



Call for participation (closed)

**Experiencing the Embodied Mind:
high performance psychophysical expertise,
subjectivity research, and brain-computer technology**

**Monday 7 – Saturday 12 October 2013
Tuscany, Italy**

Organized by Rachel Zahn and Massimo Bergamasco



<http://www.percro.org/embodied2013>

Contacts

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Challenge

Francisco Varela and his colleagues challenged the field of Cognitive Science in 1991 with *The Embodied Mind: Cognitive Science and Human Experience*. The after-shocks from that challenge came as a relief for some, but were felt as a betrayal of rigorous, objective science by others. Twenty years later, the term *embodied mind* is now part of any serious debate about the nature of the mind.

Though the void left after Varela's untimely death in 2001 remains, a multi-disciplinary following responded to his challenge and Varela's *neuropsychology* continues to give credence to scientists seeking to examine their own first-person experience and to philosophers needing to test their theories of mind with scientifically verifiable methods.

However, there is a challenge that has not been addressed at its most practical level: Varela's insistence in 1999 that a second-person expert in the particular "first-person methodology" under examination be required to mediate between first-person subjects and third-person laboratory scientists to ensure accurate interpretation.

Goal

Our first response to Varela's challenge was a workshop, "The Embodied Mind: a domain of second person psychophysical experts" (CREA, École polytechnique, February 2012, Paris). Following that 3 day experiment, Shaun Gallagher suggested a more in-depth response to Varela's second-person challenge, and we have again selected teachers of the Alexander Technique to fill the role of second-person experts.

Our goal is to bring together for the first time a group of researchers and Alexander Technique teachers in a collaborative environment. The researchers have interdisciplinary expertise in robotics and virtual reality, medical imaging, the philosophy and science of subjectivity and intersubjectivity, disciplines of physiotherapy and osteopathy, and the practice of meditation.

The results of the Alexander Technique have been measured post hoc but the intersubjective process between teacher and student has never been examined in real time. Though there have been some exchanges before between philosophers and psychophysical specialists, there has never been the opportunity to use:

- EEG technology to monitor the extraordinarily subtle exchange between an Alexander Technique teacher and his or her student in a tangible and rigorously verifiable way.
- Motion capture and virtual environment technology to record and replay third-person perspective 3-D visualization of the relative interaction between the teacher and the student.

Our hope is that this event will provide a unique collaboration for rigorously exploring the first person perspective of direct self-observation of feelings and sensations, the second person perspective of high-performance psychophysical specialists engaging in their coaching process, and the third person perspective of scientific observation and evaluation.

Structure

We are continuing our CREA Model of limiting participation to approximately 10 researchers and 10 psychophysical experts, plus a support staff of 8.

The current plan is to convene at 14:00 on Monday 7 October at Massimo's PERCRO Laboratory in Pisa where we will be able to see and experience the latest work his group has been doing on perceptual robotics, exoskeletons, virtual reality, and brain-computer EEG interface technology.

PERCRO has arranged for a 16:30 bus to take all of us to a charming residential conference center in Gargonza, located between Arezzo and Siena, where we will be able to conduct 5 days of "hands on" experimental collaboration. We will leave Gargonza by bus at 9:00 on Saturday 12 October, arriving at Pisa airport at 12:00.

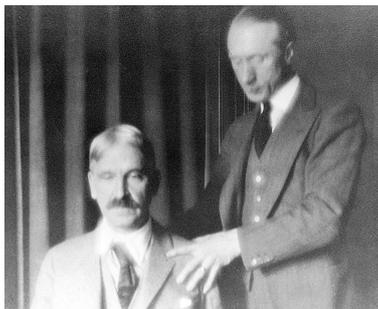
Each day in Gargonza will be organized as follows:

- short (30 min) presentations from researchers and AT teachers addressing their particular perspectives on the science of intersubjectivity, embodiment, disembodiment, future technology, and the training and transfer of skills.
- individual and group Alexander lessons twice a day, for the researchers to refine their first person perceptions of psychophysical congruence
- "world café" thinking sessions for gathering our collective intelligence on the design of experiments, the development of a scientific intersubjective language for describing the experience, and the potential (as well as the dangers) for future technology.

Background: the Alexander Technique

In Varela and Shear's *View from Within*, Carl Ginsburg referred to F.M. Alexander as the earliest of "a pioneering group of thinker-explorers of the twentieth century who were interested in finding practical ways of furthering human development." The American philosopher Richard Shusterman was similarly inspired at Collège de France in 2008, where he introduced F.M. Alexander as the father of somatic education and explained the influence of the AT on John Dewey's philosophy.

The Alexander Technique was also the model for psychophysical re-education favored by Sir Charles Sherrington, William James, John Dewey, Raymond Dart, Karl Popper, Nikolass Tinbergen, Benjamin Libet, and by many successful musicians and actors. The reader is encouraged to watch this short clip from Nikolaas Tinbergen (Nobel Prize winner) describing the AT: <http://youtu.be/XXr-9kQZ0ow> and this clip showing an AT lesson by Thomas Cook in Vienna: <http://youtu.be/KZK2xT6eNBM>



John Dewey and FM Alexander (1917)

The AT teacher remains highly focused on his/her own psychophysical practice while stimulating the student's receptivity to both the philosophy and the praxis with which he/she will develop first-person expertise. The three-years of training necessary to transform first-person psychophysical expertise into second-person psychophysical expertise is what differentiates the AT from other somatic education or therapies. The teacher's first-person consciously lived experience of his/her congruent use determines the success of the lesson. Thus, the AT version of the second-person mediator is a perfect research model for "first-person methodologies".

Background: PERCRO

The Perceptual Robotics Laboratory (PERCRO) studies the control component and the "sense of presence" of humans in Virtual Environments (VE) and in Tele-operation conditions by developing Advanced Interaction Concepts and Technologies for improving communication between humans and the reactive environment. The Laboratory has expertise in the design of haptic systems and deep knowledge of the integration of highly interactive Virtual Environments.

PERCRO hosts a sophisticated large visualization system, the CAVE Automated Virtual Environment, which enables a group of people to experience a fully immersive Virtual Environment in three dimensions. In order to study human motion in VE, special motion tracking technology has been recently developed using a VICON motion capture system (Omg, UK) based on infrared cameras and retro-reflective markers attached to a moving individual and/or object. Software algorithms are capable of processing the images recorded by the cameras and reconstructing the movement of the markers in space in real time. This is a crucial technology for studying human movement and for animating virtual characters based on real captured movements. A working set-up based on VICON motion capture technology will be available in Gargonza for this workshop.



Another research line of PERCRO involves the use of Brain-Computer Interfaces (BCI), a new communication channel through which the neural activity of a person is used to communicate with the external environment. Usually, a non-invasive surface electroencephalogram (EEG) is used to record the neural activity of a person, who may voluntarily "regulate" his or her brain waves to accomplish a specific behavior that is recognized by software algorithms, and translated in the action of a computer or an artificial system.

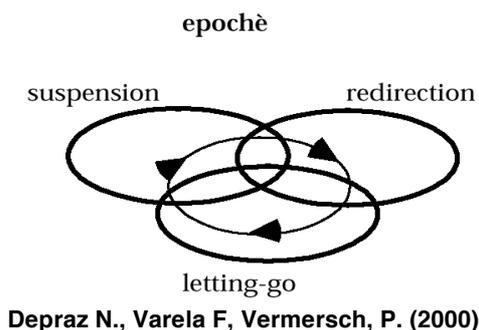
A surface EEG system will be available for the Workshop, in particular PERCRO will provide a wireless EEG system with 8-20 electrodes. The EEG system will be interfaced with the Motion Capture system by means of specific software modules developed at PERCRO to monitor both motion and brain activity of AT teachers and students. The reconstructed motion and EEG signals will be integrated and visualized on a projection screen. All the acquired signals will be recorded for later offline analysis by means of statistical and machine learning techniques.

A video showing PERCRO's activities may be found here:

<http://www.alexanderscience.org/embodied-mind-project/percro-skills/>

More details on the web site

For up to date practical information and bios of the organizers and invited participants, please see our web site: <http://www.percro.org/embodied2013/>



Depraz N., Varela F, Vermersch, P. (2000)