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Work of interface from comparison of diversity and singularity about space and time in media art

Abstract

The concept of general and limited space disappeared long time ago, and the space is less limited in recognition. The concept of time is still limited rather than transferring the recognition of space. However, it is possible to understand and experience subjective and conceptual time. The number of spaces is increased as many as the number of the coordinate systems, and the spaces move against each other. Time cannot but move with them.

The author analyzes exemplary about diversified and unique time and space on literary works and expanded cinema•moving image, media installation works, and architectural installations, in which modern concept of spaces and time appears on the basis of Leibniz's The Fold, Deleuz's Le Pli and Rhizome,

Prototype software and a physical model system to substitute participant's actual data based on the structure. The author expects an actual interface, not virtual models in a physical space, and the shared interface of memory and sensitivity in various times and spaces as a tool for observing visualization of new recognition for this study.

Keywords: Space and Time, Interface, Interactive installation and Architecture

1 Introduction

"…To reach, not the point where one no longer says I, but the point where it is no longer of any importance whether one says I. We are no longer ourselves.

Each will know his own. We have been aided, inspired, multiplied.…"

'Rhizome' of Deleuz's 'Mille Plateaux' is illustrated above. Rhizome is the concept of a form divided, branched and linked without a root which is the center of branches. It is also applied to the structure of a book and all areas including the world we live in.

Since Einstein announced the theory of relativity, the number of spaces increased as many as the number of coordinate systems, and the spaces move against each other. At present, the term Multi-Universe is also widely used. A space is distinctively shown in the digital world about the concept including Leibniz's The Fold and Deleuz's Le Pli. With the thinking in Lefèbvre's living space, Tschumi extends the thinking through social and political changes.

We are not interested in Newton's general time in the concept of time any more. We substantially experience the subjective ideal time said by Kant in Critique of Pure Reason through wired/wireless communication following the development of wheels, internet, and mobile devices by means of telegraph. Now, respective time is newly prospected and the possibility of various concepts of time is realized. It is because we meet BT(Bio Technology) in reality, not just IT(Information Technology), and the space shuttle era is coming to ordinary people. Which means it can transform thinking and fact what we couldn't accept traditional and absolute era time.

The author expects an actual interface, not just virtual just physical-like space for this study.

In general, it is ideal that a researcher suggests a new theory. The author specialized in new media design and art thinks it is reasonable to make hardware and software prototypes, not just by theory, to verify virtualization and usability of new recognition through artistic experiments and experience.

In this study, it is intended to suggest a system to verify the inevitable contents based on the contents of the tool, literature easily recognizable, and which enables memory and sensitivity to be shared in a variety of times and spaces through new media works, further extended space and architectural projects.

Table 1: Concept of time and space

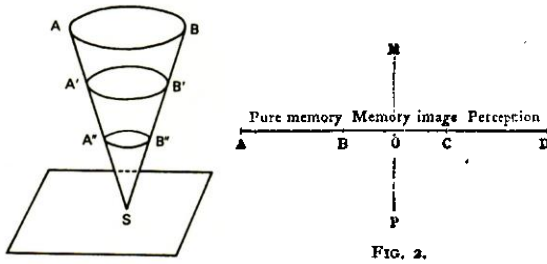| Theory	
Bergson	Time
Leibniz	The fold
Deleuz	Rhizome

Figure 1: Image about memory, image And perception from Bergson's ' Matter and Memory'
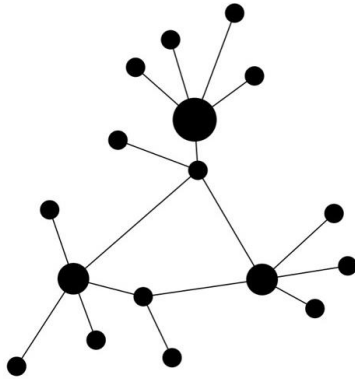

Figure 2: Conceptual topography about Rhizome by Allie Bishop Pasquier

The existing concept of space is described, and then re-analyzed physical space and perceptual space to study general concept of time and conceptual time from immanence.
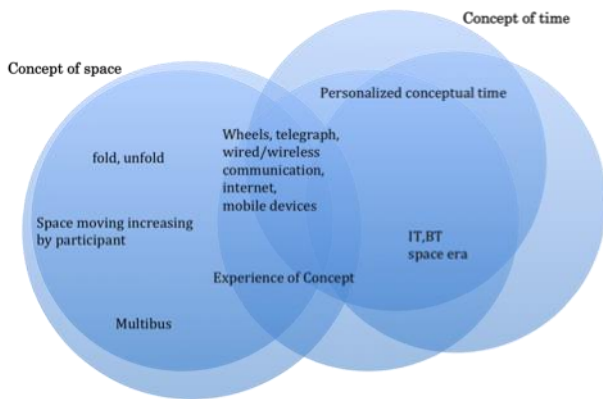

Figure 3: Concept of time and space

2 Case Studies

2-1 Literary works about spacetime

The reason of a work based on literary works, and the metaphor of books, libraries and the outer space are explained with Rhizome. An analysis is made of Borges's works including 'The Garden of Forking Paths, 'Tlön, Uqbar, Orbis Tertius', 'Pierre Menard, Author of the Quixote', 'Library of Babel', 'A Survey of the Works of Herbert Quain, 'Theme of the Traitor and the Hero', 'Death and the Compass' and 'The Aleph', and also of Calvino's 'Invisible Cities', Bolaño's

'Nazi Literature in the Americas', W. G. Sebald's 'Rings of Saturn', 'Austerlitz', Joyce's 'Ulysses' and Márquez's 'One Hundred Years of Solitude' to identify the spacetime structure therein.

Table 2: Exemplary various literary works about distinctive time and space

Literary works	
Jorge Luis Borges	Tlön Uqbar Orbis Tertius, The Garden of Forking Paths, The Library of Babel, The Aleph
Italo Calvino	Invisible Cities
W. G. Sebald	Austerlitz, Rings of Saturn
Roberto Bolaño	Nazi Literature in the Americas
James joyce	Ulysses

2-2 Expanded cinema·moving image, media installation work

Audience's encounter and extension of installation movies, moving images and media, not just typical one-directional movies and moving images are explained by exemplifying Andy Warhol's 'Sleep' and 'Empire', Tsai Ming-Liang's 'What Time Is It There?' and 'Hole'.

Exemplary Gene Youngblood's 'Expanded Cinema' is also examined. Future Cinema's installations exhibited in ZKM are examined. Exemplary media installation works include web art including Jonathan Harris' 'We feel fine' which conducts data visualization for the memory of space, Olafur Eliasson's 'Your blind movement', 'Your atmospheric colour atlas' which encompasses the concept of space, and Jane and *Louise* Wilson's 'A free and anonymous monument'.

Table 3: Expanded cinema and moving images

Cinema and moving images	
Andy Warhol	Sleep, Empire
Tsai Ming-Liang	What Time Is It There? , The Hole
Gene Youngblood	Expanded Cinema
ZKM	Future Cinema

Table 4: Media Installation work

Media Installation work	
Jonathan Harris	We feel fine
Olafur Eliasson	Your blind movement, Your atmospheric colour atlas
Jane and Louise *Wilson*	A free and Anonymous Monument

2-3 Space and architectural project

For studying architecture and space on the basis of Lefèbvre's thinking in a living space, Tschumi's space as social and political changes, and Hal Foster's 'The Art-Architecture Complex'. Reproduction of Asymptote's 'NYSE 3DTF' and 'Guggenheim Virtual' Museum' is investigated as an exemplary actualization of the concept of Digital Architecture and Liquid Architecture. MVRDV 's 'Glass farm' and ' Water cube pavilion', and Diller Scofidio + Renfro's projects including 'Does the punishment fit the crime?'. Tesoc Hah's ' Differential Life Integral City 'MIT Sensible City lab projects are classified.

Table 5: Architectural installation works

Interactive Digital Architecture	
Asymptote	NYSE 3DTF, Guggenheim Virtual Museum
Diller Scofidio & Renfro	Does the punishment fit the Crime
Tesoc Hah	Differential Life Integral City
MIT Sensible City Lab	Currentcity

3 Case Studies Analysis

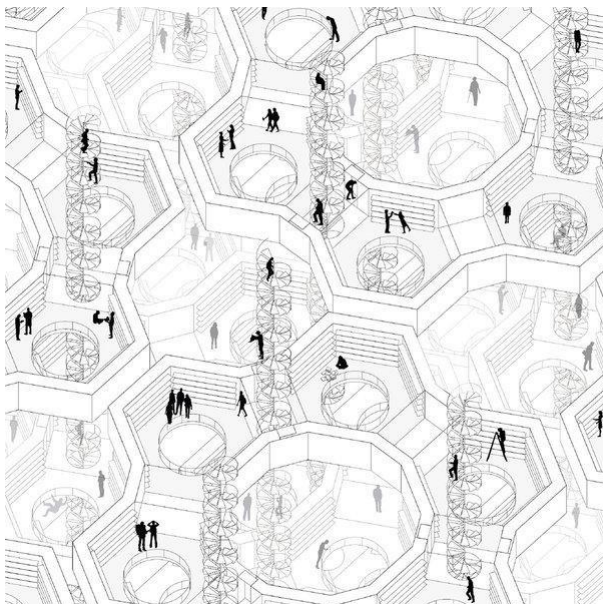### 3-1 Visual analysis from literary works about spacetime

Figure 4: Analysis from Literary works in Rice Lipka for Fairy-Tale Architecture about ' The Library of Babel'
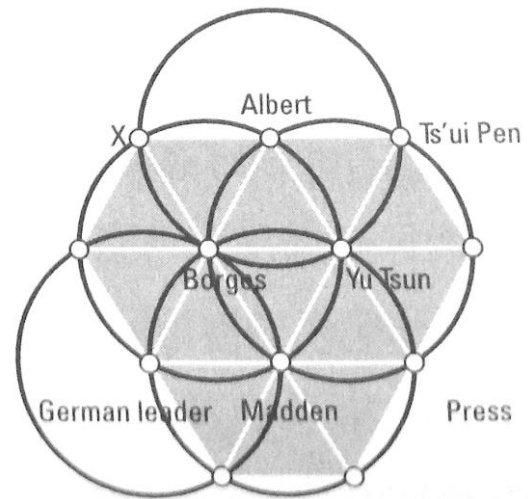

Figure 5: Analysis from Literary works from Sophia Psarra's Architecture and Narrative about 'The Garden of Forking Paths' showing circle, triangle and octagon among character

It is possible to make structure from 'The Garden of Forking Paths' and 'The Library of Babel' and compare contents from characters.

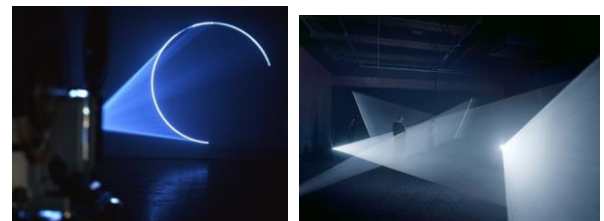### 3-2 Concept analysis from Expanded cinema and moving images

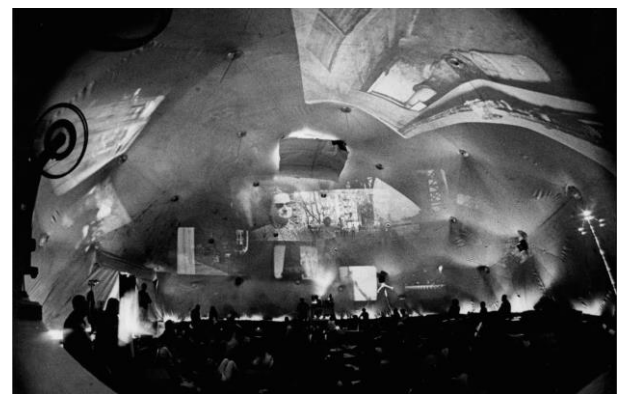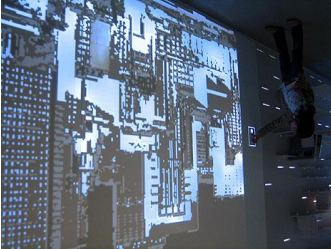Figure 8: Anthony McCall's early work

Figure 9: Movie-Drome, Influenced by Buckminster Fuller's spheres, Vanderbeek

Audience can feel for time concentration and all possible in small movement from Andy Warhol's Sleep, Empire as a contents. Other side, audience can experience developing Anthony McCall's early work to Movie-Drome as a form.

Cities and memory 1	Cities and memory 2	Cities and desire 1	Cities and memory 3	Cities and desire 2	Cities and sign 1
Cities and memory 5	Cities and desire 4	Cities and sign 3	Thin cities 2	Trading cities 1	
Cities and desire 5	Cities and sign 4	Thin cities 3	Trading cities 2	Cities eyes 1	
Cities and sign 5	Thin cities 4	Trading cities 3	Cities and eyes 2	Cities and names 1	
Thin cities 5	Trading cities 4	Cities and eyes 3	Cities and names 2	Cities and the dead 1	
Trading cities 5	Cities and eyes 4	Cities and names 3	Cities and the dead 2	Cities and the sky 1	
Cities and eyes 5	Cities and names 4	Cities and the dead 3	Cities and the sky 2	Continous cities 1	
Cities and names 5	Cities and the dead 4	Cities and the sky 3	Continous cities 2	Hidden Cities 1	
Cities and the dead 5	Cities and the sky 4	Continous cities 3	Hidden Cities 2	Cities and the sky 5	Continous cities 4

Figure 6: Chapter titles in Italo Calvino's Invisible Cities, shown in the order in which they appear. Colors illustrate how the reappearance of various cities creates a staircase pattern.

Figure 7: A closer look at the staircase pattern in *Invisible Cities*. Author has shifted each row in Figure 6 one additional column to the right.

Figure 10: A map of emotional connection from Jonathan Harris's web art project 'We feel fine.'

Audience could get a sense base through form to contents from above example of expended cinema and media art project.

3-3 Form analyses in Space and architectural project

Figure 11: Exhibition view from Ha Tea Seok's 'Differential Life Integral City'

Figure 12: This architecture project allows audience members to create their own city using smartphones.

4 Art Work Proposal

In this study, an analysis is made of literary works, images, media art installations and architectural projects in which the modern concept of space and time appears in a contents and structures. Software and a physical model systems are substitute participant's actual data in direct or through online and mobile device.

Author exhibit analog memory object collecting her own and participant's. Then, established software system for map connecting memory and emotion also actual fact. The last Mockup model will exhibit in physical space. Participant and

audience can experience and changing it with their online/off line object.

4-1 Output of direct study

Table 6: Exhibition view

Exhibition from analog object	Collecting and Exhibiting from analog memory object of author/artist's own and participant's. Example: media city seoul, author's work
Online Project	Connecting, Sharing of memory and emotion on the online/mobile from participant's actual fact.
Visual effect for concept	Media façade/Wall projection is good visual showing method for concept. Example: MILAN, 2007 Example: Cockatoo Island, Sydney, NSW
Possible Mockup example	Example: Michelle O'carroll Example: marcos novak, Liquid Architecture
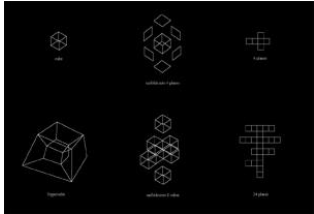
Table7: Technical fact

Software(S/W)	Use a software system to make a pattern and then substitute participant's actual data.
Mockup model (H/W) system	Substitute participant's actual data, Mockup and exhibit a virtual model for suggesting a prototype (H/W) system.
Tool for recognition of scientific fact	Use a shared interface of memory and sensitivity in various spacetimes as a tool

	for observing new recognition.

4-2 Output of indirect study

Table 8: Tool for extension of result

Tool for Visualization	Expecting about it can be used as a tool for visualizing the diversity time and space concept of science or philosophy.
Educational tool	Expecting about it can be used as an educational tool for showing paradigm conversion of time and space.
Fluidic tangible Interface	Nonshaping variable spacetime interface can effect expansion of thinking.

5 Conclusions and Further Study

The process includes setting categories of space and memory according to the classification in literature for in-depth interviews and identifying actual needs, making a pattern with a software system for experiment to substitute actual data, exhibiting virtual models for suggesting a prototype model (H/W) system.

It is expected that the shared interface of memory and sensitivity in various spacetimes can be used as a tool for observing virtualization of new recognition and individuals' mind.

The expected output of indirect study is that the system produced in this study can be used as a tool in science or philosophy, and as an educational tool to facilitate paradigm conversion of time and space.

In this study, although a mockup model (H/W) is produced for participants to share it in order to interface spaces, it may be a limited model because it is difficult to encompass all spaces, various times, all possibilities of each participant and potential participants. However, modularization can implement probable extension to tackle the difficulty.

Another issue is that what produced results and prototypes mean if they represent and follow just the phenomenon of recognition. It is necessary further to observe different recognition and find a method after this study.

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