

# **Art Research: EDEN3: The Breath of a Tree**

**The cultural dimensions of climate change, an evolution in subjectivity.**

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## **Abstract**

'Eden3: The Ethical Aesthetic Impulse' is the title of a research initiative, with publications, exhibition and performance outputs whereby artists and musicians work with technologists and scientists to reveal the biogenic interaction of trees with the changing atmospheric chemistry and climate of cities. The intent of the project is to reveal a tree's role in atmospheric exchange, while trying to understand the potential for empathy, and its relationship to imaginative and responsible human response.

## **Description**

The Eden3 project is a five year artist-led, climate-change research initiative. In simplest terms our intention is to provide a 'mind/body experience' of trees by attending to the sound of physiological reaction (photosynthesis and transpiration) as one leaf adjusts to the day to day changes (rush hour traffic, crowds of people) in ground level atmospheric chemistry in cities. Physiological data is transposed into sound through computer software. We have chosen sound for its aesthetic purity with the goal to hear the trees more clearly as they react to changes in CO<sub>2</sub>, Temperature and Humidity. The initial system is called 'Plein Air', a stable single platform system that embraces the portable easel, as a metaphor for the historic practice of open air painting. Where Millet extended the idea of landscape to peasants working in the fields and the impressionists examined the phenomenological exchange between light and material; Goto extends an interest and the intent to seek empathic exchange with the trees themselves. At the same time, recent work with the system raises questions about what we expect to 'hear' when we listen to nature, as it reacts to intense inputs of carbon dioxide?

In 2010 we began a concept development plan for a hand held system that will allow a performative approach to producing sounds with many leaves on a large tree, or a stepped/temporal experience of a grove of trees. In the longer-term, Initial discussions we have begun discussion with Prof Hocking and others, about an installed and monitored system that will let us experience a symphonic/cacophony' of many trees at once. The work continues Collins' and Goto's interests in the integration of aesthetic, ethical and cognitive approaches to experience that transcends utility but has an impact upon human values.

Why Trees? Trees are the largest most dominant natural, aesthetic element in the world. They are essential to human life, since ancient times they have had both utilitarian and intrinsic value. Climate change research reveals that trees have an almost instantaneous response to carbon dioxide emissions - challenging our perception of them as slow moving life forms.

Doctoral Research. In 2007 Reiko Goto began doctoral study (related to the project) with Prof Anne Douglas at Robert Gordon University. The title of the thesis is, *Ecology and Environmental Art in Public Places. Talking Tree: Won't you take a minute and listen to the plight of nature?* The development of 'Plein Air' was directly tied to her intention to examine questions of empathy; particularly the work of Edith Stein (1917). Stein emerges as a significant critical contract through which to examine the inter-dependence and interrelation of humans and trees as dynamic and diverse communities on the earth. The research is also informed by a strong position of aesthetics of art, particularly the dialogical aesthetics by Grant Kester. The key components of his argument are conversation, inter-subjective exchange and empathic relationship. The philosopher Emily Brady provides insight on aesthetics of the natural environment. She positions human imagination as a mediating force between human beings and nature. The artistic context of the thesis is provided by specific projects by Joseph Beuys '7000 Oaks' as well as Helen and Newton Harrison's 'Serpentine Lattice.'

## Background

The central hypothesis of this research suggests that life is interdependent and interrelated with nature even within our most urban environments. Our plan is to develop the empathic potential of cross-species exchange. With the intent to make a small contribution to the emancipation of nature by expanding what is known and understood about the life of trees. We have developed a poetic sound/music experience which has a fundamental relationship to the physiological response of trees to urban environments. With this project we intend to investigate and elucidate cross species inter-relationship by revealing reactions to shared environmental context and conditions. The work will result first in a series of gallery exhibitions and performance, then a series of larger outdoor art and science installations. The work will be conducted in various cities around the world. Documentation will examine the hypothesis and research questions, frame the methodological intent of the creative response then examine the audience response when they hear – what can be described as the 'secret life of trees'.

## 2008

Collins and Goto worked with Carola Boehm and Mathew Dalgleish to set up the plant photosynthesis monitoring equipment and initiate initial data testing and then subsequent sound experiments. Prof Trevor Hocking reviewed the project and gave feedback on the science. With the system up and running, and protocols established, we were prepared to monitor trees (data capture) then process that data to sound.

From August through September 2008, Collins and Goto assembled nine native trees in a controlled studio environment at the Headlands Center for the Arts in Sausalito California. They focus on complete tests on three of those trees using plant physiology based sound/music interface equipment. The moral and creative intent of the work was to develop a 'true' sound-based representation (and viewer experience) of tree reaction to typical conditions of an urban environment. An additional element of the work was to test the concepts and methodologies that inform and define the work. We arranged group meetings with colleagues from Northern California who have made a commitment to environmental

practice in art and design. We brought them together to discuss three questions specific to the project, as well as to listen to, and comment upon the first sound files.

- *Are you aware of artwork that contributes to an ethical relationship to the natural environment?*
- *Has, or can art move from an ethical/aesthetic stance to a more active emancipative role?*
- *How might we ascertain arts contribution to the emancipation of people, place and things?*

Collins says

*'As this residency came to a close we began to understand trees in a new way. The project develops art and science based methods to explore the separation between humanity and nature, subject and object and what it means when technology provides us with an experience that bridges that gap.'*

## **2009**

In late 2008 the project moved into the University of Wolverhampton's Crop Technology Unit (CTU) in Compton at the request of Professor Trevor Hocking. At the CTU we sustained specimens in greenhouses and ran experiments in climate controlled light chambers.

Matthew Dalglish decided that to achieve real time sound the interface had to be rethought and rebuilt. We worked with 'Arduino-microprocessors an open source embedded computing device. Sensor data is transferred through the 'arduino' to a laptop computer. Dalglish has written new software to produce the real-time sound with MaxMSP an interactive multi media, hardware and software authoring tool. In January 2009 the systems began to work although we found that we had to keep simplifying the system and concepts behind the work, to get the system to function. We settled on a simple synthesized sound for the prototype, and went from a complex reading of the data to simple differential equations. We then began refining the prototype and building a display using a plein air painting easel to organize the equipment and create a historically referential visual focal point for this art/science experiment. Development ran through the autumn.

## **2010**

Various tests have been run in Cornwall and Aberdeen UK, fine tuning the system and its components for July 2010 exhibition at Peacock Visual Arts Aberdeen. Initial work has begun with a technical team, to improve scientific range of the prototype (multi-parameter sensing and photosynthesis/respiration analysis). We have also begun talking to musicians interested in appropriate voice, and an appropriate level of complexity to reveal the 'breath' of the tree. Collins has begun to conceptualize a more performative system. The team is currently reviewing further exhibition sites for the prototype, and the potential to work with long term ecological research stations.

From May through August 2010 Collins was a Visiting Research Fellow at the Institute for Advanced Studies in the Humanities (IASH), University of Edinburgh. (His collaborative partner, Reiko Goto was immersed in her final months of work on a PhD at the time). Working amongst the arts and humanities scholars at IASH Collins was reading aspects of German aesthetic philosophy to better understand ideas of freedom and subjectivity and the intellectual relationship between society and nature. Collins was seeking a better critical understanding of current work generating new ideas and experimental application through visual art practice.

### **Eden3 Exhibitions**

Goto, R. Collins, T. Et al (2012-13 under development) Wolverhampton Art Gallery, UK.  
Goto, R. Collins, T. Dalglish, M. (2010) *Plein Air: the Ethical Aesthetic Impulse*, Curator Angela Lennon, Peacock Visual Arts, Aberdeen Scotland

### **Eden3 PUBLICATIONS and ARTICLES**

Goto, R., Collins, T. (2010) *Plein Air: The Ethical and Aesthetic Impulse*. Aberdeen: Peacock Visual Arts, (exhibition catalogue.)  
Goto, R., Collins, T. (2010 forthcoming) Eden3 – The ethical, aesthetic impulse. In Brady, E. And Phemister, P. (Eds.) *Embodied Values and the Environment*. London: Springer-Verlag.  
Goto, R. (2010 forthcoming) Plein Air and Emergent Aesthetic and Ethical Impulse. in

Montag, D., and Tyzlik-Carver, M. (Eds.) *AIAS 2010 Proceedings*. Falmouth UK: University College Falmouth.

### **Eden3 RESEARCH FELLOWSHIPS AND ARTS RESIDENCIES**

Summer 2010, T.Collins, Institute for Advanced Studies in the Humanities, University of Edinburgh

Winter 2009, T. Collins, M.Dalgeish, R. Goto, Crop Technology Unit, University of Wolverhampton

Summer 2008, R.Goto and T.Collins, Headlands Center for the Arts, Sausalito, California

### **Eden3 CONFERENCES AND SEMINAR PRESENTATIONS**

Sept 2010, Institute for Advanced Studies in the Humanities, University of Edinburgh

June 2010, On the Edge Research, Robert Gordon University

Feb. 2010, Institute for Advanced Studies in the Humanities, University of Edinburgh

Oct. 2009, AIAS Conference University College Falmouth

June 2009, Arts and Forestry Commission, Day Conference, London

May 2009, School of Art and Design, University of Wolverhampton

May 2008, Institute for Advanced Studies in the Humanities, University of Edinburgh

Oct. 2008, Landscape Institute West Midlands

Nov. 2008, Grey's School of Art, Robert Gordon University

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