LIVING COMPUTERS, MARS SIMULATIONS AND DIY STARSHIPS
Advancing cross-disciplinary and cross-cultural collaboration

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Fig. 1. a. schematical representation of the ventral view of a Chironomus head capsule (adapted from Oliver et al. 1978), b. normal mentum, c. deformed mentum showing a mentum gap or so-called Köhn gap, d. normal mandible, e. mandible lacking one inner tooth, f. normal antenna, g. deformed antenna, h. normal pecten epipharyngis, i. deformed pecten epipharyngis with fused teeth. All illustrations are composite drawings based on photographs, except f and g (adapted from Madden et al. 1992). Nomenclature follows Saether (1980).
- Diversity
- Autonomy
- Leadership
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Starships – or interstellar craft – are considered the next major leap in the exploration of the Cosmos by mankind. Currently starship development is in its infancy due to the lack of a practical and adequate propulsion technology. If we consider manned interstellar travel the challenge is even more complex, and also shifts towards creating a fully autonomous system that is resilient over a long period of time. In fact a starship can be considered as the ultimate model for closed, autonomous systems, and as such has functional applicability in creating a more sustainable Earth. Traditionally, space systems design is being guided by incorporating as many contingencies as possible, and then training and anticipating for that. However, because of the sheer scale and inherent unpredictability of an interstellar mission, this approach cannot be relied upon any longer. A fundamentally different design paradigm is needed.
USS Enterprise, Star Trek, 60s & Imperial Star Destroyer, Star Wars, 70s
Watch on Vimeo
https://vimeo.com/61763869
Biomodd [LBA²], UPLB, Los Baños, 2009
Watch on YouTube
https://youtu.be/uf01YJKYWBg

Biomodd [LBA²], video by Waise Azimi & Angelo Vermeulen, 2009
Biomodd [LBA²], UPLB, Los Baños, 2009
When Ideas Migrate: Postcolonial Perspectives on Biomodd \( L*B*A* \)

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Abstract

Biomodd is a global series of art installations in which computer technology and ecology converge. Computer networks built from upcycled computer components are provided with living internal ecosystems. In a symbiotic exchange, plants and algae live alongside electronics and use the latter’s waste heat to thrive. Sensors and robotics provide additional interaction possibilities with the organisms. The first version of the project was completed in 2013, while the second version was built in the Philippines. Using a postcolonial stance, we reflect on the challenges involved in translating the project from one context to another. We focus on issues related to heat recycling in the tropics, authenticity and hybridity, obsolescence and the convertibility of capital, cultural sampling, remixing, and appropriation, and structures for social organisation. We advance Biomodd as a significant contribution to art-science collaborative initiatives in the global South.

Keywords

Postcolonial computing, installation art, collaboration, ICT4D, BE4D, digital games, e-waste, recycling, gaming, ecology, biological art

Introduction

Many practices of contemporary art have wandered into and act up shop in territories traditionally held by science, and vice versa. [1] This crossover between art and science seems particularly noticeable to those of us who live in what media theorist Rolando Tolentino has termed “advanced capitalist countries”, or, where intellectual practices and concerns in scientific and artistic disciplines have experienced particular shifts and turns. [2, p. 101] However, a review of the literature on art-science matters in so-called “global South” countries (like the Philippines, from where we are currently writing this paper) reveals that questions of existential philosophy or aesthetics hardly figure. Instead, issues that do appear to matter—and for which the study of pure and applied sciences is encouraged—include improving food security, achieving better maternal health outcomes, preventing the spread of communicable diseases, and addressing other challenges articulated in texts such as the United Nations Millennium Development Goals. [3] In response to these socio-economic challenges, perspectives on information and communication technologies for development (ICT4D) and human-computer interaction for development (HC4D) have been advanced within the computing science. [4] While such perspectives are interdisciplinary and do draw from the arts, much work could be done to advance the intersectionality of the arts and the sciences and their role in addressing the diverse range of issues particularly in the “imperialised formations” of the global South. [5, p. 101]

For instance, art-science collaborations matter in addressing the global challenge of fostering what might be thought of as a critical awareness of coexistence. By this we mean a shared understanding of how the flourishing of human societies relies on our interaction with the natural ecosystems on which we depend, and on a critical engagement with the artificial systems that we create. This includes an acknowledgement and understanding of the fact that social, natural and artificial systems are continuously impacting on and reshaping each other. These dependencies and interactions have undermined a diverse and bountiful corpus of artistic and design work that has emerged over the years, marked by an interest in imagining a new “ecology of relations” through interfaces and systems that link humans, organic materials, and machines. [5] For instance, The Telegraph Garden features a robotic arm that tends to a garden and which human participants can remotely control. [6] Mussels control lights and sounds in Natalie Jeremijenko’s ART/ISEA2011. [7] Receiver uses electric motors to agitate algae that luminesce in response to the heart rate of their users. [8] Legend of the Sea Lord uses mobile technologies to deliver a “mythological spectacle” and parallel on the impact of human activity on marine ecosystems. [9] Each of these cases, the artists have responded to the invitation to address critical awareness of coexistence through poetic and technology-led forms of interventions.

Biomodd Themes and Approaches

Biomodd imagines and integrates relationships between real and artificial systems. The project was the second author of this paper in 2007 and has taken in collaboration with various groups and in the USA, Philippines, Slovenia, Belgium, and New Zealand, Chile, and the UK. [10] While some of the different Biomodd versions project does not solely aim to create a singular like many other process-oriented projects, Biomodd nevertheless coalesce into physical structures, which installation stands as a material testament to the negotiations, and other exchanges underpinning.

Biomodd is predicated on a range of concerns that take on a conceptual framework: hacking, and hardware hacking: Biomodd’s work from the practice of case modeling, the transforming computer cases into imaginative Biomodd is in spirit by the codes and techniques of computer virtual environments. Its creative reuse: Obsolete hardware is Biomodd functionally and visually. As we discuss in the next section, the difference between obsolete in industrialized West and in the global South ecological and design problems in LEA."
Biomodd [NYC4], virtual component of entangled reality system, NYSCI, 2011-2013
Biomodd [NYC⁴], robotics component of entangled reality system, NYSCI, 2011-2013
Evolvability
Seeker, various locations, 2012 - (ongoing)
Seeker isolation missions, Z33, Hasselt & Museum of Contemporary Art, Ljubljana, 2013
There are now 9 humans from 5 nations together in space on the International Space Station: go.nasa.gov/1FnafB0
HUMAN BIOLOGICAL ARTIFICIAL INTELLIGENCE ROUND TABLE
Maxwell Port - bridging towers
In this second part, the aim of this experiment was to create an optimised connection between the Maxwell Port towers and designing a landscape pattern which will provide outdoor activities as well as bridging the towers. The slime mold was used as a tool to find optimised patterns in three-dimensional space showing the connection between different floors of different buildings according to the placement of nails.

The 3D meshes had to be printed at an external company due to the unique geometry. The polymer laser sintering method was used since it doesn’t rely on scaffold structures that would interfere with the geometry. Further, this printing technology allows printing in sub-millimetre dimensions in all planes, before the experiment could start the containment box and the grids had to be pre-processed. First, the containment box was filled with a hydrophilic access point and drainage holes for condensed water. Second, the grid had to be connected to the containment box using stainless steel in order to send it securely to the MRI facility. Then, all equipment, the 3D meshes and the containment box were sterilised with ethanol and placed in the glove box. After an additional sterilisation of the slime mould and sterilised food (20 min 60°C) were reseeded and placed in strategic points on each layer of the grid. During the growth process, the specifications were extracted from the box and were added again prior to tissue transfer to the MRI facility.
1. Radical integration
2. Evolvability
3. Co-creation