

potential of moving beyond such dependence on representation. This is the potential of the installation as a cognitive technology to communicate that which is excluded from representations of speech by means of writing and, by extension, of that what is excluded from conceptions of knowledge, information and thinking of which alphabetic writing and print are constitutive.

Thinking, Rotman (following David McNeill and Terrence Deacon) argues, has its origins in pre-verbalized visio-kinetic images which then become gesticulated and verbalized to form utterance. "Thought, including abstract thought such as mathematical reasoning, rests on metaphors and diagrams derived from repeated and deeply layered patterns of body movement". When listening to speech, we listen not to speech sounds as such but to what they signal about the movements of the body causing them. We listen to speech as symptoms of gesture. When listening to spoken language "we focus on

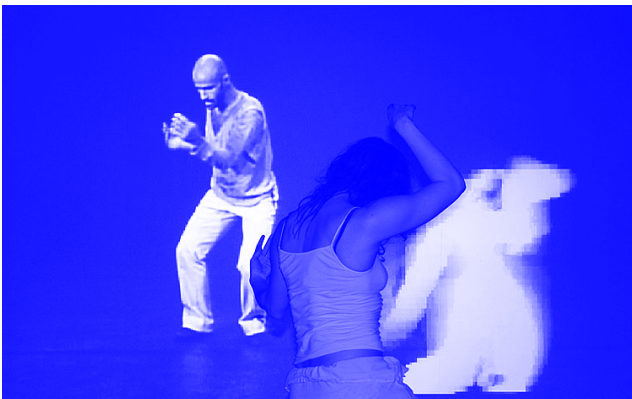
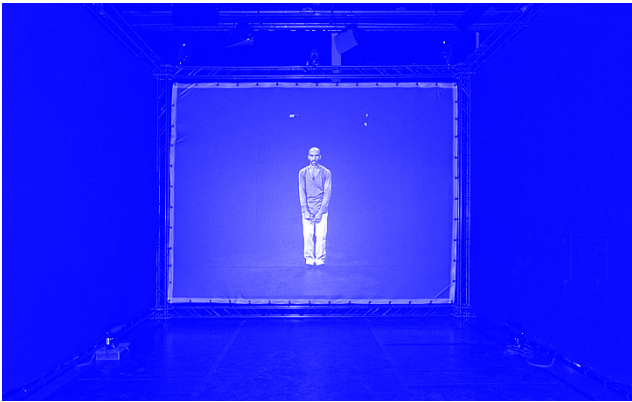
what happens between the sounds, to the dynamics of their preparatory phases, pauses, holds, accelerations, fallings away, and completions—the very features of gestures we attend when we are perceiving them". We listen, one might argue, to capture the intention embodied within speaking, where again intention does not refer to something preceding speaking and of which speaking is the expression, but rather that which it is expressive of. As a cognitive technology, the *Double Skin / Double Mind* installation allows for a comprehension of this intention by means of an augmented environment designed to make the user move. Through movement the user gains experiential access to kinesthetic patterns as they are constitutive of thought processes, thus allowing for kinesis to become an integral part of how communication takes place as well as of what is communicated.

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Simulated Learning: A Conversation

Chris Ziegler & Scott deLahunta

On 24.09.2009, at 09:19,
Scott wrote:

hi chris

In your idea of **simulated learning** you seem to be exploring quite a specific idea about how learning is an interactive experience where the model of the internal (cognitive) learning process is extended out into the environment or space itself?

Do I interpret your idea correctly? If no -- then clarify for me or if 'yes' can you say something more about it?

thanks
scott

At 12:10 24/09/2009 +0200,
Chris wrote:

I was trying more to describe the new issue of addressing the body not as "object" but the "subject" of learning. Cognition is (simply said) for me—the knowledge by representative media, such as text, image, video etc., and where knowledge of reading and interpretation is required to relate this information to the body. It sounds simple, but it is important for me - the training of the body - in other words - body intelligence is only possible by **DOING IT**, what there is to learn... maybe you have more information about "neuronal" or "muscular" intelligence or knowledge?

That is where our installation comes into place as a simulation platform (wrong word, looking for another one soon!), adapting the teaching situation of a workshop makes the participant DO IT.

chris

On 12.10.2009, at 11:00,
Scott wrote:

Hi Chris

Okay -- if we are asking the question “what role does the body have in learning” then we have a place to start.

I don't think it's specifically physical training you are talking about? Like dance or sports technique? And I think you mean not just the ‘body’ but something that is embodied in the sense that mind and body are working together in this context?

I think you mean how understanding and thinking (if we accept these as parts of intelligence?) can involve body movement.

Then we could talk about physical thinking perhaps and this would be interesting for me.

In part we have to decide that thinking is not what people normally think it is. That is propositional thought conveyed mostly through words.

Let me know if you are interested in this idea of **physical thinking** (in relation to **embodied learning**) because then I think I have some more information might be useful...

Scott

At 11:17 12/10/2009 +0200,
Chris wrote:

hi scott,very interesting.

To not leave the track, i would try to reach from “physical thinking” to “simulation” and “incorporating knowledge into an interface / installation”. What do you think about this trajectory? Also, yes, what you sent is interesting. I could think of how cognition and emotion (sounds?) and “the space” you move in could have an impact on learning?

So I would start with the idea of the body as subject of thinking and go to creating an environment for “movement thinking/simulation” because

“thoughts about something” could also be described as simulations or representations of physicalities/movements.
Chris Ziegler

Date: Sat, 17 Oct 2009 16:37:00
+0200, Scott wrote:

hi chris

Distributed creativity: the mechanisms by which team members harness resources to *interactively invent* new concepts and elements, and then structure things into a coherent product;

Embodied cognition: the mechanisms by which designers, engineers, artists, dancers, and scientists *think non-propositionally*, using parts of their own sensory systems as simulation systems, and in the case of dance, using their own (and other's) bodies as active tools for physical sketching.

The close study of both of these processes bears directly on the goals of developing new theoretical models of creativity and new models for research and education. It relocates creativity from a within-the-mind process to a more socio-technical process involving resources and other people; and it recognizes the importance that bodies and sensorimotor systems—both non-verbal and perhaps sub-rational elements—play in creative cognition.

I sent you the above the other day -- something David Kirsh (<http://www.cogsci.ucsd.edu/~kirsh/>) recently wrote in a grant application for a research project with Wayne McGregor. David is a cognitive scientist who studies distributed cognition. One of the early and most famous studies of distributed cognition involved pilots in a jet cockpit. I have attached it. I think you will find the theory very close to the ideas you are working with. What I am interested in doing is figuring out how close your thinking comes to some sort of existing theory or model -- second question is whether or not that theory or model is useful to you as a designer and if yes how.

Scott

Date: Fri, 22 Jan 2010 08:50:23
+0530, Chris wrote:

hi scott,

Referring to the text you sent (by Hutchins and Klausen) in which they described an aircraft cockpit conversation involving the captain, first and second officer talking with ground control to get clearance to ascend to a higher altitude as a “**cognitive system**”. I found similarities to our installation setup.

If you enter the *DS/DM installation* and you see the space filled with screens, cameras and speakers you might feel like being in a cockpit. The major difference is that you are alone. I found David Kirsh's paper interesting mainly for two reasons:

1. representation
2. meaning.

The difference here to a decision making system in a aircraft cockpit is that we are trying to raise the awareness level of movement qualities in the installation. To reach there we have various ways of using media. There we do encounter the same problems of representation and meaning as in a cockpit session. The “transcript” process of translating dance into spoken language can be difficult, not reaching the core of the actual “information”—which relies so much on the full physical experience. We are also simulating a conversation of a teacher to a student. There is no “backchannel” possible, but also we are dealing with the spoken word, which includes—referring to the text of Hutchins and Klausen as **locutionary**, **illocutionary** and **perlocutionary** acts, meaning: “what is Emilio saying?”, “what is the force of what he said” the action it asks for and “what is the effect of what he said?” what certain movements it entices you make. Because we are not concerned with a strict decision making / problem solving process like in an airline cockpit, we are not so worried about locutionary-illocutionary-perlocutionary misunderstandings here. But we still aim to for a level of clarity and understanding in the creation of a representation of a teacher (Emilio Greco) who aims to entice the student (in this case the one who is experiencing the installation) towards an achievement of a state of higher ‘body awareness’; that the installation

users' sensorial levels are raised and this is something they can acknowledge. As such *Double Skin/Double Mind* is a program of transmitting information into another body. So how is this happening?

We designed the installation for the user to experience a journey through “learn”, “play” and “create”. The first level is the “demo” level A which gives any visitor a glimpse into the work of Emilio Greco| PC's *double skin/double mind* workshop. The second and third or B + C levels have been designed and developed in the context of *Inside Movement Knowledge* and constitute together the “professional level”, aiming to simulate as closely as possible the actual experience of the workshop itself.

Level B1 is the “professional intro mode” which reconstructs the workshop in space and time. In this mode, the installation approximates as closely the “real life” situation one would encounter in the workshop with the video representation of Emilio Greco talking and physically demonstrating. Here, the user experiences an unalterable linear series of video/ sound sessions, which he or she is invited to follow. Level B2, the “professional explanation mode” gives the user the opportunity to revisit the session made just before. There are more explicit sources of information available in this mode, such as a new window with a “talking head” monitor providing more descriptive background to the movements that are being seen and followed in the main video display on the large screen where Emilio is repeating the movements without speaking at the same time. In this mode, the system gives visual and sound feedback to enhance movement qualities. In level B3, the “professional customized mode”, the installation finally becomes a “tool” in the hands of the dancer (user/ student) who can customize his or her learning session. The order and the number of sessions can be changed and adapted to ones that interest and respond to the needs of the user. Here new windows/ displays such as side views are there for a closer look at the movement practice. Level C is the “play mode”...



understanding of what is involved in doing Greco's work, especially in his characteristic mode of moving. These movements, when executed well, involve a particular intentionality articulated in and through them. Intentionality here does not refer to some kind of idea pre-existing the execution of the movement but rather describes the directionality and the distribution of intensity embodied within the movement and crucial to the quality of the movement's execution. Embodied engagement with the installation allows the user to experience this directionality and intensity, and to develop an awareness of how this intentionality is constitutive of the logic of Greco's movement language."

Date: Mon, 25 Jan 2010
11:13:38 +0530, Chris wrote:

hi Scott,

Maaik Bleeker's paragraph describes very well the "intentionality articulated in and through movements". When it comes to computer motion tracking and design terms this is a challenging thing to work with. What helped me to understand the "core" of the *Capturing Intention* project was focusing with Bertha Bermudez and Frederic Bevilacqua on the "dynamics" of dance—**temporal tracking**—and how one can measure the time dimension of a body moving instead of emphasizing so much only the spatial aspect. For example, we can say we are looking for "elasticity" in jumping instead of measuring the exact height of jumps or the shape of the body moving. We can focus on change over time.

Invisible, imagined aspects of dance were revealed in *Improvisation Technologies* (cd-rom) when, in 1994, we used graphics lines to visualize the architecture of "reorganizing space and time" in Bill Forsythe's work. Emio Greco|PC's emphasis on intention draws our attention to the **qualities of dance**. I suggested in the beginning of the double skin | double mind project that we should develop a "**sensational interface**".

This concept connected to my own knowledge of using sensing technologies on stage in real-time dance performances and my work as a designer for CD-ROM and DVD-ROMs. The



Throughout the B-level learning modes there is various acoustic and visual feedback in the form of graphic icons which support the actions of the user, trying to enhance his or her movement qualities. In the B level, the user can use his or her newly gained physical awareness and knowledge to "play" with the interactive environment's sounds and visuals. We don't know yet if it makes sense to reload the system with other sounds to fully adapt the installation to what we might call a "**creation machine**", but since this is possible on the

DVD- ROM we are thinking about it...

Date: Fri, 22 Jan 2010 08:30:44
+0100, Scott wrote:

Hi Chris

Of course your installation is completely different from the airline cockpit. It's a good comparison to make here since Laura Karreman is writing briefly about the work of Chris Jansen who designs sensor feedback systems for helicopter cockpit pilots, but also competitive sports. Because they are so tightly coupled with directly measurable

outcomes, much less ambiguous than the 'measurements' attained by the DS/DM installation, these type of technically enhanced environments as well as the models and theories that accompany them are of a completely different class to the type of simulation you are trying to create. I wonder -- does the sort of language we use to describe the installation the right language?

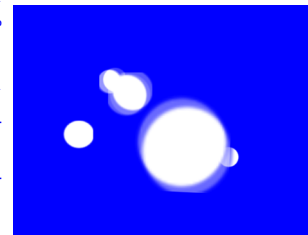
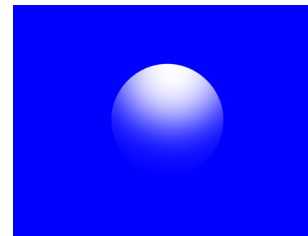
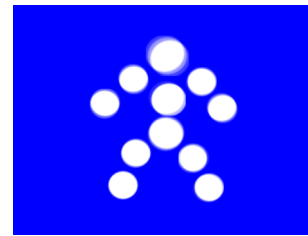
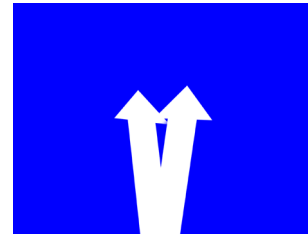
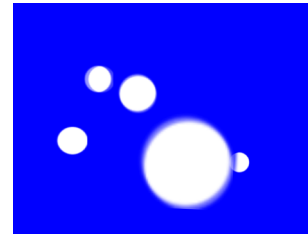
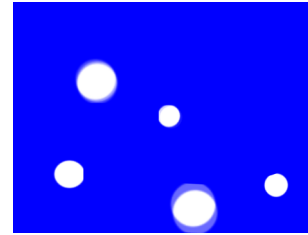
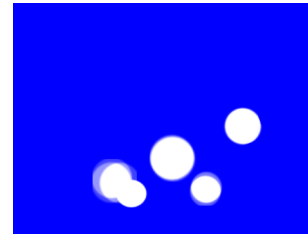
What do you think of this paragraph from Maaik Bleeker's essay in this journal?

"The installation is being developed to transfer to its user an

DS/DM DVD-ROM is intended as a preview of the installation. The installation is now both an environment to reconstruct a workshop and also a “tool” like the DS/DM DVD-ROM. The design of the DVD-ROM involved a strategy of using various media like notation, video and text simultaneously visible in a ‘patchwork of fields’ to reach the core of an understanding of *capturing intention*, or the qualities of dance Emio Greco|PC wanted to transmit in the live workshop. In the third

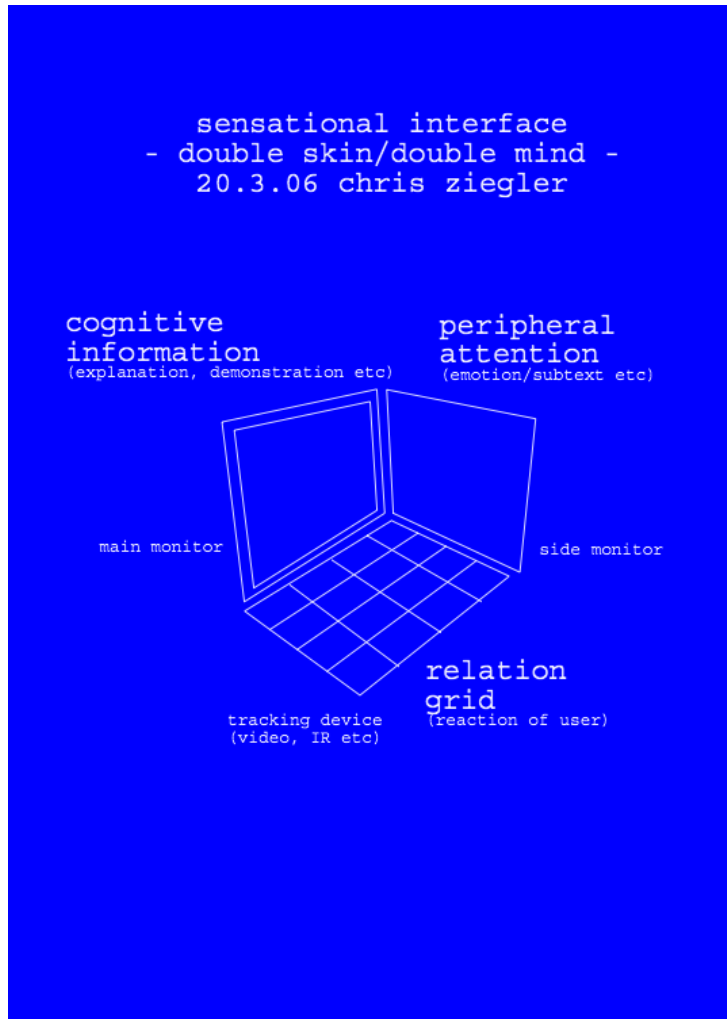
lab, when trying to describe the installation to a new group of dance students from the Amsterdam School of the Arts, I found myself describing the process of approaching this **core understanding** from various angles or trajectories using various media in the installation.

The DS/DM’s cubical design of the installation’s “**sensational interface**” is the protected space where the body is both the subject and the object



of learning and experiencing. Visual and acoustic indicators like emotive iconic animations and sound feedback are used to enhance the quality of the experience while moving and promote learning. The space protects and also challenges the dancer to move with specific qualities.

I would like to stress the term creativity in relation to this learning/ experiencing environment one more time. If you learn as a child, an emotional impact is necessary to remember abstract information: your mother smiles at you and says “well done!” Creativity is a process of association and discovery. In our DS/DM installation environment, the missing teacher of a workshop is replaced by many ways of engaging an individual way of learning. One can customize the timing and the path of going through the chapters. This might sound like one is reading through the chapters of a book. It is actually a workshop - and an interactive installation. Blurring the borders of genres was necessary to reach the core of describing the core of “capturing intention”.



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