‘Draft’ PAPER

‘Li’ and the Artificial: 'Designing' the Future through 4D Design.

by Alec Robertson
& Delai Men
2010
Designing Design Research 7:


Click on SQUARE above for Multimedia Proceedings, or the Video icon at top for a 10 minute Video Abstract of this Design Research Event.
• Complex Systems Science (CSS).
• 4D design
• C2 Cybernetics
• Applied Performance
• Li’ (礼)
Science of Complex Systems....

- A system is complex if it consists of autonomous units (Actors, Players, Agents) each pursuing own goal in a strong interaction with each other

- The interaction can be competitive, cooperative or a combination of the two

- Goals of individual players may or may not be disclosed to other players.

Professor George Rzveski, Magenta Corp. (2006)
3D design ...

The 3D World is predictable (deterministic = 3D)
- based on the “grand design”
- any uncertainty is due to our inability to understand it
- the future is given
- Aristotle, Kant, Newton, Einstein

Deterministic 3D forms of artefact of today, which are for example:

- **Static** e.g. Conventional cars, aircraft, engines
- **Linear** e.g. Conventional automated production lines
- **Dedicated** e.g. Conventional non-robotic tools
- **Active but not interactive** e.g. A clock

*based upon presentation by George Rzveski at “More is More’, Magenta Corp. (2005)*
4D design and complexity...

The 4D world is inherently unpredictable (complex = 4D)
- evolves with time due to autocatalytic properties of some of its elements
- evolution is irreversible and leads to an increase in complexity
- the future is under perpetual construction
- Buddha, Maxwell, Darwin, Popper, Prigogine

Complexity is a prerequisite for 4D form in artefacts with, for example:

Adaptation (complex system adapt to any external or internal unexpected change that disrupts its operation for better or worse)...

Resilience (complex systems are resilient to changes that represent a threat to their survival, eg, misuse, breakdowns)....

*based upon presentation by George Rzveski at “More is More’, Magenta Corp. (2005)*
4D Design....

“The dynamic form resulting from ...

the design of the behaviour of artefacts and people in relation to each other and their environment.”

Alec Robertson
4D Dynamics Conference 1995
## 4D Design: expands art & design ‘design’?

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*Alec Robertson @ 4D Dynamics Conference 1995*
Examples...

Real 4D products have 'dynamic' form in real or actual space and can be:

- dynamic lighting in a discotheque
- Sony AIBO dog with 'personality',
- 'smart' clothing
- responsive solar panels on buildings etc

Examples...

Virtual 4D products have 'dynamic' form in cyber-space and can be:

- computer games
- internet chat rooms
- etc.

Examples...

Real 4D services have 'dynamic' form in real or actual space and can be:

- and the way food is served in restaurants
eg. McDonalds vs The Ritz.

- through to 'customer care' systems in hotels,
eg. a motel vs a Hilton

Cybernetics......

C1.......First order cybernetics
the cybernetics of observed systems

C2.......Second order cybernetics
the cybernetics of observing systems

Heinz von Foerster in book “Cybernetics of Cybernetics”

“the observer is touched and touches “
Ranulph Glanville at “Cybernetic Serendipity Redux.” Sept 2008
or applied performance arts?


4D value

In this example, we see the value of the raw material (A. coffee bean) provided, and the 3D artefacts used (B. cups etc.).

This is followed by the delivery of the service of making (C.) though to the complex dynamics within the experience of drinking in a social setting (D), and what I refer to as ‘applied performing arts’ -
“礼”
Li’ (礼) denotes and embodies the entire spectrum of interaction with humans, nature, and material objects. Many patterns in nature, such as growth rings in trees, flows of water and drifting clouds as physical elements inter-act in ‘complex’ ways over time, and visually show a moment of ‘Li’.
LI

DYNAMIC FORM IN NATURE

David Wade
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Why does Nature use the same special patterns over and over again? What are the main families of natural design? How are they formed? Did the ancient Chinese really study this subtle and elegant subject?

In this beautiful book, illustrated by David Wade, a new perception of organic pattern, ‘Li’, is presented for the first time in the West. Essential reading for designers, artists, philosophers and natural scientists.

*a Top 3 Recommended Book - New Scientist*
Confucian classic text

“liji”, Book of Rites


Ci Hai
….. A challenge for SCHOLARSHIP:

….. what does the ancient Chinese definition of scholarship offer?

qin 琴, qi 棋, shu 書, and hua 畫.

“Musical Instruments,
Board Games,
Calligraphy,
and Painting”

reason, creation, expression and dexterity.
South China University of Technology, Guangzhou, China.

Innovation Ability Training Platform

Imaginal thinking Cultivation
- Feeling for Space
- Feeling for Shape
- Feeling for Color
- Visual Thinking
- Touch Thinking

Creativity Practice Studio
- Visual Expression (2-D)
- Visual Expression (3-D)
- Mixed-Media and Material
- Virtual Art
- Ceramic Art

‘innovation consciousness’
Receiver

Self-Discipline
moderation
Abidance
Respect

Li

Respect
Abidance
moderation
Self-Discipline

Design
• ‘service design’
• ‘user centred design’
• ‘universal design’
• ‘user experience design’
A challenge for DESIGNING:

...to consider the relationships between elements as ‘the design’..

..... and to enable ‘adaptation’ that gives rise to metamorphosis.

Alec Robertson
at KINETICA MUSEUM
14 October 2008
Designing the future....

asynchronous polysensorial performative
semiosis *habitus* reciprocity
emergence *adaptation*

Conversational *spatialisation* ?
Three Laws of Robotics by Isaac Asimov introduced in his 1942 short story “Runaround”

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.

2. A robot must obey any orders given to it by human beings, except where such orders would conflict with the First Law.

3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.
Li’ may well be important to embody in artificial systems as ‘machines’ become more and more intelligent and autonomous.
‘challenge norms’