfully recognized by the cortex, or are beaten in a Darwinian competition of possible thoughts. [41] [42] [43]

The difference between input/output and transduction/actuation is helpful, though indeed subtle. The relationship between a light switch and light emitted from a bulb is easily explained using either pair of terms. Nonetheless, it is essentially a linear system, reducible to a single bit (on or off). It becomes more clear when we apply it to more complex, nonlinear systems that can not be entirely and precisely formulated digitally from any static, objective 'God's eye' point-of-view. [44] In addition not too complex! An input/output scheme implies that there is a static relationship between the input and output. A human body defies prediction of any relationship and could not possibly be consistent. So we will consider the automobile. One might say that the accelerator pedal is an input device, and that the output is acceleration of the car. However that input must also occur when there is sufficient fuel. That alone may not cause acceleration though, as a dead battery would also prevent the output. One might then list every conceivable input and every conceivable output (which would include, not just acceleration, but exhaust, vibrating radio speakers, etc.) Nevertheless, even if an exhaustive list of these inputs and their coordination were feasible, if

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a giant boulder fell on the car, acceleration would still not take place. For all but extremely simple mechanical circuits, the input/output scheme is not a precise enough model. It becomes impractical to conceive of a logical map between the infinite number of possible inputs and outputs. When we speak of qualia, we are easily confused by this model.

> *'Flowers display their beautiful colours which give pleasure to us, however they are not made for us, but for flying insects. Those insects involuntarily fertilise plants carrying pollen from flower to flower... So some plants evolved to attract insects and in that way plants reproduce and continue living on the planet Earth. So insects evolved to distinguish flowers among the whole electromagnetic radiation that gets to their eyes coming from the Earth's surface, as patches of definite colours. Thus, eyes have appeared and evolved as a filter for those chains of events .. For instance, electromagnetic radiations are filtered by eyes, in chains which end at perceptions we call colours. But if the radiation wavelength is in the ultraviolet zone, some insects will see it, but in our case we will not[.]'* [45]

3.2. Transduction

The problem becomes much clearer when we broaden our assumed definitions of the senses, to speak of *transducers* [46] and *actualizers* (rather than input/output). Color is not a feature eyes detect. The eyes send stimuli to the cortex, which manufactures qualia in a very specific protocol, only used by the (illusionary) Cartesian Theater. The theater cannot be proven to exist, is not likely, but is experienced nonetheless. In other words, the first step is to re-conceptualize colors, not as input but as output. Output that is exclusively for a particular context and not the rest of the universe. [18] Though "output" becomes misleading when we consider that qualia does not exit from the mind that creates it.

Though we often say there are five senses, there really is no way to determine the amount and number of sources for our impulses. The sense of touch is not in one specific place, but a whole network of nerves both in the skin and internally. Is the recognition of a person's walk, fundamentally different from a recognition of the person's face? When we have been waiting in line and become impatient, with which organ do we 'feel' the time passing? We must take a broader view of the senses, including a sense of our location in space.

> *Frogs react quickly and effectively to bugs that fly past them, but this by no means implies that they have a concept of 'bug'. Indeed, we can be pretty sure that they do not, or at best that their concept of 'bug' both under- and over-generalizes to a rather gross extent. For instance, they will overgeneralize by snapping at bug-sized pellets that are flipped past them, but will undergeneralize by totally ignoring motionless bugs even when no other food source is available.* [47]

Likewise, jellyfish skin is rather delicate, and easily damaged by light. Thus, when the jellyfish detects that too much light is hitting it, the fish sinks to deeper (darker) waters. Is the jellyfish aware of this detection? Given the neural anatomy (or profound lack thereof) of the jellyfish, this is surely not the case. Does the jellyfish feel uncomfortable in too much light, and seeks comfort? This is speculative, but highly unlikely. It is ultimately impossible, of course, to determine if a precise point at which an creature's mind is *aware* of its own behavior or reasons for it. Though it would be ridiculous to imagine that the jellyfish has any concept of things like 'skin' or 'light,' or even self.

Contrary to popular belief, stimuli to different modalities is not processed solely by any one module. For instance, visual stimulus is mainly processed in the visual cortex, but occurs all over the brain. [48] Nonetheless, the impulses from the various sensory organs, as well as the cortical modules of the brain, are all essentially the same. [49] It is merely a series of phenotypical accidents. Likewise, even Noam Chomsky has continually held that the Language Acquisition Device (LAD) was not specifically designed *for language*, but has merely been employed *with the result of language.* [50] [51] [52] The LAD may well be useful to conceptualize music, trance and space, among other mental tools. Also of note, in Ruth Millikan's pushmi-pullyu representation (PPR) scheme, [13] the role of linguistic intention, can be to simultaneously define expectations, as well as perform them. Though she speaks of language and utterances, there is no reason to restrict the PPR from spaces, such as art galleries, churches and court rooms, which also both signify expected behaviors, as well as serve those behaviors. In fact, it is useful as a model to reconsider the senses (including the 'sense' of space) as *potential meaning detection systems*.

4. CONCLUSION

Where does this leave us? If location is an illusory notation applied by the mind for the sake of sparing our limited cognitive resources, is space then, in programming parlance, a *null value*. Perhaps the notion of 'Utopia' will help to explain. The assumption is that Utopia is a place, and in that place life is organized such that problems do not arise. Clearly, conceived of as a space, this is a fictitious ideal, albeit one that has popular appeal. Nonetheless, we *could* say that Utopia is not necessarily an external place, but an internal state, where conflicts may exist, but do not disturb 'inner peace.' The difference is merely semantic.

When it comes to virtual spaces, there is absolutely no significant difference between the use of the audience member's imagination to construct a library, a commute home, or a scene on the web. Media is entirely arbitrary. Though Walter Benjamin argued the media is crucial, [53] his collected essays stand as evidence that the media essentially does not matter. We often see messages and either take no notice of, or cannot ascertain the media employed. Marshall McLuhan points out specific cases, such as the initial lighting of the Eiffel Tower, where "the medium is the message," [54] [55] but his examples are a miniscule minority "in the Age of Mechanical Reproducibility."

Like media, location can and generally does add an *essence* (in the Sartrean sense) to the piece. Yet, if we are to *get* anywhere, that essence is but a chassis and not an engine. As a message, it is the envelope and not the letter. As such, there is a great demand for pretty envelopes. The artist must package the artwork in such a way that it grabs the attention of the audience member. Hopefully not at the risk of gimmick, drawing attention from more fundamental concepts to 'surface grammars' such as media or place. ■

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JUDSON WRIGHT

interviewed by

Lanfranco Aceti & Richard Rinehart

As merely a linguistic tool to denote categorization in humans, a formalized definition of 'Art World' may not be possible (famously like "pornography"). Regardless, the use of the word absolutely defines a club, complete with rules for membership, a club that necessarily is fundamentally *exclusive*, and requires that the club will support members, so long as the members make sacrifices to maintain the club. This has *both* taboo negative ramifications, and seldom-considered positive ramifications. The function of "clubs" in culture is discussed further by sociologists, particularly Stanley Milgram, [1] Erik Hoffer, [2] and Erving Goffman. [3] Hence one must appreciate the relative nature of the sheer idea that borders could be applied to *categorization* at all.

If the membership were not club-like, or actually accessible to all (as the ideal would have it), the Art World would cease to exist, serving no linguistic function. The moment one decides that there is no "outside" is the moment the word ceases to have any function. And since Art World is necessarily *only* a linguistic indicator for mental, personal categorization, there must be a negation. We might say that a cat (arguably) has a concrete real-ness, but "mammal" only exists for us as a concept. Where we delineate cat from non-cat is somewhat arbitrary. Another organism could identify some object as a cat. Even if we have roughly the same idea about what constitutes a cat, one of us could mistakenly identify something as a cat. We could never conclusively say that they are wrong. But where we delineate mammal from non-mammal is entirely so. Another organism may describe something as a mammal, but insofar as we can come to an agreement about what constitutes a mammal, we can come to a conclusive resolution about the use of the word.

Is there an 'outside' of the Art World from which to launch critiques and interventions? If so, what is the border that defines outside from inside? If it is not possible to define a border, then what constitutes an intervention and is it possible to be and act as an outsider of the art world? Or are there only different positions within the Art World and a series of positions to take that fulfill ideological parameters and promotional marketing and branding techniques to access the fine art world from an oppositional, and at times confrontational, standpoint?

The thesis of the proposed paper is that all humans are probably genetically predisposed to the neural function of art. Clearly, if there is no "outside" then the use of the word "art world" would be meaningless. A concrete reality is not the same as a topic which is similar to us each enough that we can discuss it. To some degree, the question assumes that we make some decision about the concrete reality of an art world. This is not necessary (though a common misleading detour in semiotics).

"In *The Truth in Painting*, Derrida describes the *parergon* (*par-*, around; *ergon*, the work), the boundaries or limits of a work of art. Philosophers from Plato to Hegel, Kant, Husserl, and Heidegger debated the limits of the intrinsic and extrinsic, the inside and outside of the art object." (Anne Friedberg, *The Virtual Window: From Alberti to Microsoft* (Cambridge, MA: MIT Press, 2009), 13.) Where then is the inside and outside of the virtual artwork? Is the artist's 'hand' still inside the artistic process in the production of virtual art or has it become an irrelevant concept abandoned outside the creative process of virtual artworks?

Wow! To properly address this question would require a whole paper unto itself. I will attempt to touch on key points, relying heavily on references. Nonetheless, a lot of ground must be covered to qualify and preface any remotely meaningful answer to that question.

Preface (somewhat of an abstract of the proposed paper):

While I am a devout constructivist [5] (mostly developed by Jean Piaget, [6] with important contributions from John Dewey [7] and Lev Vygotsky [8]), I insist that it remains essential to (temporarily) come to a sympathetic view of the traditional Platonist notion of 'reality.' Descartes's Theatre in the mind is a flawed dualistic concept (perhaps most thoroughly discussed by Daniel Dennett [9]), but this sympathy is essential in order to get from the everyday experience of removed observation, to say Kant. One cannot leap from looking at a red ball, and it seeming rather red, to understanding the role of culture in the construction of the sensation of red-ness (qualia), without passing through some intermediary concepts. But in the end, accepting the quantifiability of red-ness (or the extrinsic-ness of some quality) is a misleading premise, tacitly (the innocently enough) assumed in the question.

To a baby, the universe and the self are just one thing – albeit very limited, since the baby can only sensate so far. The universe is pretty much the mother and food. As the child develops, selfhood is elaborated and differentiated from the environment. [10] But this in no way is evidence that the child comes to a more accurate conceptualization of the world. Rather, the child constructs a more useful conceptualization.

Members of a tribal culture need to make sense of why water sometimes falls from the sky, and furthermore why their crops, which really need water, are shriveling up and dying. One possible role of that culture then is to say that rain is a message, a favorable one, so members of the tribe should do their best to stay on a deity's 'good side.' [11] Whereas, in that same tribe, perhaps the weight of a plant is not viewed as a message. Culture creates sense for members, by distinguishing what is a significant communicative of meaning, from what is simply random background noise in their environment.

Insofar, as an Art Word exists (as something distinct from a world outside of that Art World), it merely provides *scaffolding* for its members, to reinforce mental structures defining what should *seem* 'artistic' and what should not. Though it is unfashionable in the Art World to say "That's not art, and no one else should think it is either!," that is precisely the fundamental function of any Art World. The "artists hand" is yet another relative concept. The recognition of it is inextricable, as would be a message of rain and the gods' favor – in a particular context. If there was no message, there would be no interpretation of rain, or of artwork. The piece would simply be recognized as something else, or not noticed at all. The only way to experience art is to be indoctrinated by some one or more Art Worlds that explicitly or implicitly say "*This* is art!"

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The answer to the question:

If the emperor is running around naked, and we, as elders in the culture, point and say "what a nice robe," we are not necessarily trying to fool the novice, but instructing the novice as to what a robe is. The novice, eager to learn and partake in the discourse of our shared culture, merely comes away with a confused and vague idea of what a robe might be. The objective reality of the robe is not essential for this subtle and tenuous concept to be formed. In one sense, the *value* of the artist's-hand-feature exists for the art collector. Whether or not that feature exists for someone from a different culture, is irrelevant. A painting by Van Gogh is worth a fortune, in a particular world, but it is hardly useful material to use for building furniture, hence is worthless, in another world. No one would say that there is some feature that is only recognized in one or the other world, merely that there are never universally valuable features.

Of course, after a few generations of this, though probably never conclusively distinguished, a quality "robe-ness" would be honed meaningful, if only in a particular culture. If, after a few thousand years- worth of attempts to formalize, [12] the term is finally abandoned (perhaps due to the fact that no one successfully offers a precise and consistent enough definition), that does not make the vague idea any less or more 'real' for others.

The same can be said of 'artistry' or "parergon." After countless unsatisfying attempts to distinguish the notion non-subjectively, [13] we could easily abandon the term. But there is no point in applying it, only for the sake of keeping it in the vernacular. If the term does not apply to artworks that incorporate current technology, why alter our conception of that technology to fit an abstract, synthesized term? Words are just vehicles for thoughts; art may be a vehicle for words; but no word ('parergon') justifies the existence of any art, or hypothetical feature we are convinced we detect, at all.

Virtual interventions appear to be the contemporary inheritance of Fluxus' artistic practices. Artists like Peter Weibel, Yayoi Kusama and Valie Export subverted traditional concepts of space and media through artistic interventions. What are the sources of inspiration and who are the artistic predecessors that you draw from for the conceptual and aesthetic frameworks of contemporary augmented reality interventions?

The research on perception by Richard Gregory, [14] the experiment Eliza by Joseph Weizenbaum, [15] and the concept of "man-machine symbiosis" by JCR Licklider [16] are all inspirational examples of how the computer (or any object or space) can possibly be considered apart from the neurological reactions to both the input and output of the computational system.

There is one of the ultra-realistic people by Duane Hanson in the Kansas City Nelson-Atkins Art Museum, a museum guard standing at attention. Actual live museum guards report that visitors often mistakenly ask this museum guard-piece directions, etc. This is one of the few examples of linear artwork that qualifies as Behavioral Art. Though much artwork aspires to effect mental conceptions (and this seems the primary goal of site-specific intervention), there is no indication that the audience member has undergone a conceptual reconstruction or simply used a fitting construction and intellect to nimbly adjust behavior as required. Even if that member is taken by surprise, this does not indicate reconstruction, so much as they had the wrong frame in mind but suddenly substituted a better one. It is not actually essential that a person speak to the museum guard-piece, merely that it indicates that something more fundamental is likely to be occurring, for that person to have made that mistake. And if so, it also likely occurs in others. The "something fundamental" is akin to projection of a Theory of Mind. [17]

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In the representation and presentation of your artworks as being 'outside of' and 'extrinsic to' contemporary aesthetics why is it important that your projects are identified as Art?

It is important, as a Turing Test. [18] In a Turing Test (a traditional method in Artificial Intelligence), humans determine whether the output of some system (whether a computer or another human is not revealed) is intelligent. Not that it provides correct answers so much as answers are interpreted as subjectively informed. Speaking casually, I have no desire to press a button and make 'art' pop out of a computer. More precisely though, I do aim to create processes in which individual audience members interpret computer output as art. Supportive friends will almost always say "sure, that's art!" However, when work is submitted to experienced curators, amidst plenty of competition from other hand- constructed artworks, there is no chance to be supportive. These computer systems being selected provides me with a strong indication that someone then must have interpreted whatever the system did was art!

This brings us back to Dewey. In his theory (a theory only, but a safe bet, like Charles Darwin's theory of evolution [19] or Noam Chomsky's theory of a Language Acquisition Device [20]), dictation is not learning. The learner *must* engage in, or invent for themselves a game, by which that knowledge is necessary to fulfill a perceived need. In cases where the child is unable to integrate dictated facts into a mental game, teachers assuming a traditional perspective on learning will usually decide that the learner is somehow at fault (though this may be seen as some innate deficiency), rather than the inert presentation. Still images (and video is merely a series of stills) are essentially dictations of framed visual facts, but do not always encourage such interaction and game play. Hence, many are discouraged as having 'learned' nothing, observing the artwork, and are excluded from membership in the Art World.

In painting, certainly the art-ness, if it is can be said to exist, lies not in the paints but the artists' mind, as the artist dictates. [21] But with computers there is a bit of an option. Who then is the artist, the human programmer, the interacting audience member, the microchip processor? This requires we take a few steps back, rather than rush ahead.

A computer can position dots on a page with a random function. Likewise, an artist can employ a computer to design, to position those dots manually. In the former case, the output would very seldom be considered art (accept in cases where the judge had some knowledge of how the marks were made and an intellectualized enthusiasm for technology). In either case, the audience member is labeling the experience as "art" or "not art," based on their idiosyncratic indoctrinations to various cultures.

Therefore, it is important that my work be identified as art, merely because I am attempting to straddle these two schemes. While pure random behavior (which comes in many forms, such as bio-sensors and fish tanks) is usually neurologically insufficient to trigger the classification "art," purely dictated behavior does not justify our use of computers.

What has most surprised you about your recent artworks? What has occurred in your work that was outside of your intent, yet has since become an intrinsic part of the work?

Whatever works becomes part of the work. Nothing is ever discarded because it conflicts with my expectations. My expectations are trivial and if they occur, I tend to ignore them. However, I have often executed steps, from vague intuition, only to find all of that trial-and-error was for naught, as the concepts have been thoroughly articulated and discussed. A recent example is applying Gerald Edelman's reentrant (feedback) [22] to computers, only to find that this was roughly what Norbert Weiner [23] had been pursuing in about 1960. ■

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JUDSON WRIGHT

statement & artwork

Art, and the compulsive need to create it in all cultures, is one of the brain's strategies for continually updating itself to the environment.

The artworks I make are examples of borrowed intelligence, systems that include both the audience and the computer, in order to elicit implicit meanings.

Traditionally, art has been considered a concrete object on display. Even in conceptual art, the piece is assumed to exist independently of the minds of the audience. Alternatively, the artwork here only exists within the individual experiences of each distinct audience member.

While there has seldom been any pressing need to distinguish between these two senses of art, a very particular facet of interactive computing has brought new issues to light. My interest lies on a tiny sliver where the cognition of participants becomes the sole focus.

This constructivist approach, that centers on neurology, takes an anthropological view of the 'art world.' From this perspective, this world is an organization of cultural ritual behaviors to be studied in galleries and on stages. ■

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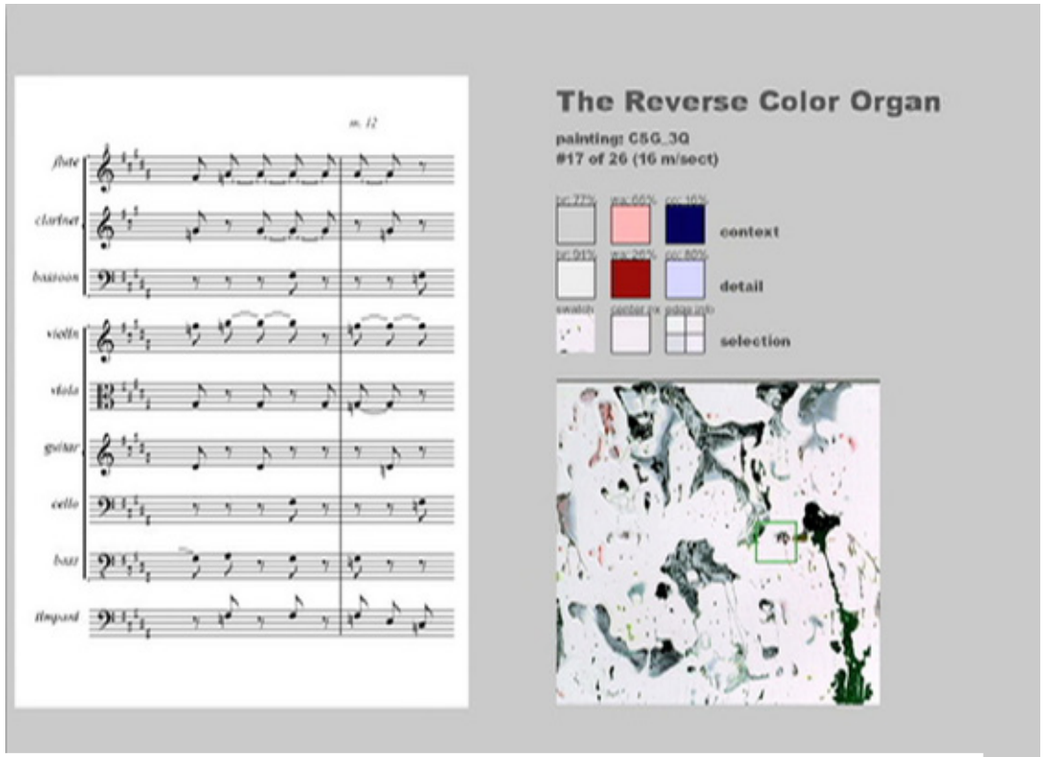
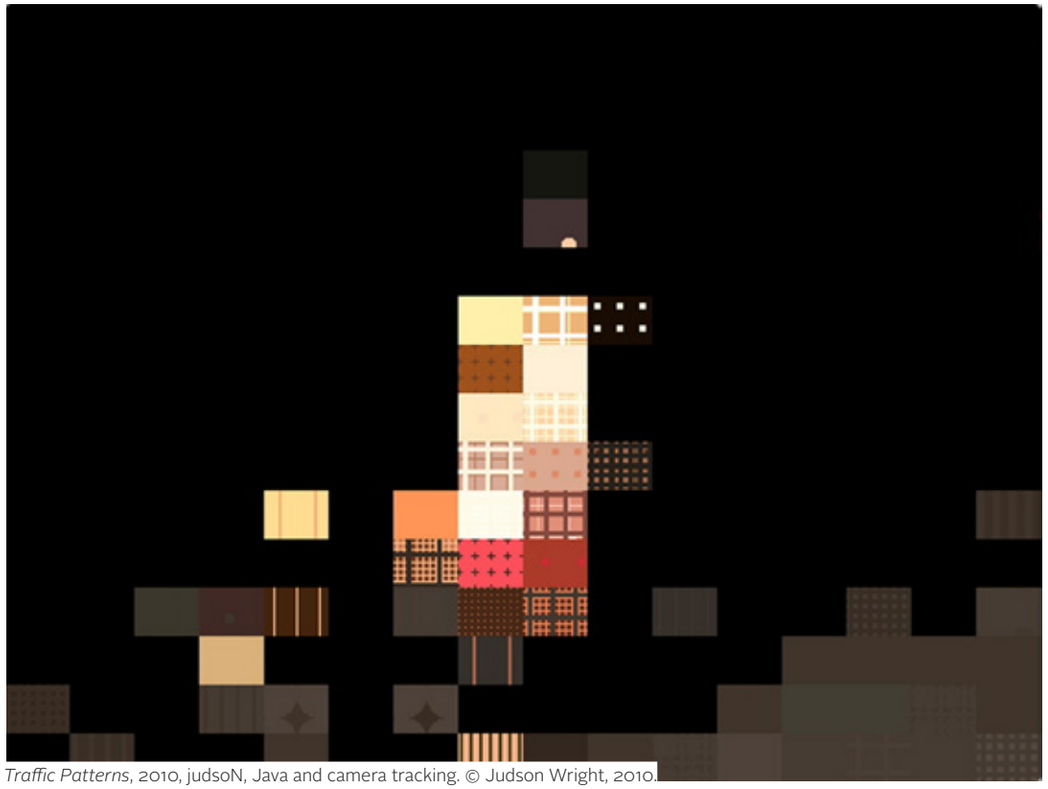


The Reverse Color Organ, 2009, 2011, Ellen Hackl Fagan & judsoN, Java, camera and music. © Judson Wright, 2009-2012.



Traffic Patterns, 2010, judsoN, Java and camera tracking. © Judson Wright, 2010.

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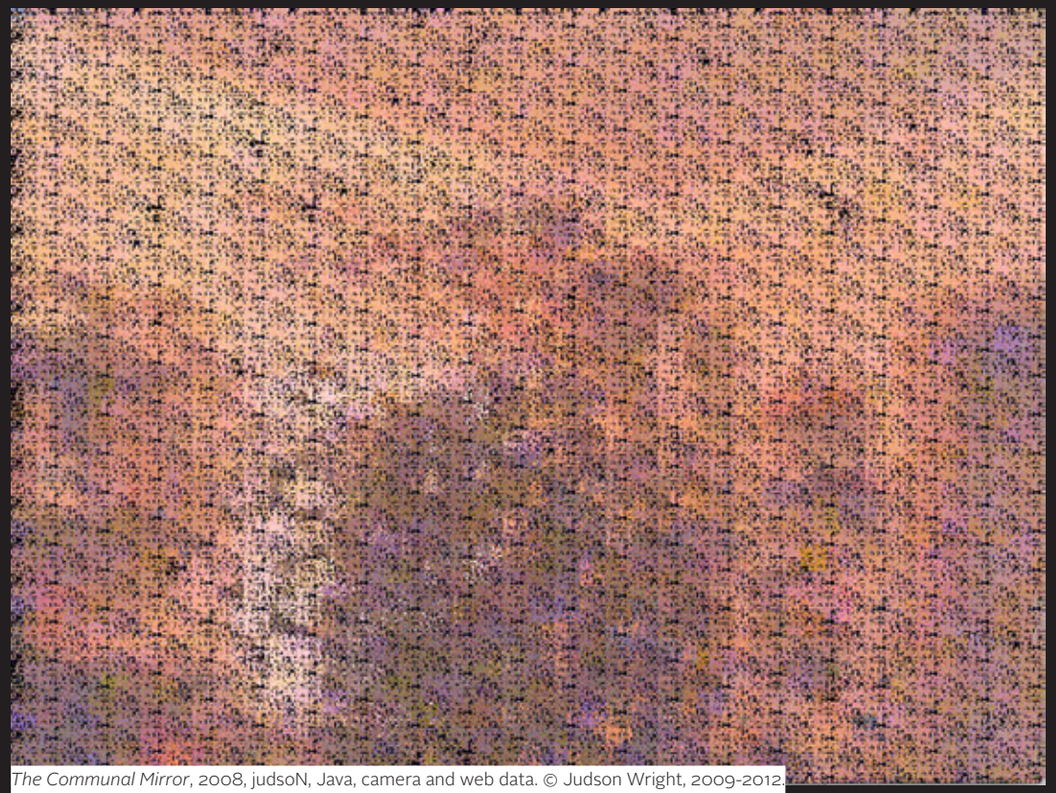
Five Things, 2001, 2002, 2009, Eve Beglarian & judsoN, Java and live music audio. © Judson Wright, 2001-2009.



The Communal Mirror, 2008, judsoN, Java, camera and web data. © Judson Wright, 2009-2012.

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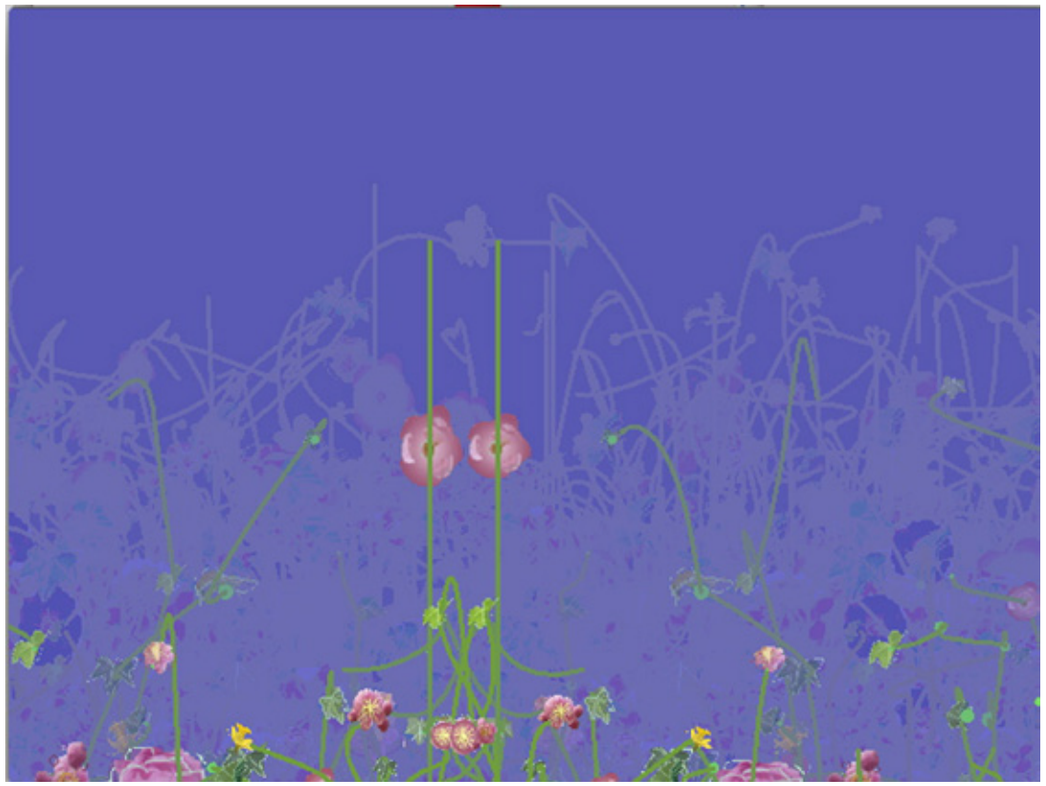
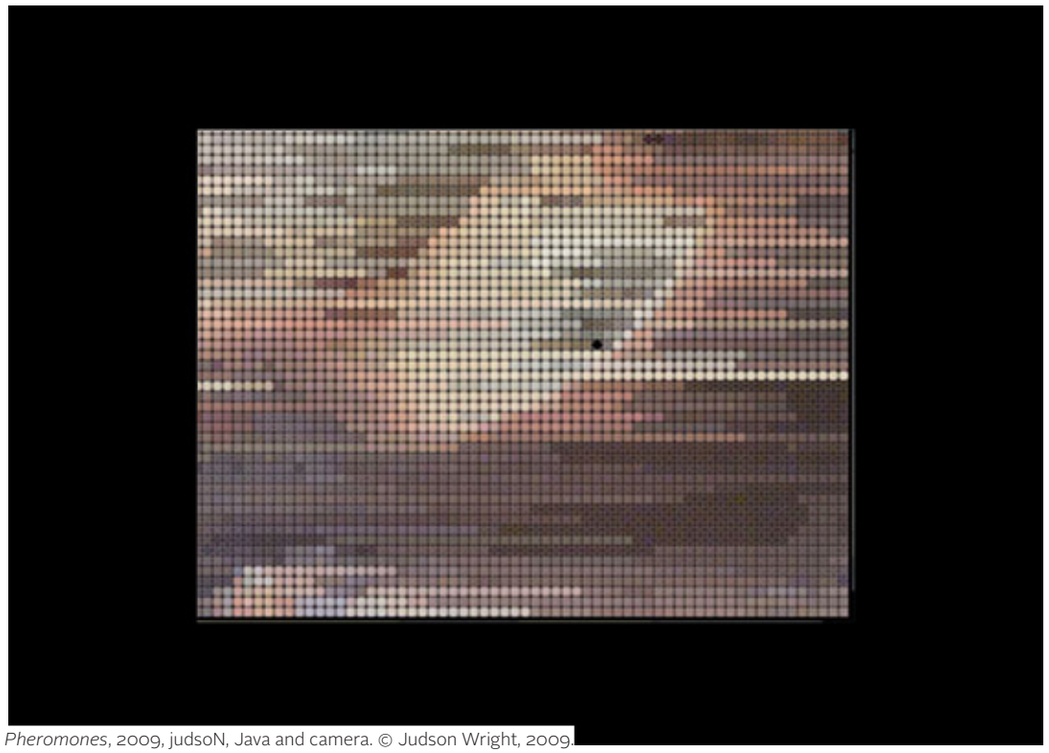


Compost, 2008, 2009, K Saelin & judsoN, Java and television audio. © Judson Wright, 2008-2009.



Pheromones, 2009, judsoN, Java and camera. © Judson Wright, 2009.

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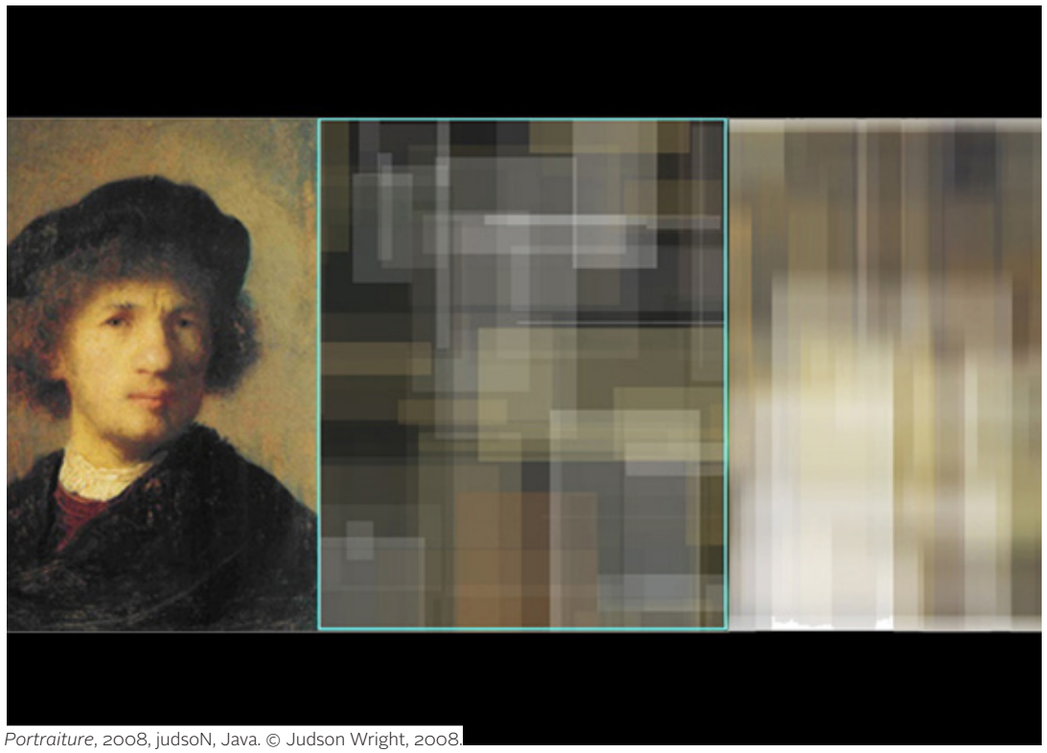
The Synesthetic Machine; 2008, judsoN, Java, camera and audio. © Judson Wright, 2008.



Portraiture, 2008, judsoN, Java. © Judson Wright, 2008.

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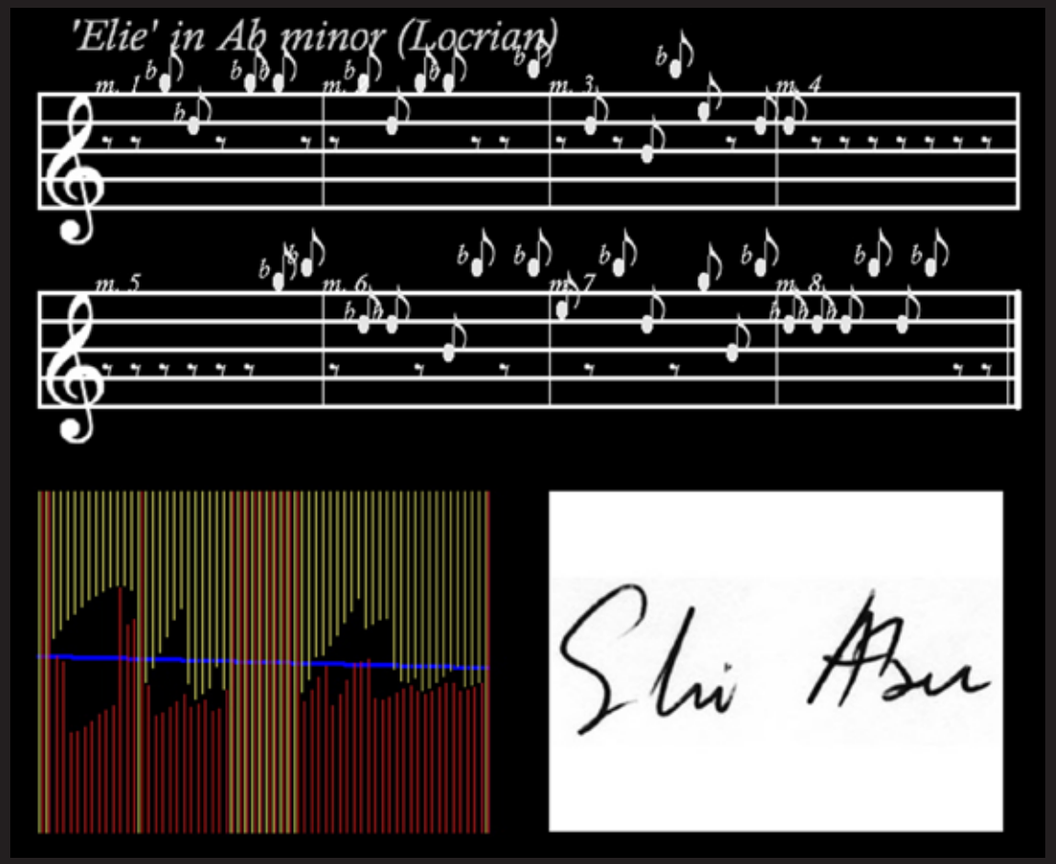

Signature Sonata; 2008, judsoN, Java, graphics tablet and music. © Judson Wright, 2008.

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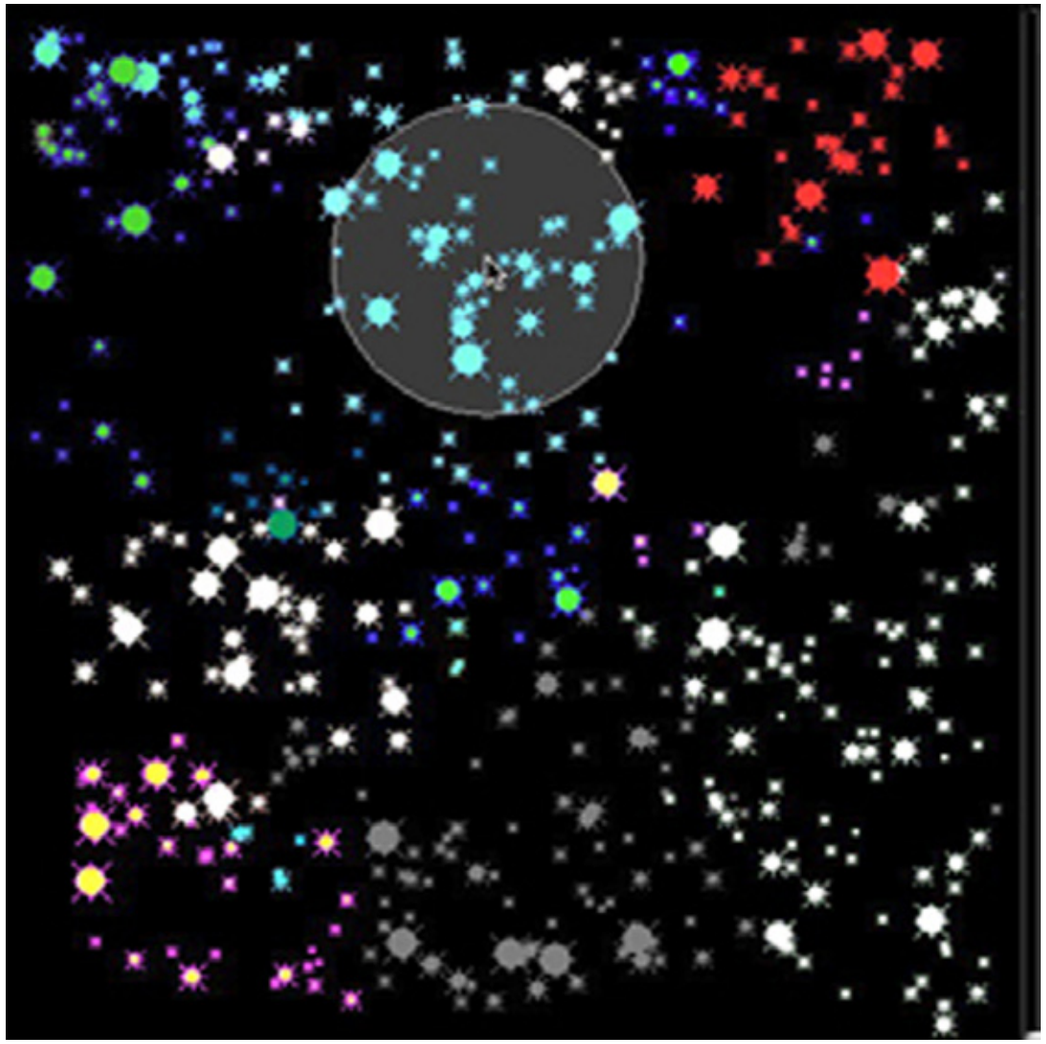

Epidemiology, 2006, 2009, judsoN, Java. © Judson Wright, 2006-2009.

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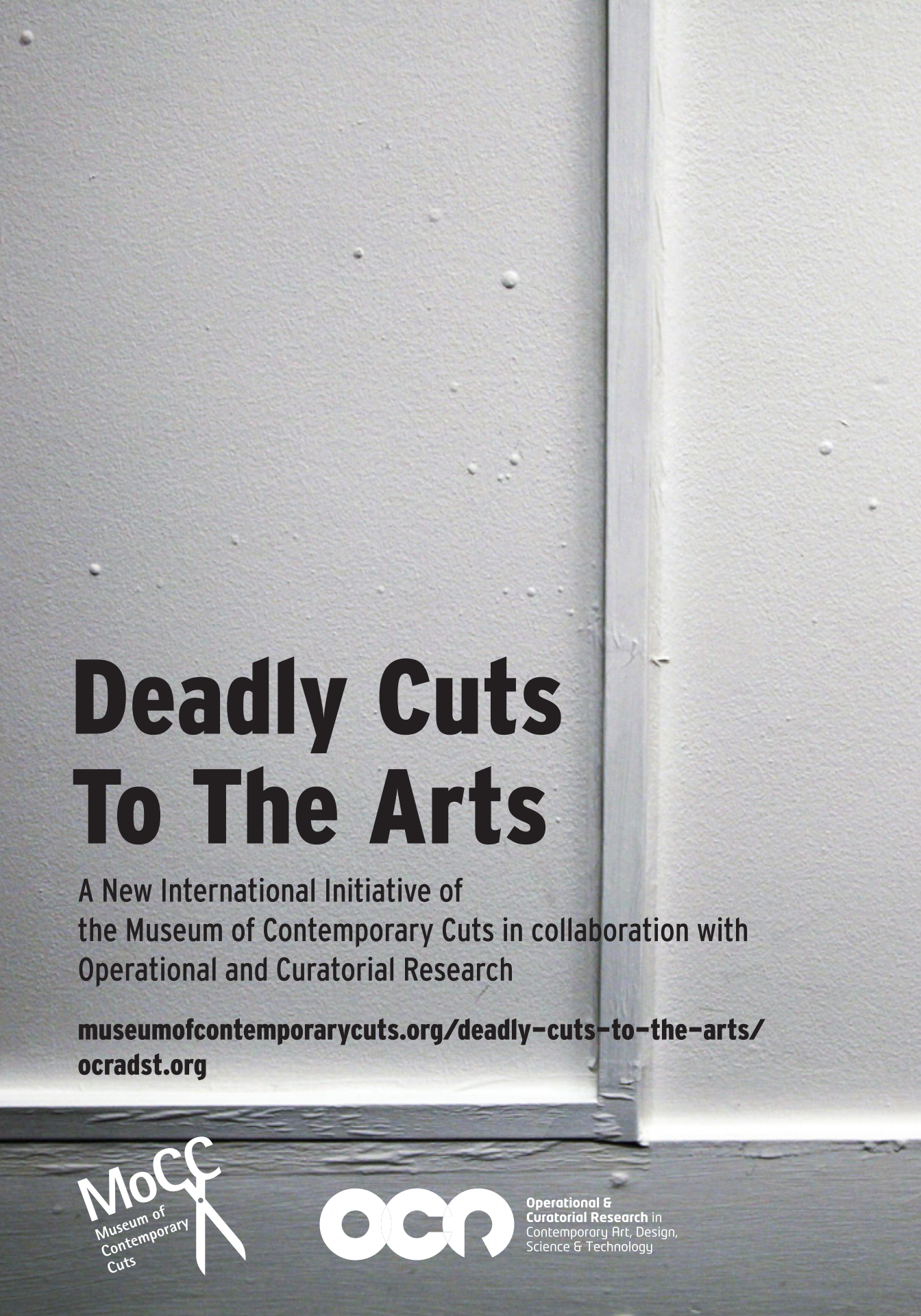

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