

# MacchinaPerTracciare – Interactive Installation

Ruben Coen Cagli

Department of Physics  
Università di Napoli Federico II,  
80100 Napoli, Italia.  
+39 3343295163  
coen@na.infn.it

## ABSTRACT

Every gesture, every action we take leaves traces. Independently of our will, our existence modifies space and things, and contributes to the “memory of places”. MacchinaPerTracciare (MPT) is an interactive installation that induces an aesthetic experience of the traces we leave, producing a visualization of the recent memory of a place.



Figure 1: A frame from MPT

## Categories and Subject Descriptors

J5 [Arts and Humanities]: Fine Arts.

## General Terms

Algorithms, Measurement, Performance, Experimentation.

## Keywords

Memory, Interaction, Human Behavior, Data Visualization.

## 1. INTRODUCTION

MacchinaPerTracciare (MPT) is an interactive installation, whose aim is to transform the bodily experience of staying and moving in places, into a playful and aesthetic experience. It captures simple movements of people and transforms them into continuously changing graphical images. The images videoprojected in real time invite the spectator to play with her own traces and to guide the projection with her movements. Printed frames of the projection are thrown on the floor at regular intervals, where the spectators leave a further trace with their footmarks.

## 2. CONCEPT

I propose this interactive installation as a poetic reflection about the concept of ‘trace’. Voluntary or involuntary traces – isolated or compound traces - interpreted traces or pure signs.

### 2.1 Traces

1. Every breath modifies the concentration ratio of the gases that air is composed of; every spoken word produces changes in the kinetic profile of the molecules of air; every step leaves a footmark.

2. Every gesture, every action we take leaves traces. Independently of our will, our existence modifies space and things, and contributes to the “memory of places” with lots of plugs left there, sometimes casually, sometimes systematically. A perpetual refocusing of attention on our bodily existence, which we forget sometimes.

3. There is a basic, structural predisposition to leave traces, and it is a fundamental factor in almost any of the survival strategies - broadly speaking – adopted by any animal species: from the feromone that ants learn to follow as a localization cue, to the millennial activities of writing and drawing.

4. How could our traces become relevant in the interaction with computing systems? Every trace can be captured by sensors, coded into abstract data, elaborated by a processor. This abstraction process can be followed by the re-materialization process: transforming the traces in new visible signs that can be used to draw the memory of places.

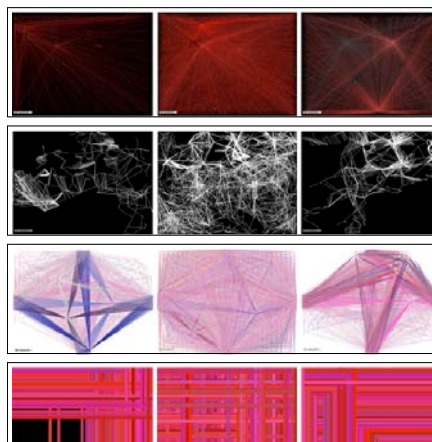


Figure 2: Different visualizations of MPT

### 2.2 MPT as a ‘Creative Ambient’

The presence, pervasive and often invisible, of digital computing systems in our environments – a scenario prefigured in the 90’s as Ubiquitous Computing [1] and today called Ambient

Intelligence – represents an exciting possibility for the construction of cutting edge artistic experiences that really deserve to be called contemporary [2,3].

Being a visual artist interested in this possibility, I found a rich source of inspiration in the deep philosophical and scientific foundations of the field that today is called Computer Science. At the beginnings of the last century a number of researchers in logic and mathematics, among them Alan Turing, were the first to catch and formalize the idea that some forms of human reasoning, and more generally speaking human behaviours, can in fact be represented as sequences of symbols, and reproduced effectively by a machine [4].

Symbolic elaboration is a material possibility, rather than a disembodied mental process. Aside from the well known evolution of Computer Science since then, it is worth noting that such a revolution in modern thought opened the way to the interpretation of human behaviours as data streams.

MPT is a project that, paraphrasing the words of Lev Manovich [5], is intended to involve the spectator in the construction of a dynamic representation of the “subjective experience of a person living in a data society”, namely the condition of being “immersed in data”, and even of being data streams ourselves.



Figure 3: Drawing through body movements

### 2.3 Description

MPT defines an active zone of the space, a zone where the presence and movements of people is captured and then transformed in real time into fluid graphical images [6]. These are visualized in front of the spectators and continuously change in response to their movements. The images generated are purely graphical to make the interaction as explicit as possible and invite the spectators to play. Printed frames of the projection are thrown on the floor at regular intervals, where the spectators leave a further trace with their foot-marks.

### 3. FIRST IMPLEMENTATION: ISSUES AND RESULTS

MPT was first implemented and exhibited in July 2006, in the post-industrial setting of BadMuseum, Casandrino. During the opening it was played by about 200 participants, but no more than 10 at the same time in the active zone (See fig. 3, 4).

A videocamera, a videoprojector, a pc and a printer are hooked up to the ceiling. The videocamera monitors the space

below. The video stream is processed in realtime by two custom software, one for motion tracking and, subsequently, one that produces images that change depending on motion parameters. The images generated are projected on the frontal wall, and continuously change in response to the movements of people. The printer ejects, at regular intervals, numbered still frames of the projection, that fall on the floor; the spectators then walk onto the prints and leave further traces. All the software was written with the aid of the open source Processing IDE [7]. Real time video acquisition was however not feasible with the Processing Libraries available at that time, so the JavaMediaFramework API [8] were adopted.

Due to the short distance between the camera and the floor (less than 3.5 m), we opted for a wide angle webcam; we measured a horizontal view angle about 51 deg, which allows for a ratio *view field width / camera-to-floor distance* close to one. Up to 10 persons could move in the active zone of MPT at the same time.

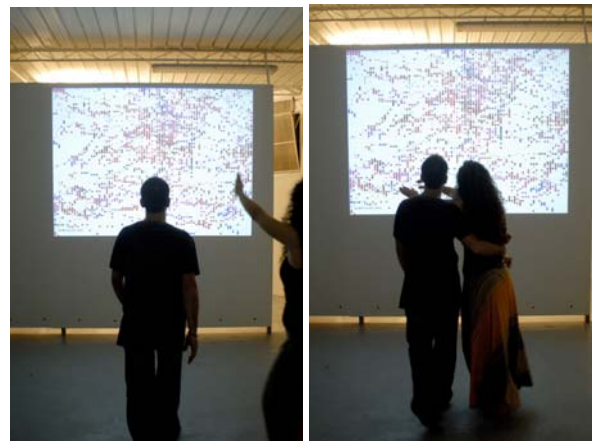


Figure 4

### 4. ACKNOWLEDGMENTS

I wish to thank the director of Bunker Art Division and the BadMuseum G. Buonanno for his enthusiastic support, and all the crew. A former presentation of the concept took place at PixelAche 2006 in Helsinki, and I wish to thank J. Huuskonen.

### 5. REFERENCES

- [1] M. WEISER, “The Computer for the Twenty-First Century”, Scientific American 1991, pp. 94-100.
- [2] C. PAUL, “Digital Art”, London 2003.
- [3] S. WILSON, “Information Arts”, Cambridge, Mass. 2002 .
- [4] G. TAMBURRINI “I matematici e le macchine intelligenti. Spiegazione e unificazione nella scienza cognitiva”. Bruno Mondadori, Milano 2002 .
- [5] L. MANOVICH “Data Visualisation as New Abstraction and Anti-Sublime.” 2002 ( <http://www.manovich.net> ).
- [6] The first predecessors of this kind of installation are the Responsive Environments, see M. KRUEGER, “Artificial Reality”, Addison-Wesley, 1983.
- [7] <http://www.processing.org>
- [8] <http://java.sun.com/products/java-media/jmf>