

The geography of mobility: Bodies and technology

Technologies such as augmented realities, mobile and locative devices and computer vision systems, when integrated into choreographic practice, can liberate traditional notions of time, space and movement. Panel members will explore the specific aesthetic concerns and the impact on performance practice that results from the convergence of technology and choreography. How does the integration of the body and technology significantly shift the relationship between the performers and audience?

Bonemap is a creative intermedia arts partnership often working with interdisciplinary teams of artists. It's a collaborative and hybrid, fluid and thoughtful journey.

- **We Practice creative ecological acts** - interrelationships are essential to our practice. Design permeates our dialogue. Interest in intuitive design and interfaces.
- Reside in Cairns approx. 3000k north and Emerald End 60k west.
- **Transience** and **tropical** one of Australia's most diverse landscapes. reef, rainforest and savannah
- We live in this particularly sensitive geographic environment, where the weather is a prominent dialogue. The ephemeral nature of performance leaves little human impact. Partly because we do it for the lens; also use existing infrastructure (the internet, messed up environments with human intervention and urban remains);
 - Transgress the romanticism of the landscape and the figure in it and broaden the dialogue of the environment.
 - Microcosm of what's happening in larger urban locations.
 - De-centred as a political choice.
- Diversify **skills** and production **location** to conduct a sustainable art practice.
- Access to less urban infrastructure means being more entrepreneurial and efficient with our resources. Fortunately that's part of our creative dialogue. Technology is incredibly expensive to work with so we're interested in the carbon footprint it takes to create and produce our work. I.e. Office is at home where we have photovoltaic power, can walk to work

Takes the temporal and ephemeral and reinterprets moments seeks a **transformative experience** for the participant. Our process is a trajectory of becoming... knowing and unknowing. Inherent multiplicity in our work and the process can become the product.

Organic process, embodied research

- fieldwork expeditions
- field studies observing
- cross-cultural exchange

For over a decade our collaborative projects have focused on decentralized zones in a number of countries including Singapore, Wales, Japan and regional Australia. The Bonemap aesthetic discipline is a hybrid mesh of performance and media arts framed by an overarching ecological philosophy placing the context of their creative practice in the environments we inhabit and often ignore. Bonemap's hybridisation is a rupture crossing between gallery, theatre and alternative platforms, and is a natural response to engagement in an intermedial creative ecology.

Recent projects and research has included media and performance festivals, audience interactive performance interfaces, computer vision systems for show controls and projection mapping, augmented reality interfaces, and mixed reality networked performance.

- We encourage the **audience not to be sedentary** in engaging in our work.
- We have been in a steady and constant way researching interaction in lo and hifi environments between people, their senses and objects. This lineage comes from producing various performances and environments, observing audience interaction.
- The nature of this evolution is that through observing the audience when they know or don't know that they are being watched provides us with insight into empathetic

relationships - show how people are engaging in environments and with objects that we are creatively producing.

- **Challenge perspective** of viewer. Theatrical environments and actions can fracture reality through use of illusion, as can technology. We use Technology to assist in transposing environments and manipulating time and place in a bid to provoke insight through experience and empathy.
- Provide author (participants) as opposed to us (creative producer) with more flexibility for engaging with the concept and creativity of the work. Phenomenon of user generated content for performance environment.
- The preference of the screen to object/person ratio. Where does the audience attention lie/go? Potentially its more cerebral and less physical because of the sedentary nature of paying attention to a screen. The more one interacts virtually the less they are interacting on the physical plane, or are they? Can we engage people through virtual and physical space spanning the distance between worlds?
- Create environment conducive to **authentic movement** - participants engage in spontaneous expressive movement exploration in / with the interface.
- Constant switching from passive to active viewing, induces a heightened spatial awareness of self and a more internal sense of the spatial, physical and conceptual relationship.
- Our **methodology** investigates the relationship between body, environment, and time, partly through observing the **macro environment** (that larger than the human body) and the **micro environment** (smaller than the body)
- **The body is our interface with the world. It's the first perception with how we experience the world. The body in/as environment.**

Dance is constantly evolving as a '**living**' form of culture. Norman Doidge, MD in his book, *The Brain That Changes Itself* investigates neuroplasticity -

- "...the brain is structured by its constant collaboration with the world, and it is not only the parts of the brain most exposed to the world, such as our senses, that are shaped by experience. Plastic change, caused by our experience, travels deep into the brain and ultimately into our genes, molding them as well..."
- Plasticity is a term, referring to the brain's unique ability to constantly change, grow, and remap itself. The "plastic" in this sense refers to "moldable", as it can constantly adapt itself to deal with new input and information.
- Every time the brain encounters information, it reworks itself to accommodate it, and creates a map of the information it contains so that it can readily retrieve information
- This innate plasticity provides potential for **interactivity** and dance, in that we are making intuitive body / mind design interfaces "art" to facilitate transformative experiences, while participating in social, political and cultural dialogue. Humans are not hardwired, as exposure to what we creatively produce influences the development of the body and human endeavour.

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Ever participated in or delivered a presentation by teleconference and you can't see the speaker; or hear the audience's question?

Important to think through what experience you want the end user to have. Do you want them to feel empowered or suffer from position envy?

Going to talk through **COVE as a case study** because it highlights some considerations for aesthetic concerns in the convergence of technology and choreography and relationship to audience .

Undertook research to make a work *Cove*, knew we wanted to make it immersive, interactive and aesthetically resolved.

- **Show making of *Cove*** Get a sense of the scale of the work.

Cove is an interactive media arts experience that transforms the interior of the theatre into an immersive space that places the audience at the centre of an imaginary geography. *It's* a subtle interactive space filled with ephemeral light sources, projection and sound. Interested in meteorological and atmospheric effects to create a transformative environment inhabited by the performer. Large forms integrate into the work as both sculptural elements and projection surfaces like ancient landmasses with the fleeting atmospheric effects in the work representing the sanctuary of a 'cove'. Sculptural representations of sea passages and landing sites integrate with media and performance to complete the immersive quality of the installation.

Looked at the relationship of sculpture and performance by engaging an infrared tracking system allowing the audience's movements to interact with projected light in the space. Wanted to project onto a vapour screen, create 3D sculpture, beyond our resources. focused on technical innovation where audience entering the work navigated their way through sculptural vapour screens and dance performance.

Explain basic elements of ***Cove* – an event for one**

Developed the work with a programmer (Jason Holdsworth) who is a musician and a musician (Steven Campbell) who is a programmer, and a theatre technician (Stephen Barton) who is also a musician.

Audience arrives, greeted by an usher, usher gives some directions, ie. movement is rewarded, etc. Audience enters the work they have 10 minutes to explore it. Enter a pre-set where they step into a dark space with a vaporous floor, they think they are alone. They see a butterfly, they can make it move by gesturing, this evolves to particles and sound moving as they move. Suddenly they become aware that there is a performer in the space. They are not alone. The audience interacts with the projection, sound and dancer, who is leading who, it's a theatrical conversation without words. A lot more happens. At the end of 10 minutes the audience is left in a 'game over' sense in the pre-set state. They exit there is 5 minutes where the installation resets and then the cycle begins again for the next participant...

Each 10 minute session is a unique experience. People had to book in and we ran in approximately 25 times a day.

Intuitive Interfaces - Consider Design

- **Define the parameters**, try to make them intuitive (concept, workflow, methodology / technique, outcome, sightlines)
- **Focus** attention
- Have **contributors** involved at the concept stage

Consider **User Knowledge** base –

- What is the audiences expected knowledge for **engaging in the artwork**? Have to be able to predicate this by devising an interface and testing the system. What kind of choreography suits the situation. All this is part of the design interface, or art.
 - The knowledge the audience or user have when they arrive at the design (**current knowledge**), what knowledge they'll need to complete their tasks (**target knowledge**), and what the design needs to do to help them complete the task (**gap knowledge**) are the key ingredients for making an interface that seems 'intuitive' for the audience.
- Gap knowledge - Do you simplify the design interface or train the audience?
 - *Cove* audience was trained through explanatory text in a program provided by an usher who also briefed them on the parameters.

- Reflected on how to reduce the complexity of the design for the audience.
- We knew that the current knowledge point and the target knowledge point were not identical. So when the user walked into the design, they would not know everything they need to, to operate it. The system responded to movement – projection animation, sound, so the performer was critical in stimulating interactivity.
- The current knowledge point and the target knowledge point are separate. The audience is unaware the design is helping them bridge the gap. The audience is training themselves by moving, but in a way that seems natural.

Computer visioning – Immersive Environment

- There were several sections to the work, which built in complexity as the work unfolded. The choreography had the tandem purpose – of engaging and communicating as the narrative unfolded in combination with the screen and sound narrative, so the work built as a cohesive whole for the audience.
- The installation had a spatial design that sees the theatre split into two by a semi-circular scrim, which separates the audience from the performer and operators. Six projectors back project onto the scrim, so the scrim is opaque to the audience and encloses around them unless the theatrical lighting illuminates the dancer
- In this set-up we didn't use show controls for the performer, we had a manual technical operator controlling lighting states for the performer. So the performer is not triggering any sensors.
- The interface focuses on the audience who is in the sensor stage area. (sensation of a mirror chamber) Traditionally think of the spotlight on the performer and the audience sitting passively would have empathy for the dancer moving etc. So this was still the case with the spotlight on the performer, however because the audience is moving (because if they stop moving the system slows) there is a communication happening between the performer and audience, and there is empathy occurring between the two, an empathetic feedback loop.

Cove raised a lot of questions about authorship, agency and audience / performer interactivity

- Often the audience or even performer can't tell who is operating (the technician, technology, performer, audience) and this **authorship** is a factor. For some audience who want to control (personality types those that accept ambiguity and those that prefer the concrete. Passive and active users.
- **Agency** Different modes of interactivity where people feel like their interacting (controlling) and what happened when you challenge this experience ie. Cove audience of one felt alone and in control and then realize their interacting with a human too, questions the relationship of who is active passive, who is saying what. Is it the audience leading the conversation or performer?
- **Gesture computing** Challenging to create and program a common movement language because of diversity of movement "accent" ie. do people wave hello in the same way? That's why machines can get it wrong because of the variables. And if they do create this universal movement vocabulary, will big media producers like Apple try to copyright it? And what does that mean for choreographers?

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- In April we will be working the same team of collaborators in a residency, where we will be gratefully able to **deepen** the **dialogue**.

The Sweet Spot project encompasses research design and structural development of a media and sonic environment in reference to the way interactivity may be configured around certain **generative actions**.

- Choreographic practice and mobile device technology for live motion capture.
- **Visceral** and the **Virtual**
- Engage and interact with a community of creatively minded participants and audiences defined by their **relationship to place, the physical** and the **imagined**

Investigates:

- the **empathetic space** between the **performer** and the **audience**
- Intimacy of the audience and screen environment
- Translations of multiplicity and meaning convergence of **built** and **natural environments**

Using mixed reality and augmented technologies programmed through ubiquitous hand held devices in place of sophisticated motion tracking systems for human movement capture and locative specialised environmental position GPS and a personalised computer vision system to integrate choreographic and site specific aesthetic concerns.

Key Elements

- Looking for currency that the audience can respond to, one that has **meaning** for them (like the mobile device) and is relatively **accessible** (cheap and available).
- Ability to take the outside in and **transpose environments**, so that the studio or theatrical environment has **relevance** to audience, which aren't necessarily familiar with arts dialogue and contemporary dance language, but may respond to movement imagery.
- **Potential** teams of performers inhabit urban landscape with GPS enabled choreographic tools attached to the wearer, narratives unfold as they respond to movement, which is translated to large scale outdoor projection mapping in a static audience zone.

The idea of 'the sweet spot' derives from physics references to desirable situations in which the opportune solution occurs. It's not a tangible or physical spot, it's a numerical, indicative state. Sport and musical instruments, refer to the "sweet spot" as having an affinity with the center of percussion, oscillation and other equations, presenting the ultimate highly desirable set of circumstance or sweet state.

Like the phenomenon of the Fibonacci number pattern occurring frequently in nature, its sweet spot is identified by patterning found throughout nature's flora and fauna. Shells, fruit, plants and organic forms are diverse yet have deeper implication and meaning beyond human perception.

- Correlation between the sweet spot physics (which they use to sell a lot of bats for different sports ie. the best bat) of the One will be the location where the measured performance of the bat is maximized, and the other will be the location where the hand sensation, or sting, is minimized.
- Look for the **sweet spot of interactivity** through the **measured performance of hand held devices** insight into **empathetic space provide transformative experience**.

Note:

Computer vision is, in some ways, the inverse of computer graphics. While computer graphics produces image data from 3D models, computer vision often produces 3D models from image data. There is also a trend towards a combination of the two disciplines, e.g., as explored in augmented reality.

FYI:

Sponsors: Move Dance TNQ New Move Network, RADF Arts Queensland and Cairns Regional Council, Australia Council for the Arts, KickArts Contemporary Art, JUTE Theatre, Centre of Contemporary Arts Cairns, School of Creative Arts JCU.