



## International workshop: AHO+BARTLETT= i-DAT

25th - 27th February 2009

## A trans-disciplinary research workshop on Arch-OS

### Introduction

Architectural ecologies: from aesthetics to behaviour, an interdisciplinary approach to affecting the relationships and interactions between inhabitants and their architectural environment.

This workshop will experiment with and forecast potential future use, impact and value of using 'data' generated by a building and its inhabitants, to recursively influence behaviour, creating a symbiotic ecology with a potential greater environmental awareness. Through an interdisciplinary approach it will encourage the development of an organic list of solutions or potential methodologies for building design based on the study of the main factors: behaviour, data and interaction. The resultant hybrid construct has the potential to expand and evolve our physical and conceptual space, and behaviours and interaction within these.

The word "building" contains the double reality. It means both the "action of the verb BUILD" and "that which is built" – both verb and noun, both the action and the result. Whereas architecture may strive to be permanent, a building is always building and rebuilding. In such a state the space boundaries and thresholds maintain a dynamic pluralism between contemporary tectonic architecture and abstract environmentally generated data.

Buildings have often been studied whole in space, but never before have they been studied whole in time. The interests reside in a synthesis that proposes that buildings adapt best when constantly refined and reshaped by their occupants, and that architects can mature from being artists of space to becoming artists of time.

### Context

The workshop will use the Arch-OS system ([www.arch-os.com](http://www.arch-os.com)) as a starting point for this investigation. Current literature on Intelligent Buildings suggests an ideal of a building as an autonomous system that controls its internal and external environments. The model, whose origin lies with early models of artificial intelligence, effectively treats the building as a slave to human needs, and appears to vest more intelligence in the building than its occupants. Arch-OS exemplifies an approach of seeing environments as extensions of human sense, by increasing building occupant's consciousness of their environment.

With this ecological model of Intelligent Building we can now question the autonomy of the building from its users. Sensors within the building yield data for processing by the system, which in turn actuated equipment that affected the environment.

The Arch-OS project was created to enable a greater transparency and understanding of the complexity of modern buildings and the relationship between its inhabitants and their behaviour. The system enables building occupants to reflect on the environmental impact of their interactions, both physically and through the extended social interactions enabled by communications technologies. Through the acoustic and visual representation of their social activity combined with live representations of data generated by the electro-mechanical and environmental activities of the building, occupants are able to better understand the complex relationships that exist between each other and their environment.

By studying a fragment of the life of a building's history through data collection, what can we as designers learn?

### Task

The workshop is structured in four phases:

1. Requirements definition and behaviour interpretation
2. Data collection
3. Data visualisation and experimentation
4. Organic list of solutions or potential methodology

Keywords: data, sustainable architecture, building management systems, data visualisation, architectural systems, organic behavioural patterns, ecology and environment.

Before you arrive we will collect last weeks data from the building, which will include temperature levels, CO2 levels and motion capture, for you to use as your blueprint for your architecture...

The Arch-OS system is essentially an open source reader of the building energy management system. By using data from a building as it is being used, can we develop architectural spatial strategies that will shift and adapt to this residue of the building. Each group will work closely with a specialist Digital Art & Technology student to develop different spatial proposals for the building. Your designs should manage and manipulate this spatial residue as a transient occupant of the building. One of the most important questions one should ask is why? Also, what does your proposal change of shift in the building? Does your proposal suggest a subtle architecture that can be only read through the reader a.k.a Arch-OS.

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### Schedule

Workspace:  
Babbage 213,  
i-DAT (B312/323 Portland Square),  
Immersive Vision Theatre,  
Green Screen - Portland Screen.

Wednesday 25th February

1300: Workshop introduction - Immersive Vision Theatre.

1345: Arch-OS data distributed/ Site Reconnaissance - Portland Square building.

1415-1800: Six groups: generation of 4D manifestations of the past model.

Thursday 26th February

1000-1200: Prototype sketch shown in the immersive vision theatre of all six groups

1300-1800: Projecting and recording prototypes within the Portland Square building.

### Project Team

**i-DAT**  
Birgitte Aga  
Pete Carss  
Gianni Corino  
Mussaqa Garghouthi  
Lee Nuttbeam  
Shaun Murray  
Mike Phillips  
Chris Saunders

### AHO Staff

Per Kardveit  
Joakin Skjottaa  
Tomas Stokke  
Magne Magler Wiggen

### Students

- Group 1: Bartlett / AHO / UoP Green Screen
- Group 2: Bartlett / AHO / UoP Immersive Vision Theatre
- Group 3: Bartlett / AHO / UoP Green Screen
- Group 4: Bartlett / AHO / UoP Immersive Vision Theatre
- Group 5: Bartlett / AHO / UoP Green Screen
- Group 6: Bartlett / AHO / UoP Immersive Vision Theatre

### Equipment

Software (Action script, Processing, XML ...)  
Still and video cameras with Fish Eyes.  
Six digital projectors  
Six video cameras  
Two inflatable domes  
Digital Media Labs (PC/Mac) equipped with a range of digital media software.

### References and Resources

- Anders, P., Phillips, M. 2004. Arch-OS: An operating system for buildings. In proceedings of the 2004 AIA/ACADIA Fabrication Conference, Cambridge and Toronto, Ontario, Canada. 8-13/11/04, pp. 282-293
- Mc Taggart, Lynne. The Field. London: HarperCollins Publishers, 2003.
- Murray, S. Disturbing Territories. Hamburg: Springer Wein New York, 2006.
- Phillips, M. Speed, C. Arch-OS v1.1 (Architecture Operating Systems). Software for Buildings. Engineering Nature, Art & Consciousness in the Post-Biological Era. Ed Ascot, R. Intellect. ISBN 1-84150-128-X, p. 177-182. (2006).
- <http://www.arch-os.com/downloads.html>
- <http://www.i-dat.org/toolbox>
- <http://www.r-o-b-about.com/en/biennale2008.php>

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