

**Algorithms for Social Curation:
Designing and evaluating an embodied and
subjectively situated visual art Interpretation
and navigation system (VAINS).**

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Abstract

VAINS, the *visual art Interpretation and navigation system*, is an interdisciplinary work in progress, an interactive website which offers repository, search and content recommendation tools for art content in an online environment. This paper will put the VAINS system into a historical curatorial context as well as explaining and analysing the VAINS project and its methodology, outlining our reasons for placing the body at the forefront of its navigation systems. The paper will also present a narrative of interaction with the tools we have created, showing their impact on a range of users and illustrating the value of embodiment in the context of online curation.

VAINS, *visual art Interpretation and navigation system*, is an interdisciplinary work in progress, an interactive website which offers repository, search and content recommendation tools

adjusted to art content in an online environment, drawing upon the Computer Fine Arts database of digital artworks. The site is a response to the expected changes in content consumption as part of the movement towards a more complex web 3.0 generation, offering a customizable and personalized art viewing experience. The VAINS system aims to be in part a text free environment, where visual experiences are interpreted through their contextual categorization and through the use of other sensual means, such as icons, sounds and textures. VAINS also deploys the embodied and situated nature of human users as core resources in its underlying computational structures, drawing upon enactivism and embodiment as core computational principals.

The paper will put the VAINS system into a historical curatorial context as well as explaining and analysing the VAINS project and its methodology, outlining the reasons for placing the body at the forefront of its navigation systems. The paper will also present a narrative of interaction with the tools we have created, showing their impact on a range of users and illustrating the value of embodiment in the context of online art curation.

Contexts

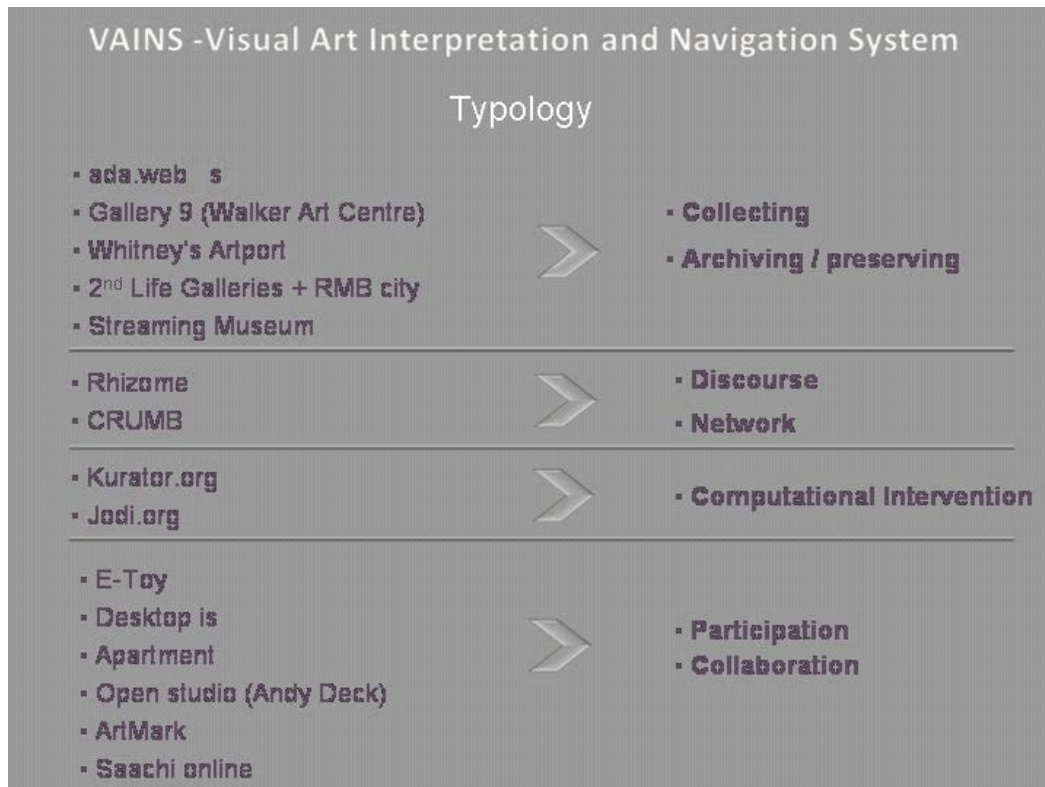
Artistic practice has always been connected with developments in technology and media. Art history shows that pioneering artists were habitually involved in deploying technology's latent possibilities. Contemporary artists continue to take the opportunity to investigate new technologies, utilize them, criticize them, and find ways in which they can be differently conceived. From this perspective, it seems art has been walking hand in hand with science and technology, investigating and developing new frontiers in cultural development, while all too frequently art theory and art history had stayed behind, analyzing the past and criticizing the

present.

Our work on the VAINS system derives from an urgent need in curatorial practice to emerge from and be in contact with artistic practice, including practices that engage with and operate via digital means. This need derives from an understanding of curation as the platform upon which the encounter between a viewer and an artwork occurs, and in providing the stage for this encounter, curation has to consider its own agency and its own ideological assumptions. We have identified the curation of web based digital art works as particularly problematic in this regard. Too often web based art sites emulate analogue paradigms of art curation without considering the medium specificity of digital works, this is a problem that is highlighted (by among others) Christiane (2006), Krysa (2008), Pennock and Knight (2008), who recommend that institutions need assistance 'with the task of understanding and evaluating significant properties', of digital works, for example the 'significant properties of vector images, moving images, software and learning objects' (Pennock and Knight, July 2008).

As part of the initial stage of our research design we analysed a broad range of digital art sites, looking for evidence of the type of engagement that we emulate for VAINS and for more problematic contexts, in which the White Cube or the Victorian art museum was blankly re-mediated via the web. While we identified a number of sites which we value as significantly deploying digital technology to stage and disseminate digital works we also identified many sites that lacked a significant level of engagement with the strengths (and indeed weaknesses) of digital contexts for such works.

Below, a brief typology of online art sites (Weinberg 2010)



Having analysed the strengths and weakness of a number of digital art sites and also having constructed a brief typology of the strongest sites (in terms of our own criteria for medium specificity), we were able to identify the core pragmatic commitments and methodological orientations of our own model for a digital art platform.

It is in the context of this research that VAINS aims to be an alternative curatorial platform for the presentation and investigation of digital art. The system is committed to the understanding that art cannot be viewed in a vacuum, and that contextualization is an important aspect of the curatorial practice. We therefore aim to expose the different layers of contextualization processes in order to (as far as possible) place the job of interpretation back to the viewer. That is, instead of presupposing a curatorial ideology which places the art work in a certain context, the system aims to offer a range of dynamic and flexible curatorial contexts, while also acknowledging that no system can be ideologically neutral or wholly without disparities of agency and access.

New curatorial structures and tools

VAINS currently draws upon the data-base of the Computer Fine Arts Collection, with the support of the artist and collector Doron Golan. The Computer Fine Arts Collection includes a wide range of works, many of which are considered to be significant representatives of the net.art tradition. It is an extensive and diverse collection, currently one of the largest available online. Although eventually we would like to grow beyond this archive, we believe the collection provides the opportunity to engage with different and significant types of online art. The site in its original form consists of lines of text that link to each work; these are presented in the form of a list. While this structure has some benefits (it enables a very rapid textual overview of the works), it clearly makes selecting works problematic if one is not already familiar with them. The list does not indicate genres, forms or

dates of work.

Below, a screen shot of the main navigation page for the Computer Fine Arts Collection, the image represents about 30 percent of the total collection.

Index of /collection

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
<u>Parent Directory</u>			-
<u>00_About/</u>	24-Jul-2010 15:06		-
<u>01.org/</u>	19-Jun-2007 03:15		-
<u>KRN/</u>	28-Nov-2006 10:04		-
<u>MTAA/</u>	08-Jul-2007 09:38		-
<u>RSG/</u>	28-Nov-2006 11:07		-
<u>YOUNG_HAE_CHANG_HEAV..></u>	28-Nov-2006 11:55		-
<u>abrahams/</u>	28-Nov-2006 08:37		-
<u>ahn/</u>	28-Nov-2006 08:38		-
<u>amerika/</u>	28-Nov-2006 08:38		-
<u>andrews/</u>	05-Jun-2007 16:34		-
<u>biggs/</u>	28-Nov-2006 08:43		-
<u>bookchin/</u>	05-Jun-2007 16:34		-
<u>boredomresearch/</u>	27-Jul-2007 02:16		-
<u>bravo/</u>	28-Nov-2006 08:43		-
<u>breeze/</u>	28-Nov-2006 08:45		-
<u>brucker_cohen/</u>	05-Jun-2007 16:34		-
<u>bunting/</u>	28-Nov-2006 08:52		-
<u>burton/</u>	28-Nov-2006 09:08		-
<u>cahen/</u>	28-Nov-2006 09:09		-
<u>campbell/</u>	06-Jun-2007 06:14		-
<u>chatonsky/</u>	28-Nov-2006 09:12		-
<u>cheang/</u>	28-Nov-2006 09:28		-
<u>clausse/</u>	28-Nov-2006 09:28		-
<u>cloninger/</u>	28-Nov-2006 09:40		-
<u>coyarzun/</u>	28-Nov-2006 09:41		-
<u>daggett/</u>	28-Nov-2006 09:41		-
<u>deck/</u>	12-Sep-2007 12:29		-
<u>decologne/</u>	28-Nov-2006 09:43		-
<u>...</u>	<u>...</u>	<u>...</u>	<u>...</u>

Specific interventions and tools offered by VAINS

Our main question at this point was how we might work with the Computer Fine Arts Collection to construct more medium specific navigational tools, and to deploy technologies that are increasingly ubiquitous, such that many millions of people now 'move seamlessly from one computer to their mobile device or phone and back, and they want the tools to move with them. They work with technology, they play in technology, they breathe this technology, and it is virtually invisible to them' (Crumlish and Malone, 7: 2009). A key observation in our background research into art sites was the lack of engagement with the body as a means of navigating sites and communicating with visitors. We became increasingly aware that online art sites typically operate within a computational framework that takes little account of the body. We asked ourselves what a site would be like that eschews mind-body splits and naturalised systems of logic in online contexts, offering instead alternative computational structures for engaging with digital art?

In order to answer this question we began to design a series of experimental interfaces and tools that would investigate the value of centralising the body in an online art context. We also made a commitment to framing the site as a form of social media, defined as "media that is created, filtered, engaged with" (8).

The VAINS platform therefore offers a range of tools to facilitate the exploration and interpretation of online art works. These tools

have been constructed with a view to fulfilling the following objectives:

- To deploy networked and subjectively situated software architectures in the context of recent interrogations upon the role of the curator in the online context (Krysa 2006).
- To deploy subjectivity and embodiment as core resources for the curatorial practice.
- To explore the validity and practicality of enactivism (as delineated by Varela and Maturana among others) and its associated methodologies, including situated and embodied cognition, within such software.

These goals have been validated by an analysis of relevant theoretical and methodological contributions to the areas of human-computer-interaction, embodiment, and situated cognition. We have researched both current and historical literature on these topics. As a result we have found valuable analyses in the works of Shaun Gallagher (2006, 2009), Donna Haraway (1991), Robbins and Aydede (2009), Bill Gaver and Gaver et al (1999, 2004, and 2008) and Phoebe Sengers (2006), Henri Bergson (1896, 1911), Hubert Dreyfus (1992), Julia Kristeva (1982), Elizabeth Grosz (1994), Karen Barad (2007) and Lucy Suchman (1987, 2005, 2006). The analyses presented by these writers validate the proposition that human beings are entangled with their technologies and with complex, relational and temporally bound systems of agency. Hence, a core methodological commitment embedded in the VAINS project is the confrontation or re-framing

of the body in online curation, this has been supported by an examination of the separation between computers and humans, and, indeed, the ready made separations that we project between subjects and objects (including visitors and online galleries). Another important aspect of this work has been to identify the significant material features of computational interaction while acknowledging that computers are not clearly separable from ourselves, but, like all human artefacts, are of us. The meaning of this statement will become clear when we explain the specific tools we have constructed and tested for the VAINS project.

Enactivism, embodiment and situated cognition

To clarify the relationship of the VAINS tools to enactivism, embodiment and situated cognition we would like to frame them within a historical context in which computation has been dominated by top-down, disembodied and propositionally based structures. Enactivism offered a radical break from this construction, emphasizing the way that organisms and human minds interact with their environments. These ideas are in many ways the precursors of situated cognition and embodied cognition, and are presented as an alternative, middle way or via media between extremes of relativist subjectivism, cognitivism, computationalism and Cartesian dualism.

The methodologies represented by enactivism and situated cognition offer the possibility of constructing an alternative form of digitally curated space, one that deploys embodied subjectivity and situatedness as valid and valuable resources in the generation of new creative insights and actions in the field of online arts.

The tools distributed by the VAINS platform enable, to quote Maturana and Varela, a means of understanding how 'our world, as the world which we bring forth in our coexistence with others, will always have precisely that mixture of regularity and mutability, that combination of solidity and shifting sand, so typical of human experience when we look at it up close' (Maturana, Varela, 1992:241). This position has been critiqued as potentially solipsistic (see Svenson, 1992) however, such a methodological standpoint should be seen as part of a wider move in computing towards a re-conceptualisation of the body and a move away from a rigid Cartesian split between mind and body, described as 'a division of labor that was not simply theoretical and a problem for philosophers, but that was finding its way into the pragmatics of every day life' (Gallagher in Robbins, Aydede, 2009:37). This reframing is an opportunity to integrate the body into new epistemologies and methodological approaches. As Grosz states in (1994), eschewing disembodied, computational models of cognition represents an opportunity to 'displace the centrality of the mind, the psyche, interior or consciousness (and even the unconscious) in conceptions of the subject through a reconfiguration of the body' (Grosz, 1994: v ii). But, in reconfiguring the body we might also seize an opportunity to reconfigure the inter-subjective and technological boundaries between bodies and computers.

The *Abjection* application

One of the first tools we have offered VAINS visitors is a mobile application called *Abjection*. The application is disseminated through what we have called 'the VAINS research centre', an area

of the platform that offers onsite and mobile tools for engaging with artworks. The *Abjection* program is a response to some of the aims stated in our introduction to this paper, in which we declare a curatorial responsibility to engage with technology and to provide opportunities for VAINS visitors to gain insights into the contexts of curation and also to gauge the impact such contexts have on artworks.

The application encourages users (and user-researchers) to investigate the bodily traces they have left within their digital equipment. The identification of such visceral traces may be seen as an interrogation of the notion of the immateriality of our interaction with digital technology, and, perhaps even a challenge to the notion of a stable virtuality. More significantly still, and in keeping with Julia Kristeva's framing of abjection, it is proffered by VAINS as a challenge to the stability and sovereignty of the self. Abjection, which we will define as the horror of the materials ejected by the body, (which we customarily consider to be unclean), is deployed within the VAINS mobile application to test the limits of the boundaries between ourselves and the technologies we use, between subjects and objects and, indeed, between online artworks and human subjects. The Abjection application takes its users through a series of investigative procedures, these involve analysing the various abject materials that we embed into the keypads and ear pieces of laptops and phones.

Offering mobile and other applications to VAINS visitors also tests the boundaries of the web, it acknowledges the fact that all websites are also part of a wider social and media ecology. VAINS offers both web-based and other tools, such as mobile applications

that can be 'taken away' from the web and used in other contexts. These tools have the potential to include locative media such as GPS, messaging, haptic feedback and biological sensors.

Below, a user scenario, illustrating current and projected tools and experiences offered by the VAINS site.

VAINS narrative of interaction

M.S X a 43 year old administrator visits the VAINS ,site, she is interested in art but not formally trained in understanding it.

- VAINS Analyzer Phone App**
 Help her to ask and answer questions about art works, both online and in other locations
- Collaborative Filtering**
 Includes situating data such as the weather, mood and location to **identifies works she might like** based on pattern matching algorithms
- VAINS Social network generates online discussion of art works**
- Online Responder software matches** her to works based on her reflexes – depending on how rapidly she identifies an object and clicks on it
- The Abjection phone app**
 Asks M.S X to question the separation between herself and technology by guiding her through a series of simple exercises
- the Rule of Thirds applet** – reveals compositional conventions in web pages and web based artworks.

Collaborative filtering: abject traces and new conceptualisations of the interactive.

In addition to the visceral and bodily traces left by users of digital technology, we also invite visitors to consider the many other traces of themselves that they (often unwittingly) leave behind. Bruno Latour (2007) has framed these traces as representing a significant erosion of the differences between the private and the public:

The ancient divide between the social on the one hand and the psychological on the other was largely an artefact of an asymmetry between the traceability of various types of carriers: what Proust's narrator was doing with his heroes, no one could say, thus it was said to be private and left to psychology; what Proust earned from his book was calculable, and thus was made part of the social or the economic sphere. But today the data bank of Amazon.com has simultaneous access to my most subtle preferences as well as to my Visa card. As soon as I purchase on the web, I erase the difference between the social, the economic and the psychological, just because of the range of traces I leave behind.

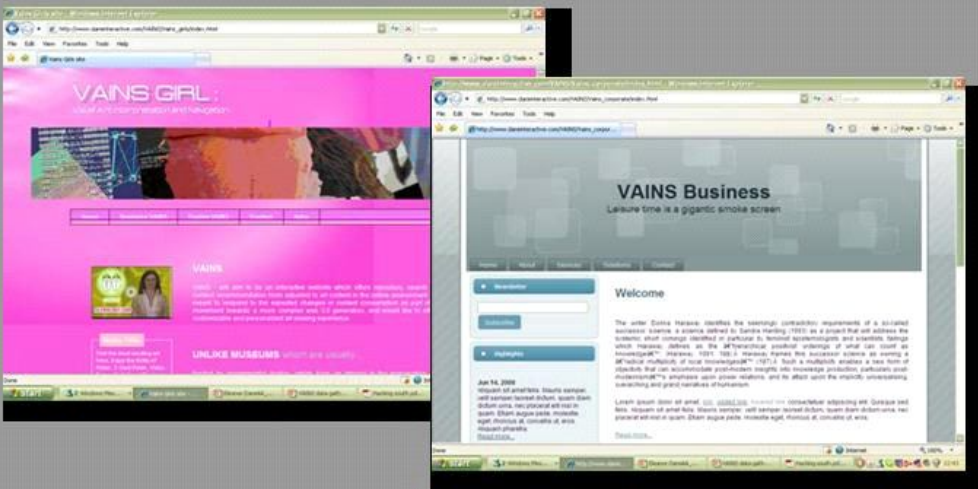
(Latour, 2007)

Collecting and instrumentalising data from users of web sites, whether covert or consensual, is now part of the materiality and medium specificity of the web. But the traces Bruno Latour writes of are arguably rarely made visible to the users who have left them. VAINS makes these traces part of the materiality and navigational structure of the platform.

Below, the VAINS platform works playfully with the notion of demographics and demographic targeting, it offers these practices as sites of exploration and provocation to its visitors.

VAINS - Visual Art Interpretation and Navigation System
NAVIGATION – “Demographic Targeting”

The VAINS platform works playfully with the notion of demographics and demographic targeting, it offers these practices as sites of exploration and provocation to its visitors.



The image displays two overlapping screenshots of a web browser. The left screenshot shows a page titled "VAINS GIRL" with a vibrant pink background. It features a navigation menu at the top and a central image of a woman. The right screenshot shows a page titled "VAINS Business" with a grey background. It features a "Welcome" section and a paragraph of text. Both screenshots show a standard web browser interface with address bars and navigation buttons.

The VAINS practice hinges around the tensions inherent in the construction of subjectivity, singularity and collectivism, but, as

many of the writers we have referenced maintain, we cannot easily reach a consensus as to what a subject is or even if such an entity really exists. This ambiguity and fluidity is an instrumental presence within this practice, to quote Barbara Bolt, it is a practice in which 'the materials are not just passive objects to be used instrumentally by the artist, but rather the materials and processes of production have their own intelligence that come into play' (Bolt, 2004:1). This becomes a case in point in our deployment of collaborative filtering within the VAINS platform. In VAINS collaborative filtering assumes both non-instrumental and instrumental qualities according to the unpredictable materiality of the dynamic system at play. Non-Instrumentality is described by Lowgren as 'aesthetic, ludic and social qualities' (Lowgren, 2008)) and instrumentality as 'usability' and 'usefulness'.

The VAINS platform gathers data online in order to create a user-based collaborative filtering system, using php and mysql. The algorithms we have constructed find closest matches, for mood, weather, gender, age, location and other specific and situating variables. They find what the closest co-users in the system liked as well as negative correlations, such as what users might not like. Such filtering may also be called opinion mining, or sentiment analysis, within VAINS it is framed as a complex means of investigating both subjective and collective responses to online artworks. The VAINS algorithms collect and generate multi-dimensional similarity metrics for VAINS visitors based on the data-set and probable interests of new visitors. These are dynamic and offer a constantly evolving picture of the content and how users react to and engage with it.

However, in offering recommendations it is important to emphasise

that the VAINS system is not framed as a truth making mechanism, rather it is framed as a provocation to contemplate the validity and putative neutrality of such data-mining processes. In this way visitors to VAINS are invited to look at works which the system might have assessed as of no interest to them, or works that might be considered as statistically more suited to a different age, gender or other social grouping.

VAINS -Visual Art Interpretation and Navigation System
INTERPERTATION – *TEXTLESS*



“The simplicity of the art works picturing complex emotions fascinates me.”



Christine Barak & Amy Welford, 2009, VAINS
Exhibitions, Harvard Art Museums

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Above and below, evaluation of a users experience of the VAINS *textless* software.

VAINS -Visual Art Interpretation and Navigation System
INTERPERTATION – *TEXTLESS*



"The use of abstract images that have a complex set of meanings in order to relate to an art work was a challenging task, and it complicated the way I interpreted and looked at the art work. In a way I wish that the images were more simplistic"

Charles Burt & Lee Weirich :: 2021 ::
Exhibitions, Heritage, and Education

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Other tool offered by the VAINS platform create navigational paths and collaborative filters to artworks based on interfaces that are reflexive and game-like, deploying embodied feedback, such as reaction times and hand-to-eye coordination. These programs can dynamically impact on the overall structure of the VAINS navigation system and on each individual's experience of the site. If visitors want to understand the mechanisms at play they are able to access the code we have written to generate these experiences. Examining the code will reveal the underlying computational logic as well as the logic of our methodologies.

The tools we have produced are still in process, indeed it is our recommendation that such tools always be 'in process', and that a process-based orientation is brought to this practice. This recommendation is consistent with both our experimental deductions (evidenced in the following section) and our methodological commitment to a dynamic, inter-subjective and networked system of continuously evolving interactions. The next section will describe two experiments we conducted in order to evaluate and explore both sensory and overtly symbolic means of interaction with the VAINS platform, it will outline some of the problematic aspects of user evaluation, these aspects echo the themes we have raised already in this paper of instrumentality and non-instrumentality, navigating a delicate *via media* between extremes of subjectivism and positivist realism, embodiment and *a priori* representation.

Testing icons: user evaluation with sensory and non-verbal interfaces

In order to investigate the validity of using non-verbal and sensory art interpretation tools we undertook a series of depth interviews and testing procedures with volunteers. The tests we undertook enabled users to construct their own interpretive methods and conceptual frameworks, while the structured interviews we conducted were designed to elicit complex and multi-layered responses, rather than a fixed set of *a priori* outcomes or material for specific 'action plans'.

Volunteers were given links to five diverse artworks from the Computer Fine Arts Collection database. After exploring each work the subjects were asked to choose one image from forty visual images that they felt could best represent or interpret the work they had just seen. These images were randomly chosen by us and were not overtly related to the artworks. After choosing an image (or symbol) to represent the site they were then asked to touch a range of textures and choose an appropriate texture out of stone, carpet, seashell, paper, fur, ice, an old leaf, leather or plastic. Finally they were asked to listen to five diverse sounds and choose one sound that best represented or interpreted the artwork for them. After the subjects had undertaken these tests we then interviewed them in depth following a pre-written set of questions.

As we realistically anticipated, reactions to the use of icons, sounds and textures varied, from subjects who could not easily make use of this interpretive method, to subjects who, often unprompted, provided detailed insights into why they had selected certain images, sounds and textures to interpret the works we provided. One subject wrote 'The simplicity of the art works picturing complex emotions fascinates me.' She reported that she had chosen the icons instinctively, though she did also use a process of elimination to choose what she felt were appropriate icons, reducing the forty icons to six then selecting the most apposite image from the final six.

So far our subjects have found the link between artworks and sound the least useful or expressive as a means of re-mediative interpretation. One subject observed "the sounds weren't related to

the artworks, I couldn't find meanings". The same subject had no difficulty using images or textures as interpretive tools, and indeed reported that she found it more useful than using everyday language. Her reported interpretations ranged from the figurative to the abstract, for example choosing fur to interpret dekok's Zabnulvier because it was 'fluffy, random and structureless' while an image of wrestlers was chosen as her interpretation of So Ahn's 'Inbetween', which she described as ambivalent residing in a place that was 'stuck between other things'.

Conclusion

The forms of navigation and filtering we have discussed are often engaged with alternative computational epistemologies, these epistemologies challenge the propositional logic at the heart of what is called Good Old Fashioned Artificial Intelligence – a narrow conception of human intelligence and being in the world that denies the body and certainly denies the political and cultural significance of its own logic. In the future we plan to evolve more subtly embodied and situated navigation and interpretation systems by developing software that reacts to bio-feedback and to more complex networks of embodied and situating factors.

Within the context of VAINS it has been engaging and productive to allow for ambivalence and multiplicity of interpretation. With this ambivalence of purpose in mind, notions of utility are also challenged, and as, Gaver and Sengers state, 'alternative values, such as curiosity, play, exploration, and reflection are also important from this point of view' (Gaver and Sengers, 2006: 3). Gaver and Sengers emphasize the importance of generating new

strategies and methods for creating systems that embody these alternative values, such as 'purposely blocking' (4) and, thwarting 'any consistent interpretation' (4). This, Gaver and Sengers are at pains to point out is not the same as deliberately generating confusion at the level of usability, stating that 'what the system does and how it can be controlled is obvious – but the ultimate purpose meaning and usefulness of the device is left open for users to decide' (4).

As alternatives to single interpretation we show how the VAINS system has solicited complex, multi-layered and often contradictory interpretations, characterising them not as problems in need of solutions, but as creative and welcome resources within the context of an arts computing based project. Gaver and Sengers (2006) have outlined useful evaluation strategies that can accommodate multiple and complex interpretation of human-computer-interactions, in which 'potentially competing interpretations can fruitfully co-exist' (Gaver and Sengers, 2006:1). They also document how 'design and evaluation strategies shift when we abandon the presumption that a specific, authoritative interpretation of the systems we build is necessary, possible or desirable' (1), stating that it is difficult 'to conceive of interaction without interpretation' (1). The multiple meanings that are assigned to computational systems by their users emphasize the importance of interpretation within HCI. Although the notion of single use and single interpretation may be appropriate in some cases, though Sengers and Gaver point out that even in issues of road safety it is sometimes better to stimulate drivers and pedestrians into making their own, non-passive interpretations of

safe behaviour, rather than telling them what to do.

In the case of VAINS we are producing a system that is open to interpretation on many levels, from the interface itself, to the overarching significance of the entire system, summed up in the questions 'what role can it play in my life' (2) and 'what does it mean about me, my social group, my society, my culture'? (2). These questions, among others, are ones that we have asked a range of people in relation to aspects of VAINS, confirming the assertion by Gaver and Sengers (2006) that multiple interpretations are almost inevitable in relation to computational systems, we would also assert that this is true of artworks themselves and that the VAINS system is conducive to complex, multilayered and embodied engagement with digital works.

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Lee Weinberg is an artist and curator, and also a PHD candidate at the Art Department, Goldsmiths, University of London. Her practice centres on the collision between traditional forms of art representation and new media process based contemporary art. Her doctoral research revolves around a re-reading of the ICOM code of Ethics for the Museum in light of such artistic practices. In the past two years, Lee has been working on creating alternative platforms for the engagement with digital art, focusing on connectivity and embodiment. Throughout the past 3 years, has been working in different frameworks, including Manifesta Biennale, Homepage Project, Haifa Museum of Art, University of Haifa, and Azmon Interdisciplinary Art Centre, curating new media and community based projects.