Living in Blended Spaces

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Overriding idea

- Blended spaces are more than just mixing realities
- Blended spaces have a coherence and their own properties
- These are emergent properties of a new kind of space
- Spaces that deliver layers of experiences where people experience a new kind of presence.
Mixed Realities

Mixed Reality (MR)

Real Environment Augmented Reality (AR) Augmented Virtuality (AV) Virtual Environment

Physical space

Atoms

Information space (or digital space)

Bits
What are these spaces like?

- Physical space - with real world physics!
- Information (digital) space - with multimedia content
- Both spaces consist of objects, laid out in some way, including technologies (materials) to mediate interaction
- In both spaces people navigate, make meanings and have feelings
Metaphors we live by

• A hugely influential book written in 1980 by George Lakoff and Mark Johnson

• It argued that metaphor — understanding one thing in terms of another — is central to our thought processes

• It has led to ideas of ‘second generation’ cognitive science and has spawned a huge literature and follow-on books.
Philosophy of the Flesh

- The key finding of their work is that the “body is in the mind”

- All our thinking is grounded in bodily-based schemas.....

- that we learn through interacting with the world physically, perceptually and culturally.
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<th>Containment</th>
<th>Multiplicity</th>
<th>Process</th>
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**Figure 5.1 Example of image schemata (based on Hurtienne and Blessing, 2007)**
From Metaphor to Blends

- But is thinking just a cross domain mapping?
- Others believe that there is a bit more going on with thinking.
- There is a selective function that takes some of one domain and maps it to another.
- There is also a creative function that brings together elements of the two domains.
Blending Theory (from Fauconnier and Turner)

Figure 5.8 Generic space and Blended space (based on Imaz and Benyon, 2006)
Describing Spaces

- Ontology - what objects are in the space, their types and instances, the size of the space?
- Topology - how the objects are related, giving distance and direction?
- Volatility - how often the objects change?
- Media - what technologies or materials are supported in the space?
- Agents - are there artificial or real people in the space?
Old Edinburgh
RLS’s Edinburgh
I went to Arthur’s Seat and the Calton Hill, heard the band play in Prince’s Street Gardens, inspected the regalia and the blood of Rizzio, and fell in love with the great castle on its cliff, the innumerable spires of churches, the stately buildings, the broad prospects, and those narrow and crowded lanes of the old town where my ancestors had live and died in the days before Columbus”

Robert Louis Stevenson (RLS)’s last day in Edinburgh

- Ubicomp, mixed reality fiction based in Edinburgh
- Ontology - locations in Edinburgh
- Topology - physical locations and passages from an RLS book
- Volatility - quite stable
- Media - QR codes in locations, pictures and text from RLS book, smart phone
- Agents - people in physical spaces
RLS as Blended Space

- Experience of walking through the physical city
- Finding the QR codes to scan using smartphone
- Reading the passages from 100 years ago
- Experiencing RLS now as if it were his last day
- Layering the experiences of the physical, the digital and the fictional
QR SCULPTURE
Friday, 13 July 12
AR STORYTELLING

Augmented Reality Fiducial Marker
Being in Spaces

• Spaces and places are media: environments in which we act and shape the media itself
• People engage in activities in spaces
• People step back and reflect in spaces
• People act on objects through the interfacing media and technologies
• People are present in blended space
The ICE
The ICE as a blended space

- Physical space = empty office, boardroom table, high stools, electronic whiteboards
- Digital space = PyMT (Kivy), windows 7, 8, TUIO interface, integrates iPads, etc.
- Conceptual space = understanding what’s possible, relationships between zones, etc.
How to design for Blended Spaces

The overall objective of blended space design is to make people feel present in the blended space, because feeling present means it is a better user experience (UX). Presence is the intuitive, successful interaction within a medium.

Think of the whole blended space as a new medium that the user is interacting with, is existing within. It is a multi-layered medium, a multimedia medium with both physical and digital content. A blended space is a sort of meta-medium as it aims to blend lots of different media.

In blended spaces people are existing in multiple media simultaneously and moving through the media, at one time standing back and reflecting on some media and at other times engaging in and incorporating other media, moving in and out of physical and digital spaces.
Think about the overall experience of the blended space that you are trying to achieve and the sense of presence that you want people to have.

Decide on the activities and content that will enable people to experience the blended space that you want.

Decide on the digital content and its relationship with the physical space in terms of the ontology, topology, volatility and agency of the digital and physical spaces.

Do the physical design of the digital and physical spaces, considering:

- the user interfaces and individual interactions
- social interactions that combine people, practices, values and technologies within a local environment
- flow (movement through the blended space)
- the physical environment
Considering Content

1. the correspondences between these characteristics of the spaces

   1. design for suitable transitions between the digital and physical spaces
   2. the points where people transition between physical and digital spaces; consider these as anchor points, portals, or entry points
   3. how to make people aware that there is digital content nearby
   4. how to help people navigate in both physical and digital worlds; how to navigate to the portals that link the spaces

   5. creating narratives to steer people through the blended space
   6. how to enable people to effortlessly access and interact with content
   7. designing at the human scale rather than the technological scale
   8. how to avoid sudden jumps or abrupt changes as these will cause a break in presence
   9. the multi-layered and multimedia experience that weave the digital and physical spaces together
Blended Spaces - the bigger picture

- People will be living in and moving through in blended spaces
- They will be present in blended spaces
- People have implants and experience new sensations directly
- People will form relationships with agents, not simply interact
- New theories of presence, blended space and embodied and embedded interaction are required