



THE UNIVERSITY OF
SYDNEY

COPYRIGHT AND USE OF THIS THESIS

This thesis must be used in accordance with the provisions of the Copyright Act 1968.

Reproduction of material protected by copyright may be an infringement of copyright and copyright owners may be entitled to take legal action against persons who infringe their copyright.

Section 51 (2) of the Copyright Act permits an authorized officer of a university library or archives to provide a copy (by communication or otherwise) of an unpublished thesis kept in the library or archives, to a person who satisfies the authorized officer that he or she requires the reproduction for the purposes of research or study.

The Copyright Act grants the creator of a work a number of moral rights, specifically the right of attribution, the right against false attribution and the right of integrity.

You may infringe the author's moral rights if you:

- fail to acknowledge the author of this thesis if you quote sections from the work
- attribute this thesis to another author
- subject this thesis to derogatory treatment which may prejudice the author's reputation

For further information contact the University's Director of Copyright Services

sydney.edu.au/copyright

The Cinematic Aesthetics of Digital Virtualism

Heon Jeong



**A thesis submitted in fulfilment of the degree of Doctor of
Philosophy**

Department of Art History and Film Studies

Faculty of Arts and Social Sciences

The University of Sydney

2014

Statement of Originality

This is to certify that to the best of my knowledge, the content of this thesis is my own work.

This thesis has not been submitted for any degree or other purposes.

I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.

.....

Heon Jeong

April 2014

Acknowledgement

This thesis is a product of my life, love, and tears.

I hope that this dissertation is dedicated to people's lives and happiness.

I also wish that this thesis becomes a little compass for the future of cinema and cinephiles.

I would like to express my gratitude to all those who gave me the possibility to complete this thesis.

I especially want to thank my supervisor, Dr. Richard Smith for his guidance during my PhD research at The University of Sydney. His perpetual favour and concern had motivated all my research. He encouraged me to go ahead with my thesis. I deeply appreciate his help and support for me.

Furthermore, I want to thank Dr. Alan Cholodenko, Dr. Laleen Jayamanne, Dr. Bruce Isaacs, Dr. Mary Roberts, Dr. Keith Broadfoot and School administration manager Ms. Elizabeth Conner for all their help, support, interest and valuable advices at Department of Art History and Film Studies in The University of Sydney.

My deepest gratitude goes to my family for their heartfelt love and support throughout my life; this dissertation is simply impossible without them. I am indebted to my parents and siblings during my whole life.

Especially, I would like to give my special thanks to my wife Sung Ah Lee whose patient love enabled me to complete this work. I always love you. I also thank my two sons, Henry Yeonsu Jeong and Harry Yeonchan Jeong. You have made my life more fertile and bountiful.

I would like to thank all people who have helped and inspired me for my life.

God bless you!

Abstract

This dissertation explores the cinematic ontology of digital virtualism in the context of the current trend to digitalisation. I define digital virtualism as the aesthetics of assemblage and configuration in the age of digital images. This definition implies that digital technology strengthens the complex tension between physical reality and imaginary illusion. Based on computer simulation and synthesis, the digital image intensifies the contradiction between cinematic materiality and immateriality. Digital virtualism is the aesthetics of historical hybridity and aesthetic complexity between the actual and the virtual, the indexical and the symbolic, the material and the immaterial, the real and the imaginary.

In this context, this thesis examines the aesthetical relationship of filmic virtuality and the digital image. In particular, I assert that the digital image is the new form and expansion of filmic virtuality. While film is always the art of the virtual, that is, the aesthetic imbrication of actual indexicality and imaginary illusion, the digital image intensifies the contradiction of filmic virtuality between reality and illusion. On one hand, computer simulation reinforces the indexicality of film by the principle of perceptual realism. On the other hand, it attenuates the causality between the object and the image by digital manipulation. I argue that digital technology simultaneously intensifies both filmic reality and the manipulation of the imaginary. Thus, the digital image expands the expressive force and aesthetic potential of cinema.

After examining the cinematic aesthetics of realism, modernism, postmodernism, and digital aesthetics after postmodernism, this dissertation investigates the aesthetical implications of Deleuzian virtuality in the age of the digital image. Deleuze presents the cinematic aesthetics of virtual conjunction in the monism of simulacra, which implies the indiscernible and inextricable imbrication of the actual and the virtual, original and copy, reality and image, and cinematic movement and time. Following the discussion of the aesthetical ontology of Deleuzian virtuality, this dissertation theorises the assemblage aesthetics of digital virtualism.

Consequently, this dissertation proposes the subjective and practical task of digital ethics. Digital technology intensifies the spectacular attraction of images and the interactive participation of

spectators in the cinematic process. In contrast, the digital image reveals technological fetishism and aesthetic commercialisation. Based on the ontological contradiction of the digital image, this dissertation articulates the configurative aesthetics and the subjective ethics of digital virtualism.

Table of Contents

Introduction	1
1. The Definition of Digital Virtuality	14
1-1. The Concept of Virtuality	16
1-2. The Virtuality of the Image: History and Aesthetics	23
1-3. The Virtuality of Film	33
1-4. Digital Virtuality: Concept and Historicity	44
2. The Aesthetics of Digital Virtualism	76
2-1. The Aesthetics of Hybridity	78
2-2. The Aesthetics of Synthesis	87
2-3. The Aesthetics of Materiality	100
2-4. The Aesthetics of Information	116
3. Film Aesthetics and Digital Virtualism	131
3-1. Realism: Bazin and Indexicality	133

3-2. Modernism: Metz and the Imaginary	145
3-3. Postmodernism: Baudrillard and Hyperreality	159
3-4. After Postmodernism: Digital Aesthetics beyond Postmodernism	176
4. Gilles Deleuze and Digital Virtualism	193
4-1. The Ontology of Simulacra: From Representation To Virtual Conjunction	197
4-2. Cinematic Movement: Materiality and Sensation	212
4-3. Digital Time: Crystal-Image and Digital Virtualism	227
Conclusion	251
Bibliography	263
Filmography	279

Introduction

This thesis explores the aesthetics of digital virtualism as a new ontology of cinematic digitalisation. Digital virtualism is the hybrid aesthetics of physical reality and imaginary illusion. This definition implies the imbrication and bridging of the real and the unreal, the actual and the potential, and the material and the immaterial. Digital virtualism is the cinematic aesthetics of assemblage and configuration, which takes place in the virtual simulation of the computer. Since the rapid computerisation of film technology in the 1990s, the aesthetics of digital virtuality has proliferated in the world of cinema. This is because data algorithms and numerical manipulation have intensified the virtual simulation of film images. Hence, digital virtualism strengthens filmic virtuality. The virtuality of digital cinema expands and reinforces the contradictory complexity between the reality and the imagination of cinema. Digital cinema is a successor to and new form of filmic virtuality. This thesis is based on the balanced view of continuity and discontinuity between film and digital image. I assert that digital technology has transformed the virtuality of cinema from the photochemical to the digital, which raises two related questions concerning the aesthetics of film.

First, what is the relation between filmic reality and digital cinema? Does computer synthesis herald the end of filmic indexicality? Indeed, the aesthetics of digital virtualism evokes the issue of filmic indexicality. In this thesis, I will argue that computer-simulated images retain filmic indexicality. As Philip Rosen observes, ‘digital mimicry’ also works on the ground of indexicality and historicity.¹ Although filmic indexicality is transformed by digital manipulation, cinema still exists in relationship to physical reality. However, the aesthetics of digital virtualism implies a new, different, and heightened reality of cinema.

My next question concerns how the imaginary nature of film has changed with the spread of digital technology. How does digital technology transform the nature of cinematic illusion? Digital cinema has provoked a theoretical debate about the nature of the filmic imagination, including cinematic affection, thought, dream, fantasy, and illusion. The

¹ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, pp.307-309.

² Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of*

imaginary nature of film goes beyond indexicality and causality to its object. In particular, digital cinema reinforces the imaginary and virtual nature of filmic images. This is because computer simulation expands the possibility of cinematic expression and imagination. Digital manipulation intensifies the virtuality and fantasy of filmic images. As Tom Gunning asserts, the aesthetics of digital cinema intensifies the cinematic nature of magical attraction and sensual perception beyond filmic indexicality.² In this thesis, I investigate the aesthetic implications of cinematic attraction and bodily sense in terms of digital virtuality.

In this context, I postulate that the aesthetics of digital virtualism is the contradictory combination of cinematic indexicality and imagination. It is both physical reality and imaginary illusion. While filmic indexicality implies the physical traces and causalities to objects, cinematic imagination expands the nature of film to the aesthetic realm of fiction and fantasy. This thesis argues for an aesthetics of digital virtualism that is based on the dialectical tension between reality and imagination. As Cassetti emphasizes, the aesthetics of cinema, whether in photographic form or digital simulation, is a practical linkage and contradictory negotiation between physical indexicality and the cinematic imagination.³ The proliferation of digital technology has resulted in both the new possibility of realism and the expansion of cinematic expression. That is, the diffusion of computer synthesis has given rise to the new form of the contradiction between filmic reality and fantasy.

On one hand, I note that digital cinema intensifies the representative indexicality of film by ‘the obsession of technological realism’.⁴ David Bordwell indicates that digital technology results in ‘intensified continuity’⁵ of cinematic time and space. Hollywood narrative convention is strengthened by digital simulation. Stephen Prince claims that digital technology intensifies the principle of ‘perceptual realism’ between cinematic

² Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No. 1, 2007, p.48.

³ Franco Cassetti, Sutured Reality: Film, from Photographic to Digital, *October 138*, Fall 2011, p.106.

⁴ Gerry Coulter, Jean Baudrillard and Cinema: The Problems of Technology, Realism and History, *Film-Philosophy 14(2)*, 2010, p.8.

⁵ D. Bordwell, Intensified Continuity: Visual Style in Contemporary American Film, *Film Quarterly 55(3)*, 2002, pp.16-28.

images and spectators.⁶ Moreover, digital technology has revitalized the production and consumption of documentary cinema, in particular, making it easier to create movies that record daily life. The diffusion of portable digital video cameras, simple compositing tools, and widespread editing software has made movie making an increasingly personal and popular activity. User-created content (UCC) on youtube.com already occupies the cyberspace of the Internet and mobile devices. It seems that they anticipate the new age of popular realism and the documentary.

On the other hand, digital cinema attenuates the indexical causality of objects in filmic images. The digital manipulation simulated by computer software and databases reinforces the virtual nature of cinematic images. Andrew Darley terms the aesthetics of the computer-generated image ‘secondary’ or ‘second-order’ realism.⁷ He emphasises that computer-based synthetic images replace the first images produced by direct representation and imitation. Lev Manovich points out that digital cinema is an aesthetics of the composite that works at the level of pixels and data manipulation.⁸ Manovich highlights the synthetic traits and spectacle images of digital cinema in contrast to the photographic realism privileged by Bazin.⁹ Aylish Wood claims that the aesthetics of computer synthesis intensifies the creative and expressive potential in cinema production. According to Wood, digital manipulation goes beyond the limitations of filmic indexicality to separate and recreate independent image elements at the micro-level.¹⁰

Based on the dialectical tension between material indexicality and virtual imagination, I will raise the issue of how computer-simulated images transform the aesthetic ontology of film, which is related to recent disputes regarding cinematic indexicality in digital cinema. I explore the issue by reappraising filmic ontologies both historically and aesthetically. I suggest the aesthetics of digital virtualism in terms of historical hybridity

⁶ Stephen Prince, *Digital Visual Effects in Cinema: The Seduction of Reality*, New Brunswick, N.J.: Rutgers University Press, 2012, pp. 31-37.

⁷ Andrew Darley, *Visual Digital Culture: Surface Play and Spectacle in New Media Genres*, London, New York: Routledge, 2000, p.83.

⁸ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.270.

⁹ Ibid, pp.192-193.

¹⁰ Aylish Wood, Pixel Visions: Digital Intermediates and Micromanipulations of the Image, *Film Criticism*, September 2007, pp.72-94.

and aesthetic complexity. In particular, I extrapolate the aesthetics of digital virtualism from the historical and theoretical tradition of film aesthetics. A main aim in this thesis is to elicit the aesthetic ontology of digital virtualism from the historicity of film theories.

In light of the historicity of film aesthetics, I will reappraise Bazin's photographic realism, Metz's imaginary signifier, and Baudrillard's hyperreality and simulation. My point is that film theories provide clues to the complex relation between physical reality and the cinematic image. I describe the aesthetics of digital virtualism in terms of the imbrication of materiality and immateriality that is promoted by computer simulation and digital interactivity. The digital virtualism goes beyond the representative aesthetics of physical indexicality. Simultaneously, digital virtualism maximizes the aesthetics of cinematic fantasy and illusion in digital spectacle and bodily sense. By reevaluating the main theories of the nature of the film image, I conclude that digital virtualism is the aesthetics of historical hybridity and ontological complexity of physical reality and the virtual image.

Furthermore, I enunciate that digital virtualism stems from the conceptual kernel of Deleuzian virtuality. As Rodowick asserts, Deleuze's cinema book is one of the most philosophically elaborate discussions of the concepts of cinematic movement and temporality.¹¹ In terms of the aesthetical implications of Deleuzian virtuality in the age of digital information images, I examine his main concepts, such as simulacra, virtual conjunction, material image, movement and time, crystal image, becoming, rhizomatic configuration, and the struggle with informatics. The main concepts of Deleuzian virtuality provide the theoretical basis of my concept of digital virtualism, particularly with regard to the inextricable and indiscernible relationships between the actual and the virtual and the movement-image and the time-image. In my account of the Deleuzian aesthetics of crystal image, the concept of digital virtualism proceeds to the aesthetics of the hybrid combination of physical reality and cinematic imagination. Thus, I extrapolate the new reality and potential of digital techno-aesthetics from the aesthetics of Deleuzian virtuality.

¹¹ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, p.14.

This thesis consists of four main chapters. In the first chapter, I focus on the definition of virtuality. I define the concept of virtuality as both the liminoid and the threshold between the actual and the potential, which is not actual, but real. The assumption that the virtual is the real is an important theoretical premise in this thesis because it postulates the imbricated relationship between physical reality and immaterial virtuality. Hence, I presuppose that filmic virtuality is the hybrid combination of the actual and the virtual, the material and the immaterial, the indexical and the symbolic, and the real and the imaginary. Furthermore, I elicit the concept of digital virtuality from the virtuality of filmic image. As the expansion of filmic virtuality, digital virtuality is a new form of filmic virtuality in the age of computer-simulated images.

In the historical context, I will explain that the spread of digital virtuality is associated with the transformation of cinematic images from the photochemical to the numerical by the development of computer-generated images since the 1960s. Digital images intensify the aesthetic tendency of multimedia, virtual reality, and cyberspace. The manipulation and synthesis of computer-simulated image combines with the convergence and interactivity of digital arts. Digital technology expands the virtual nature of cinematic images.

In addition, I indicate that the concept of digital virtuality raises the issue of the ambivalence of techno-aesthetics. On one hand, the emergence of digital virtuality from computer technology has resulted in the expansion of human sense and filmic reality. On the other hand, as Willemen states, it provokes the fetishistic desire of technological images and digital gadgets.¹² Based on the duplexity of digital techno-aesthetics, I will connect the concept of digital virtuality to the subjective and practical configuration of cinematic images.

¹² Paul Willemen, Indexicality, Fantasy, and the Digital, *Inter-Asia Cultural Studies* (14:1), 2013, pp.123-125.

In the second chapter, I deal with the cinematic aesthetics of digital virtualism. I define digital virtualism as comprising four related concepts: hybridity, synthesis, materiality, and information. First, in terms of film historicity and aesthetics, I argue that digital virtualism is the aesthetics of hybridity. The hybrid aesthetics of digital virtualism presupposes the aesthetic complexity of technology and aesthetics, humans and computers, and physical reality and imaginary illusion. As Frank Popper clearly articulates, digital virtualism is ‘techno-aesthetic’.¹³ In addition, Donna Haraway argues for a new feminist theory in the age of the hybrid cyborg of human and machine, male and female.¹⁴ William Brown explains the hybrid nature of digital cinema as the concept of ‘digital complexity’ of the human and the non-human.¹⁵ Following Rosen, I assert that digital virtualism is the aesthetics of ‘historical hybridity’¹⁶ of physical indexicality and cinematic illusion, which implies a complex combination of ‘old’ film theories and ‘new’ reality of digital arts.

In terms of the technological development of the cinema, I argue for the synthetic nature of computer-simulated images. My point here concerns the difference between mechanical reproduction and computer synthesis. Walter Benjamin’s concept of ‘mechanical reproduction’¹⁷ is based on the reproducible ability of filmic images from an original in the age of industrial mass-production and consumption, whereas digital cinema transforms the nature of cinematic images from kinetic, chemical, and optical image to numerical, electronic, ecological, cybernetic, informational, and networking. In this sense, W. J. T. Mitchell proposes the concept of ‘biocybernetic reproduction’,¹⁸ which implies the complex fusion of original and copy with the spread of computer

¹³ Frank Popper and Joseph Nechvatal, *Origins of Virtualism: An Interview with Frank Popper*, *CAA Art Journal*, Spring 2004, p.65.

¹⁴ Donna Haraway, *A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century*, *The Feminism and Visual Culture Reader*, edited by Amelia Jones, New York, London: Routledge, 2003, p.476.

¹⁵ William Brown and Meetal Kutty, *Datamoshing and the Emergence of Digital Complexity from Digital Chaos*, *Convergence* 18(2), February 2012, pp.165-176.

¹⁶ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.303.

¹⁷ Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction*, 1935, translated by Harry Zohn, *Film Theory and Criticism*, edited by Gerald Mast etc., Oxford; New York: Oxford University Press, 1992, pp.665-681.

¹⁸ W. J. T. Mitchell, *The Work of Art in the Age of Biocybernetic Reproduction*, *Modernism/Modernity* 10(3), 2003, p.487.

simulation. Aylish Wood explains the nature of digital synthesis using the concept of ‘micromanipulation’,¹⁹ which takes place at the level of computer data and pixel elements. I emphasize that the digital synthesis of various images of the human and the non-human proceeds to the assemblage and configuration aesthetics of digital virtualism.

Third, in terms of the ontology of cinematic images, I define digital virtualism as the aesthetics of materiality and sensation. The materiality of digital images is associated with the visual attraction of cinematic movement, which precedes logic, language, science, and semiotic hermeneutics. As Gunning points out, it is connected to the ‘cinema of attraction’ beyond the realm of rationality.²⁰ The emergence of digital attraction means the restoration and intensification of the materiality of images. Moreover, Thomas Elsaesser and Malte Hagener point out the importance of ‘haptic and embodied perception’ in digital cinema.²¹ I emphasize that the materiality of digital images cannot be separated from the spectator’s bodily sense and perception.

Finally, I define digital virtualism as the aesthetics of information in terms of the convergence and divergence of media and art forms. This definition implies that digital cinema intensifies the immaterial nature of the image. I argue that computer simulation and digital manipulation expand the virtual nature of cinematic images. Computer networks and the interactivity of images in digital information serve to inspire the convergence and divergence of cinematic images. While Henry Jenkins stresses the tendency of ‘transmedia’ and ‘convergence’ based on the exchangeable intersection of media and images,²² Peter Kiwitt highlights the ‘divergence’ of the cinema as an independent and autonomous ‘art form’.²³ Based on the balanced position of convergence

¹⁹ Aylish Wood, Pixel Visions: Digital Intermediates and Micromanipulations of the Image, *Film Criticism*, September 2007, pp.72-94.

²⁰ Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No. 1, 2007, p.33.

²¹ Thomas Elsaesser and Malte Hagener, *Film Theory: An Introduction through the Senses*, London; New York: Routledge, 2010, p.169.

²² Henry Jenkins, *Convergence Culture: Where Old and New Media Collide*, New York: New York University Press, 2006, p.282.

²³ Peter Kiwitt, What Is Cinema in a Digital Age? Divergent Definitions from a Production Perspective, *Journal of Film and Video* 64(4), Winter 2012, pp.3-21.

and divergence, this thesis maintains that the digital information image reinforces the virtual nature of cinema.

In the third chapter, I deal with the debate among film theorists regarding the aesthetics of realism, modernism, postmodernism, and digital aesthetics after postmodernism. These disputes reflect the ontological change in film images caused by the diffusion of digital images. My question concerns the relation between physical indexicality and cinematic imagination in the age of digital cinema. Does digital manipulation force the disappearance of the photographic indexicality of the film image? How does the aesthetics of computer synthesis transform the imaginary nature of film? By recounting theories of film, I explore the complex relationship between filmic ontology and digital simulation.

In particular, I reappraise André Bazin's 'photographic realism', Metz's 'the imaginary signifier', and Baudrillard's 'hyperreality'. Although Bazin accentuates the 'objective reality' of photochemical images, he clearly grasps the material ambiguity and complexity of film images. As Daniel Morgan claims, the theoretical core of Bazin's realism is not the indexical traces of objects or models, but material ambiguity and temporal contingency.²⁴ Bazin also articulates the position of the subject and artistic expression in the aesthetics of film realism. I argue that the reassessment of Bazin's realism is connected to the hybrid nature of digital realism, merging the object and the subject, the indexical and the illusionary, and the material image and virtual expression.

Second, I re-evaluate Christian Metz's film theory of the imaginary in terms of the relationship of filmic reality and illusion. Despite the limitation of Metz's film semiotics, in which the attractive nature of filmic materiality is superseded by scientific rationale and linguistics, his position on filmic reality is complex with regard to the hybrid relation of the real and the imaginary. Rushton asserts that Metz's concept of the imaginary properly grasps the 'reality of the imaginary', that is, the ontological ambivalence of the

²⁴ Daniel Morgan, Rethinking Bazin: Ontology and Realist Aesthetics, *Critical Inquiry*, Vol. 32, No. 3, Spring 2006, p.458.

physical reality and the filmic illusion.²⁵ I examine Metz's concept of the imaginary in terms of the new and intensified contradictions of digital cinema concerning the real and the virtual.

Third, I deal with Jean Baudrillard's postmodern aesthetics in terms of the ontology of filmic reality and the image. Although his vision of hyperreality and simulation is radically nihilistic, I note his ambivalence regarding the filmic image and digital virtuality. Baudrillard consistently maintains that digital simulation is the end of physical reality and aesthetic illusion.²⁶ However, his later works open the dim possibility of reality persisting in the boundary of 'false' simulacra. Melanie Chan claims that Baudrillard suggests a new possibility of symbolic images and simulacra by positing the notion of 'systemic anomalies'.²⁷ I argue that Baudrillard's negative assertion of the simulated image and digital virtuality should be reinterpreted as a strong indication of the 'desert of the real'.²⁸

Finally, I argue that digital aesthetics goes beyond postmodernism in terms of computer simulation and digital interactivity. While postmodernism emphasizes the absolute primacy of hyper-real images over material reality, digital aesthetics pays attention to the interactive reality of images and the new modes of auteurism. Digital aesthetics suggests a different ontology of physical reality and image synthesis beyond the nihilist vision of postmodernism. I argue that digital aesthetics after postmodernism moves toward the hybrid aesthetics of physical reality and virtual image.

In the final chapter, I examine Gilles Deleuze's cinematic aesthetics. The Deleuzian concept of virtuality has important implications for the aesthetic ontology of digital virtualism. I accentuate that Deleuze extrapolates the reality of cinema in terms of the

²⁵ Richard Rushton, *The Reality of Film: Theories of Filmic Reality*, New York: Manchester University Press, 2011, p.80.

²⁶ Jean Baudrillard, *Violence of the Virtual and Intergral Reality*, translated by Marilyn Lambert-Drache, *International Journal of Baudrillard Studies*, Vol. 2, No. 2, July 2005, (n.p.)

²⁷ Melanie Chan, *Virtually Real and Really Virtual: Baudrillard's Procession of Simulacrum and The Matrix*, *International Journal of Baudrillard Studies*, Vol. 5, No. 2, July 2008, (n.p.)

²⁸ Jean Baudrillard, *Simulations*, translated by Paul Foss, Paul Patton and Philip Beitchman, New York: Semiotext(e), 1983, p.40.

‘virtual conjunction’ of physical reality and the simulated image beyond the copy and representation of material reality. Although the Deleuzian concept of virtualism does not directly originate in the digitalised phenomenon of film art, Deleuzian concept of movement and time as the aesthetic nature of virtual images has a close relationship with the emergence and expansion of digital information images. This thesis asserts that Deleuzian virtualism expands the core of aesthetic concept at the level of the molecular movement and crystalized temporality of computer synthetic images. Furthermore, I take a note that Deleuzian concept of the virtual ontology of cinematic images suggests the creative and configurative potential of digital cinema. In addition, I attempt to expand his cinematic aesthetics of virtuality to the concept of digital ethics. His main aesthetical concepts of simulacra, cinematic movement and time, crystal images, becoming, and the struggle with information image move toward the digital ethics based on the practical and subjective notions of assemblage and configuration. Using the Deleuzian concept of virtuality, I explore the configurative aesthetics and ethical task of digital information images.

First, I deal with the ontology of simulacra. While Baudrillard considers the world of simulacra and digital virtuality as ‘false’ evil and violence, Deleuze postulates the ‘univocity of being’²⁹ in the indiscernible hybridity of physical reality and simulated image. For Deleuze, the virtual image is not the representation and ‘degraded copy’³⁰ of material reality, but comprises different realities or new forms of realities. Thus, Deleuze’s concept of simulacra proposes the virtual conjunction of cinematic images in the immanent plane of simulacra. I develop the concepts of simulacra and virtual conjunction to posit the ontological potential of the cinematic image, particularly the aesthetic possibilities of computer-simulated images.

In addition, the Deleuzian aesthetics of cinematic movement has two vital implications for establishing the aesthetics of digital virtualism. First, Deleuze suggests clearly that

²⁹ Alain Badiou, *Deleuze: the Clamor of Being*, Minneapolis: University of Minnesota Press, 2000, p.143.

³⁰ Gilles Deleuze, *The Logic of Sense*, translated by Mark Lester and Charles Stivale, London: Continuum International Publishing Group, 2004, p.299.

cinema is the movement of material reality beyond representative indexicality.³¹ In terms of the material movement, I pay attention to the molecularisation and chromatisation of movement-images in the new regime of audio-visual signs.³² Borrowing Deleuze's concepts of montage, affection, and spiritual automaton, I extrapolate the potential of digital images from the disjunction and connectivity of the molecular particles of virtual images. The molecular register of the information image-surface suggests the new form of movement-image and filmic hybridity on the immanent plane of virtual images. I elicit the implication of Deleuzian movement-image in the digital age from the molecular, microbiological, ethological quantum state of the virtual image and of perception itself.

Moreover, the movement of cinematic images is symbiotic with the spectator's attraction, which is not external to the film. Thus, the reality of film derives from the combination of screen and subject. Similarly, Ronald Bogue indicates that the material nature of the cinematic image integrates the spectator's sense and perception.³³ Deleuze theorises the complex combination of objective movement and subjective perception, the moving image and spectator's attraction, the cinematic motion and the filmic affection, and the physical reality and the cinematic imagination. Based on the Deleuzian concept of the movement-image, I suggest that digital virtualism is the hybrid aesthetics of the actual and the virtual, the material and the immaterial, indexicality and imagination, the screen and the spectator's sense.

Finally, I explore Deleuze's aesthetics of the time-image in the context of digital virtualism. After examining the interdependent and contradictory relationship between the movement-image and the time-image, I investigate the Deleuzian aesthetics of the crystal image as the inextricable and indiscernible conflation between the actual and the virtual, the real and the imaginary, and movement and time. I postulate the ontological hybridity of digital cinema based on the aesthetic implications of the crystal image. I elicit the creative potential of a new reality and image from the complex ontology of the

³¹ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.3.

³² Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, pp.84-85.

³³ Ronald Bogue, *Deleuze on Cinema*, New York, London: Routledge, 2003, p.34.

crystal image. In particular, I attend to Deleuze's statement of the emergence of the digital information image. Deleuze intuits that the aesthetics of digital virtuality requires questions of the 'source and addressee of information' and a 'struggle with informatics'.³⁴ His intuition implies that the new regime of the signs produced by informatics is closely associated with the spiritual automaton of dynamic movement and digital time-image. The nature of digital images based on data transcoding and computer simulation enhances and strengthens the assemblage aesthetics of multiple temporalities and crystal-images, by which the digital time coexists in the symbiotic conflation of passing past, ephemeral present, and emerging future. In this sense, the digital information image connotes the aesthetics of complex and hybrid temporality.

Thus, I suggest the aesthetic ethics and practical task of digital cinema, which demands a configurative aesthetics of creative realities in a ceaseless process of rhizomatic assemblage and becoming.³⁵ As Damian Sutton indicates, Deleuzian ethical and political concept of 'rhizome' and 'becoming' is coincided with the visual arts practice against capitalist ideology.³⁶ It is the eternally multiplied process of 'becoming others', 'becoming animals', 'becoming minorities', 'becoming arts', and 'becoming digitals'. I conclude that digital virtualism expands and transforms the aesthetics of creative reality and imagination. It is the configurative aesthetics of computer simulation and interactivity. Therefore, digital virtualism moves toward an aesthetic ethics of subjectivity and participation.

³⁴ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.259.

³⁵ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, p.21.

³⁶ Damian Sutton and David Martin-Jones, *Deleuze Reframed: a Guide For the Arts Student*, London, New York: I.B. Tauris, 2008, p.xv, pp.65-84.

1. The Definition of Digital Virtuality

In this chapter, I define the concept of digital virtuality. Digital virtuality is the virtuality of the image in the age of digital cinema. The virtuality of the image is part of the artistic history of human beings. In the history of the arts, whereas the virtuality of the image consistently presents physical reality and imaginational potentiality, the virtuality of the film image achieves technological virtuality. The technological virtuality of cinematic images precedes the age of digital cinema. Digital virtuality is the technological virtuality of the image in the age of computer simulation and mobile networks. It is the new stage of virtuality beyond the mechanical virtuality of film images. Digital virtuality presents different forms of cybernetic and synesthetic cinema.

This chapter consists of the four sections related to the concept of digital virtuality. The first section argues the aesthetic definition of virtuality. I argue that virtuality is the liminoid and threshold between the actual and the potential. In particular, I investigate the Deleuzian concept of virtuality, which implies a creative potential and an incessant becoming in the monism of the immanent plane. The second section demonstrates the concept and history of virtual image. Based on Deleuze's concept of virtuality, I argue that the art of virtual image is a complex imbrication between reality and illusion, materiality and immateriality, and object and subject. In the third section, I deal with the virtuality of film images. I demonstrate that the techno-aesthetics of film is the contradictory combination of physical indexicality and cinematic fantasy. I focus on the paradox of technological automation and filmic virtuality. The final section argues that the mechanical reproduction of film is transformed by the cybernetic virtuality of computer simulation. In particular, I stress that digital virtuality is both continuous and discontinuous with filmic virtuality. Digital virtuality is the new artform of virtuality beyond indexical reality. In short, this chapter suggests the contradictory concept of digital virtuality between actuality and reality. It is connected to the next chapter dealing with the cinematic aesthetics of digital virtualism.

1-1. The Concept of Virtuality

Let me begin by placing the concept of virtuality in the context of the aesthetics of digital virtualism. Here I equate *virtuality* with *the virtual*. The term virtuality is the noun form of the adjective virtual; virtuality signifies nothing more than the quality and traits of the virtual. While the adjective virtual describes the ontological state of objects and events, the noun virtuality indicates the aesthetic nature of matters and beings compared with the concept of actuality. First, I provide the definition of the adjective virtual as given in the Oxford English Dictionary. According to this definition, the term virtual has complex and contradictory meanings:

1. a. Possessed of certain physical virtues or capacities; effective in respect of inherent natural qualities or powers; capable of exerting influence by means of such qualities. Now rare ...
2. Morally virtuous...
3. a. Capable of producing a certain effect or result; effective, potent, powerful...
4. That is so in essence or effect, although not formally or actually; admitting of being called by the name so far as the effect or result is concerned.³⁷

In the archaic use of the term, the adjective virtual described powers, virtues, and capacities. The meaning is derived from the etymology of Latin *virtus*, which implies strength and qualities. In this usage of the term, we might call a certain prominent person ‘a virtual person’. The more important meaning of the term virtual has to do with the ‘effect, potent, powerful’, which relates the term to effective and potential power. The Oxford English Dictionary explains that virtual is not formal or actual. Although the virtual indicates an essence or effect of matters and objects, it does not take a concrete form or a palpable materiality. However, in contemporary usage, such as ‘virtually finish’, or ‘virtually impossible’, virtually is used to indicate ‘almost’ but not perfect or not complete. On the other hand, ‘the virtual’ means that a person or event does not

³⁷ Oxford English Dictionary Online,
<http://www.oed.com.ezproxy2.library.usyd.edu.au/view/Entry/223829?redirectedFrom=virtual#eid>

actually exist, but almost so, that is, it is not the same but is similar. Michael Heim also follows this general definition of the virtual. He defines the term virtual as ‘not actually, but just as if.’ He states that the concept of virtuality came into recent vogue with the use of computer techniques to enhance computer memory.³⁸ Although the virtual connotes the essence or effect of things, it does not correspond to the thing itself as a concrete form or a material source. Therefore, we can consider the term virtual an oxymoron, which is an opposite and simultaneous contradiction between the essential nature of being and its external form. According to the dictionary definition, the virtual subsumes effective powers and abstract forms simultaneously. It is both an essence and an effect without actual and tangible forms of being.

Charles Sanders Peirce, the founder of semiotics, also recognized the contradiction in the term virtual. He indicated the imbrication of the potential and the actual in the term virtual:

(1) A virtual X (where X is a common noun) is something, not an X, which has the efficiency (virtus) of an X. This is the proper meaning of the word; but (2) it has been seriously confounded with "potential," which is almost its contrary. For the potential X is of the nature of X, but is without actual efficiency. A virtual velocity is something not a velocity, but a displacement; but equivalent to a velocity in the formula, what is gained in velocity is lost in power.³⁹

He defines the concept as ‘something not an X, but efficiency of X’. For Peirce, the term virtual is a kind of potential, in which X is and is not X, simultaneously. Moreover, he introduces the concept ‘displacement’ to explain a conceptual contradiction in the term virtual. The word displacement connotes both the removal and the occupation of a certain place and position. The virtual is a displacement from an actual efficiency to a potential X. Thus, Peirce defines the virtual as the actualization of the potential. Subsequently, Peter Skagestad argued that Peirce’s definition of the virtual could be grasped in the

³⁸ Michael Heim, *The Metaphysics of Virtual Reality*, Oxford: Oxford University Press, 1993, p.160.

³⁹ Charles Sanders Peirce, *Dictionary of Philosophy & Psychology*, Vol. 2, edited by James Mark Baldwin, New York: Macmillan, 1902, p.372.

context of modern semiotics.⁴⁰ According to Skagestad, Peirce conceptualizes the virtual in the sense of semiotics, in which the implication of the virtual is re-designated in terms of signs and symbols. For Peirce, the term virtual has to do with indexes or traces of objects and beings, although it is displaced by the ‘potentials’. Peirce defines a sign as anything capable of standing in for somebody or something in some respect.⁴¹ In this sense, he considers the irreducibly close association between the sign and its object. He implies that the term virtual does not refer to physical materials or objects but their representatives, agents and interpreters. In Peirce’s semiotic view, the contradiction of the virtual, which is the overlapping (i.e., imbrication) of efficiency and potentiality, is incorporated into the concept of signs of objects.

Based on Peirce’s semiotics heavily that considers the nature of signs the combination of index, symbol, and icon,⁴² Deleuze also defines the nature of images in terms of complex hybridity of the actual and the virtual. Here Deleuze goes beyond the representative aesthetics of Platonism based on the ideal dualism. Instead, he follows up the Bergson’s these, which demonstrates the homogeneity and monism of matters and images in material universe.⁴³ For Deleuze, the concept of the virtual has interexchangeable and contradictory relations with the actual and the real. Using the ambivalent concepts, Deleuze asserts a careful and elaborate argument on the ontological meaning of the virtual. He presents practical grounds for the concept of the virtual, contrasting it with the actual:

Philosophy is the theory of multiplicities, each of which is composed of actual and virtual elements. Purely actual objects do not exist. Every actual surrounds itself with a cloud of virtual images. This cloud is composed of a series of more or less extensive coexisting circuits, along which the virtual images are distributed,

⁴⁰ Peter Skagestad, *Philosophy and Cognitive Science-Peirce, Virtuality, Semiotic*, presented to the Twentieth World Congress of Philosophy, in Boston, Massachusetts, August 10-15, 1998.

⁴¹ Charles Sanders Peirce, *Dictionary of Philosophy & Psychology, Vol. 2*, edited by James Mark Baldwin, New York: Macmillan, 1902, p.228.

⁴² Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, London: Continuum International Publishing Group, 2005, p.29.

⁴³ Henri Bergson, *Matter and Memory*, translated by N. Paul and W. Palmer, New York: Zone Books, 1991, p.19.

and around which they run. These virtuals vary in kind as well as in their degree of proximity from the actual particles by which they are both emitted and absorbed.⁴⁴

Deleuze compares the virtual with the actual, which is not real. As Rob Shields properly indicates by the concept of ‘liminoid’ and ‘threshold’ between the actual and the potential, in Deleuzian philosophy, the virtual is real but not actual.⁴⁵ Deleuze tries to explore a genuine nature of the real by re-defining the virtual. In a reciprocal intersection on an immanent plane of multiplicities, the actual and the virtual consist of the ontological essence of reality. Unlike the common usage of the virtual, which means illusion, imagination, desire, belief, fiction, image, information, mental world, and so on, Deleuze accentuates the reality of the virtual by distinguishing it from the actual. Following Proust who highlights the importance of dream and memory in virtual temporality, Deleuze defines the virtual as ‘real without being actual, ideal without being abstract.’⁴⁶ According to Michael Hardt, in Deleuzian philosophy virtuality is always real (i.e., in the past, in memory) but may become actualized in the present.⁴⁷ The virtual, in which the reality of objects and beings is based on its distinction from the actual, is at the core of the Deleuzian ontology of the image. By defining the virtual as the real, Deleuze attempts to reconfigure the potential capacities of the virtual, such as intangible and impalpable illusion, dream, imagination and intentions. For Deleuze, the term virtual is none other than a potential reality and a different form of physical reality.

Similarly, Johan F. Hoorn, who tried to apply the epistemic of the virtual to a theory of fiction, claims that the distinction between fiction and reality is not crisp but fuzzy. For Hoorn, the physical world is all, and the mental activity of the virtual takes place in the physical world or at least is surrounded by it. He argues that the distinction between physical reality and the virtual has blurred edges. For Hoorn, as applied to fiction,

⁴⁴ Gilles Deleuze and Claire Parnet, *Dialogues 2*, translated by Hugh Tomlinson and Barbara Habberjam, New York: Columbia University Press, 2007, p.148.

⁴⁵ Rob Shields, *The Virtual*, London, New York: Routledge, 2003, p.25.

⁴⁶ Gilles Deleuze, *Bergsonism*, translated by Hugh Tomlinson and Barbara Habberjam. NY: Zone, 1988, p.96.

⁴⁷ Michael Hardt, *Gilles Deleuze: An Apprenticeship in Philosophy*, Minneapolis: University of Minnesota Press, 1993, p.16.

illusion, and information the concept of the virtual is no more than a new form of aesthetic expression.⁴⁸

In general, the actual and the virtual comprise two different types of reality on an immanent plane. David N. Rodowick comments on the relation between the two: the actual is objective and the virtual is subjective, imaginary, and mental.⁴⁹ Pierre Lévy also indicates that the actual and the virtual are two different ways of being, and the virtual should not be compared with the real but with the actual.⁵⁰ Here the virtual is still a kind of reality. Dream, memory, and image are still real.

Richard Rushton points out the misunderstanding of the relationship between the actual and the virtual. The first trap is to conceive the actual as the real and the virtual as the unreal. The second trap is to proclaim that the movement-image is the actual whilst the time-image is the virtual. The third mistake is to think that Deleuze's aim is to downplay the actual and to advocate the virtual which is incorrect because there is no actual without the virtual, and vice versa. Rushton claims that Deleuze coherently emphasizes the coexistence and exchangeability of the actual and the virtual on the plane of the immanent.⁵¹

The virtual image absorbs all of a character's actuality, at the same time as the actual character is no more than a virtuality. This perpetual exchange between the virtual and the actual is what defines a crystal; and it is on the plane of immanence that crystals appear. The actual and the virtual coexist, and enter into a tight circuit, which we are continually retracing from one to the other. This is no longer a singularization, but an individuation as process, the actual and its virtual: no longer an actualization but a crystallization. Pure virtuality no longer has to actualize itself, since it is a strict correlative of the actual with which it forms the

⁴⁸ Johan F. Hoorn, *Epistemics of the Virtual*, Amsterdam, Philadelphia: John Benjamins Publishing Company, 2012, p.44, p.144, pp.187-190.

⁴⁹ D. N. Rodowick, *Gilles Deleuze's Time Machine*, Durham: Duke University Press, 1997, p.92.

⁵⁰ Pierre Lévy, *Becoming Virtual: Reality in the Digital Age*, New York, London: Plenum Trade, 1998, p.23.

⁵¹ Richard Rushton, *Cinema after Deleuze*, London; New York: Continuum, 2012, p.87.

tightest circuit. It is not so much that one cannot assign the terms 'actual' and 'virtual' to distinct objects, but rather that the two are indistinguishable.⁵²

In turn, Deleuze explains that the virtual actualizes on the immanent plane, and vice versa. They coexist and are exchangeable in a tight circuit. Deleuze calls the reciprocal and interactive process the crystallisation of individuality and singularity, or the actual and the virtual.

In this sense, Pierre Lévy demonstrates the interactive process of actualization and virtualization.⁵³ According to Lévy, actualization appears as the solution to a problem. It is the creation and the invention of a form based on a dynamic configuration of forces and finality. In contrast, virtualization is the movement of actualization. It is not a derealization (the transformation of a reality into a collection of possibles), but a change in identity, a displacement of the centre of the ontological gravity of the object considered. The virtual is actualized to solve problems through the encounter and resonance of events and serials, whereas the actual is virtualized to make a difference and to realize creative potentials through eternal repetition. In the process of difference and repetition by the de-territorialisation and re-territorialisation of events and serials, immanent reality reveals the force of virtuality beyond the actual.

In light of his notion of the ontological circuit and entanglement of actualization and virtualization, Deleuze brings this concept into the chaotic order of temporality; the actual is the present, while the virtual consists of the past and memories.⁵⁴ In the perpetual flow of the present and the past, the actual and the virtual are ineffable, inextricable and indiscernible. The virtual is crystalized in the fluidity of time, that is, in duration. Thus,

⁵² Gilles Deleuze and Claire Parnet, *Dialogues 2*, translated by Hugh Tomlinson and Barbara Habberjam, New York: Columbia University Press, 2007, pp.150-151.

⁵³ Pierre Lévy, *Becoming Virtual: Reality in the Digital Age*, New York, London: Plemum Trade, 1998, pp.25-26.

⁵⁴ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, London: Athlone, 1989, p.54.

The actual object and the virtual image, the object become virtual, the image actual, are all figures dealt with in elementary optics. This distinction between the virtual and the actual corresponds to the most fundamental split in time, that is to say, the differentiation of its passage into two great jets: the passing of the present, and the preservation of the past... The passing of the present, the preservation and self-preservation of the ephemeral each occur according to their own scale of measurement. Virtuals communicate directly over the top of the actuals, which separate them. The two aspects of time, the actual image of the present which passes and the virtual image of the past which is preserved, are distinguishable during actualization although they have unassignable limits, but exchange during crystallization to the extent that they become indiscernible, each relating to the role of the other.⁵⁵

For Deleuze, the term, the virtual, is associated with the indiscernibility of a crystal image in the perpetual and ephemeral flow of time. In the imbrication and entanglement of actuality and virtuality, Deleuze re-designates the realm of reality. The virtual constantly actualizes in events and movements, while the actual simultaneously deterritorialises through the rhizomatic intersection and assemblage of virtualization. It is the process of differentiation, heterogenesis, and becoming others.⁵⁶

For these reasons, Antony Bryant states that Deleuze conceptualizes the virtual in terms of creative possibility, potential actuality, transformative potentiality, and expandable reality by defining virtuality as the relation between the real and the actual.⁵⁷ According to Bryant, Deleuze defines the virtual and virtualization as a nomadic struggle in the crystallisation of time to move towards creative potential and new reality. In short, the virtual is the realm in which creative potentiality is becoming constantly actualized. For

⁵⁵ Gilles Deleuze and Claire Parnet, *Dialogues 2*, translated by Hugh Tomlinson and Barbara Habberjam, New York: Columbia University Press, 2007, p.151.

⁵⁶ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, p.10.

⁵⁷ Antony Bryant, *Digital and Other Virtualities: Renegotiating the Image*, London: I. B. Tauris, 2010, p.15.

Deleuze, the virtual is the foundation of reconfiguring the aesthetic ontology between reality and the image.

1-2. The Virtuality of the Image: History and Aesthetics

In light of this contradiction in the concept of virtuality, the virtuality of the image subsumes contrasting meanings: materiality and the ideal, actuality and potentiality, object and subject, being and imagination, and reality and illusion. The term image is also as contradictory as the concept of virtuality. Above all, although it is related to something mental and psychological, the concept of image originates in material reality. For example, the image of a tree in the mind stems from a real tree in the actual world. Therefore, the virtuality of the image is both actual and ideal. The Oxford English Dictionary defines two different aspects of the word image:

1. An artificial imitation or representation of something, esp. of a person or the bust of a person...
2. b. A visible appearance; a manifestation of a figure; an apparition...
3. a. A visual representation or counterpart of an object or scene, formed through the interaction of rays of light with a mirror, lens, etc., usually by reflection or refraction...
5. a. A mental representation of something (esp. a visible object) created not by direct perception but by memory or imagination; a mental picture or impression; an idea, conception...⁵⁸

On one hand, the image is a kind of physical imitation, appearance, and representation of something material. On the other hand, it is a mental imagination and impression of human beings. Hence, the term image combines a figural agent and a mental idea. This

⁵⁸ Oxford English Dictionary Online,
<http://www.oed.com.ezproxy2.library.usyd.edu.au/view/Entry/91618?rskey=ArNiu&result=1&isAdvanced=false#eid>

contradiction in the term image results in two different perspectives on the ontology of the image.

Historically, the virtuality of the image is related to the development of arts. As Elizabeth Grosz properly points out, the concept of virtuality is not only a recent phenomenon caused by the proliferation of computer technology and digital civilization,⁵⁹ rather it has a long story having kept pace with the historical development of human beings and image art. When the concept of virtuality is defined as a creative reality and potentiality in view of the contraction between material reality and imagination, the historicity of virtuality is closely associated with the historical evolution of the image art. This is because art is a kind of creative activity to make new reality by the virtual like fiction, imagination, consciousness and intention of human beings. In conceptual essence, art differentiates the meanings of objects and beings in actual world by the force of virtuality. Hence, art is the virtual, and aesthetic is the exploration of virtuality. In particular, it is clear that the art of image like painting, sculpture, architecture, photograph, and film definitely has the virtuality. This is because the art of image pursues a new reality and potentiality in actual world by making creative figures. Therefore, the historicity of virtuality comes together with the history of image art in a broad sense.

In light of the historicity of image, the first virtual art can be considered as ancient cave murals at Lascaux and Altamira approximately 17,000 years ago. These cave paintings expressed human desires for hunting and survival in the virtual images. We can easily guess that these cave paintings might be combined with virtual story telling of hunting in daytime. In those days, cave paintings functioned as an artistic and virtual tool to express their reality and life. In this sense, cave murals are the progenitor in the genealogy of virtual art. Régis Debray demonstrates that the virtuality of image was born in death, which means that it was inevitably born in the process of life and death for the survival of humankind.⁶⁰ He says that it was spawned by the denial of death and the desire for

⁵⁹ Elizabeth Grosz, *Architecture from the Outside: Essays on Virtual and Real Spaces*, Cambridge: MIT Press, 2002, pp.78-79.

⁶⁰ Régis Debray, *Life and Death of Image*, translated by Ginguook Jeong, Seoul: Vision and Language Press, 1994, p.40.

eternal life of the ancients, by the means of immortal existence linking the finite lives of human beings forever, by the condolence of people who are alive, by the tool of ideology that connects the domains of the deceased and the living. Included are visible images in ancient times, such as hieroglyphics, sculptures, and cave paintings.

Here my point is the fact that the ancients identified the actual and the virtual. Unlike the modern humans, they did not strictly distinguish real objects from virtual images. They believed that the mummy is the same as the real human, and cow's image is identical with real cow. The ancients pursued the actual reality in the virtuality of images. Human figurines and idols were none other than virtual agents of life resisting death. Nevertheless, representing something in virtual arts means only making absent things present to us. Therefore, the virtual image does not only occur in our minds, but it complements the sufficiency of the real and alleviates the anxiety, fear, and grief of the real resulting from it. The ancients identified the world of physical reality with the virtuality of image in order to preserve their 'actual' efforts and costs.

According to Regis Debray, the historicity of image art based on virtuality can be formulated by three stages of the mediasphere.⁶¹ The first phase is the era of the Logosphere, which was characterized by writing and orality. It is a system of idolatry based on the supernatural and the transcendent. In this stage, the image reveals a transcendent being, which is another name for the real. In the era of the first Logosphere, God was the sole artist. In the age of the idol ruled by religion, images existed only as 'eyes without subjects'. The second stage of the mediasphere is the era of the Graphosphere, which was triggered by the invention of printing. It is the age of art based on representation and illusion. Here the image constantly reflects and represents the real world. The second phase is the age of art, in which the artist has replaced God in the first stage. In the sacred times of art achieved by humanism and freedom from theology, the image indicates only 'subjects existing behind eyes'. In today's world, the virtual image dominates the real. This era is called the age of the videosphere, which is caused by

⁶¹ Ibid, p.26.

visual media. Whereas previously we were in front of the image, we are now in the image. The eruption of the image paralyzes our thinking. In modern times, people are surrounded by visual media such as TV, movies, videos, and the Internet and thus are encircled by 'vision without eyes'. In the age of the videosphere, the virtual image achieves a new world where its purpose is not transmission and storage, but manipulation and synthesis. What were called art works in the past has become a visual industry of the tools and methodology for the accumulation of profits.

Consequently, Debray's notion of videosphere asserts that image arts are facing the new stage of virtuality in modern times. The prehistory of virtuality from cave arts in ancient times to paintings and sculptures in the middle ages was the age of handicraft arts without the interference of technology and media. However, the age of videosphere stemmed from photograph, film, TV, video, and computer image proceeds to the new phase of virtuality dominated by technological media. Here the virtuality of image converts to the concept of 'technological virtuality'. In this context, the concept of virtuality is historically distinguished into three different kinds of virtuality: the manual, the technological, and the digital. While manual virtuality indicates the prehistory of technological virtuality, digital virtuality indicates the evolutionary form of technological virtuality. Basically, the age of technological virtuality begins with the invention of photograph and film because those liberate the arts from human manual labour and acquire the mechanical automatism of the arts.

Although Debray extrapolates the nature of image arts from its representative characteristics unlike the Bergsonian or Deleuzian concept of virtual images, I consider that his argument of the historical development of image arts provides us with a theoretical clue of how the virtual image actualizes in the process of historical evolution. On the ground of Debray's concept of videosphere, I take note of the fact that technological virtuality has a negative effect causing a reversed and overturned relationship between physical reality and image world. Unlike the age of handicraft artworks, people in modern times do not adore subject-oriented reality. They would rather worship the immediacy and superficiality of the virtual image itself blindly, as

people did in the age of idol. The virtuality of image now substitutes for the idol, as it is. People in current society worship the virtual image itself instead of the world of physical reality that was represented by the image in ancient times. Contemporary visual media have accomplished an image world, reality without history, and reality that is not the real, that is, the transformation of reality from the actual to the virtual.

There are many theorists criticizing the negative influences of virtual image in modern society. In the early 1960s, Guy Debord strongly criticizes the limits of virtuality and spectacle in modern society.⁶² He indicates that the credibility of physical reality is subverted by virtual image. Baudrillard also conceives the concept of virtuality in terms of the simulation of hyperreal image, which is more real than physical reality.⁶³ He takes note of the adverse effects of hyperreal image in virtual world. Baudrillard claims that nobody apprehends immediate reality in the world of simulated virtuality. Nobody lives in the actual world. Nobody experiences the world without the mediation of the virtual image. Nothing remains but to live in the world of the virtual image, where the real that we can see and hear is mediated. The age of the virtual art reliant on simulation transforms the real to visual codes, symbols, and signs based on hyperreal virtuality. The more that signs and symbols overflow the world, the less the truth and authenticity of reality remains in it. This paradox in the age of the technological art has led human society to a harsh and odd landscape where physical reality is eroded by the virtuality of hyperreal image.

While Debray, Debord, and Baudrillard pay attention to the historical negativity of virtuality and image art in modern society, Vilem Flusser optimistically accentuates the progressive hope of virtual technology and image art. In particular, Vilem Flusser introduces the notion of ‘technical image’ into the history of virtuality and image art. Like Debray, he conceptualizes virtual images by the development of tools and media in history. However, the concept of image defined by Flusser is unique. His description of

⁶² Guy Debord, *Society of Spectacle*, translated and edited by Ken Knabb, London: Rebel Press, 1983, p.7.

⁶³ Jean Baudrillard, *Simulations*, translated by Paul Foss, Paul Patton and Philip Beitchman, New York: Semiotext(e), 1983, pp.40-43.

technical image shows that technical apparatuses like photograph and film transformed the virtuality of image art in the history of technological media.

Flusser argues that images are significant surfaces.⁶⁴ In other words, the image is a significant thing on the superficial surface for him. He argues that images signify-mainly-something ‘out there’ in space and time that they have to make comprehensible to us as abstractions (as reductions of the four dimensions of space and time to the two surface dimensions). According to him, this specific ability to abstract surfaces out of space and time and to project them back into space and time is what is known as virtuality and imagination. His proposition ‘images are significant surfaces’ essentially consists of the combination of two sentences. The first sentence is ‘images are surfaces’. It means that the image is a kind of medium between ‘out there’ and ‘in here’, object and sense, matter and perception, and the world and human beings. This sentence expresses an abstraction and the imagination of the second dimension against the fourth dimension in space and time. Unlike linear thinking, it also results in circulating, sensitive and imaginary thinking based on surfaces. The second sentence is ‘image has significances’ on the surface. In this stage, the image becomes a complex of symbols. Furthermore, he consistently demonstrates that it is not denotative but connotative. This is because the image can have a variety of interpretations. Unlike number, which is unambiguous, the image has the characteristic of ambiguity. Consequently, as a phenomenologist, Flusser emphasizes that the image is a symbolic passage to access the essence of the world. Indeed, it seems that he positively trusts the capability and possibility of the image, which makes it comprehensible. For Flusser, wandering over the surface of the image is a kind of scanning or expedition in order to understand and access the four dimensional orders in space and time.

In my view of the virtuality of the image, Flusser’s concept of image can be compared with Deleuze’s concept of the virtual. Like Deleuze, Flusser also indicates the fact that the virtuality of image exists in the nexus and interface between surface and depth, time and space, object and sense, matter and perception. However, while Flusser defines the

⁶⁴ Vilem Flusser, *Towards A Philosophy of Photograph*, London: Reaktion Books, 2000, pp.8-9.

image as significant surfaces between ‘out there’ and ‘in here’, object and sense, matter and perception, and the world and human beings, Deleuze conceptualizes the dynamic force of virtual art based on fiction and imagination along the indiscernibility and hybridity between the actual and the virtual, matter and image, the present and the past. Deleuze conceptualizes the virtual between the actual and potentiality in view of the creativity of physical reality. Deleuze’s virtuality is also related to the logic of a dynamic force and becoming to make a difference on the plane of immanence. This pursuit of dynamicity and multiplicity let Deleuze define the virtuality and image arts as a power of the false.⁶⁵ In particular, virtuality has to do with the indiscernibility of crystal image in his cinema philosophy.⁶⁶ He suggests the aesthetics of the virtual image in the relation of inextricable and interactive exchange and transformation between the present and the past, being and perception, reality and potentiality.

Next, let us investigate the Deleuzian concept of the virtuality of the image in more detail. Virtuality concerns the question of the nature of the image. The question ‘What is image?’ implies an answer that is opposite to itself. Traditional idealist thoughts based on Platonism assert that the image is none other than a reflection in our mind of the real world. While Hegel considers the virtuality of image the phenomenology of absolute geist,⁶⁷ Tolstoy defines that the virtual art is the feeling and infection of emotion.⁶⁸ They argue that the nature of image and art is the replica or representation of a model or something that actually exists. In this definition, the image is considered a dependent variable of the real, which is based on the separation between the world and illusion or matter and consciousness. In particular, Plato, who is considered the founder of idealism in the western philosophical tradition, presents this perspective in his famous ‘Allegory of the Cave’.⁶⁹ Plato asserts that the image is the world of the false and is therefore not in

⁶⁵ Gilles Deleuze, *The Logic of Sense*, translated by Mark Lester and Charles Stivale, London: Continuum International Publishing Group, 2004, p.300.

⁶⁶ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, London: Continuum International Publishing Group, 2005, p.127.

⁶⁷ G.W.F. Hegel, *Phenomenology of Spirit*, translated by A.V. Miller, Delhi: Shri Jainendra Press, 1998, p.497.

⁶⁸ Leo Tolstoy, *What is Art?*, translated by Aylmer Maude, Oxford; New York: Oxford University Press, 1962, p.228.

⁶⁹ Plato, *Plato's The Republic*, edited by B. Jowett, New York: The Modern Library, 1941, Book VI. 516b–c.

the realm of Idea, which is the world of truth. Like prisoners in a cave, human beings can only recognize the world of truth by the fictional image of simulation. In his view, an image is merely an imaginary copy of an ideal model of either physical reality or an Idea; hence, the original precedes the image, and the model of great ideals can only explain the ontology of the image.

In contrast, Deleuze overturns Platonism.⁷⁰ In Plato's idealism, the original takes precedence over the image, whereas Deleuze deconstructs the separation of the image with the original. Plato conceives of a preceding model and the falsehood of its image; Deleuze, based on material monism, goes beyond Platonism by drawing on the power of simulation and falsity. Platonism is based on the idea of a distinction between 'the thing itself' and the simulacra. Here, difference is not thought of as a thing in itself but as related to a ground that is subordinated and subject to mediation in mythic form. For Deleuze, in overturning Platonism, then, the primacy of original over the copy, of model over image is denied, thus glorifying the reign of simulacra and reflections.⁷¹ Plato concentrates on the falsehood of the virtual and simulated image in light of the transcendental Idea. In contrast, Deleuze establishes the immanent corporeality and the physical movement of the image. In materialist thought, the image is considered a figure of sense or substance. The history of the image is the movement of matter and the evolutionary process of historical incidents. For Deleuze, the image is living matter and internal movement instead of transcendent schema or ideology. Therefore, the essence of images is not in the ideal and in transcendence, but in material life, historical movement and immanent construction.

According to Gregory Flaxman, in order to grasp Deleuze's methodology in overturning Platonism, 'one must affirm the powers of the false.' This is because 'these powers create an excess of truths, a plurality of possible worlds that bear the world beyond the precincts

⁷⁰ Gilles Deleuze, *The Logic of Sense*, translated by Mark Lester and Charles Stivale, London: Continuum International Publishing Group, 2004, pp.291-302.

⁷¹ Gilles Deleuze, *Difference and Repetition*, translated by Paul Patton, London: Continuum International Publishing Group, 2004, p.80.

of truth and lying.⁷² Deleuze insinuates himself into Platonism to overturn the dualism of originals and images within themselves. Leaving aside the transcendent essence of Idea, he implodes Platonism by turning it inward. Deleuze denies the dualism of model and imitation, and restores the creative force of simulacra. Flaxman states that Deleuze achieves an immanent critique against Plato's idealism by eschewing all external or transcendent perspectives. He points out that Deleuze strips the privilege of originality and theorizes the power of the false.⁷³ Unlike Plato's negation of simulation and virtuality, the concept of the virtuality of the image as defined by Deleuze practically overcomes the dichotomy between original and copy, reality and image. He theorizes the ontological contradiction and hybridity of image as the power of false.

In this sense, in Deleuzian virtuality, the image resides not only in its materiality and reality but also in the force of fiction and imagination. It is important to grasp the contradictory concept of the image. Image is both the material and the imagined. It is a complex hybridity of the actual and the potential. Therefore, by virtue of the power of the false, the simulacra of image create different modes of physical reality, which are nothing more than enhanced and expanded reality. In terms of the virtuality of images, the power of the false is associated with the concept of 'the body without organs', producing creative reality and possibility.

In this context, the virtuality of images postulates the concept of 'the body without organs'. In other words, the creative power of false is reified by the concept of the body without organs. In *The Logic of Sense*, Deleuze borrows the term 'the body without organs' from Artaud's radio play, "To Have Done with the Judgment of God": "When you will have made him a body without organs, then you will have delivered him from all his automatic reactions and restored him to his true freedom."⁷⁴ Deleuze argues two

⁷² Gregory Flaxman, *Gilles Deleuze and The Fabulation of Philosophy*, Minneapolis and London: University of Minnesota Press, 2012, p.117.

⁷³ Ibid, pp.128-129.

⁷⁴ Antonin Artaud, *To Have Done with the Judgment of God*, *Selected Writings*, translated by Helen Weaver, edited by Susan Sontag, Berkeley: University of California Press, 1976, p.571.

different ways to encounter the world between the little girl and the schizophrenic.⁷⁵ While the little girl stays on the surface of life, the schizophrenic explores into the depth of the world. According to Deleuze, the schizophrenic body, that is, the superior body or body without organs of Antonin Artaud, is a new dimension of being and an organism without parts that operates entirely by insufflation, respiration, evaporation, and fluid transmission. In their collaboration, *Anti-Oedipus: Capitalism and Schizophrenia I*, Deleuze and Guattari develop the term ‘the body without organs’ into the concept of creative virtuality:

The body without organs is an egg: it is crisscrossed with axes and thresholds, with latitudes and longitudes and geodesic lines, traversed by gradients marking the transitions and the becomings, the destinations of the subject developing along these particular vectors. Nothing here is representative; rather, it is all life and lived experience: the actual, lived emotion of having breasts does not resemble breasts, it does not represent them, any more than a predestined zone in the egg resembles the organ that it is going to be stimulated to produce within itself. Nothing but bands of intensity, potentials, thresholds, and gradients. A harrowing, emotionally overwhelming experience, which brings the schizo as close as possible to matter, to a burning, living center of matter....⁷⁶

Deleuze and Guattari oppose the organism of the body, which repress and deteriorates the flow of living and desiring forces in the actual world. Instead, they advocate non-organic and unorganized multiplicity and the dynamicity of the rhizomatic and molecular war-machine. They disparage the inertia and spiritlessness of the world of imitation and representation, and value highly the creativity and potentiality of simulation and virtual images. For them, the force of virtuality multiplies by dismantling the organic body on the plane of immanence. They highlight struggling desires and pleasures that de-territorialise and traverse the axes and thresholds between the actual and the potential on

⁷⁵ Gilles Deleuze, *The Logic of Sense*, translated by Mark Lester and Charles Stivale, London: Continuum International Publishing Group, 2004, pp.99-105.

⁷⁶ Gilles Deleuze and Felix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia I*, translated by Robert Hurley, Mark Seem, and Helen R. Lane, Minneapolis: University of Minnesota Press, 1983, p.21.

the plane of consistency. Deleuze and Guattari conceptualize the potentiality of a new reality by the dynamic becoming of a body without organs.

Brian Massumi explains Deleuze's non-organic philosophy in terms of the virtuality of images. He states that the body should be imagined in suspended animation, intensity = 0, outside any determinate state, poised for any action in its repertory.⁷⁷ He points out that in this imagination the body is considered from the point of view of its potential or virtuality passing through a threshold state on the way from one determinate state to another. For Massumi, the body without organs is none other than 'the body as virtuality'. The body is an open system of pure potentiality and pure virtuality. The body without organs is a subset of the body's plane of consistency, which is the Milky Way of its potential orbits and trajectories. The body is a region of the Milky Way made by a constellation, including an infinity of background stars visible at varying degrees of intensity.⁷⁸ Massumi connects this hovering over the conjunctive synthesis and resonance with the beginnings of human subjectivity.⁷⁹ He states that Deleuze's concept of the organless body is the actualization and conjunction of virtuality. Instead of organs, modes of composition in the virtual attractor govern the actualization of the threshold state.⁸⁰ For Massumi, the image of reality is the potential on the consistent plane.

Consequently, the image, as Deleuze said, is not a notion or concept but a practice or set of practices.⁸¹ The potentiality of the image, the creativity of simulation, the virtuality of reality and the virtualization of the actual are a matter of assemblage and becoming. Deleuze's concept of the virtuality of images presents one point regarding the creative subjectivity of human beings in the virtuality of image world.

1-3. The Virtuality of Film

⁷⁷ Brian Massumi, *A User's Guide to Capitalism and Schizophrenia*, Cambridge, Mass: MIT Press, 1992, p.70.

⁷⁸ Ibid, p.71.

⁷⁹ Ibid, p.73.

⁸⁰ Ibid, p.74.

⁸¹ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, pp.149-150.

As we can have seen in the prior section, the virtuality of image is the imbrication between the actual and the potential. As it were, the virtual image is the threshold between physical reality and fantasy. In this section, I extend the concept of virtual image to the territory of film art. I argue that film is the art of virtuality, which implies the liminal between reality and image. In particular, I distinguish film from the traditional arts like painting or architecture in terms of technological virtuality. Film art presents the new phase of virtuality because it is mediated by technological automation. Unlike traditional image arts reliant on human's manual operation, the virtuality of film stems from mechanical apparatuses like camera, film strips, and screen. On one hand, film invokes the technologically mediated physical reality; on the other hand, it causes potential power of fictional imagination and fantasy. The virtuality of film is the contradictory duality between materiality and immateriality, actuality and potential, indexicality and fantasy.

Historically, the virtuality of film has evolved along two paths: the reproduction of physical reality and the projection of visual illusion. On one hand, as Benjamin intuited, it involves the history of the technology of reproducing images with the invention of the camera and celluloid filmstrips.⁸² On the other hand, it is the history of visual illusion and spectacle as conveyed by the projection apparatus of the screen. <deleting 32-35> In the prehistory of film, the virtuality of images has developed through the two different ways. While camera obscura and photography succeeded in capturing physical reality, magic lantern and screen instruments projected the visual illusion. The mechanical apparatus of cinematography integrates these two different streams. Auguste and Louis Lumière effectively combined the contradictions of the reproduction of reality and the presentation of illusion into two different aspects of filmic virtuality. For the first time in the history of art, human beings succeeded in the technological representation of objects and the public presentation of virtual images. Lumière brothers' cinematograph showed scenes of everyday life that were produced in one shot and one scene using a fixed camera. The

⁸² Walter Benjamin, *Little History of Photography, Selected Writings Vol.2 1927-1934*, translated by Rodney Livingstone, Cambridge, Mass.: Harvard University Press, 1999, p.508.

concept of shooting and editing did not yet exist. Although these scenes were given narrative titles, such as the *Arrival of a Train*, *Workers Leaving the Lumière Factory*, and *The Sprinkler Sprinkled*, they were primitive documentary newsreels showing people's daily routines.

According to Noel Burch, early movies, such as Lumière's films, centred on visual presentation using primitive modes of representation (PMR).⁸³ He contrasts them to institutional modes of representation (IMR), which concentrated on narrative cinema. Tom Gunning also sets a high value on the reality and spectacle of moving images in the early cinema, designating them as 'the cinema of attraction.'⁸⁴ According to Louis Giannetti's description of the early history of film, Lumière is the first realist because his filmstrips are mainly dedicated to capturing and recording physical reality.⁸⁵ Lumière's team wandered around the world seeking interesting scenery and curious customs, such as the New York subway, Niagara Falls, and the coronation of the Russian Czar. His films evidence the early features of the later genre of documentary. In contrast, Giannetti explains that, while Louis Lumière focused on the realistic essence of film, Georges Méliès concentrated on the magical and fantastic aspects of filmic virtuality.⁸⁶ Whereas Lumière's films presented people's real, contemporary lives, Méliès explored the potential of the virtual using a variety of techniques and experiments. Méliès created magical effects by various camera tricks, special effects, and editing techniques, such as time-lapse photography, multi exposures, dissolves, fade-outs, and hand-printed colour. He manipulated and re-composed the reality of film by combining his imagination with technological experiments. In 1902, he made *Voyage to the Moon*, the first science fiction film. Méliès's films offered spectators magical curiosity and fantastic pleasure. For him, cinema was the art of the dream and imagination instead of realistic record. In terms of filmic virtuality, Méliès's films developed the imaginal aspects of film using

⁸³ Noël Burch, *In and Out of Synch: The Awakening of a Cinema-Dreamer*, Aldershot: Scholar Press, 1991, pp.161-164.

⁸⁴ Tom Gunning, *The Cinema of Attractions, Early Film, Its Spectator and the Avant-Garde*, *Early Cinema, Space, Frame, Narrative*. London: British Film Institute, 1986, pp.56-57.

⁸⁵ Louis Giannetti, *Understanding Movies (12th edition)*, New York: Pearson, 2010, pp.1-5.

⁸⁶ *Ibid.*

experimental techniques, which is distinguished from the characteristic of physical indexicality and reality.

Nevertheless, as Thomas Elsaesser properly points out,⁸⁷ Lumière's reality does not absolutely have a confrontation with Méliès's fantasy. This is because the filmic virtuality essentially subsumes the immanent contradiction of physical indexicality and magical illusion. In this sense, Elsaesser emphasizes that Lumière's cinematographs also showed the magical characteristics based on artificial compositions and stylistic desires despite its main traits as a real documentary. Lumière and Méliès represent two different aspects of filmic virtuality, in which physical reality is complexly entwined with magical illusion by the force of technological apparatuses such as camera, filmstrips, projector, and screen. Consequently, the invention and evolution of film was a technological and aesthetic combination of physical reality and visual illusion. It relied on the technological development of virtual images, which created magical illusions and visual spectacles by seizing material reality and projecting light and images in a darkened environment. Here my point is that the history of film presents the hybrid combination of the actual and the virtual, and physical reality and illusionary spectacle. The history of filmic virtuality shows a consistent attempt to combine technologically and aesthetically the reality and the illusion of the image.

Based on the historical review of the contradictory development of filmic virtuality between physical reality and illusionary fantasy, let us move on the issue of the aesthetic concept of filmic virtuality. First, I begin from the fact that filmic virtuality establishes a close rapport with physical reality. With the help of technological apparatuses, the art of film realistically records and imitates material objects and referents. Walter Benjamin delineates the reproductive features of film by the concept of 'mechanical reproduction'.⁸⁸ According to Benjamin, the mechanical reproducibility of film

⁸⁷ Thomas Elsaesser. Louis Lumière-the Cinema's First Virtualist?, *Cinema Futures: Cain, Abel or cable?: The Screen Arts in the Digital Age*, edited by Thomas Elsaesser and Kay Hoffmann, Amsterdam: Amsterdam University Press, 1998., pp.45-61.

⁸⁸ Walter Benjamin, The Work of Art in the Age of Mechanical Reproduction, 1935, translated by Harry Zohn, *Film Theory and Criticism*, edited by Gerald Mast etc., Oxford; New York: Oxford University Press, 1992, pp.665-681.

revolutionises the history of the technology of reproduction. Although artwork has always been replicated and imitated in principle, it not perfected until the new phenomenon called mechanical reproduction finally arrived. The role of the artist's hand has been fully converted to a mechanical process by the photograph and the film beyond the phase of xylography and lithography. Mechanical reproduction has replaced manual reproduction. By using the camera lens for the reproduction of reality, humans achieve a strict objectivity that is separate from imperfect manual work. The technology of visual reproduction using the camera apparatuses indeed has become the essential factor in innovating conditions for the production and consumption of artwork.

Like Benjamin, Vilem Flusser also accentuates 'the technical image' of film, which captures and records material reality.⁸⁹ He describes the main characteristics of the technical image, comparing it to the ages of the traditional image and alphabetical writing. According to Flusser, the era of the traditional image refers to the world of ancient magic and myth, cave arts, murals, engravings, carvings, and sculptures. Communication in this world is ritualistic, religious, and oral. This era is similar to the era of the technical image such that the dominance of the image is a way to access the world. It is based on chaos and circulation, unlike the era of the alphabet and writing, which was founded on linear thinking. In other words, the image has become the most vital mediator between humans and nature and individuals and groups in both eras. However, the technical image is definitely different from the traditional image. Flusser emphasizes that unlike the traditional image, which was directly and manually forged by humans, the technical image indirectly and automatically mediates between humans and the world by machines and other apparatuses. Images taken by the camera are very different from images created by painters. Machines like the camera used for photographs and films break the chain of image and significance, whereas painters work out the virtuality of the image 'in their heads'.⁹⁰ Therefore, Flusser claims that the technical image is an abstraction of the third order, whereas the traditional image is an abstraction of the first order. That is, the technical image is not subjective but objective because of

⁸⁹ Vilem Flusser, *Towards A Philosophy of Photograph*, London: Reaktion Books, 2000, p.14.

⁹⁰ *Ibid*, pp.15-16.

the use of apparatuses and mechanical automatism without the intervention of the human body. For Flusser, the technical image of film opens the new world of post-history, going beyond the era of history.

Stanley Cavell draws his philosophical concept of 'scepticism' from the automatism of film. Although it is true that his scepticism postulates the imaginative nature of cinematic images, he also emphasizes the photographic and instrumental automatism. He takes note of the material reality of film by the concept of 'a succession of automatic world projections'.⁹¹ As it were, he maintains that the mechanical and automatic characteristics of film make the succession of the image projecting the world. For him, the automatism and succession of film images is prerequisite for the mechanical reproducibility of instrumental apparatuses like camera, lens, raw film stocks, and projector. Cavell stresses that filmic virtuality and scepticism can be realized on the material ground of technological automatism and succession. For him, filmic virtuality just exists in relation to physical reality. It is 'the world viewed', which is created by technological automatism and aesthetic scepticism.

In contrast, although many scholars and researchers including Benjamin, Flusser, and Cavell appropriately point out that the ontology of film originates in the instrumental and mechanical characteristic of film images, the technological image of film raises the issue of the complex relationship between physical reality and filmic imagination and fantasy. Even though it is clear that film mechanically and automatically reproduces physical reality, it has a diversity of implications in terms of artistic imagination and aesthetic practice. Above all, film technology is absolutely not objective and neutral. Rather, cinema is always a medium of subjectivity, despite its appearance of technological objectivity, which can be hidden by film authors. Since then, as theorists of cinematic apparatus Jean Louis Baudry and Jean Louis Comolli argue, the camera lens is always subjective. The succession of images on the screen forces us to accept the ideological

⁹¹ Stanley Cavell, *The World Viewed: Reflections on the Ontology of Film*, Cambridge, Mass.: Harvard University Press, 1979, p.72.

meaning ascribed by filmmakers.⁹² Cinema apparatus implies a subjective vision, in which it reflects the worldview and opinions of the subject, both technologically and ideologically. In addition, Christian Metz defines the nature of cinema as ‘the imaginary signifier’ of absent desire and unconsciousness in the discourse of film semiotics.⁹³ He articulates that film has the characteristics of fiction and illusion besides the imitation and reproduction of the real world. For him, ‘the scopic regime’ of cinema goes beyond physical reality and mimetic representation. The aspect of filmic imagination and fantasy, as well as the aspects of the technological reproduction of physical reality, should simultaneously illuminate the ontological nature of film images.

In this context, we can extrapolate the fictional and imaginative traits as a different feature of filmic virtuality. In light of the contradiction of filmic virtuality between reality and image, it is necessary to contemplate the artistic aspect of film mediated by technological apparatuses. In fact, Benjamin points out that the mechanical reproducibility of film gives rise to the important transformation of human sense and artistic expression. He argues that the mechanical reproduction of film causes the decay of aura and the emergence of tactile perception.⁹⁴ In addition, Flusser indicates that the technical image intensifies the superficiality of images. He praises ‘the significant surface’ of technical images.⁹⁵ Cavell’s concept of automatism also goes beyond the concept of instrumental and photographic reproducibility: “The ‘sense of reality’ provided on film is the sense of that reality, one from which we already sense a distance. Otherwise, the thing it provides a sense of would not, for us, count as reality.”⁹⁶ As Rodowick properly points out, Cavell’s automatism is associated with the consecutive movement of filmstrips, the complexity of filmic time, and cinematic thoughts and

⁹² See the essay on the insight of the subjectivity and ideology of cinematic apparatus. Jean Louis Baudry, Ideological Effects of the Basic Cinematographic Apparatus, *Narrative, Apparatus, Ideology: A Film Theory Reader*, edited by Philip Rosen, New York: Columbia University Press, 1986, pp.281-298.

⁹³ Christian Metz, *The Imaginary Signifier: Psychoanalysis and the Cinema*, translated by Celia Britton, Annwyl Williams, Ben Brewster, and Alfred Guzzetti, Bloomington: Indiana University Press, 1982, pp.42-57.

⁹⁴ Walter Benjamin, The Work of Art in the Age of Mechanical Reproduction, 1935, translated by Harry Zohn, *Film Theory and Criticism*, edited by Gerald Mast etc., Oxford; New York: Oxford University Press, 1992, p.678.

⁹⁵ Vilem Flusser, *Towards A Philosophy of Photograph*, London: Reaktion Books, 2000, pp.8-9.

⁹⁶ Stanley Cavell, *The World Viewed: Reflections on the Ontology of Film*, Cambridge, Mass.: Harvard University Press, 1979, p.226.

scepticism.⁹⁷ Like this, the theorists who accentuate the technological automatism of film images also keep in mind that the imaginative and fictional nature of film should be indicated at the same time.

In view of techno-aesthetics of film, the technological reproducibility of physical reality should be grasped in relation to aesthetic activities and expressive methodologies. The aesthetic aspect of film technology postulates the concept of filmic imagination and fantasy, author's intention and techniques, and cinematic philosophy and thoughts. In this respect, Scott McQuire takes note of the ambivalence of film technology, which simultaneously works as the technological reproduction and the tool of thinking.⁹⁸ For him, the technology of film is both instrumental apparatus and aesthetic thoughts, as the term *technology* derives from *techne* in Greek meaning art. In particular, he highly evaluates Dziga Vertov's *Man with the Movie Camera* (1929) as a representative example of 'a machine for thinking with'. Vertov's 'Kino-Eye' extolls the techno-aesthetics of film and its revolutionary thoughts and utopianism as well.⁹⁹ McQuire exemplifies the thinking force and aesthetic potential of film technology through Vertov's experimental documentary.

⁹⁷ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, pp.52-73.

⁹⁸ Scott McQuire, *Technology, Theory, Culture & Society, Vol.23(2-3)*, London, Thousand Oaks, New York: SAGE Publications, 2006, pp.253-269.

⁹⁹ Dziga Vertov, *Kino-Eye: the Writings of Dziga Vertov*, translated by Kevin O'Brien, edited by Annette Michelson, Berkeley: University of California Press, 1984, p.8. Dziga Vertov claims that the eye of the movie camera should be a mechanical aesthetics transcending ordinary human vision in order to create the new society of proletariat. He maintains the new aesthetics of cinema in terms of the progressive possibility of mechanical aesthetics:

For his inability to control his movements, WE temporarily exclude man as a subject for film. Our path leads through the poetry of machines, from the bungling citizen to the perfect electric man. In revealing the machine's soul, in causing the worker to love his workbench, the peasant his tractor, the engineer his engine—we introduce creative joy into all mechanical labor, we bring people into closer kinship with machines, we foster new people. The new man, free of unwieldiness and clumsiness, will have the light, precise movements of machines, and he will be the gratifying subject of our film. Openly recognizing the rhythm of machines, the delight of mechanical labor, the perception of the beauty of chemical processes, WE sing of earthquakes, we compose film epics of electric power plants and flame, we delight in the movements of comets and meteors and the gestures of searchlights that dazzle the stars.

Dziga Vertov's Kino-Eye is associated with the mechanical aesthetics of modernism. It also relates to the experiment of film medium exploring the essence of cinema as new contemporary art. In addition, his film and theory is deeply rooted in the social atmosphere regarding the success of first socialist revolution and the accomplishment of new order.

Deleuze would be one of the most vital philosophers who theorise aesthetically the relationship between film machine and thoughts. He proposes the concept of 'spiritual automaton' in order to explore the spiritual potential of film machine. He states that the movement-image of cinema produces spiritual thoughts:

It is only when movement becomes automatic that the artistic essence of the image is realized: *producing a shock to thought, communicating vibrations to the cortex, touching the nervous and cerebral system directly*. Because the cinematographic image itself 'makes' movement, because it makes what the other arts are restricted to demanding (or to saying), it brings together what is essential in the other arts; it inherits it, it is as it were the directions for use of the other images, it converts into potential what was only possibility. *Automatic movement gives rise to a spiritual automaton in us, which reacts in turn on movement.*¹⁰⁰
(Deleuze's emphasis)

Moreover, Deleuze demonstrates that the spiritual automaton produced by the film machine evolves to the thought of the outside in the modern cinema. While the movement-image in Eisenstein's concept of montage produces intellectual shock, attraction, and pathos, Dreyer, Bresson, Rohmer and Godard's films invoke the new type of cinematic thoughts. Deleuze argues that this is the thought seized from the outside and the unthinkable in thought. For him, the time-image of the modern cinema is the question of properly cinematographic automatism, and its consequences. It is the material automatism of images which produces 'from the outside' a thought which it imposes, as 'the unthinkable' in our intellectual automatism:

The automaton is cut off from the outside world, but there is a more profound outside which will animate it. The first consequence is a new status of the Whole in modern cinema. Nevertheless, there does not seem to be a great difference

¹⁰⁰ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.156.

between what we are saying now, *the whole is the outside*, and what we were saying about classical cinema, *the whole was the open*. But the open merged with the indirect representation of time: everywhere where there was movement, there was a changing whole open somewhere, in time. This was why the cinematographic image essentially had an out-of-field which referred on the one hand to an external world which was actualizable in other images, on the other hand to a changing whole which was expressed in the set of associated images.¹⁰¹ (Deleuze's emphasis)

Deleuze definitely postulates that the movement and temporality of film machine provokes spiritual automaton, in which human can think the unthinkable, as it were, a different type of life and belief. In terms of Deleuze's concept of filmic virtuality, the technological automation of cinema moves toward the thought of the outside, which is nothing but the potential and possibility of new life going beyond actual reality.

In this sense, Bogue asserts that Deleuze's concept of spiritual automaton is 'a thought beyond thought' in modern cinema.¹⁰² He also explains that spiritual automaton is the free indirect seeing and thinking in cinematic images on the screen. According to Bogue, spiritual automaton is both inside and outside, inside the viewer and outside in the image. Thus, Deleuze's concept of spiritual automaton is associated with the virtuality of film. That is to say, the spiritual automaton presents the border and bridge in-between technology and aesthetics, actual reality and virtual image, the world and human brain.

By the same token, Richard Rushton also considers that spiritual automaton is one of the most significant concepts of Deleuzian cinema aesthetics.¹⁰³ According to him, spiritual automaton is a machine or mechanical device that is endowed with a spiritual life, a machine that thinks. In addition, Rushton accentuates Deleuze's insight that the thought made by cinematic apparatuses does not originate 'in' our minds, rather it is the product

¹⁰¹ Ibid, p.179.

¹⁰² Ronald Bogue, *Deleuze on Cinema*, New York, London: Routledge, 2003, p.178.

¹⁰³ Richard Rushton, *Cinema after Deleuze*, London, New York: Continuum International Publication Group, 2012, pp.9-11.

of the sensations, objects and events, in short, the outside, with which we come into contact. For Rushton, what is most crucial in Deleuze's concept of spiritual automaton, while we are watching a film, is that we are traversed by sensations, affects and perceptions that are not ours but the outside, a new and different way of life and thought.

In Deleuze's concept of the filmic virtuality, cinema is both technological and spiritual automaton. It is the thought and possibility toward the outside beyond actual reality. The virtuality of film produces new and different ways of life and belief. It is a contradictory combination and hybrid imbrication between physical reality and fictional imagination. Filmic virtuality is mediated by the technological automatism of camera apparatuses. The consecutive movement and the complex temporality of cinema create the virtual nature of film images. As Rodowick properly said, the basis of all cinematic representation is virtuality, and the film is the art of virtual images, living in-between physical reality and illusionary fantasy.¹⁰⁴

In this context, Gunning proposes that filmic reality should not be reduced to the aspects of physical indexicality. Rather, he considers cinematic visuality and sensation as the core factors of film art.¹⁰⁵ In addition, Mary Ann Doane concedes that film would be excellent examples of sign systems that merge icon, index, and symbol:

Although indexical because the photographic image has an existential bond with its object, they are also iconic in relying upon a similarity with that object. To the extent that photography and film have recourse to language (or are labeled themselves), they invoke the symbolic realm. It is interesting to note that Peirce himself seemed to situate photography as primarily indexical, subordinating the iconic dimension to secondary status. Photography's iconicity was a by-product of its indexicality.¹⁰⁶

¹⁰⁴ D. N. Rodowick, *Gilles Deleuze's Time Machine*, Durham: Duke University Press, 1997, p.10.

¹⁰⁵ Tom Gunning, What's the Point of an Index? or Faking Photographs, *Nordicom Review* (1:2), 2004, pp.39-49.

¹⁰⁶ Mary Ann Doane, The Indexical and the Concept of Medium Specificity, *Differences: A Journal of Feminist Cultural Studies* (18:1), 2007, p.134.

Paul Willemen also proposes that the indexicality of film should be combined with the concept of icon and symbol in Peirce's complex taxonomy.¹⁰⁷ Unlike Gunning and Doane's perspective, Willemen accentuates the primacy of indexicality over filmic fantasy in Peirce's triadic terms. Although there are many differences related to what the main point is, it is true that most film theorists agree with the assertion that the reality of film is the combination of indexical and symbolic traits. I will in more detail deal with the contemporary disputes of filmic indexicality related with digital virtualism in the next chapters. In this chapter, I just clarify the concept of filmic virtuality between reality and illusion, indexicality and imagination, materiality and immateriality, technological reproduction and aesthetic expression. Here my point is that the technological virtuality of film presents the magic and imaginary features as well as the indexical traces of physical reality. It is a bridge and a threshold between material indexicality and fictional imagination.

1-4. Digital Virtuality: Concept and Historicity

In this section, I will deal with the digital virtuality as the new artform of filmic virtuality. Digital virtuality is the expansion and transformation of filmic virtuality. On one hand, Digital virtuality inherits the aesthetic contradiction of film images between indexicality and imagination. It subsumes both technological reproduction¹⁰⁸ and aesthetic expression. On the other hand, the virtuality of cinema is transformed filmic modes to the new dimension of digital virtuality. The development of computer technology converts the mechanical virtuality of film to cybernetic virtuality. In addition, I explore the main features of digital virtuality in the conceptual categories of multimedia, virtual reality, and cyberspace.

¹⁰⁷ Paul Willemen, Indexicality, Fantasy, and the Digital, *Inter-Asia Cultural Studies* (14:1), 2013, p.113.

¹⁰⁸ Douglas Davis argues that the digital technology transforms Benjamin's mechanical reproduction into the concept of digital reproduction. He indicates that the digital reproduction eliminates a conceptual distinction between original and reproduction in virtual artforms. Douglas Davis, *The Work of Art in the Age of Digital Reproduction*, *Leonardo*, Vol. 28, No. 5, 1995, pp.381-386.

There is a diversity of definitions of digital virtuality. Shields defines digital virtuality as the 'liminoid' between concrete actuality and intangible potential in computer simulation.¹⁰⁹ For him, digital virtuality is the cultural impact of computerisation. Here Shields consistently applied his concept of the virtual, which means real, but not actual. As it were, he argues that digital virtuality is the hybrid imbrication of the actual and the potential in the environment of computerised simulation and cyberspace:

The virtual is liminal, 'betwixt and between', a threshold (*limen*) between at least one immediate lived milieu and the distant ground of the other(s). In it, everything is representational, a convenient fiction by which participants 'meet' but only figuratively; elements interact 'in essence' but not physically. Beyond the transmission, bricolage and the animation which is the labour of the technologies involved, there is always an innately human work of *metaxis*, translation and imagination which transposes digital action and virtual encounters to the world of living animals and objects.¹¹⁰

Bryant also demonstrates that digital virtuality is related to the conceptual oxymoron of the virtual, which is real, but not real existing.¹¹¹ He indicates that there has been a new negotiation and resonance between analogue indexicality and digital virtuality since the development of computer technology and cyberspace since the 1960s. However, he argues that this distinction between photochemical indexicality and cybernetic virtuality are not absolute and exclusive, as Rosen suggested the concept of 'digital mimicry'.¹¹² Bryant stresses that we have to avoid any risk of simplifying an opposition between analogue film and digital image in terms of the trace or indexicality of time. For him, digital virtuality is not the dichotomy between filmic indexicality and digital manipulation, but a consistent process of becoming and unbecoming, presence and absence, appearing and vanishing, zeros and ones.

¹⁰⁹ Rob Shields, *The Virtual*, London, New York: Routledge, 2003, p.17.

¹¹⁰ *Ibid*, p.49.

¹¹¹ Antony Bryant, *Digital and Other Virtualities: Renegotiating the Image*, London: I. B. Tauris, 2010, pp. 8-11.

¹¹² Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, pp.307-309.

Furthermore, Pierr Lévy positively advocates the creativity of digital virtuality. He defines digital virtuality as ‘the virtualisation of information and communication’.¹¹³ Like Shields and Bryant, he also illuminates the concept of digital virtuality in terms of the contradiction of the actual and the potential. For Lévy, the virtual is not the opposite of the real but the opposite of the actual. Virtuality is the contradictory ontology of digital images in the age of computer networks. He states that digital virtuality is technologically founded on a computer memory and software. He also argues that the digital image, in its philosophical meaning, is virtual on the hard disk and actual on the screen. Virtualisation is digitalisation and actualisation is display. Therefore, digital virtuality is none other than the new form of physical reality in computer networks and screen projection. In this definition, Lévy emphasises that the affirmative effects of digital virtuality, although no positive effect is guaranteed, could be a new stage of human experience and collective intelligence:

Digitalisation and virtualisation of information is a new stage in the making of collective intelligence. We can now share in real time not only static records but constantly evolving dynamic memories. We can now share, trade and collectively refine simulations, which are externalised and exchangeable dynamic mental models. Expert systems allow a very easy and quick sharing and distribution of empirical knowledge. We can use computer supported cooperative work systems or computer supported cooperative learning networks. We can coordinate actions or competences among thousands of people without a centre, without being obliged to plan or design every step in advance. We can communicate interactively ‘many to many’ (and not only ‘one to many’ as in the traditional communication networks like postal services or telephone). In parallel with the growth of the distributed hyperbody, humankind experiences the fast growth and extension of a global hypercortex.¹¹⁴

¹¹³ Pierre Lévy, *Welcome to Virtuality, Digital Creativity*, edited by Colin Beardon and Lone Malmberg, London, New York: Routledge, 2009, pp.11-12.

¹¹⁴ *Ibid*, p.13.

As Lévy points out, digital virtuality is the technological virtuality of the image in the age of computer simulation and mobile networks, while the technological virtuality of film is based on the photochemical mechanism of the image reproduction. Although it is unreasonable to extrapolate the untraversable gap between film and digital images, digital virtuality is the new stage of the virtual image beyond the mechanical virtuality of film. It extends the virtuality of film, and presents different forms of cybernetic and synthetic image.

In 1970, Gene Youngblood, a pioneer in the theory of expanded cinema, pointed out that based on computer technology, cybernetic cinema contributes to the amplification of human freedom and intelligence.¹¹⁵ He demonstrated that the computer does not replace human beings; instead, it liberates them from specialisation. Youngblood evaluates that the development of computer technology gives rise to the expansion of human sense and aesthetics. For him, digital virtuality implies the creative potentiality of computer technology. It is a creative potentiality of the ‘new reality’ produced by digital technology.

Above all, the aesthetic ontology of digital virtuality derives from the technological difference between the analogue and the digital image. Whereas the analogue image is based on continuously varying voltage or physical quantities, the digital image is based on discrete data signal systems, such as 0 and 1. The analogue clock has rotating hands, whereas the digital clock is electronic and displays numbers. Analogue film is comprised of photosensitive materials, whereas digital film relies on computer data and software. Analogue film reveals images using tangible material, whereas digital cinema is expressed by invisible codes. Therefore, whereas the analogue image is exposed as an integrated whole that is difficult to separate, the digital image consists of innumerable splinters and fragments created by numerical modules and codes. Technological differences between the analogue and the digital image, such as continuity and discontinuity, whole and part, and integration and fragmentation, shatter the frame in the production and consumption of these images. The formation and transformation of the

¹¹⁵ Gene Youngblood, *Expanded Cinema*, New York: P. Dutton & Co., Inc., 1970, pp.179-185.

analogue image as a continuous and integrated whole are unusually difficult and challenging because the material nature of the medium itself is damaged. In contrast, the formation and transformation of the digital image as discontinuous and fragmented modules are easy and convenient because shifts in data and the revision of programs are always available.

According to Rodowick, the output of digital images is separated from the input, whereas analogue images have continuity in inputs and outputs.¹¹⁶ Digital images are based on numerical calculation and transcoding, while analogue images are focused on the record of physical reality. Digital images are discontinuous, whereas analogue images are continuous with their sources. Consequently, the technological differences between digital images and analogue images entail the ontological transformation of cinematic virtuality.

Historically, it is clear that the concept of digital virtuality has evolved along with the path of the development of computer technology. As Gene Youngblood indicates, the evolution of computers has simultaneously taken place in both the technology of hardware and the informatics of software. While the computational hardware has functioned the physical cerebral cortex for numerical calculation, the algorithmic software has developed 'conceptual camera' for filmmaking.¹¹⁷ The first computer can be considered the abacus, which was invented in Babylon circa BC 2400.¹¹⁸ The modern computer was invented in 1936 and had the capacity to process and program data. The American George Stibitz's 'Model K' and the German Konrad Zuse's 'Z-series' were invented during World War II and were the first electronic digital computers to perform calculations using the binary form.¹¹⁹ In 1936, a paper by the English Alan Turing proved

¹¹⁶ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, pp.124-131.

¹¹⁷ Gene Youngblood, *Expanded Cinema*, New York: P. Dutton & Co., Inc., 1970, pp.185.

¹¹⁸ Eleanor Robson, *Mathematics in Ancient Iraq: A Social History*, New York: Princeton University Press, 2008, p.5.

¹¹⁹ <http://web.archive.org/web/20080601210541/http://www.epemag.com/zuse/part4a.htm>, Horst Zuse, *The Life and Work of Konrad Zuse*, EPE Online.

the theoretical definition of a universal computing machine.¹²⁰ Invented in 1946, the electronic numerical integrator and computer (ENIAC) was the first electronic general-purpose computer in the US. It combined a high-speed memory of 80 bytes with programming ability. It was a huge Turing-complete device with 18,000 vacuum tubes. In 1952, IBM made the first business computer, the IBM 701 EDPM, and announced FORTRAN as the first high-level programming language in the next year.¹²¹ In 1975 and 1976, the business computer evolved from the personal computers, IBM 5100 and the Apple I, II in 1976, respectively. In 1984, Apple's Macintosh computer introduced the first graphic interface and painting program into the world of the computer, which were followed in 1991 by QuickTime software for movies.¹²² In this process of the modern computer evolution from Alan Turing to Steve Jobs, the computer as a mechanical calculator gradually developed into an effective tool for image making and digital multimedia.

Concerning the diffusion of computer-generated images, the digitalisation of film has gradually been proliferated since the 1960s. At first, it was related to the aesthetic experiment of avant-garde films. Many avant-garde directors such as John Whitney, John Stehura, and Stan Vanderbeek explored the techno-aesthetical potential of emerging computer-cybernetic images. According to Youngblood, the avant-garde artists in the 1960s experimented the material transformation of film medium using geometric images generated by computer. For them, computer-cybernetic images implied the expansion of human senses and artistic expression. They attempted to go beyond the dramatic narrative and commercial entertainment of mainstream films by computer cinema.¹²³

In contrast, in Hollywood mainstream films, computer technology was introduced to films in order to show realistically images that were difficult to express by conventional

¹²⁰ Alan Mathison Turing, *The Essential Turing: Seminal Writings in Computing, Logic, Philosophy, Artificial Intelligence, and Artificial Life plus The Secrets of Enigma*, edited by Jack Copeland, Oxford : Clarendon Press, 2004, p.22.

¹²¹ Leonard Dudley, *Information Revolution in the History of the West*, Cheltenham, U.K, Northampton, Mass.: Edward Elgar Publishing, 2008, p.266.

¹²² James Monaco, *How to Read a Film: Movies, Media, and Beyond (4th edition)*, New York: Oxford University Press, 2009, p.588.

¹²³ Gene Youngblood, *Expanded Cinema*, New York: P. Dutton & Co., Inc., 1970, pp.207-256.

shooting or special effects. It was an effective tool for representative realism, spectator's identification, and technological spectacle. The computer graphic or computer-generated image (CGI) has effectively represented images that do not exist in real life. In addition, computer technology transforms an image that is shot to a synthesized image, in which the actual shooting clips is mixed with computer graphics. Pioneering companies for computer graphics like Lucasfilm and Digital Impact suddenly emerged in the 1970s, and CGI has been widely used since the 1980s. Made in 1982, *Tron* was the first film to use CGI. In 1989, director James Cameron's *The Abyss* became a landmark film in digital history because of its innovative use of 3D computer software and special effects by Dream Quest Images (DQI) and Industrial Light & Magic (ILM). It was followed by *Terminator 2* in 1991, in which T-2000 was synthesized with a human image and computer graphics by using a morphing technique.

As Vivian Sobchack sharply points out, the film aesthetics of computer synthesis by the morphing technique presents the aesthetics of an 'effortless shape-shifting' against the ground of the photo-realism of film. With the advent of computer-synthesized morphing images, filmic realism faces the confusions of the real and the unreal, the animate and the inanimate, and the stable and the uncanny, and the human and the non-human.¹²⁴ Darley suggests the notion of 'second-order realism' in order to theorize effectively the new trend of realism.¹²⁵ For him, 'second-order realism' indicates the new order of digital realism generated by computer graphics. Darley describes that second-order realism is a synthetic realism beyond the first realism of representative image. It is not realism but realism beyond realism.

Since the 1990s, the digitalisation of filmstrips and the aesthetics of computer synthesis have become more widely proliferated along some different ways. I describe the evolutionary phenomena of computer cinema in terms of historical and taxonomic approach. First, computer drawing and graphic images was successfully contributing to

¹²⁴ Vivian Sobchack, "At the Still Point of the Turning World" Meta-morphing and Meta-Stasis, *Meta-morphing: Visual Transformation and the Culture of Quick-Change*, edited by Vivian Sobchack, Minneapolis : University of Minnesota Press, 2000, p.xi, and pp.131-158.

¹²⁵ Andrew Darley, Second-order Realism and Post-modernist Aesthetics in Computer Animation, 1993, *A Reader in Animation Studies*, edited by Jayne Pilling, London: John Libbey Publishing Ltd, 2011, p.16.

the hybrid combination of filmic illusionism and visual spectacle in live-action films. In 1993, Steven Spielberg's *Jurassic Park* authenticated the fact that the technological spectacle of computer graphics can combine with the realistic illusionism for popular consumption. Stephen Prince named this new trend of Hollywood spectacle-narrative cinema the 'perceptual realism'.¹²⁶ The spectacle images produced by computer graphics were dedicated to spectator's perceptual illusion and filmic identification. As David Norman Rodowick describes, the 'digital paranoid' has caused a broad range of the ontological and allegorical conflict between the representative images and computer simulations.¹²⁷ The digital films like *The Matrix*, *Dark City*, *Thirteenth Floor*, and *eXistenZ* in the 1990s simultaneously presented the possibility and limitation of new representative aesthetics.

In the 2000s, the spectacle images by computer simulation have been extensively accepted as a necessary element for the storytelling of the Hollywood narrative cinema. It has also made and transformed a diversity of film genres based on magical fantasy and imagination: Fantasy movies like *The Lord of the Rings* (2001-2003), and *Harry Potter* (2001-2011), Super hero films like *The Matrix* (1999-2003), the *Batman* series (1995-2012), and the *Spider-Man* series (2002-2012), SF movies like *I, Robot* (2004), *The Island* (2005), and *War of the Worlds* (2005), the action thrillers like *King Kong* (2005), *Mission Impossible* series (1996-2006), and the *Transformers* series (2007-2011), and even historic movies like *Troy* (2004), 3D disaster films like *Gravity* (2013) and so on. Through the 2000s, while live-action filmstrips conflated with computer-generated images, photo-realism of film has an encounter with the spectacle aesthetics of computer simulation. As Scott Mcquire argues, the 'impact aesthetics' of digital spectacle images has an ambivalent nature. On one hand, it expands the realm of cinematic expression and imagination. Digital spectacles reinforce the visionary attraction of cinema. On the other hand, the impact aesthetics intensifies the 'California ideology' based on commercial entertainment and de-historicity. It produces a new illusionism based on digital

¹²⁶ Stephen Prince, True Lies-Perceptual Realism, Digital Images, and Film Theory, *Film Quarterly* Vol.49 N.3, 1996, pp.27-37.

¹²⁷ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, p.4.

technology.¹²⁸

Furthermore, since the 1990s, the new ‘digital ecosystem’¹²⁹ for filmmaking and consumption was getting settled down in the process of digitalisation of film medium. There has been the wide spread of digital devices and institutional system such as digital camera, computer editing, digital projection, and digital distribution. Since the 1990s, the use of the digital camera has been popular. Many films have been made using digital cameras, such as *Festen* (1998) and *Idiots* (1998), which were directed by the Dogma movement, *Timecode* (2000), which was directed by Mike Figgis, and Aleksandr Sokurov’s *Russian Ark* (2002), which shows the digital aesthetics of an uninterrupted shooting of eighty-six minutes’ duration and a direct recording to hard disk.¹³⁰ In 1999, George Lucas released *Star Wars Episode 1-The Phantom Menace*, which achieved digital screening for the first time. The 16 scenes in the movie were shot using a Sony F900 HD camera, and the whole film was digitalized. It was followed by transmission via satellite network and was screened by digital projector. In 2003, seven major filmmakers in Hollywood established the digital cinema initiative (DCI) in order to prepare for a system of digital production and distribution. The digital ecosystem of movie world transforms the old process of filmic business. While digital production intensifies the ‘non-linear and interactive system’ of shooting and editing,¹³¹ the digitalisation of film medium reinforces the new trend of film distribution and consumption. As Rodowick exactly points out, box-office receipt is no longer primarily in the movie business.¹³² In 2004, video sales and rental revenues of studio feature-film records three times over box-office receipts. Due to the spread of digital production and distribution, the new related sources of revenue such as DVD sales, computer game, and Internet download service has continuously have replaced movie theatre business. In particular, digital purchases

¹²⁸ Scott McQuire, Impact Aesthetics: Back to the Future in Digital Cinema?: Millennial fantasies, *Covergence*, Vol. 6, No. 2, 2000, pp.41-61.

¹²⁹ Amrithesh and Jayanta Chatterjee, Digital Ecosystem for Knowledge, Learning, and Exchange: Exploring Socio-technical Concepts and Adoption, *Digital Eco-Systems: Third International Conference*, edited by Fernando Antonio Basile Colugnati etc., New York: Springer, 2010, pp.44-61.

¹³⁰ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, P.165.

¹³¹ Thomas A. Ohanian and Michael E. Phillips, *Digital Filmmaking: The Changing Art and Craft of Making Motion Pictures*, Boston: Focal Press, 2000, p.145.

¹³² D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, pp.26-27.

and streaming services of movies from new online players such as Netflix, Comcast, Paramount and Amazon have become Hollywood's most important revenue fraction to growth in the 2010s, which has eclipsed slumping DVD sales. While digital spending on movies rose to \$1 billion in 2013, which means the growth of 50 per cent compared with 2012, the whole market of home entertainment reached at 18.2 billion in 2013.¹³³ The new ecology of digital production and distribution has rapidly transformed film business and aesthetics. The film art proceeds to digital multimedia based on online network and home entertainment beyond movie theatres.

Finally, it is remarkable that there was the appearance and diffusion of 3D computer animation, which was followed by the shrinkage of 2D cell animation. *Toy Story*, the first completely computer graphic animation, was created in 1995, the same year that Steve Jobs left Apple Computer to joined Pixar, which was a spin off from Lucasfilm. *Toy Story* was made using MAYA software, which is a comprehensive composition tool that includes the whole process of 3D animation, such as modeling, simulation, visual effects, rendering, and matchmoving.¹³⁴ Although this movie was a small animation for children, there is no doubt that it was a giant step for digital cinema. Disney acquired Pixar in 2006, declared the end of the age of 2D cell animation and converted to the system of 3D animation.¹³⁵ There are many examples proving the attenuation of cell animation and the dominance of computer animation: the *Shrek* series (2001-2010), *Finding Nemo* (2003), *The Polar Express* (2004), *Madagascar* series (2005-2011), *Monster House* (2006), *Ratatouille* (2007), *Wall-E* (2009), *Kung Fu Panda* series (2008-2012), *Frozen* (2013) and so on.

To sum up, the historical evolution of digital virtuality is closely associated with the new trend of film production, aesthetics, and industry; the conflation of live-action images and computer graphics, the combination of filmic illusionism and digital spectacle images,

¹³³ Matthew Garrahan, Digital Film Sales Resuscitate Hollywood Revenue Stream, *Financial Times Article*, January 9, 2014.

<http://www.ft.com/cms/s/0/0282cc28-78d8-11e3-831c-00144feabdc0.html#axzz2xXOCqBIS>

¹³⁴ James Monaco, *How to Read a Film: Movies, Media, and Beyond (4th edition)*, New York: Oxford University Press, 2009, p.665.

¹³⁵ Laura M. Holson, Disney Moves Away From Hand-Drawn, *New York Times article*, September 18, 2005, <http://www.nytimes.com/2005/09/18/business/media/18disney.html?pagewanted=all>

the settlement of digital ecosystem such as digital shooting, editing, screening, and distribution through all areas of filmmaking and distribution, and the replacement of 2D animation by 3D computer animation. In 2009, the movie *Avatar* intensively presents the main tendencies and hybrid aesthetics of digitalisation. As William Brown argues, based on the combination of live-action and 3D computer animation, and filmic illusionism and spectacle aesthetics, the humanistic and the non-humanistic, *Avatar* shows the new aesthetic stage of ‘stereoscopic cinema’ and ‘3D gaseous perception’.¹³⁶ In particular, with the help of digital technology, this movie succeeded in capturing minute details in facial expressions, gestures, and motions. The film’s virtual characters, which replace real human bodies and actions, emerge as genuine protagonists. In addition, Cameron’s film created both the realistic and the spectacular effects of computer graphics by virtue of 3D virtual camera, motion capture technology, and a non-linear system in the process of shooting and editing. In this film, the representative aesthetics of filmic illusionism effectively combines with the ‘impact aesthetics’¹³⁷ of digital spectacle images.

In light of the short history of digital cinema, it is now rapidly evolving. What is digital cinema? Lev Manovich stated: ‘Born from animation, cinema pushed animation to its boundary, only to become one particular case of animation in the end.’ Therefore, it seems that the ‘digital cinema is a particular case of animation which uses live action footage as one of its many elements’.¹³⁸ Expanding Manovich’s definition, I define that digital cinema is the digitalisation of cinema in the whole process of production, distribution, screening, viewing, circulation and consumption. The digital cinema is cinema made by computer technology instead of celluloid filmstrips. Data files shot by the digital camera create completely different cinema images by mixing them with previous data through editing software programs. Digital technology also changes the method of screening and enjoyment of the image as well as the production of cinema. The computer files received by the Internet and satellite networks are distributed and screened by a digital projector instead of filmstrips rolled in round tin containers. Movie

¹³⁶ Brown, William. *Avatar: Stereoscopic Cinema, Gaseous Perception and Darkness*, *Animation: An Interdisciplinary Journal* 7(3), August 2012, pp.259-271.

¹³⁷ Scott McQuire, *Impact Aesthetics: Back to the Future in Digital Cinema?: Millennial fantasies*, *Covergence*, Vol. 6, No. 2, 2000, pp.41-61.

¹³⁸ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.302.

files stored in computers are reproduced infinitely by DVD, the Internet, and mobile devices. Cinema has become information as well as art. Movies produced on computers diversify time and space in distribution, screening, viewing, circulation and consumption. Cinema has become cultural contents that audiences enjoy by using multimedia devices, such as computers, the Internet, mobile phones, personal multimedia players (PMP), and even game consoles. Cinema is available not only in theatres but also everywhere all the time, ubiquitously. Cinema is about to reach the new stage of innovation in methods of production, circulation, and consumption.

In terms of the ontology of digital cinema, the development of digital computer technology has changed the characteristics of cinematic images from the photochemical to the numerical. While the photographic film is based on the analogous connections with the physical reality, the digital computer depends on the binary numerical system. It transforms the material image into the binary digits of one and zero. Whereas the language of film depends on chemical, optical, and mechanical process of image, the algorithmic language of the computer consists of hardware and software.¹³⁹ The hardware of the human brain is the physical cerebral cortex, its neurons and synapses, its software consists of logic or intelligence, which animates the hardware. In the computer, the hardware is technology and the software is information. The algorithmic language of computer programs simulates the lines, curves, patterns, and colours of images. The computer becomes 'the conceptual camera' using the language of numerical algorithm.¹⁴⁰ The digital computer transcodes the virtual image into the numerical and computational concept. The digital computer transforms the virtuality of the image into the aesthetics of numerical manipulation and abstract synthesis.

The conceptual transformation of image by computer technology results in the new form of techno-aesthetics. Doane defines the concept of medium specificity as the process of 'a continual reinvention'.¹⁴¹ The medium is continuously transformed and reborn under

¹³⁹ Gene Youngblood, *Expanded Cinema*, New York: P. Dutton & Co., Inc., 1970, p.183.

¹⁴⁰ *Ibid*, p.185.

¹⁴¹ Mary Ann Doane, The Indexical and the Concept of Medium Specificity, *Differences: A journal of Feminist Cultural Studies* (18:1), 2007, p.131.

technological and aesthetic influence. She argues that a technological medium goes through a resistance to resistance, a transgression of what are given as material limitations, which nevertheless requires those material constraints as its field of operations. In this sense, Doane indicates that the photochemical indexicality of film has been transformed to the digital virtuality by the development of computer technology. She claims that the aesthetics of new medium should pay more attention to the immateriality and timelessness of digital virtuality:

On the other hand, such an argument has the flavor of a theology, and it is not surprising that the discourse of indexicality seems indissociable from that of the relic. For the index is never enough; it stops short of meaning, presenting only its rubric or possibility, and for that reason it is eminently exploitable—as is the fantasy of immateriality, the dream of the perfect archive, of digital media. The challenge of digital media, in its uses and theorization, is that of resisting not only a pervasive commodification of the virtual but also the digital's subsumption within the dream of dematerialization and the timelessness of information, returning history to representation and reviving the idea of a medium. Making it matter once more.¹⁴²

McQuire indicates that techno-aesthetic in the history of cinema has developed through the aesthetic experiment of avant-garde films, as well as through the special effects of Hollywood genre films.¹⁴³ Avant-garde films, from Dadaist in the 1920s to Structural films in the 1960s and recently digital arts, deny the narrative convention of mainstream cinema, and experiment with the limitation and materiality of medium specificity. In the 1920s, Dadaist films such as Man Ray's *The Return to Reason* (1923), Fernand Leger's *Ballet Mechanique* (1924), Marcel Duchamp's *Anemic Cinema* (1926) exclude story telling and continuous editing, and present raw and absolute images. In addition, Absolute Films in Germany, Hans Richter's *Rhythmus* series (1921-1925), Viking Eggeling's *Symphonie Diagonale* (1921), Walter Rutmann's *Lichtspiel:Opus seires*

¹⁴² Ibid, p.148.

¹⁴³ Scott McQuire, *Impact Aesthetics: Back to the Future in Digital Cinema?: Millennial fantasies, Covergence, Vol. 6, No. 2, 2000, pp.50-51.*

(1921), Oskar Fischinger's *Studie seires* (1929-1932) etc, explore the expression of visual language and the limitation of film medium. Absolute Films pursue an abstract visuality and a direct sense reliant on the arbitrary irrationality of lines, geometries, colours, and sounds, instead of an ideal meaning.¹⁴⁴

The experiment of film images and medium specificity is also connected to the American Underground and 'Structural Films' in the 1960s.¹⁴⁵ In particular, Structural films challenge the material nature and structure of film. Peter Kubelka, Michael Snow, Paul Sharits, Peter Gidal, Andy Warhol, and Stan Brakhage investigate the nature of light, time, and space in the image of film. They experiment with the materiality of film through absolute signs, graphics, fragmental images. Kubelka's *Arnulf Reiner* (1958-1960) is the epitome of abstract cinema. He depicts subtle motions and stream of colours in *Adebar* (1957). Sharits's *Razor Blades* (1968) reveals repetitive signals, irregular images through the flicker effect. Hollis Frampton's *Lemon* (1969) explores a feeling of objects induced by the movement of lights with fixed camera and object. Similarly, Snow's *Wavelength* (1967) experiments cinematic temporality and duration using a continuous zoom technique. Through the extremely slow forward zoom, audiences experience the deep and profound change of time and space. Brakhage is one of the most prominent directors of American Avant-garde. His movies like *Mothlight* (1959), *Dog Star Man* (1966) presents the various techniques of film scratches, collage, action painting, superimposition, and flicker effect. He deconstructs the material foundation of film medium by the new aesthetics of filmstrips without camera.

Peter Wollen indicates that structural films are in the new forms of counter-cinema in the 1960s and 1970s with the cinema of political modernism.¹⁴⁶ According to Adams Sitney, who is one of the most trailblazing researchers of Avant-garde films, American avant-garde movement in the 1960s recreates film art as a 'radical otherness' and a 'different

¹⁴⁴ Paul Young and Paul Duncan, *Art Cinema*, Cologne: Taschen, 2009, p.51.

¹⁴⁵ P. Adams Sitney, *Visionary Film: The American Avant-garde, 1943-2000*, Oxford, New York: Oxford University Press, 2002, p.347.

¹⁴⁶ Peter Wollen, *The Two Avant-Gardes, Readings and Writings: Semiotic Counter-Strategies*, London: Verso, 1975, pp.92-104.

realm' as exclusive and independent medium.¹⁴⁷ He considers that the material figures of film such as light, time, and process are the aesthetic essence of structural films. For him, structural films present the materiality of film medium containing the light, time, and space of images. Similarly, Rees evaluates structural films as 'a cinema of vision', which replaces seeing and reading films.¹⁴⁸ Structural films depend on the technological manipulation and transformation of filmstrips and camera apparatuses. It explores into the material nature of film and the spatial-time of medium.

In terms of the materiality of cinematic images, avant-garde films have a close relationship with the aesthetics of digital virtuality based on computer technology. Since the 1960s, avant-garde films have contributed to the experiment of medium specificity and the creation of new artform. The tradition of avant-garde films evolves in new types of techno-art and image arts since the 1980s. It had an impact on mainstream cinema such as Stanley Kubrick's *2001; A Space Odyssey* (1968), which reappropriates the material aesthetics of structural films for the psychedelic expression of space. In addition, the material aesthetics of avant-garde films influenced a diversity of media fields such as TV commercials, music videos, video installations and digital arts.

Youngblood theorises the aesthetics of avant-garde films and the possibility of computer technology through the concept of 'expanded cinema'.¹⁴⁹ He intuits that the introduction of computer technology into film images results in the expansion of human sense and new aesthetics of reality. For him, the aesthetics of computer cinema is nothing but the potential for 'new reality'. He argues that the cybernetic cinema based on computer simulation is 'the end of drama' and 'the beginning of synesthetic cinema'. According to him, computer cinema decentralises and indivisualises the communication channels of humanity. He highly evaluates the positive potential of computer-generated images. It is the interactivity between technology and aesthetics, human and computer. For him, the computer as 'the aesthetic machine' is the tool of cybernetic art and the programming of

¹⁴⁷ P. Adams Sitney, *Visionary Film: The American Avant-garde, 1943-2000*, Oxford, New York: Oxford University Press, 2002, xii.

¹⁴⁸ A. L. Rees, *A History of Experimental Film and Video*, London: BFI Publishing, 2002, p.72.

¹⁴⁹ Gene Youngblood, *Expanded Cinema*, New York: P. Dutton & Co., Inc., 1970, pp.42-44.

the artist's emotional state.¹⁵⁰ Furthermore, the computer aesthetics of 'new reality' will reside in the nonrepresentational system of information. The age of electronic reality will rely on a metaphysical system of information. For him, computer-generated images create new possibilities for human communication. He theorises the emergence of computer cinema in terms of the expansion of human consciousness and sense:

It is quite clear that the trend of human communication is towards these possibilities. If visual subsystems exist today, it would be folly to assume that the computing hardware will not exist tomorrow. The notion of 'reality' will be utterly and finally obscured when we reach that point. There will be no need for movies to be made on location, since any conceivable scene will be generated in a completely convincing reality within an information processing system. By that time, of course, movies as we know them will not exist. We are on the cusp of a mythic age of electronic realities that exist only on a metaphysical plane. Meanwhile, some significant work is being done on the development of new languages through computer-generated, nonrepresentational graphics in motion.¹⁵¹

From this perspective, Youngblood analyses several artworks by the most prominent artists in the field of computer cinema in the 1960s: he points out that A. M. Noll, a pioneer in three-dimensional computer films at Bell Telephone Laboratories, created the visualization of the invisible. Youngblood argues that Noll's computer cinema inspired a new conceptual art, in which imaginative ideas combine with technological, numerical, and abstract manipulations.¹⁵² He stresses that a diversity of experimental artists experiment with the limitation of film medium, and expand the new artform of computer cinema; The Whitney family's composition of time images based on the combination of eastern philosophy and modern science; John Stehura's aesthetics of machine language, which shows the simultaneous awareness of inner and outer space and time; and Stan

¹⁵⁰ Ibid, pp.189-190.

¹⁵¹ Ibid, p.206.

¹⁵² Ibid, p.193.

Vanderbeek's mosaics of the mind, which presents a harmonious work between live-action and animation, single and multiple projection, and intermedia events.¹⁵³

In the history of film, the techno-aesthetic of avant-garde films since the 1960s is connected to the concept of digital virtuality. This is because the aesthetics of expanded cinema has experimented and reinvented the medium specificity and materiality of film. The expanded cinema is the aesthetics of new reality based on technological virtuality of film. It is the technological and aesthetic experiment of film medium between physical actuality and computer-simulated virtuality. As Rees recounts Youngblood's intuitive vision of the new language and aesthetics of the emerging cybernetic cinema,¹⁵⁴ the aesthetics of expanded cinema is increasingly re-evaluating in terms of digital virtuality.

Valie Export argues that, the expanded cinema is 'expanded reality' in the age of digital image.¹⁵⁵ In the contemporary condition of techno-aesthetics, the aesthetics of virtuality expands the concept of filmic reality. It is the reality technologically mediated and simulated by computer simulation and cyberspace. Valie argues that the 'expanded reality' of digital cinema implies the extension of physical reality by the computer simulation, that is to say, the expansion of space and time. She claims that digital virtuality is a collage expanded around space and time beyond filmic representation and illusion. That is because digital cinema is based on mixed media, multiple projection, and intermedia technology. For Valie, the new aesthetics of digital virtuality provides an expanded reality beyond filmic indexicality and representation.

Nevertheless, it is not necessary to extrapolate the untraversable gap between filmic reality and digital virtuality. Although Negroponte proclaims the future-casting vision that digital media results in the expansion of individual choice and human freedom

¹⁵³ Ibid, pp.207-256.

¹⁵⁴ A. L. Rees, Expanded Cinema and Narrative: A Troubled History, *Expanded Cinema: Art, Performance, Film*, edited by A. L. Rees, David Curtis, Duncan White, and Steven Ball, London: Tate Publishing, 2011, p.13.

¹⁵⁵ Valie Export, Expanded Cinema: Expanded Reality, *Expanded Cinema: Art, Performance, Film*, edited by A. L. Rees, David Curtis, Duncan White, and Steven Ball, London: Tate Publishing, 2011, pp.288-291.

beyond the limit of analogue media with the help of computer technology,¹⁵⁶ there are many different views of the contradictory characteristics of digital media and aesthetics. Rosen indicates that digital utopia should not be proposed by ‘the strategy of the forecast’, or ‘the historiography of conquest’.¹⁵⁷ For him, digital virtuality is none other than a historical hybridity between filmic indexicality and digital manipulation. Bolter and Grusin also suggest the concept of ‘remediation’, and ‘hybridity’ between old and new media.¹⁵⁸ They state that digital media have incorporated the aesthetics of transparency and narrative of film, while film has been rapidly transformed by computer technology and synthetic aesthetics. In this sense, Bolter claims that the digital virtuality is underpinned by the hybrid aesthetics of ‘mixed reality’ between physical reality and simulated images.¹⁵⁹

Futhermore, John McMullan claims that the digital image is more indexical, transparent, and instantaneous than film images in light of its comparatively low frame rate, shallow depth-of-field, and essential property of temporal displacement.¹⁶⁰ On the ground of Peirce’s semiotics that the reality of film derives from the hybrid combination between index, icon, and symbol, he denies the premise that film images are indexical, while digital images are numerical and symbolic. Rather, he emphasizes the similarity between the analog atoms and the digital bits in terms of contemporary quantum physics. For him, the cinema, either film or digital, is a complex artform, which fuses indexicality, iconicity and symbols.

The concept of digital virtuality goes beyond the indexical trace of physical reality. Mark Poster points out that the concept of reality becomes multiple in the age of digital media.¹⁶¹ He claims that physical reality becomes multiplied, and real spatial-time takes a variety of artforms:

¹⁵⁶ Nicholas Negroponte, *Being Digital*, New York: Knopf, 1995, pp.179-181.

¹⁵⁷ Rosen, Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, pp.315-326.

¹⁵⁸ J. David Bolter, Richard Grusin, *Remediation: Understanding New Media*, Cambridge, Mass.: MIT Press, 2000, p.45.

¹⁵⁹ J. David Bolter, The Desire for Transparency in an Era of Hybridity. *Leonardo* (39:2), 2006, pp.109-111.

¹⁶⁰ John McMullan, *The Digital Moving Image: Revising Indexicality and Transparency*, IM 7: Diegetic Life Forms II Conference Proceedings, 2011, p.15.

¹⁶¹ Mark Poster, Postmodern Virtualities, *Body & Society*, Vol. 1(3-4), 1995, pp.79-94.

The terms 'virtual reality' and 'real time' attest to the force of the second media age in constituting a simulational culture. The mediation has become so intense that the things mediated can no longer even pretend to be unaffected. The culture is increasingly simulational in the sense that the media often changes the things that it treats, transforming the identity of originals and referentialities. In the second media age 'reality' becomes multiple.¹⁶²

Poster argues that the multiple realities in the age of digital media give rise to 'postmodern virtuality'. For him, postmodern virtuality is underpinned by new methodologies of communication: decentralised networks and interactivity. Poster indicates that postmodern virtuality based on computer networks and interactive media constitutes multiple, dispersed, unstable, and fragmented subjects with a certain fluidity of identity. For him, while the concept of traditional reality is fixed and stable, postmodern virtuality is uncertain and unstable. Consequently, he points out that the concept of digital virtuality associates postmodern subjectivity with multiple realities. For Poster, digital virtuality is a new means of communication and aesthetics, in which the potential of technological utopia coexists with the uncertainty of postmodern subjectivity simultaneously.

While many theorists focus on the aesthetic hybridity of the digital image beyond physical indexicality, McQuire points out that the aesthetics of digital virtuality should be understood in the context of the political economy of Hollywood cultural industry beyond aesthetic agenda.¹⁶³ He sharply indicates that the impact aesthetics of digital cinema creates ambivalence between utopia and dystopia. According to him, techno-aesthetics, especially the impact aesthetics of digital cinema, should be grasped on the ground of dialectical perspectives between narrative and spectacle. Although digital cinema has a positive aspect challenging the identification ideology of Hollywood narrative cinema, it also has a negative aspect in relation to the blockbuster marketing and entertainment

¹⁶² Ibid, p.85.

¹⁶³ Scott McQuire, *Impact Aesthetics: Back to the Future in Digital Cinema?: Millennial fantasies, Convergence, Vol. 6, No. 2, 2000, pp.41-61.*

ideology of Hollywood global capitals. He points out that the techno-aesthetics of digital cinema is not simply 'realism' but 'reality' in the socio-economic context of contemporary capitalism.

Similarly, Willemen also indicates that digital virtuality could fall into a trap of stock-broker aesthetics of Hollywood industry and finance capital.¹⁶⁴ Reappraising Andy and Lana Wachowski's *The Matrix Reloaded* (2003), Willemen argues that the scene of 'bullet time' in the movie shows the technological fetishism of digital gadgets, which overwhelms the narrative by stressing the demiurgic powers of the narrator. He claims that rotational swivel in *Matrix Reloaded* is a sign of megalomania, which dispossesses the author-narrator and its narratorial position, and at the same time displays the self-celebration of digital gadgetry.¹⁶⁵ Willemen criticises the negative effects of technological spectacle and attraction, that is to say, the lethal dimension of a digitised film industry's aggressive fantasies. He alerts the 'real' risk that the aesthetics of digital virtuality in Hollywood cultural industry arouses technological fetishism, and saves the dead-labour of digital gadgets beyond the living-labour of physical reality:

My main criticism is reserved for the way it is used now in commercial (and aspirant commercial) narrative film contexts. There, it betrays the presence of nefarious fantasies programmed into the technology as it has been developed and designed for use in the film industry, and there, at the same time, it connotes a particular phase in the struggle over the management and control of the dead-labour savings account stored in the form of technology.¹⁶⁶

Based on a diversity of conceptualisation of digital virtuality, let me move to the next argument of some sub-categories to define the digital virtuality in more details. Here I would investigate the three sub-categories in relation to the concept of digital virtuality:

¹⁶⁴ Paul Willemen, Indexicality, Fantasy, and the Digital, *Inter-Asia Cultural Studies* (14:1), 2013, pp.126-127.

¹⁶⁵ Ibid, pp.123-125.

¹⁶⁶ Ibid, p.126.

Multimedia, virtual reality, and cyberspace. As James Monaco states,¹⁶⁷ these sub-categories give a useful classification to extrapolate the concept of digital virtuality. This is because these sub-categories could properly reveal the development of contemporary digital technology and the aesthetic implication of digital virtuality.

First, in terms of multimedia, digital virtuality accompanies the dynamic process of the convergence and divergence of broad ranges of media. As Henry Jenkins precisely indicates, the development of digital technology results in the tendency of ‘convergence’ and ‘transmedia’.¹⁶⁸ Computer networks and cyberspace converge with all kinds of data and information, and diverges from different forms of media. Texts, sounds, and visuals are transcoded and exchanged into united digital formats by the binary number system and computation. These digital formats then remake new creations of synthesis and transformation by computer simulation.

The digital cinema evolves into the multimedia integration of various texts, signs, sounds, live-action images and graphic animations. Monaco states that because artists have been combining text, images, and sounds since the invention of movies, Edison was the first multimedia artist, and film is the first multi-medium.¹⁶⁹ Digitalizing images and sounds intensifies multimedia in a new way. In the age of multimedia, digital cinema has the shape of digital contents. It is a numerical and computational fusion and manipulation of a diversity of image formats. The convergence and divergence of media stem from the ontological characteristics of digital images. Synthesis and transformation is necessary to the ontology of digital images. In digital virtuality, the possibility of mixing and assembly is extended. By virtue of a simple and easy transformation, the digital image opens a new phase of the virtual image, in which reproduction and manipulation can be infinitely possible in the synthesis of images.

¹⁶⁷ James Monaco, *How to Read a Film: Movies, Media, and Beyond (4th edition)*, New York: Oxford University Press, 2009, p.608.

¹⁶⁸ Henry Jenkins, *Convergence Culture: Where Old and New Media Collide*, New York: New York University Press, 2006, p.129.

¹⁶⁹ James Monaco, *How to Read a Film: Movies, Media, and Beyond (4th edition)*, New York: Oxford University Press, 2009, p.593.

Antony Bryant points out the difference between mechanical ‘reproduction’ and digital ‘production’.¹⁷⁰ He distinguishes digital images from Benjamin’s concept of mechanical reproduction. In his view, digital imaging does not consist of reproducibility. Instead Bryant asks wherein the ‘re’ lies? In Benjamin’s concept of reproducibility, film images are numerical copies of the original; however, digital images do not have an original. Digital imaging fundamentally denies the separation between an original and its copies. Therefore, he claims that digital images are not reproductions, but productions. It means that the same digital formats between original and copy inspire the convergence of images and media.

In addition, I would add that the ontology of digital images consists of synthesis and transformation. Although it is clear that digital images retain physical reality and indexical traces as Philip Rosen wisely observes,¹⁷¹ they move towards a new aesthetics of complexity and hybridity, based on synthetic images. Even though analogue and digital images similarly appear to the eye of the spectator, according to the principle of ‘perceptual realism’¹⁷², they proceed to different ontologies in the history of the virtual image. Digital virtuality goes beyond the photographic representation of film images.¹⁷³ Photographic film is transcoded into compact memories, analogue TV changes digital TV, and DVD supplants videotape. Shifts in hardware entail changes in software and content. The production and consumption of the image then becomes possible only with the compatibility of computers and digital technology. In the contemporary era, computer and digital technology have become meta-media, ruling all mediums, such as writing, painting, photography, radio, TV, video, the internet, the mobile phone, and even cinema. It is impossible to maintain our daily lives and image associations without depending on computer technology. Created as a calculator, the computer has changed the virtual image

¹⁷⁰ Antony Bryant, *Digital and Other Virtualities: Renegotiating the Image*, London: I. B.Tauris, 2010, p. 5.

¹⁷¹ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, pp.307-314.

¹⁷² Stephen Prince, True Lies-Perceptual Realism, Digital Images, and Film Theory, *Film Quarterly*, Vol.49 N.3, 1996. pp.27-37. In addition, Prince develops his argument of perceptual realism and ‘immersive aesthetics’ in the age of digital cinema. Stephen Prince, *Digital Visual Effects in Cinema: The Seduction of Reality*, New Brunswick, N.J.: Rutgers University Press, 2012, pp.31-37, and pp.183-220.

¹⁷³ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, p.105.

into whatever can be calculated and manipulated. The audio-visual image has been transformed into data and information. Digital virtuality is nothing more than a programming consciousness that dominates the thoughts and minds of humans. Thus, the computer has become the god of images, manipulating human memory and spirit.

In terms of digital contents, digital cinema has become both art and information. In other words, the digital cinema intensifies the immaterial and virtual characteristic of information. It is able to restore itself and reproduce virtually, regardless of the material traits of the medium. Movies that assume the shapes of a DVD, Laserdisc, and digital file have become multimedia content that enters the intimate realm of personal computers, home theatres, and mobile networks, beyond the public threshold of theatres.

In this regard, Monaco stresses that the major advantages of digitization's instant access to information and its comprehensive indexation have more to do with the rise of networks and their databases than with the combination of media.¹⁷⁴ Moreover, Lev Manovich claims that digital cinema is a 'network cinema', or a 'database cinema.'¹⁷⁵ For him, digital network and database create a new methodology of film production, screening, and distribution, which causes the convergence and divergence of a diversity of image formats. Digital cinema has immaterial virtuality in the form of information and interfaces with different media expressed by numerical formats of the digital. It is mixed with a variety of media, such as TV, cable, the computer, Internet, and the mobile phone. The virtual image of digital cinema goes beyond the threshold of theatre.

Second, regarding virtual reality (VR), the term has been given various definitions. In common usage, what is real is real, what is virtual is not real. It is both an oxymoron and a contranym. Much confusion has resulted from the contradictions of the term. However, the exact meaning and usage of the term is discussed earlier in this thesis. In particular, Deleuze defines the concept of the virtual as an extension of physical reality. It is not actual, but real and expresses the creative potentiality of the real in movement and time.

¹⁷⁴ James Monaco, *How to Read a Film: Movies, Media, and Beyond (4th edition)*, New York: Oxford University Press, 2009, p.607.

¹⁷⁵ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.180.

Deleuze demonstrates the reality of the virtual in light of the concept of immanent plane and actualization. For him, the virtual reality connotes the inextricable and exchangeable imbrication and interfaciality of the actual and the virtual, the matter and the image, and the object and the subject. It is ‘a line of flight’, ‘the deterritorialisation of line of the earth’, and ‘the movement of flight’ in the plane of immanence.¹⁷⁶

“The plane of immanence includes both the virtual and its actualization simultaneously, without there being any assignable limit between the two. The actual is the complement or the product, the object of actualization, which has nothing but the virtual as its subject. Actualization belongs to the virtual. The actualization of the virtual is singularity whereas the actual itself is individuality constituted. The actual falls from the plane like a fruit, whilst the actualization relates it back to the plane as if to that which turns the object back into a subject.”

¹⁷⁷

Concerning the definition of the virtual reality in the digital age, Michael Heim combines the dictionary meanings of virtual and reality: ‘Virtual Reality is an event or entity that is real in effect but not in fact.’¹⁷⁸ He reinterprets the dictionary meaning from the perspective of digital virtuality. For him, VR is any simulation that makes something seem real that is in fact not real. Virtuality games combine a head-tracking device, gloves, and computer animation to create the effect that entities are moving towards the player, which are in fact not real. In addition to the dictionary meaning of the term VR, Michael Heim asserts that the concept of VR includes the seven traits of computer technology and digital culture; simulation, interaction, artificiality, immersion, telepresence, full-body immersion and network communications.¹⁷⁹

According to Ken Hills, VR is a hybrid concept that includes the dimensions of technologies and individual experiences. He states that in theorizing VR, it is productive

¹⁷⁶ Gilles Deleuze and Claire Parnet, *Dialogues 2*, translated by Hugh Tomlinson and Barbara Habberjam, New York: Columbia University Press, 2007, p.40, p.135.

¹⁷⁷ Ibid, pp.149-150.

¹⁷⁸ Michael Heim, *The Metaphysics of Virtual Reality*, New York, Oxford: Oxford University Press, 1993, p.108.

¹⁷⁹ Ibid, pp.109-117.

to distinguish between technical and social components. He suggests the concept of virtual environments (VE) in contrast to virtual 3-D technology. For him, VEs are a special form of interactive and immersive communication because of the social relationships fostered by digital technology. Using the concept of virtual environments, he tries to theorise the experience of users as aspects of social communication.¹⁸⁰

Similarly, Thomas Elsaesser and Malte Hagener claim that VR can be better understood as the concept of ‘a total environment’.¹⁸¹ They point out that VR is different from traditional definitions of cinematic realism. For them, ‘reality’ in VR does not mean index, trace, and reference. It concerns not correspondence theory but coherence theory. They explain the concept of VR in connection with the user’s bodily and sensory experience. VR is associated with emphasis on the immersive, tactile, and haptic properties. It is the body-based aspect of the experience. Bodily sensations are distinct from pictorial illusionism. What we see is not something that is real, but we enter the ‘reality’ of VR in fascinated self-oblivion and submerged self-presence. For these reasons, Elsaesser and Hagener argue that VR is distinguished from the concept of imaginary reality (IR). Whereas IR is based on concepts of fiction, narrative, and representation, VR relies on the technology of simulation, the spectator’s presence, immersion and interactions. In the total environment of VR, the bodies and senses of the players and operators experience a coherent, diegetic world.

In Oliver Grau’s definition, VR is a ‘mixed reality’.¹⁸² He states that old media are not obsolete, but newly defined, categorized, and interpreted. For him, virtual art exceeds by far a purely mimetic view. He says that VR introduces a new realism in which the immersive environment of virtual reality integrates the image and observer. For him, VR combines the panoramic view and sensorimotor explorational images in living environments. In the telepresence experience, images change in a multisensory interactive space. He claims that the new concept of immersion facilitated by a head-mounted display and simulation technology combines with the interaction and interface

¹⁸⁰ Ken Hills, *Digital Sensations*, Minneapolis, London: University of Minnesota Press, 1999, xv-xxiii.

¹⁸¹ Thomas Elsaesser and Malte Hagener, *Film Theory: An Introduction Through the Senses*, 2010, New York, Oxon: Routledge, p.178.

¹⁸² Oliver Grau, *Virtual Art from Illusion to Immersion*, Cambridge, Mass.: MIT Press, 2003, pp.7-9.

between human sense and the image world. Thus, VR provides a new concept of mixed reality in a world of artificial images.

In contrast to many digital theorists that emphasize the difference, discontinuity and novelty between digital virtuality and traditional representation, Philip Rosen pays attention to their historical continuity and hybridity. He claims the concept of ‘digital mimicry’ or ‘digital indexicality’, which means that the digital image has indexical traces of physical reality.¹⁸³ For him, digital cinema is the imbrication of indexical representation and digital simulation. He suggests three reasons for digital indexicality. First, the digital camera is also a lens base that collects light, which leaves indexical traces of physical reality. Second, the sources of the numerical manipulation of the digital image are based on indexical images. Third, since the 1990s, digital images have increasingly focused on the imitation of photographic forms with the help of digital technology. He stresses the continuity of the digital image with photographic reality. For him, digital manipulation is not a matter of kind and quality but of the degree of a quantity, an increase, and an easiness because both painting and film can manipulate objects. In terms of the historical continuity of cinema, he emphasizes that the hybridity of the digital and indexicality is at the heart of the definition of the digital. In this context, Rosen demonstrates that theoretically, digital virtuality remains within traditional concepts of reality and representation:

Virtuality and simulation presuppose a basic minimum of representational credibility, simply because the digital subject must recognize that he or she is entering a (virtual) world and must identify objects in that world in order to interact with them. In that case, such interactivity assumes the depictive imaging codes that Darley argues displaced the dominant alliance with a nonfigurative, modernist abstraction of early computer graphics. Digital mimicry will often be important here....¹⁸⁴

¹⁸³ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, pp.307-314.

¹⁸⁴ *Ibid*, p.342.

Rosen explains the immersive and interactive characteristics of digital virtuality. For him, VR is not the collapse of the oppositions of inside and outside, but is a new form of representation in virtual environments. The creation of special illusions in VR means nothing more than the pursuit of the ‘more real’.¹⁸⁵ Digital virtuality is a particular kind of reality modeling afforded by the digital image. Interactivity makes virtuality credible, but its fantasy is increased in the indexical model. In this sense, the definition of interactivity is the real manipulation of both unreal and virtual objects. The subject knows that his or her actions towards objects are real, not a fantasy. The real action of the subject creates fantasies and virtual feelings.

Moreover, Rosen emphasizes the simultaneous and reciprocal effect of the subject and object. The immersion and interactivity of digital virtuality exists in relation to a powerful impression of reality and its effects. In VR, the subjects are divided, not unified. For Rosen, digital virtuality is the world of hybridity that exists in the persistent indexical traces of physical reality and the virtual immersion of subjective interactivity. Consequently, he claims that cinema is not the opposite of the digital, but a historical, hybrid entity merging of the old and new, the filmic image and digital virtuality.¹⁸⁶

Lastly, I examine the concept of digital virtuality in terms of the cyberspace. The term ‘cyberspace’ is derived from William Gibson’s short story *Burning Chrome* (1982) and a science fiction novel *Neuromancer* (1984): “Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding.”¹⁸⁷ Gibson has a grasp of the meaning of cyberspace in terms of the relationship between a graphic representation of computer data and a consensual hallucination of users. Although Gibson later commented in the independent documentary *No Maps for These Territories* that the term cyberspace seemed like ‘an effective buzzword’ rather

¹⁸⁵ Ibid, pp.339-341.

¹⁸⁶ Ibid, p.349.

¹⁸⁷ William Gibson, *Neuromancer*, London: Harper Collins, 1993, p.67.

than having a 'real semantic meaning', the term properly presents the new characteristics of computer networks and user's experience caused by digital technology. The term cyberspace coined by the author's literary imagination and intuition is becoming increasingly popular through the boom of Internet and telecommunication in the 1990s.

Etymologically, the term cyberspace means the virtual space of numerical data and abstracted information rather than the space of material objects and physical reality. Marcos Novak indicates the conceptual characteristics of cyberspace in terms of the development of computer networks and human communication:

Cyberspace is a completely spacialized visualization of all information processing systems, along pathworks provided by present and future communications networks, enabling full copresence and interaction of multiple users, allowing input and output from and to the full human sensorium, permitting simulations of real and virtual realities, remote data collection and control through telepresence, and total integration and intercommunication with a full range of intelligent products and environments in real space.¹⁸⁸

For Novak, cyberspace involves a reversal of the current mode of interaction with computerized information. In the similar way that Debray describes the characteristics of videosphere in terms of the inner domination of the image space,¹⁸⁹ Novak demonstrates that cyberspace subverts the relationship between external and within the information. Whereas the information, so far, was external to us in physical reality, cyberspace let us enter into the space of information. In the new space of information, subjects should be connected with bits, data, and system. In this sense, cyberspace is reliant on the interactive communication between users and computer system, physical reality and informational image, and objects and subjects. The interactive communication and interface within cyberspace is a necessary premise to create the immersive experience of

¹⁸⁸ Marcos Novak, *Cyberspace: First Steps*, edited by Michael L. Benedikt, Cambridge, MA: MIT Press, 1991, p.225.

¹⁸⁹ Régis Debray, *Media Manifestos: On the Technological Transmission of Cultural Forms*, London: Verso, 1996, p.26.

subjects. Cyberspace creates the subjective effect of immersion based on interactive connection with the world of virtual data and information.

In this sense, the term cyberspace used to mingle with VR. Both of them indicate in common the virtual characteristics of digital technology. They are related to the ontology and epistemology of digital virtuality. However, it is reasonable to distinguish the conceptual kernel of cyberspace from the category of VR. This is because the concept of cyberspace has more to do with the concept of digital networks. In the context, Monaco describes the history of VR in view of verisimilitude and interactivity, and the chronology of cyberspace in light of the development of on-line database and Internet.¹⁹⁰ Whilst the concept of VR is focused on the reality effect of simulation and immersion by digital apparatuses like computer games, head-mounted displays (HMD), and 3D movies, the concept of cyberspace is more closely associated with the interactive way of human communication and image representation caused by Internet and mobile networking.

Historically, the development of computing hardware and software combines with the new ways of human communication by computer networks since the 1960s.¹⁹¹ In 1969, the emergence of ARPAnet opens the new age of computer and mobile networks. The Ethernet Computer Networking develops in 1973. The concept of the connection and communication of ubiquitous computers develops the concept of World Wide Web by Internet companies like AOL, Netscape, and Lycos in the 1990s. In the 2000s, a wide range of computer networks were connected by TCP/IP, and a large number of Internet websites such as Google, Facebook, Twitter, and Youtube has evolved a new way of human communication based on an information superhighway.¹⁹² Moreover, as Manuel Castells properly indicates by the expanded concept of ‘mobile network society’, the

¹⁹⁰ James Monaco, *How to Read a Film: Movies, Media, and Beyond (4th edition)*, New York: Oxford University Press, 2009, pp.609-621.

¹⁹¹ J. C. R. Licklider, Man-Computer Symbiosis, *IRE Transactions on Human Factors in Electronics, Vol. HFE-1*, March 1960, pp.4-11.

¹⁹² Dennis A. Trinkle, The Basics, *The History Highway: A 21st-century Guide to Internet Resources*, edited by Dennis A. Trinkle and Scott A. Merriman, New York: M.E.Sharpe, 2006, pp.3-5.

Internet is connected to the development of mobile communication.¹⁹³ Since Motorola invented the first mobile phone in 1973, the hardware and software of mobile communication has consistently developed.¹⁹⁴ The world's first commercial automated cellular network was launched in Japan by NTT in 1979. In 1991, the second generation (2G) cellular technology was launched in Finland by Radiolinja on the GSM standard. NTT DoCoMo launched the third generation (3G) on the WCDMA standard in Japan in 2001. In 2007, Apple's I-phone based on the touch screen combines mobile communication and Internet services.¹⁹⁵ As we can definitely see in brief history of cyberspace, the main axes leading invisible and intangible space of digital virtuality are computer data, Internet, and mobile communication. All types of computer data like Texts, sounds, visual images are mixed with Internet and mobile communication. In these days, computer networks are becoming more and more combined with the technology of mobile communications.

The territory of cyberspace expands to the concept of telepresence. An American cognitive scientist Marvin Minsky coined the term telepresence in 1980.¹⁹⁶ He studies the technological combination between intelligent robotics and telepresence. He develops remote controlling technology giving an actual feeling at a different location by making the first mechanical hands with tactile sensors, visual scanners, and their software and computer interfaces. Since David Allen and Harold Williams successfully introduce the concept of remote business meeting in 1993,¹⁹⁷ the technology of telepresence is utilized in a wide range of industries and arts like remote conference, 3D traveling, distant education, surgery hospitals, dangerous works, pipeline inspection, and video installation art. Google glass project, which is demonstrated in February 2013, is also one attempt to

¹⁹³ Manuel Castells et al., *Mobile Communication and Society: a Global Perspective: A Project of the Annenberg Research Network on International Communication*, Cambridge, Mass.: MIT Press, 2007, p.6, p.247.

¹⁹⁴ Ted Shelton, *Business Models for the Social Mobile Cloud Computing*, Hoboken, N.J.: John Wiley & Sons, 2013, pp.35-37.

¹⁹⁵ Seung-Hyun Lee, *Incorporating Mobile Multimedia Into Everyday Life: Diffusion and Use of Mobile TV*, PhD thesis at the University of Wisconsin-Madison, 2008, pp.8-34.

¹⁹⁶ Marvin Minsky, *Robotics*, Garden City, N.Y. : Anchor Press/Doubleday, 1985, p.26, p.148.

¹⁹⁷ Howard L. Lichtman, *Telepresence, Effective Visual Collaboration and the Future of Global Business at the Speed of Light*, the Human Productivity Lab Whitepaper, 2006. http://www.humanproductivitylab.com/telepresencepaper/hpl_telepresence_paper.pdf

combine the technology of head-mounted display and the concept of telepresence.¹⁹⁸ Telepresence combines remote location and live-action. Users can feel the reality of distant location in a real time. It raises the concept of 'augmented reality'¹⁹⁹ in the imbrication of human and computing, reality and virtuality, and immersion and participation.

As Bolter indicates that contemporary computer technology develops the concept of hybrid and mixed reality with pure virtuality,²⁰⁰ telepresence presents a new type of reality. The reality of telepresence is different from traditional reality in film. While film images offer illusionary reality on separated points of view with spectators, the cyberspace of telepresence provides users with correspondent point of views. Users can sense the physical reality, following their body's motions and directions in real-time and live-action. This is called the concept of augmented reality, which is different from VR. VR is focused on immersive reality within virtual environments, augmented reality creates the reality in the mixture of physical location with virtual environments. Cyberspace is connected to the telepresence based on the concept of augmented reality. Telepresence creates the concept of new reality through the condensation and exchangeability of multiple space and time. Cyberspace of telepresence reduces the physical distance, and crystalises the concept of time. It creates the new concept of the virtual reality based on real-time telecommunication with remote location.

According to Yongblood, the power of digital virtuality exists in invisible images and uncontrolled conversations on cyberspace and the Internet.²⁰¹ He pays attention to the positive potentials of digital virtuality as the concept of telepresence. For Youngblood, telepresence on the Internet is a utopian dream to constitute humankind's ultimate reality, and a public sphere to achieve global democracy.²⁰² It is the virtual image of collective

¹⁹⁸ Mat Honan, Google's New Tools Show How Deep Glass Will Embed in Our Lives, *Wired: Gadget Lab Article*, November 19, 2013.

¹⁹⁹ Gregory Kipper and Joseph Rampolla, *Augmented Reality: an Emerging Technologies Guide to AR*, Amsterdam, Boston, MA: Syngress/Elsevier, 2013, pp.1-28.

²⁰⁰ Bolter, J. D. The Desire for Transparency in an Era of Hybridity. *Leonardo* (39:2), 2006, pp.109-111.

²⁰¹ Gene Youngblood, What We Must Do, *Fluid Screens, Expanded Cinema*, edited by Janine Marchessault and Susan Lord, Toronto, Buffalo, London: University of Toronto Press, 2007, p.321.

²⁰² *Ibid*, p.323.

forces that transcend space and implode time. He discovers the power of digital virtuality through the telepresence on computer networks and Internet, which constitutes a global multimedia conversation. He argues that telepresence separates time, creates spectacular images of assembly in space, and interacts with a common database. For him, the reality of digital virtuality means the active interaction and participation of spectators into the time and space of global multimedia teleconference.²⁰³ Youngblood advocates an effective counterculture of the potential reality in the contemporary conditions of digital virtuality. Cyberspace and telepresence is the expansion of human communication and image world based on the concept of synesthetic time and space. For him, digital virtuality is a matter of digital ethics to achieve the new reality of computer simulation and cyberspace.

To sum up, I have defined the concept of virtuality in terms of the hybrid combination between the actual and the virtual, the reality and the image, and physical indexicality and imaginary fantasy. In particular, although techno-aesthetics has a latent risk of technological fetishism and commercialization, I propose that the concept of digital virtuality provides image art with the creative potential of new reality and artforms. Deleuzian concept of digital virtuality accentuates the physical reality of the virtual and the process of endless becoming in the contemporary phenomenon of media convergence, virtual reality, and cyberspace. It is a matter of subjective and practical assemblage and aesthetic configuration. In this context, I will move on the next chapter as regards the cinematic aesthetics of digital virtualism.

²⁰³ Ibid, p.325.

2. The Aesthetics of Digital Virtualism

As discussed in the previous chapter, the concept of virtuality is derived from the imbrication of the actual and the potential, and the art of film presents the technological and aesthetic virtuality residing in physical indexicality and imaginary illusion. In this context, I defined digital virtuality as the new phase of the virtual image, subsuming a new reality in the age of computer-simulated images. I suggested that the main concepts of digital virtuality are explored by three categories of multimedia, virtual reality, and cyberspace.

Based on the concept and historicity of virtuality, as defined in the previous chapter, this chapter explores the cinematic aesthetics of digital virtualism. While the term ‘virtuality’ indicates the objective aspects of digital phenomena, the term ‘virtualism’ suggests the subjective aspects of digital arts, which is the same as the relation of realism and reality. Whereas the term reality implies the ontological objectivity of the film image, the aesthetics of realism comprises historical and aesthetical movement by subjects. Hence, this dissertation uses the term digital virtualism to signify cinematic movements and subjective activities in response to the objective phenomena of digitalisation in the cinematic world. The arts not only passively reflect and represent objective phenomena and contemporary tendencies, but also actively express and interfere with their developmental direction. In this chapter, aesthetic tendency and movement are tested using a theoretical hypothesis and a practical trial. Therefore, the aesthetics of digital virtualism is an attempt to achieve a subjective intervention and perform practical activity in the objective flow of digital virtuality.

Digital virtualism is an aesthetic response to new technology in the digital age. It is the aesthetics of hybridity, synthesis, materiality, and information. First, in terms of film history and theory, digital virtualism is a contradictory, hybrid combination of realism, modernism, and postmodernism. I assert that digital virtualism is associated with the aesthetic complexity of a wide range of film theories. Second, in terms of the evolution of film technology, digital virtualism is the aesthetics of computer simulation and synthesis. I examine the concept of reproduction and manipulation in the digital age, as well as the difference between filmic montage and digital collage. Third, in terms of the ontology of

the cinematic image, digital virtualism is the aesthetics of material images. It means that digital aesthetics contributes to the technological attraction and the visual spectacle of cinema. I demonstrate that the bodily sensations of digital cinema present a new mode of perception and simultaneously describe the traps of technological determinism and commercial fetishism. Finally, digital virtualism is the aesthetics of information in terms of the complex conflation of a wide range of media ad arts. It is related to the immateriality and virtuality of computer-simulated images. The informational nature of digital cinema proceeds to the convergence and divergence of different images and media. The age of transmedia gives rise to the complex transformation of the cinematic art. This chapter is dedicated to the new conceptualisation of cinema as the aesthetics of digital virtualism.

2-1. The Aesthetics of Hybridity

In this section, I theorise digital virtualism in terms of the hybridity of ‘old’ theories of film and the ‘new’ reality of digital cinema. The definition is historical and aesthetical. With regard to historical hybridity, digital virtualism has inherited a diversity of film theories, such as realism, modernism, and postmodernism. According to Rodowick, ‘while film disappears, cinema persists’.²⁰⁴ Accordingly, I will place the aesthetics of digital virtualism in the context of the historical continuity of cinematic movements and theories. I also investigate the discontinuity of digital virtualism compared with ‘old’ film theories. In view of aesthetical hybridity, digital virtualism presents the contradictory combination of humans and computers, technology and aesthetics, and reality and image. It explores the complex linkage between physical reality and virtual image. In short, in this section I explore the historical and aesthetical hybridity of film theories and the digital phenomenon.

First, this thesis argues that digital virtualism is underpinned by the diversity of film theories in the context of film history. The cinematic ontology of digital virtualism

²⁰⁴ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, Preface.

derives from the history and aesthetics of film, particularly in relation to the film theories of realism, modernism and postmodernism. It requires aesthetical integration and the combination of the actual and virtual in the monism of simulacra. In the age of digital cinema, 'the crisis of representation' is irresolvable in the frame of traditional realism. However, it is also difficult to discover an alternative within the frame of (post)-modernist aesthetics. Thus, a productive theory of digital cinema should be established by breaking the contradictory frameworks of both physical indexicality and cinematic illusionism. This thesis takes note of both the continuity and discontinuity of film theories, such as realism, modernism, and postmodernism, in terms of digital aesthetics. There is a need for a new concept that goes beyond the conceptual duality and limits of previous film history and theories. The new concept also attempts to develop the conceptual advantages and disadvantages of antecedent film theories. From the realist accentuation of the priority of reality in cinematic image making, it borrows the concept of the creative configuration of physical reality. Instead of the radical denial of cinematic indexicality, digital virtualism conceptualises the extension of physical reality in a new and different context. In this sense, the aesthetics of digital virtualism tries to develop the ontological significance of realism.

At the same time, digital virtualism also goes beyond the indexicality of film. It takes on the positive aspects of modernist aesthetics, which accentuate the imaginary and psychological effects of cinematic images. In particular, I assert that the imaginary nature of film is not in opposition to physical reality. The illusion and fantasy of cinema coexists with physical reality in the contradictory ontology of digital virtualism. While Bazin stresses the continuity and transparency of the image with physical reality, the aesthetics of political modernist theorists, including Peter Wollen, Christian Metz, and Stephen Heath, emphasises the ideological and subjective reconfiguration of the film image. I extrapolate the aesthetics of digital virtualism from the hybrid conflation of realism and modernism.

In addition, I point out the aesthetical ambivalence of postmodernism, which focuses on the superiority of simulacra to the real world. On one hand, postmodern aesthetics denies

the affirmative force of the cinematic image, which produces a new reality. On the other hand, it allows the composite aesthetics of the image to surmount the limitations of physical actuality. Postmodern aesthetics raises the issue of the spectacle and sensation of cinematic images. The aesthetics of digital virtualism simultaneously sublimates the ambivalence of postmodernism between the surrender to fetishist images and the utopian dream of the image world.

With regard to aesthetic hybridity, digital virtualism denies the dichotomy between the real world and simulacra, indexicality and illusion, and the actual and the virtual. In the light of scientific relativity, the real world derives from simulacra in the molecular and microscopic dimension. While reality is imaginary, the image is a possibility of reality. Similarly, when actuality fades away in changing reality, virtuality emerges to achieve a potential actuality. Hence, based on the aesthetics of Deleuzian virtuality, the new theory of digital cinema transcends the dualism of reality and simulacra. It is reliant on the monism of simulacra beyond the contradiction of the real world and the imagination. In the conceptual extension of Deleuzian virtuality, the crystal image and the time-image question the source and the addressee of the digital information image in the age of global capitalism and neoliberalism. The world of digital cinema is the immanent plane of simulacra on which the informational image mixes with reality, and virtuality converges with actuality towards cinematic practice and participation.

Therefore, the ontology of digital virtualism is the hybrid and complex aesthetics in the monism of simulacra. It is connected to the composite aesthetics of the cinematic image in the intersection and resonance of reality and hyperreality, the complex fusion of the actual and the imaginary, and the subverting practice of the cinematic image against the dichotomy of the original and the copy, that is, realism and postmodernism. Digital virtualism maximizes the imagination and the illusionism of cinema. It is necessary to reconstitute and reorganize the aesthetics of virtual imagism both subjectively and practically so that the new aesthetics of digital virtualism is reborn in the tradition of a variety of film aesthetics. It is the aesthetics of hybridity and complexity bridging physical reality and imaginary illusion. Digital virtualism pursues the ‘virtual

conjunction²⁰⁵ of a diversity of cinematic images on the immanent plane of simulacra. Thus, digital virtualism is the cinematic aesthetics of composition and synthesis.

Philip Rosen accentuates the historical hybridity of digital images in the continuity of film history.²⁰⁶ According to Rosen, hybridity is a core concept of digital images because the latter still represent the indexical traces of physical reality. The novelty of digital cinema combines with the ‘obsolete’ aesthetics of the film medium. Therefore, he argues that digital cinema is not a pure utopian dream but an impure historical hybridity of the old and the new:

In that case, the historiography of old and new, which is so often at the heart of conceptions of the digital, threatens to dissolve into a complex, “impure” historicity and a complex, “impure” historiographic temporality. The digital would have to be referred to a radical historicity without stable points of source and end, old and new. Historical sequencing would have to become provisional, and the categories enabling such sequencing would themselves have to be temporalized (historicized), de-idealized, returned to the complexity that characterizes the concrete rather than the conceptual, the nondigital as much as the digital. My point here is not that ideals should never be articulated or presented as purities, or that it is possible to completely avoid sequenciation; however, that said, one would have to seek the digital in the contradictory junctures of idealized purities and impure hybridities.²⁰⁷

In this context, he opposes the strategy of the forecast, in which digital cinema is considered both a pure ideal and a prophetic transition. He disavows the historiography of conquest in the movement towards the digital utopia. Digital cinema is ‘the contradictory junctures’ of idealized purities and impure hybridity. Consequently, he asserts that digital

²⁰⁵ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, p.109.

²⁰⁶ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.303.

²⁰⁷ *Ibid*, p.315.

aesthetics should be regarded as both historical hybridity and temporal complexity instead of the rhetoric of prophecy and the aesthetics of conquest in film history.

While Rosen pays attention to the aspects of the historical continuity of digital images with filmic indexicality, Frank Popper highlights the hybrid combination of technology and aesthetics in the age of digital arts. According to Popper, digital virtualism is ‘techno-aesthetic’.²⁰⁸ He defines the aesthetics of virtualism in terms of the communicable hybridity of humans and computers and technology and aesthetics. The humanization of technology is through the artistic imagination. For Popper, the techno-aesthetic of digital virtualism is neo-communicability and new possibilities that take place in the passage from technological art to virtual art. Although it is clear that film art essentially depends on the nature of ‘techno-aesthetic’, computer technology expands the technological virtuality of film art to the level of digital hybridity and interactivity. Popper argues that the digital virtualism is associated with the combination of technological and aesthetical changes from the 1980s to the present:

Technically speaking, virtual art, to my mind, includes elements from all the arts made with the technical media developed at the end of the 1980s (or a bit before, in some cases). One of its aspects, at the time, was that interfaces through which exchanges passed between human and computer - for example: visualization casks, stereoscopic spectacles and screens, generators of three-dimensional sound, data gloves, data clothes, position sensors, tactile and power feed-back systems, etc. - allowed us to immerse ourselves completely into the image and interact with it... Aesthetically speaking, virtual art, as I see it, is the artistic interpretation of the contemporary issues mentioned previously, not only with the aid of the above technological developments but through their integration with them. Such an integration - or combination - allows for an aesthetic-technological logic of creation which forms the essential part of the specificity of the virtual art works I am describing in this book and which differ from other art works in the sense that

²⁰⁸ Frank Popper and Jeseoph Nechvatal, *Origins of Virtualism: An Interview with Frank Popper*, *CAA Art Journal*, Spring 2004, p.65.

the latter lack this logic of creation based on the combination of current technical and aesthetic issues.²⁰⁹

In his definition of virtual arts, Popper combines the technological with the aesthetic concept of virtualism. He claims that 'what is new in virtualism is precisely its virtuality, its potentiality and above all its openness'. In particular, he stresses the openness of the virtual arts because 'this openness implies a certain amount of liberty and freedom for action and creation but not at all to radically destroy what happened before'. Popper argues that the innovation and dynamism of virtualism stems from its aesthetic openness, which exists in technological creativity and artistic interactivity. According to his definition of virtualism, virtual arts develop the concept of reality through the hybridity of technology and aesthetics. He demonstrates that the impression of reality in virtualism is provided by not only vision and hearing but also the other bodily senses. This multiple sensing is empirical, participatory, and virtual. Therefore, virtualism subsumes not only reality itself but also the simulation of reality. In the age of digital arts, reality is multiple instead of singular. Mark Poster said that reality is multiple and multisensory in the environment of multimedia and postmodern virtuality.²¹⁰ In the same manner, Popper demonstrates that the aesthetics of virtualism develops the new form of reality in the hybrid combination of digital technology and aesthetics.

Many theorists argue the hybrid relationship between technology and art and humans and machines in the era of cybernetics. In her memorable essay, 'A Cyborg Manifesto,' Donna Haraway suggests a new gender politics in the posthuman age:

The cyborg is a creature in a post-gender world; it has no truck with bisexuality, pre-oedipal symbiosis, unalienated labour, or other seductions to organic wholeness through a final appropriation of all the powers of the parts into a higher unity. In a sense, the cyborg has no origin story in the Western sense - a 'final' irony since the cyborg is also the awful apocalyptic telos of the 'West's' escalating

²⁰⁹ Ibid, p.67.

²¹⁰ Mark Poster, Postmodern Virtuality, *Body and Society (1:79)*, 1995, p.85.

dominations of abstract individuation, an ultimate self untied at last from all dependency, a man in space.²¹¹

According to Haraway, cyborg is a strong metaphor that goes beyond naturalism and the essentialism of traditional gender politics. In this sense, Haraway criticizes traditional feminism, which is based on the gender identity of male and female. She argues that feminism should move to the territory of affinity and the postmodern cyborg beyond the limits and boundaries of gender identity. The concept of cyborg is a useful strategy to overcome the dichotomy between humans and machines, humans and animals, and man and woman. In the posthuman age, the hybridity between human and machine creates a new form of paradigm and subjectivity from representation to simulation, from bourgeois novel to science fiction, from modernism to postmodern techno-science.

While Haraway redefines feminist theory in the posthuman age through the concept of hybrid cyborg, William Brown attempts to establish the concept of posthumanist cinema in the digital era. He appropriates the title of Dziga Vertov's famous film, *Man With a Movie Camera* (1929). His expressions of digital cinema, *man without a movie camera* and *movies without men*, are interesting and witty.²¹² These expressions imply that digital cinema can be made without camera devices and human actors. In this sense, digital cinema challenges the concept of traditional film, which requires embodied camera shots and human characters as necessary cinematic elements. Brown observes that digital technology helps to create a posthumanist cinema. Digital technology makes synthetic images that transcend human viewpoints and captured reality. Digital technology can transform and manipulate a variety of captured images with the help of computer graphics. In this sense, digital cinema is posthumanist cinema and goes beyond filmic humanity and reality.

²¹¹ Donna Haraway, A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century, *The Feminism and Visual Culture Reader*, edited by Amelia Jones, New York, London: Routledge, 2003, p.476.

²¹² William Brown, Man without a Movie Camera, Movies Without Men: Towards a Posthumanist Cinema? *Film Theory and Contemporary Hollywood Movies*, edited by Warren Buckland, New York: Routledge, 2009. p.71.

However, Brown emphasises that posthumanist cinema does not mean the absolute separation of filmic reality and humanism. Instead, digital cinema is a hybrid combination of humans and computers, reality and hyperreality, and humanism and posthumanism:

Posthumanism instead offers us this new perspective through a synthesis of the old and the new, in the same way that a cyborg is both human and machine (as opposed to either human or machine). Similarly, a posthumanist cinema is not a cinema created by a spectacular split or schism from old cinematic techniques—a point that I should take great care to emphasize (hence evoking Méliès, Phalke, Lye, McLaren, and the American avant-garde above). Rather, it is a cinema that involves old techniques in conjunction with new techniques; it is, as Manovich ("Image Future") has pointed out, a hybrid cinema that combines the two, but which, by combining the two, draws out the inherent potential for posthumanist thinking that has long since been overshadowed by cinema's "humanist" norms.²¹³

In this context, Brown defines digital cinema as 'Supercinema'.²¹⁴ Digital cinema is a hybrid combination of digital technology and film aesthetics. For Brown, the meaning of supercinema is twofold. On one hand, supercinema goes beyond the technological limitations of traditional film to expand the cinematic ability to express the impossible with the help of computer technology. Supercinema is the superpower of cinematic expression. On the other hand, supercinema also resembles Superman hiding his ability to expand technologically. While analogue cinema can be seen to resemble Batman, who tries to be a superhero but is all too human, digital cinema resembles Superman pretending to be human. In other words, while film as a human art form tries to hide its technical limitations, digital cinema as a new art form tries to hide its posthuman expansion behind the film aesthetics of humanism and reality. Therefore, as supercinema digital cinema is a hybrid of 'old' film aesthetics and 'new' technology, humans and computers, and reality and hyperreality.

²¹³ Ibid, p.72.

²¹⁴ Ibid, pp.77-78.

Furthermore, Brown and Meetal Kutty suggest the concept of digital complexity to explain the hybrid nature of digital cinema.²¹⁵ Digital complexity stems from the theory of digital chaos, in which data loss and corruption consistently take place. The chaos of digital images is inevitable because of the numerical and computational nature of digital data. Digital ‘datamoshing’ is a ceaseless process of data degradation and compression, instead of the infinite and stable process of reproduction. Brown and Kutty claim that the emergence of digital complexity from digital chaos provides artists with a diversity of opportunities and motivations to create new forms and works of arts:

With regard to datamoshing, it seems that we are confronted with a visual expression again of a certain complexity theory. Digital images may undergo entropy when left alone (i.e. when in a closed system, as per the Toy Story files), but this does not mean that they are not susceptible to interventions – here, on the part of an artist. What the artist does is to reappropriate the ‘chaos’ of the corrupted/compressed file and to turn it into an artwork, or what we shall argue here is a new ‘order’. The same seems to happen visually in the films: from the digital soup and swirling colours changing in time, patterns seem spontaneously to emerge, such that a new aesthetic meaning occurs. In the same way that the process of order out of chaos seems in many respects to defy ‘common sense’ logic, which is predicated upon stability and an absence of change, so, too, do the datamoshes visualise a non-common sense ‘logic’ of changing subjectivity, swallowing up and emergence, or what in short we shall call, after Manovich (2001) and Deleuze and Guattari (1984) combined, *colours becoming in time*. What to some observers is an error or a thing of ugliness, precisely because it appears to be disordered, is to others a thing of beauty, a new type of ‘order’ that challenges and allows our conceptions of ‘beauty’ to evolve.²¹⁶

²¹⁵ William Brown and Meetal Kutty, Datamoshing and the Emergence of Digital Complexity from Digital Chaos, *Convergence* 18(2), February 2012, pp.165-176.

²¹⁶ Ibid, p.173.

According to Manovich, digital cinema is simply ‘colours changing in time’.²¹⁷ In this definition, digital cinema mainly depends more on the computational flow of pixels and data than on captured real images of live-action. In addition, Deleuze and Guattari suggest the new concept of subjectivity.²¹⁸ In the schizophrenic reality of capitalism, we cannot have a single essence of reality with a fixed subjectivity because the reality and subjectivity of capitalism is multiple and schizophrenic. Hence, Deleuze and Guattari claim that new forms of reality and subjectivity are in a ceaseless process of becoming. This process of rhizomatic assemblage and complex multiplicity gives rise to endless deterritorialisation and reterritorialisation.²¹⁹ Brown and Kutty reappropriate Deleuze’s concept of becoming and the assemblage of beings to describe the concept of digital complexity. They demonstrate that digital aesthetics is a process of consistent becoming in open temporality and duration. Digital aesthetics depends on the glitch art and datamoshing of computer science. It is a creative interaction between and hybridity of humans and computers. Digital complexity is the coexistence and hybridity of different temporalities. It is a process of changing and becoming in the temporal fluidity of beings.

In summary, digital cinema is the aesthetics of historical and aesthetical hybridity. It is a contradictory combination of ‘old’ film aesthetics and ‘new’ digital technology in which technology combines with aesthetics and computers mix with humans. Digital virtualism is techno-aesthetics. It is a complex fusion of humans and computers, physical reality and hyperreality, and realism and postmodernism. Digital virtualism presents the aesthetics of historical and ontological complexity in the posthuman age.

2-2. The Aesthetics of Synthesis

In this section, I assert that digital virtualism is a techno-aesthetics based on computer synthesis. I argue that digital synthesis is distinguished from the aesthetics of filmic

²¹⁷ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.302.

²¹⁸ Gilles Deleuze and Felix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia 1*, translated by Robert Hurley, Mark Seem, and Helen R. Lane, Minneapolis: University of Minnesota Press, 1983, p.10, p.21.

²¹⁹ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, p.10.

reproduction by different ways of image production and consumption. Mechanical reproduction represents the image of mass production in the age of industrial capitalism, whereas digital synthesis suggests a new form of image arts in the age of informational cybernetics. In this section, I also demonstrate that the aesthetics of digital virtualism, which is founded upon computer simulation and synthesis, changes the concept of montage in the aesthetics of traditional film. Although it is true that the concept of montage suggests the aesthetic importance of cinematic movement,²²⁰ computer synthesis creates the new concept of digital collage instead of the traditional concept of montage. Digital virtualism creates the new aesthetics of computer synthesis and digital collage in the complex and creative flow of digital data and pixels.

Walter Benjamin uses the concept of ‘mechanical reproduction’ to advocate the artistic potential of film.²²¹ The mechanical ability of film collapses the aura of traditional arts, such as painting, sculpture, and architecture.²²² While traditional arts depend on the human production of images by touch, film produces and reproduces mechanical images of reality. The mechanical reproducibility of film has caused a revolution in the history of technological reproduction. It has created a new meaning of tactile perception and mass art.²²³ In this sense, Benjamin considers that filmic art is a kind of radical evolution in the history of art.

However, it is both necessary and important to reinterpret and re-emphasize Benjamin’s concept of mechanical reproducibility in the age of digital cinema. This is because although Benjamin’s intuition of the innovative possibility of technological art still shines on the shoulder of the digital age, the contemporary environment of image arts has changed the aesthetics of film from mechanical reproduction to digital complexity. As I have already noted in the previous section, Brown indicates the fact that datamoshing and digital complexity has replaced the mechanical aesthetics of film. Based on computer

²²⁰ I will recount the importance of cinematic movement and montage in Chapter 4 with regard to Deleuzian aesthetics.

²²¹ Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction*, 1935, translated by Harry Zohn, *Film Theory and Criticism*, edited by Gerald Mast etc., Oxford; New York: Oxford University Press, 1992, pp.665-666.

²²² *Ibid*, pp.669-670.

²²³ *Ibid*, pp.678-681.

simulation and synthesis in the posthuman age, the mechanical reproducibility of the film image is gradually transformed by the concept of digital hybridity.

W. J. T. Mitchell proposes the concept of 'biocybernetic reproduction' to replace mechanical reproduction.²²⁴ He demonstrates the fundamental transformation in the nature of media and the arts from the reproduction of identical images to the production of 'infinitely malleable and digitally animated' images, which means the change from mechanical replication to biological and digital cloning. First, Mitchell attempts to designate the age of digital arts as 'biocybernetics'.²²⁵ He considers that the other terms, 'digital', 'information', and 'cybernetic' show only one side of the contemporary phenomenon. These terms do not effectively describe the complex and conflicted tendency of the present towards incalculability and uncontrollability. He argues that the age of information might be better called the age of mis-information and that the age of cybernetics is really the era of loss of control. That is to say, Mitchell tries to reveal the dialectical tension and contradiction of digital cultivation by using the prefix 'bios' because it implies incalculability and resistance against the rational possibility of technological and social control. In the concept of biocybernetics, he stresses the two-way operation of the disintegration of the opposition of the technological and the organic.

Moreover, Mitchell reinterprets the concept of 'reproducibility' in the age of biocybernetics. Based on the aesthetic issue of original and copy, he claims that in the biocybernetic era, the copy is no longer an inferior or decayed relic of the original, but is in principle 'an improvement on the original'. Whilst in Benjamin's formulation, the mechanical reproducibility of filmic art brings about the decay of the aura, that is to say, a loss of the unique presence, authority, and mystique of the original, Mitchell asserts that biocybernetic reproduction results in an improvement on the original:

Biocybernetic reproduction carries this displacement of the original one further step, and in doing so, reverses the relation of the copy to the original. Now we

²²⁴ W. J. T. Mitchell, The Work of Art in the Age of Biocybernetic Reproduction, *Modernism/Modernity* 10(3), 2003, p.487.

²²⁵ Ibid, pp.483-485.

have to say that the copy has, if anything, even *more* aura than the original. More precisely, in a world where the very idea of the unique original seems a merely nominal or legal fiction, the copy has every chance of being an improvement or enhancement of whatever counts as the original. The digital reproduction of sounds and visual images, for instance, need not involve any erosion of vividness or lifelikeness, but can actually improve on its original material. Photographs of artworks can be “scrubbed” to re-move flaws and dust; in principle, the effects of aging in an oil painting could be digitally erased, and the work restored to its pristine originality in a reproduction. Of course this would still constitute a loss of the aura that Benjamin associated with the accretion of history and tradition around an object, but if aura means recovering the original vitality, literally, the “breath” of life of the original, then the digital copy can come closer to looking and sounding like the original than the original itself. Indeed the miraculous programming framework of Adobe Photoshop even preserves the “history” of transformations between original and copy so that any transformations can be reversed.²²⁶

In contrast to Mitchell’s argument that in the age of biocybernetics, the copy has ‘more aura’ than the original, Brown demonstrates that digital reproduction has undergone an even greater loss of aura.²²⁷ According to Brown, this has occurred because the compression of images causes the loss and degradation of computer data. Regardless, it is clear that in either case of Mitchell’s ‘more aura’ or Brown’s ‘less aura’, digital reproduction leads to the transformation of the relation of original and copy. However, I would say instead that the separation of original and copy is meaningless in terms of digital reproduction. Because of the complex fusion and manipulation of computer data and pixels, the claim of the separation of originals from copies is a kind of nonsense. Instead, a new paradigm is needed, one that is beyond the concept of mechanical reproduction based on the separation between the real model and its replica. Therefore, digital reproduction moves towards a new framework of computer simulation and

²²⁶ Ibid, p.487.

²²⁷ William Brown and Meetali Kutty, Datamoshing and the Emergence of Digital Complexity from Digital Chaos, *Convergence 18(2)*, February 2012, p.168.

biocybernetic synthesis beyond the opposition of original and copy, model and clone, and physical reality and images. In the movie *Matrix 2*, the infinite clones of the agent Smith shows the uselessness of the distinction between original and copies. All smiths are a Smith, and vice versa. In the virtual world of computer matrix and digital hybridity, the concept of mechanical reproduction is transformed to the new form of computer simulation and digital synthesis.

According to Lev Manovich, digital synthesis is a kind of computer work that assembles a number of elements to create a single seamless object.²²⁸ It is associated with the principle of computer operation. He explains that computer media are operated by two logics—selection and compositing—and that their relationship is interactive throughout the production process. In the interaction of selection and compositing, all elements retain their separate identity, and simultaneously can be modified, substituted, or deleted. Manovich claims that in this manner, the principle of computer synthesis is made possible by the modular organization of a new media object on different scales. Computer media have a new form of image synthesis made possible by the numerical and modular principle of image organization. The singularity and identity of separate elements of data and pixels persist and assemble in the process of computer operation. They are selected and composited by the automatic processing of computer hardware and software.

According to Rodowick, the process of digital synthesis is the separation of inputs and outputs.²²⁹ Unlike analogue media where outputs maintain a materiality that is identical to inputs, digital images are transformed and manipulated at the level of digits and pixels. Borrowing Deleuze's terminology, it is a perpetual process of 'becoming' and 'assemblage', and a sequential process of 'deterritorialisation' and 'reterritorialisation' of 'singularity' in the immanent plane of virtual reality.²³⁰ In other words, computer synthesis, to appropriate Stanley Cavell's term, achieves a new form of technological

²²⁸ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.132.

²²⁹ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, pp.124-131.

²³⁰ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, p.10.

‘automatism’.²³¹ While film represents an automatic image of ‘the world viewed’, digital images present a new form of technological reproduction based on computational simulation and a modular system.

In contrast, Philip Rosen claims that digital synthesis and manipulation are not much different from the manipulation of filmic images.²³² He states that film has already persisted in a long history of the manipulation of images through blue matte, animation, and a variety of editing techniques. He also considers that digital cinema maintains indexical traces of physical reality despite computer synthesis. Hence, he indicates that the difference of digital cinema from filmic manipulation is a matter not of kind and nature, but of the degree and quantity of manipulation:

Given the possibility of manipulability in the stipulated realm of the indexical, then, it is more precise to try to describe the newness of image manipulability in the digital as a matter of degree rather than kind. There is an increase, in the ease and hence the “quantity” of manipulability. But then we must ask, quantities of what? Time is as good as answer as any. Just as theories of the indexical image tend to presuppose the film developing process, theories of the digital presuppose the technological capacity for high-speed computation. If the flexibility of digital image formation and transformation does have limitations, these consist only in the speed with which numerical operations can be processed. And in that case, as they say, speed is of the essence.²³³

Although Rosen considers that in the history of cinema, the difference between filmic and digital manipulation is not essential but secondary, it is clear that digital synthesis manipulates and configures images differently. It is inevitable that the change in ‘quantities’ is associated with the transformation of ‘qualities’. The rapid increase of speed converts the nature of objects and matter to a new form when it reaches a critical

²³¹ Stanley Cavell, *The World Viewed: Reflections on the Ontology of Film*, Cambridge, Mass.: Harvard University Press, 1979, pp.107-108.

²³² Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.321.

²³³ *Ibid*, p.321.

point. Hence, this thesis pays more attention to the fact that digital synthesis invokes the new concept of image transformation based on computational manipulation and modular reconfiguration. Digital synthesis goes beyond the concept of mechanical, photographic, indexical, and representational reproduction.

Aylish Wood's concept of pixel vision and micromanipulation is useful in the examination of the nature of digital synthesis.²³⁴ Wood defines the ability of digital technology in terms of image manipulation at the level of the pixel. Moreover, she demonstrates that digital synthesis is the expansion of creative and expressive potential in cinema production. According to Wood, digital technology makes possible the manipulation and transformation of separate and independent elements of the image at a micro-level. She terms the nature of digital transformation 'genetic manipulation', borrowing Barbara McClintock's theory of the genetic transformation of movable DNA elements.²³⁵ She argues that digital synthesis is a genetic and transformable reconfiguration that occurs in the shift from macro to microstructures. In particular, she attests her hypothesis of micromanipulation in the process of digital intermediate (DI) through her analysis of comic book adaptations, such as *Hulk* (Ang Lee, 2003), *Batman Begins* (Christopher Nolan, 2005), and *Sin City* (Robert Rodriguez, 2005). She uses the term 'grouping and transformable' elements in order to reveal their adaptation strategy by digital intermediate:

My point here is not to make any judgments about the efficacy or fidelity of these adaptations but instead use the concept of adaptation to gain further purchase on textual manipulations. As I will show, grouped imagery in *Batman Begins* adheres to many of the expressive codes that already exist within cinema, at times extending their possibilities, while the ungrouped imagery of *Sin City* more explicitly reveals the extent to which elements of the image are increasingly open to transformation.²³⁶

²³⁴ Aylish Wood, Pixel Visions: Digital Intermediates and Micromanipulations of the Image, *Film Criticism*, September 2007, pp.72-94.

²³⁵ Ibid, p.81.

²³⁶ Ibid, p.82.

In Wood's analysis, the adaptation strategy of *Batman Begins* is the grouping of audio-visual elements based on psychological realism. These are revealed by the unified strategy of Nolan's psychological character and melodramatic mise-en-scene, such as set dressing, colour design, costume choice, lighting, and camera framing. *Batman Begins* creates a psychological milieu of digital images by the integrated grouping of transformational elements. By contrast, Wood explains that the expressive codes in *Sin City* are located in separate layers through the process of digital intermediate. A diversity of elements of imagery, such as the contrast of light and shadow, colour and grey scales, and black and white aesthetics are manipulated by the strategy of 'ungrouped' image elements. These are definitely intended to intensify of the expressive strategy of the digital elements. Hence, Wood exemplifies the expressive strategy of digital synthesis in the dimension of micro and genetic manipulation.

Moreover, Wood delineates the connection between the nature of digital manipulation and the concept of affection. According to Brian Massumi, affection has no direct relationship between the qualification of the imagery and the intensity of response. Instead, he defines the concept of affection as follows: 'the relationship between levels of intensity and qualification is not one of conformity or correspondence but rather of resonance or interference, amplification or dampening'.²³⁷ The aesthetics of digital affection ('afx') caused by pixel vision and micromanipulation suggests an opening of the gap between the image and referent. Digital afx is not directly representative, but is instead evocative of something that provokes unease. Thus, digital dressing and manipulation induce a resonant and interactive affection between image and referent. Wood explains that through the empirical analysis of *Sin City* and *300* (Zack Snyder, 2007), digital dressing stirs up trouble in the relationship between the figure and location and character and action. The relationship between reality and image and imagery and response shifts from reflective and representative forms to open and resonant modes by the complexity and potentiality of separate and independent image elements at the level

²³⁷ Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation*, New Haven, CT: Duke, 2002, p. 25.

of pixels.²³⁸ Consequently, digital synthesis modifies the relationship between the intensity of the imagery and the qualification of the response to it. It thereby alters our interpretations of the contents of representation. The aesthetics of digital synthesis transforms the representative characteristics of filmic manipulation to the open, separate, expressive, and resonant traits of digital images.

Furthermore, it is clear that digital synthesis changes the concept of montage in traditional film theories. While filmic montage is founded on mainly the temporal connection of different shots, digital synthesis depends on the spatial composition and configuration of pixels and image layers. Although they have the similar aim of creating cinematic fiction and manipulating virtual images, the working method of digital synthesis differs from the principle of filmic montage. Based on the collage of pixel images, the temporal continuity of filmic montage converts to the spatial montage of digital synthesis.

Etymologically, the term montage was derived from the French *monter*, which translates as the English *assemble*.²³⁹ In general, montage signifies the linkage and editing of temporally consecutive shots. In Deleuzian terms, montage is a core technique of 'the movement-image' and is used to endow the dead time of the still image with movement and life.²⁴⁰ The basic unit of montage is the shot, and the connections among shots create the movement and fictional diegesis of film. In the history of film, montage has been a main technique of image representation and manipulation to create the world of filmic diegesis. Although the early cinema shows the simple attraction of filmic realism based on the fixed frame of 'one-shot, one-scene', the development of filmic aesthetics is closely associated with the evolution of editing techniques in which the temporal connection between shot and shot creates new meanings of filmic virtuality.

Sergei Eisenstein suggested the theory of 'conflict montage,'²⁴¹ based on dialectic

²³⁸ Aylish Wood, Digital afx: Digital Intermediates and Micromanipulations of the Image, *Film Criticism*, September 2007, pp.72-94.

²³⁹ Jill Nelmes, *Introduction to Film Studies*, Oxon, New York: Routledge, 2007, p.434.

²⁴⁰ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, p.56.

²⁴¹ Sergei Eisenstein, *Film Form, Film Theory & Criticism*, edited by Leo Braudy and Marshall Cohen, Oxford: Oxford University Press, 2009, p.24.

materialism, in which the collision of shots arouses the emotional and intellectual awakening of audiences by image manipulation to create a filmic fiction. He formulated five methods of montage: metric, rhythmic, tonal, overtone, and intellectual.²⁴² While metric montage is the temporal collision between short and long shots, rhythmic montage is the visual continuity and contrast between still and moving images. Tonal montage is the collision between darkness and brightness and plane and cubic, while overtone montage is a complicated and associated combination of metric, rhythmic, and tonal montage. Intellectual montage is the metaphoric and symbolic connection of colliding shots. Eisenstein suggested the aesthetics of dialectical montage in Soviet-revolution movies, such as *Strike* (1924), *The Battleship Potemkin* (1925), and *October* (1928). Eisenstein's concept of dialectic montage focused on the collision of shots and the creation of the third meaning. The rhythm of editing is dynamic and explosive, by which audiences realize a new meaning of the film image that is caused by the conflict and collision of shots. While Hollywood montage of classical realism, concentrating on the concealment of filmic fiction through the seamless and continuous connection of shots, Soviet montage tried to provoke political awakening on the audience by the dynamic force of montage based on the collision of shots.

It is important here to recall that in both the continuous and sutured montage of Hollywood cinema and Eisenstein's experimental and expressive montage, the technique of montage is devoted to the creation of filmic fiction and imagination. In short, montage is a technique of manipulation to create the fictional time and space of filmic diegesis. In this sense, André Bazin opposes the aesthetics of montage. Instead of montage, he advocates deep focus and long-take although he does not ignore the importance of a variety of expressive techniques and styles.²⁴³ According to Bazin, montage attenuates the credibility and authenticity of physical reality by the fragmentation and manipulation of images. He considers that montage undermines the realism of filmic images. I will deal in more detail with the concept of montage in relation to cinematic movement and Bazin's

²⁴² Sergei Eisenstein, *Film Form: Essays in Film Theory*, translated by Jay Leyda, New York: Harcourt, 1977, pp.72-82.

²⁴³ Daniel Morgan, Rethinking Bazin: Ontology and Realist Aesthetics, *Critical Inquiry*, Vol. 32, No. 3, Spring 2006, pp.443-481.

realism. Here I concentrate on the difference between montage and digital synthesis.

The development of digital technology leads to a significant transformation in the aesthetics of montage. Manovich claims that montage is no longer the dominant aesthetics, even though it has been central throughout the history of film from the avant-garde of the 1920s to the postmodernism of the 1980s.²⁴⁴ He argues that the aesthetics of montage has been replaced by digital compositing, which creates a single seamless virtual image in cinematic space. While montage aims to create visual, stylistic, semantic, and emotional dissonance between different shots, digital compositing aims to mix and blend different elements of computer data into a seamless whole. This means that the fundamental unit of digital synthesis is the computational manipulation of pixel data. Manovich defines digital compositing as ‘the aesthetics of continuity’ by computer simulation. The aesthetics of continuity substitutes the aesthetics of discontinuity in filmic montage. Unlike Rosen’s opinion that the difference between digital and film is a matter of quantity, Manovich suggests that the aesthetics of digital compositing is an alternative to filmic montage, instead relying on the ‘discontinuous’ connection of shots because digital montage can eliminate the sutured traces of images at the level of pixels along the aesthetics of spatial continuity. Unlike the process of mechanical editing and the chemical production of special effects, digital synthesis seamlessly mixes the elements and erases the boundaries between spaces by the numerical manipulation of computer software and data operation. For instance, the morphing face of T-1000 in *Terminator 2* shows the seamless continuity of computer synthesis in a single frame and shot by morphing techniques. In addition, 3D one-take and a continuous non-interrupted first-person narrative of computer games and VR are good examples of the seamless continuity of digital synthesis. In this context, Manovich demonstrates that ‘the spatial montage’ of digital composite has replaced ‘the temporal montage’ of film aesthetics.²⁴⁵ While the aesthetics of film shows the connection of shots along a temporal continuity, digital synthesis presents the aesthetics of spatial montage by which a diversity of images is simultaneously assembled and juxtaposed within a single space and screen:

²⁴⁴ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.136.

²⁴⁵ *Ibid.*, p.270.

As the narrative activates different parts of the screen, montage in time gives way to montage in space. Put differently, we can say that montage acquires a new spatial dimension. In addition to montage dimensions already explored by cinema (differences in images' content, composition, movement) we now have a new dimension: the position of the images in space in relation to each other. In addition, as images do not replace each other (as in cinema) but remain on the screen throughout the movie, each new image is juxtaposed not just with one image, which preceded it, but with all the other images present on the screen. The logic of replacement, characteristic of cinema, gives way to the logic of addition and co-existence. Time becomes spatialized, distributed over the surface of the screen. In spatial montage, nothing is potentially forgotten, nothing is erased. Just as we use computers to accumulate endless texts, messages, notes and data, and just as a person, going through life, accumulates more and more memories, with the past slowly acquiring more weight than the future, spatial montage can accumulate events and images as it progresses through its narrative. In contrast to cinema's screen, which primarily functioned as a record of perception, here computer screen functions as a record of memory.²⁴⁶

Manovich's logic of the 'spatializing of time' in digital composite resembles the aesthetics of Deleuze's concept of the time-image, in which the present consistently mixes with the past and inextricably flows towards the future.²⁴⁷ Digital technology expands the virtuality of images in the hybridity of complex time, in which the past and present coexist and mix with each other. While filmic montage mainly depends on long-term temporal connection and continuity because of the technological limitation of filmic manipulation, digital composite randomly and naturally assembles and reconfigures a variety of image sources and multi-dimensional temporality in a single space and screen. Deleuze states that the time-image is an indiscernible crystal image of the past and the present and the actual and the virtual. There is no doubt that all digital images are not

²⁴⁶ Ibid, p.272.

²⁴⁷ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, London: Continuum International Publishing Group, 2005, pp.25-33.

crystal images, because it absolutely depends on the aesthetic norms instead of technological criteria. Nevertheless, it is also clear that digital technology expands the aesthetic foundation of virtuality and crystal image, because it reinforces the ‘dynamic desynchronisation’ and ‘molecularised perception’ of virtual image and sound.²⁴⁸ The molecular particles of digital information images reciprocally multiply and intersect with one another in a spatial fusion of diverse temporalities and an indiscernible coexistence between actual and virtual images. Thus, the digital synthesis and collage based on pixels and algorithms expand and transform the aesthetics of filmic montage and temporality.

Brown’s concept of ‘monstrous cinema’ is appropriate to explain the continuity aesthetics of digital synthesis.²⁴⁹ According to Brown, digital cinema is the cinema of showing ‘whole’, which results in the ‘intensified continuity’²⁵⁰ of digital virtuality in cinematic time and space. In this concept, digital synthesis reduces and replaces filmic cutting and montage and expands the reality and continuity of cinematic time and space. Brown claims that digital cinema achieves a ‘monstrous’ continuity between human and monster, the actual and the virtual, visible and invisible, and live-action and animation.

On the other hand, Aylish Wood points out the contradictory nature of digital time and space.²⁵¹ She argues that digital synthesis is not only the aesthetics of seamless continuity and increased realism but also moves towards expression beyond the invisible coherence of different image elements. Digital simulation gives rise to the reciprocal interactivity of cinematic ‘timespace’ beyond the dichotomy of narrative and spectacle. In addition, she demonstrates that the ‘animated space’ created by digital technology is both participatory and hybrid, going beyond coherent space and singular temporality.²⁵² Therefore, cinematic space simulated by computer synthesis is not only continuous and coherent

²⁴⁸ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, pp.84-86.

²⁴⁹ William Brown, Beowulf: The Digital Monster Movie, *Animation, Volume 4, Issue 2, July 2009*, pp.153-168.

²⁵⁰ D. Bordwell, Intensified Continuity: Visual Style in Contemporary American Film, *Film Quarterly* 55(3), 2002, pp.16–28.

²⁵¹ Aylish Wood, Timespaces in Spectacular Cinema: Crossing the Great Divide between Spectacle versus Narrative, *Screen* 43(4), 2002, pp.370–386.

²⁵² Aylish Wood, Re-Animating Space, *Animation: An Interdisciplinary Journal* 1(2), 2006, pp.133–152.

space but also the contradictory and complex 'timespace' that occurs in the creative interactivity of different images.

In summary, the aesthetics of digital virtualism based on computer synthesis creates a new form of cinematic manipulation. The aesthetics of filmic montage reliant on the temporal connection of shots has changed to the aesthetics of digital collage through computer pixels and image layers. Digital collage goes beyond the aesthetics of the temporal continuity of filmic montage. The spatial collage of digital images is not only the aesthetics of seamless continuity and increased reality but also the dynamically and interactively composite process of a diversity of images and elements. It presents the indiscernible coexistence of different temporalities and crystal-images. Based on computer simulation and synthesis, the aesthetics of digital virtuality suggests a new way of assemblage and reconfiguration in cinematic time and space.

2-3. The Aesthetics of Materiality

In this section, I deal with the material nature of digital cinema. The aesthetics of digital virtualism restores and intensifies the materiality of the image and the sensation of cinema. The material essence of digital cinema bifurcates to the technological attraction of virtual images simulated by the computer and the multi-sensory methodology of perception executed by physical experience. On one hand, the technological attraction of digital cinema stems from the curiosity and novelty of virtual images made by computer simulation and synthesis. I will examine the contradictory implication of digital attraction and spectacle with cinematic narrative. On the other hand, the sensual traits of digital cinema are related to the change in perceptual method from visual illusion to multi-sensory experience. Digital virtualism advocates the aesthetics of synesthetic perception and feeling instead of the aesthetics of semiotic and psychological hermeneutics. Although digital virtualism depends on the materiality of computer images and the expansion of human sense caused by techno-aesthetics, this section also investigates the limitations of technological determination and the threats of capitalistic fetishism to the

materiality of digital cinema. The aesthetics of digital virtualism explores the imbricated boundary between the affirmative potential and actual limitations of digital attraction.

First, let me describe the materiality of image arts before I proceed to explain the expansion and reinforcement of materiality in digital images. Generally, the term materiality signifies the nature of objective matter as independent of human consciousness. Thus, the materiality of the image indicates that it is an independent, physical reality, regardless of human mental states and ideals. In this view, humans can access material images only by sensible perception. In this conception, human sensation mediates material images of physical reality, consciousness, and imagination. Therefore, the materiality of images is closely intertwined with the logic of sense. Indeed, Deleuze explained the ontology of art as ‘the logic of sense’:

Sense is both the expressible or the expressed of the proposition, and the attribute of the state of affairs. It turns one side toward things, and another side toward propositions. But it cannot be confused with the proposition which expressed it any more than with the state of affairs or the quality which the proposition denotes. It is exactly the boundary between propositions and things.²⁵³

According to Deleuze, as the medium of propositions and things, sense consists of the essential ontology of arts. The logic of sense denies the dualistic opposition of reality and image. In particular, the logic of sense highlights the materiality and sensation of cinema, which in the history of film theory, is associated with the restoration of spectacle imagism and sensible attraction of cinema that has been confined by the narrativisation of realism and the psychoanalytic hermeneutics of modernism. The cinematic image is ‘feeling and sense’ before it is the object of scientific analysis and theoretical interpretation.

²⁵³ Gilles Deleuze, *The Logic of Sense*, translated by Mark Lester and Charles Stivale, London: Continuum International Publishing Group, 2004, p.22.

Tom Gunning argues that the emergence of narrative form in classical Hollywood cinema contributed to the contraction of the material attraction of cinematic images. According to Gunning, seeing cinema ‘as a way of presenting a series of view to an audience’ is more attractive than understanding it ‘as a way of telling stories’²⁵⁴ because the spectacle of material images directly fascinates the sense of audience. Despite Christian Metz’s complicated logic of film semiotics, cinema is a sensuous and material combination of images instead of a scientific and logical language. Régis Debray demonstrates that the image has the characteristics of figurality, embodied consciousness, sensual agitation, and physical movement. Debray explains that the traits of the image are nature, body and perception, whereas the traits of language are culture, spirit and intelligence.²⁵⁵ As soon as cinema is considered a language, it will have lost its internal instinct, such as brilliant eyes, sensuous touches, rude gestures, bloody flesh, sexual bodies, joyful desires, powerful passions, and so on. This is the very reason that a diversity of film theories relies on modernism to move further and further away from the simple beauty and popularity of movies, in spite of their scientific and elaborated hermeneutics. In the next chapter, I will meticulously demonstrate the limitation of a variety of semiotic, political, psychological modernist theories in the 1970s in terms of the materiality of cinematic images.

Similarly, Thomas Elsaesser and Malte Hagener state that cinema is not ‘the translation of sense perception to conscious thought’.²⁵⁶ In addition, as Jacques Aumont appropriately explained in his book, *The Image*, the image itself is closely related to the process of visual perception, in which the coding process takes place without interruption from the retina to the cortex.²⁵⁷ That is, the image is a physical process that takes place through our eyes, brains and senses. He regards the image as coding the information of light, and he explains the perception of the image in three successive transformative stages: optical, chemical and nervous. What we see is essentially nothing but perceived

²⁵⁴ Tom Gunning, *The Cinema of Attractions: Early Film, Its Spectator and the Avant Garde*, edited by Thomas Elsaesser, *Early Cinema: Space, Frame, Narrative*, London: BFI Publishing, 1990, p.57.

²⁵⁵ Régis Debray, *Media Manifestos: On the Technological Transmission of Cultural Forms*, London: Verso, 1996, pp.156-158.

²⁵⁶ Thomas Elsaesser and Malte Hagener, *Film Theory: An Introduction through the Senses*, London; New York: Routledge, 2010, p.168.

²⁵⁷ Jacques Aumont, *The Image*, London: British Film Institute, 1997, p.13.

light through the physical process of the human body, although there is no doubt that it has a subjective and social context.

Hence, if the essence of cinema focuses on the logic of conventional narrative and signification, its vivid and vibrant sensibility and physicality could disappear into the tedious storytelling of literature and science. Cinema is not the dead copy of reality. It is the resonance of opaque visuals, inconsistent sounds, and rhizomatic composition. Cinema is based on the depth and width of light and darkness, the sensual encounter and the configuration of colour and sounds. It is the sense and body of physical reality. Here Gunning's concept of 'the cinema of attraction' provides a useful tool for examining the materiality and sensation of cinema:

What precisely is the cinema of attraction[s]? First, it is a cinema that bases itself on the quality that Léger celebrated: its ability to show something. Contrasted to the voyeuristic aspect of narrative cinema analysed by Christian Metz, this is an exhibitionist cinema. An aspect of early cinema which I have written about in other articles is emblematic of this different relationship the cinema of attractions constructs with its spectator: the recurring look at the camera by actors. This action, which is later perceived as spoiling the realistic illusion of the cinema, is here undertaken with brio, establishing contact with the audience. From comedians smirking at the camera, to the constant bowing and gesturing of the conjurors in magic films, this is a cinema that displays its visibility, willing to rupture a self-enclosed fictional world for a chance to solicit the attention of the spectator.²⁵⁸

According to Gunning, the cinema of attraction is founded on the exhibition of cinematic visibility and spectacle instead of aspects of realistic narrative. He stresses the visibility and sensibility of cinema because cinema is not the logic of semiotic signs and the realm

²⁵⁸ Tom Gunning, *The Cinema of Attractions, Early Film, Its Spectator and the Avant-Garde on of Cinema, The Cinema of Attractions Reloaded*, edited by Wanda Strauven, Amsterdam: Amsterdam University Press, 2006, p.382.

of the rationale.²⁵⁹ In addition, he argues that the attraction of cinema derives from the movement of images and the sensation of spectators.²⁶⁰ In other words, for him, the magic and fantasy of cinema are related to the motion of cinematic images. Although Gunning highlights that screen exhibition is an effect of the spectator's experience, in his view the magic of cinematic motion definitely includes the processes of the production and screening of images. He points out that cinematic motion, which is the movement of camera and the exhibition of moving images, is the origin and essence of cinematic attraction.

In this regard, Gunning's assertion that cinematic motion is the origin of cinematic attraction recalls Deleuze's concept of the movement-image. Deleuze defines the movement of images as the ontology of cinema, which is not only the succession of still images but also the transformation and duration towards an open whole. Therefore, for him, the movement-image of cinema is 'the capacity for thinking the production of the new', thus opening to chance and accident.²⁶¹ In this sense, Gunning expands the concept of Deleuze's movement-image to aspects of screen projection and the spectator's sensations:

Cinema, the projected moving image, demands that we participate in the movement we perceive. Analysis of perceiving motion can only offer some insights into the way the moving image exceeds our contemplation of a static image. Motion always has a projective aspect, a progressive movement in a direction, and therefore invokes possibility and a future. Of course, we can project these states into a static image, but with an actually moving image we are swept along with the motion itself. Rather than imagining previous or anterior states, we could say that through a moving image, the progress of motion is projected onto us. Undergirded by the kinesthetic effects of cinematic motion, I believe "participation" properly describes the increased sense of involvement with the

²⁵⁹ Tom Gunning, *Moving Away From the Index: Cinema and the Impression of Reality*, *A Journal of Feminist Cultural Studies*, Vol. 18, No. 1, 2007, p.33.

²⁶⁰ *Ibid*, p.44.

²⁶¹ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, p.7.

cinematic image, a sense of presence that could be described as an impression of reality.²⁶²

Gunning views the magic and attraction of cinema in terms of the spectator's sense and perception of moving images. He defines the attraction of cinema as residing in the spectacle of image motion, which is inevitably related to the spectator's sensation and perception. Moreover, Gunning tries to go beyond the dichotomy of narrative and spectacle in terms of the concept of cinematic motion. He explains that the attraction of cinema created by the movement of consecutive images intensifies the impression of reality created by narrative and storytelling:

As cinematic experience, motion can play an intense role both in sensations of intense diegetic absorption fostering involvement with dramatic, suspenseful plots à la Hitchcock and in kinetic abstraction, thrusting viewers into unfamiliar explorations of flexible coordinates of space and time.

Theoretical exploration of cinematic motion need not contradict, but can actually supplement, photographic theories of cinema such as those of Kracauer and Bazin.²⁶³

Following Gunning's concept of the attraction and spectacle of cinema, I will move towards the issue of the materiality of digital images: Does the digital image intensify the materiality of cinema? If we answer yes, then how is it possible? First, I will examine the nature of the technological attraction of digital cinema in terms of the complex relationship between narrative and spectacle. According to Andrew Darley, the technological spectacle of digital images breaks down the priority of narrative in Hollywood cinema.²⁶⁴ He demonstrates the definite waning of narrative and the resurrection of the mode of the visual spectacle by analysing Hollywood blockbuster films and music videos produced since the late twentieth century:

²⁶² Tom Gunning, *Moving Away From the Index: Cinema and the Impression of Reality*, *A Journal of Feminist Cultural Studies*, Vol. 18, No.1, 2007, p.42.

²⁶³ *Ibid*, p.40.

²⁶⁴ Andrew Darley, *Visual Digital Culture: Surface Play and Spectacle in New Media Genres*, London, New York: Routledge, 2000, pp.102-123.

The notion of controlling or regulating the tension between narrative and image, as I have already intimated, has taken on an ever greater importance with the recent growth of special effects driven films. Indeed, particularly in recent ‘technological thrill’ films, where heightened forms of image and movement now figure so prominently, the conception that film equals narrative, which predominated in the classical era, appears now to have been all but superseded. No longer ‘isolated and intermittent ... digressions or flashes of virtuosity’, the new digitally licensed visual and action effects have now become the predominant aesthetic characteristic of such films. As such they elevate certain of the principles of the classical Hollywood style such as, ‘mimesis, self-effacing craftsmanship and cool control of the perceiver’s response ...’, whilst at the same time privileging motives of spectacle over those of narrative... For in such films it is precisely new kinds of formal concern, tied to the emergent space of intertextuality, and centred upon the imaging of action, imagery and imaging itself that is at the forefront of their aesthetic operation. In this important strand of New Hollywood, traditional narrative containment of spectacle has crumbled in a manner that is quite unprecedented.²⁶⁵

Darley designates the new phenomenon caused by computer images as the prevalence of technique and image over content and meaning, which also means that the elevation of the immediately sensuous constituent vies with our usual means of entry to symbolic meaning, that is, narrative. Even though the proliferation of digital spectacle does not mean the disappearance of the significance of narrative form in the new Hollywood, the vitality and feasibility of visual display and technological spectacle have become increasingly diffused in the aesthetics of computer simulation. This is because digital technology had made the impossible possible by the virtuality of computer images. The virtual images generated by computer graphic and synthesis provoke the visual curiosity and attraction of spectators. Examples are cyberspaces and digital vehicles such as light-cycles, tanks and ships in *Tron* (1982), virtual animals in *The Abyss* (1989) and *Jurassic*

²⁶⁵ Ibid, p.106.

Park (1993), the cyborg in *Blade Runner* (1982) and *Terminator 2* (1991), the virtual reality and cybersex in *The Lawnmower Man* (1992), 3-D animated creatures in *Toy Story* (1995), simulated ships in *Titanic* (1997), the virtual computer world in *Matrix* (1999), spectacular actions in *Spiderman* (2002) and *Batman Begins* (2005), the ecological and virtual utopian images in *Avatar* (2009), and the 3D simulation of catastrophic space in *Gravity* (2013). The technological virtuality of the digital image generates the magic and spectacle of cinema as well as the impression of reality. The material images of digital cinema attract and enlarge the bodily sensations and perceptual experience of spectators. Consequently, digital technology has brought about the aesthetics of visual exhibition and spectacle attraction through the gap of Hollywood narrative cinema. The visual attraction of virtual images generated by computer simulation goes beyond the subordination of spectacle to narrative. The technological virtuosity and novelty of computer images intensifies the tension between narrative and visual spectacle. Digital technology restores and expands the materiality and sensation of cinema, which have been suppressed by the narrative forms of Hollywood realism since the early cinema. In this sense, digital cinema is the new form of material images and technological attraction. The attraction of cinema enters the virtual images of computer simulation.

Whilst Darley claims that digital virtuality gives rise to the restoration and intensification of the materiality and spectacle of visual images beyond realistic narrative, Leon Gurevitch argues that digital technology contributes to the complex fusion between narrative and spectacle. In particular, he indicates that the attraction of computer graphic images goes beyond the boundary between filmic narrative and advertising spectacle. He describes digital attraction in terms of exchangeable transactions and the crossover between a variety of images and media. According to Gurevitch, the attraction of cinema is caused by the aesthetics of ‘digital transaction’²⁶⁶ in the age of cybernetics:

This article seeks to map out a new way of seeing digitally constituted audiovisual attractions as integrated components of a broader promotional tendency toward

²⁶⁶ Leon Gurevitch, *The Cinemas of Transactions: The Exchangeable Currency of the Digital Attraction*, *Television & New Media* 11(5), 2010, pp.367-385.

what I shall call a “cinema of transactions.” The cinema of transactions describes a system in which the computer-generated (CG) attraction is the audiovisual form both promoted by and promoting whatever textual form it is embedded within. For this reason I have grammatically constructed the phrase “cinemas of transactions” in the plural. It is not one singular, textually unified, site-specific cinema but a multiplicity of cinemas that have emerged, and are continuing to emerge, as the CG attraction continues to develop in new domains.²⁶⁷

Gurevitch thus argues that the opposition between narrative and spectacle in film and advertising was created in the spread of digital media and images.²⁶⁸ While the spectacle of advertising images combined with filmic narrative, the narrative cinema in Hollywood mixed with advertising spectacle images in other media, such as TV and music videos. In particular, he points to Apple’s advertisement *1984* and Chanel’s *No. 5, The Film*. His point is that the complex mixture of narrative and spectacle takes place widely in the age of cybernetic images. For him, digital attraction is digital transaction. He points out the significance of a broad range of transactions between different media and images in film, TV, video, computer games, and the Internet. He also accentuates the hybrid and multiple interrelated system of textual, technological, aesthetic and economic developments whereby digitally distributed attractions and promotional practices span many media and textual forms. He concludes that the aesthetics of digital attraction proceeds to the transaction of computer-generated images beyond the dichotomy of narrative and spectacle.

Here I turn to the issue of the spectator’s sense and perception in digital cinema. Digital attraction has to do with the material traits of computer images and the sensuous, bodily feeling and role of spectators in the reception of images. While the attraction of digital spectacle beyond realistic narrative is associated with the technological nature of computer-generated virtual images, digital 3-D cinema provokes a different mode of watching movies and a change in the spectator’s sense and perception. Gurevitch

²⁶⁷ Ibid, p.369.

²⁶⁸ Leon Gurevitch, *Problematic Dichotomies: Narrative and Spectacle in Advertising and Media Scholarship*, *Popular Narrative Media 2.2*, Liverpool University Press, 2009, pp.143-158.

demonstrates that the attraction of digital cinema is related to the re-appearance of 3-D cinema in James Cameron's stereoscopic movie *Avatar* (2009).²⁶⁹ He asserts that *Avatar* (2009) is the birth of a stereoscopic nation, re-appropriating Griffith's famous film title of *The Birth of a Nation* (1915). Although the history of stereoscopy began with the invention of Charles Wheatstone's hand-drawn 3-D images in 1838 and David Brewster's photographic version of the stereoscope in 1835, stereography could not function adequately within the nineteenth-century structures of vision.²⁷⁰ This is because dioramas and stereographs highlighted 'the body's role in vision', while photography in contrast buried this knowledge beneath the seamless surface of purely mechanistic technique. In the early history of cinema, photography defeated the stereoscope as a mode of visual consumption because it recreated and perpetuated the fiction that the objective vision of the camera obscura was still possible.²⁷¹ However, Gurevitch states that, in the early twenty-first century, the development of computer technology and 3-D cinema resulted in the possibility that the attraction of the stereoscope is realized beyond photography's fiction of objective vision. He argues that digital 3-D movies suggest the possibility of the combination of the technological and aesthetic between the indexical reality of photography and the bodily immersion of stereoscopy. Based on subjective action and bodily sensation beyond the fiction of the photographic image, digital 3-D cinema proceeds to the stereoscopic cinema. He considers the successful 3-D movie *Avatar* a turning point in the birth of the stereoscopic 'nation' in the age of cybernetic images. Gurevitch uses the term 'cybernetic attraction' to explain the difference from the photographic attraction of film. For him, the cybernetic attraction of stereoscopic cinema originates in bodily experience and subjective participation beyond the objective vision of photography. Similarly, Gurevitch asserts that cybernetic attraction is the emergence of a new scopic regime that relies on computer simulation and an information networks. He also argues that stereoscopic cinema suggests new ways of thinking about ourselves

²⁶⁹ Leon Gurevitch, *The Birth of a Stereoscopic Nation: Hollywood, Digital Empire and the Cybernetic Attraction*, *Animation: An Interdisciplinary Journal* 7(3), 2012, pp.239-258.

²⁷⁰ *Ibid*, p.240.

²⁷¹ Anne Maxwell, *Colonial Photography: Representations of the 'Native' and the Making of European Identities*, London: Leicester University Press, 2000, pp.12-13.

and our environment, that is, new ways of constructing virtual images of the human experience of the world as simulated by computers.²⁷²

Therefore, Gurevitch claims that as a successful computer-generated stereoscopic movie, *Avatar* represents the new, emergent mode of cybernetic production and consumption. For him, *Avatar* negotiates a turning point in the contemporary audio-visual attraction of cinema, as *The Birth of a Nation* did a century earlier. While the latter opened new chapter of Hollywood narrative cinema, the former created the new prototype of contemporary digital attraction based on computer simulation and synthesis. *Avatar* restores the new potentials of cinematic attraction and spectacle that went to the ‘underground’ of an avant-garde cinema practice and a component of narrative films since the early cinema.²⁷³ Gurevitch claims that *Avatar* creates a new tension between spectacle and narrative by stereoscopic 3-D images and spectator’s bodily experience.²⁷⁴ Although he tends to exaggerate the historical significance of the digital 3-D movie *Avatar*, his theoretical point that stereoscopic cinema subsists in the bodily sensation and subjective negotiation to the objective world has merit. The materiality and attraction of digital images are realized by the physical sensation and subjective interaction of spectators in stereoscopic cinema. It proceeds to the active impression and immersion of physical reality beyond the representative and passive reality of photographic film technology.

In contrast to Gurevitch’s assertion, which highlights the cybernetic attraction of stereoscopic cinema, John Belton denies the attraction and novelty of digital 3-D cinema.²⁷⁵ He opposes the view that digital cinema is a radical project for a new form of cinema. Philip Rosen asserts in *Change Mummified*, digital technology is not ‘a radical break’ from analogue technology, whereas Belton stresses the limitation and delay of ‘digital novelty’. First, he points out that ‘the novelty value’ of digital cinema is

²⁷² Ibid, p.242.

²⁷³ Tom Gunning, *The Cinema of Attractions: Early Film, Its Spectator and the Avant Garde*, edited by Thomas Elsaesser, *Early Cinema: Space, Frame, Narrative*, London: BFI Publishing, 1990, p.57.

²⁷⁴ Leon Gurevitch, *The Birth of a Stereoscopic Nation: Hollywood, Digital Empire and the Cybernetic Attraction*, *Animation: An Interdisciplinary Journal* 7(3), 2012, p.253.

²⁷⁵ John Belton, *Digital 3D Cinema: Digital Cinema’s Missing Novelty Phase*, *Film History*, Vol. 24, Indiana University Press, 2012, pp.187-195.

undermined because of the fact that digital technology is based on the simulation of older analogue technology:

The link between digital film technology and its analog predecessor can be seen at every level of the film chain in terms of contemporary practices involved in production, postproduction, and exhibition. In each of these areas, digital technology has deliberately taken on the characteristics of the analog technology that it has replaced. Underlying claims for digital technology's radical novelty are discourses that make it clear that the chief goal of digital technology in film is to simulate older analog technologies. Six-track digital sound, whether Dolby Digital or DTS, does digitally what six-track magnetic sound did for Dolby 70mm back in the 1970s and 1980s, or for what other 70mm formats, from Todd-AO to Super Panavision, did in the 1950s and 1960s. Digital 3D duplicates the experience of Natural Vision of the 1950s, StereoVision of the 1960s and 1970s, and ArriVision of the 1980s – not to mention IMAX 3D.²⁷⁶

For Belton, digital technology is nothing but the technological transformation of analogue technology. He asserts that digital technology is not a new form of novelty compared with analogue technology in the whole process of production, postproduction, and exhibition. For him, the digital camera is only an attempt to duplicate the depth of field achieved in film stock. Digital intermediate in post-production is also no more than the process of imitating photochemical cinematography. In the field of theatrical exhibition, the goal of the development of digital projection technology has equalled 35 mm projection in the look figured by both the resolution and reliability calculated by the failure rate. Belton claims that the development of digital cinema is driven by its desire to simulate normative practices. Accordingly, he claims that digital technology has no desire to foreground itself as spectacle or to develop its potential as a novelty.

In addition, Belton argues that digital 3-D cinema is not a genuine novelty, because 3-D technology is not new, but has existed since the invention of stereophotography in 1838,

²⁷⁶ Ibid, p.189.

the motion pictures by William Friese-Greene in the 1890s, and the 3-D films in Cinemascope of Twentieth Century Fox in the 1950s.²⁷⁷ Belton also points out the technological limits of digital 3-D cinema, such as the dimness of the 3-D bandwagon and the light loss in the digital projector and screen illumination, which resulted in the decline in revenue. For example, *Toy Story 3* (Lee Unkrich, 2010) earned 5 per cent more in 2-D than it did in 3-D. He argues that the bubble of digital 3-D cinema since the phenomenological success of *Avatar* in 2009 has been deflated by its technological and financial limitations.

Finally, Belton considers that digital 3-D stereoscopic cinema will never become a norm because it is essentially an avant-garde technology, which makes audiences regard it as an intrusive instead of an immersive experience. In this sense, he concludes that digital 3-D cinema may have missed its novelty phase and lost its innovation and diffusion by violating the segregation of spaces created in classical cinema.²⁷⁸

Even though Belton disapproves of the technological and aesthetic attraction and novelty of digital cinema, many theorists attend to the restoration of cinematic spectacle and the new form of sensuous perception. Gunning states that the visual movement of material images and the attraction of spectators build ‘a strong bridge between cinema and the new media’.²⁷⁹ Darley claims that the surface play of computer simulation in the new digital culture intensifies the visual spectacle of cinema beyond filmic narrative.²⁸⁰ Gurevitch argues that the ‘cybernetic attraction’ of stereoscopic cinema relies on bodily action and information network, creating a new form of thinking and subjectivity of humans and their experience of the world.²⁸¹ In addition, Thomas Elsaesser and Malte Hagener sensibly point out that the digital image no longer sees and hears, but touches;

²⁷⁷ Ibid, pp.190-191.

²⁷⁸ Ibid, p.194.

²⁷⁹ Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No. 1, 2007, p.48.

²⁸⁰ Andrew Darley, *Visual Digital Culture: Surface Play and Spectacle in New Media Genres*, London, New York: Routledge, 2000, pp.102-123.

²⁸¹ Leon Gurevitch, The Birth of a Stereoscopic Nation: Hollywood, Digital Empire and the Cybernetic Attraction, *Animation: An Interdisciplinary Journal* 7(3), 2012, p.242.

thus, it is haptic. It therefore goes beyond the territory of visual contemplation and representation:

On the other hand, the “return” to theories of empathy and embodiment may well have its ideological corollary and materialist base in the particular qualities of the digital image, when compared to the photographic image, a possibility we shall explore and address in the Conclusion. One of the key questions will be the extent to which the digital image can be said to be optical-perceptual at all, or belongs into a different register of perception, one that is only inadequately described as either “embodied” or “haptic”. Just as in Chion’s theory of sound perception, the term he chose for describing the new digital sound was “rendered” rather than “heard”, the metaphors relevant for the digital image may not be taken from sight and the eye, but instead derive from substances like putty and wax, or recall liquids of difference viscosity, like oil or water, setting up frames of reference within which the optical and the visual appear merely as “effects” of this new materiality that “touches” the eye but does not give it anything to “see”. The digital image would then be cast as a kind of material challenge for representation, joining at the level of technology and practice the critique of visual representation that this study has been conducting at the theoretical level.²⁸²

Here I raise a practical issue regarding the materiality of digital cinema. It is clear that the new aesthetics of cinema is associated with the materiality of cinema. Because of the separation of the image and photographic causality, the digitalisation of cinema both optimizes and maximizes the living nature and sensibility of the image through the intensification of imagination, illusion and phantasm. Digital cinema becomes the technological reorganization of image elements and the surface play of fantastic spectacle. It radicalizes the physicality and sensibility of cinema on the immanent plane of simulacra and digital virtuality. However, because of the technological attraction and

²⁸² Thomas Elsaesser and Malte Hagener, *Film Theory: An Introduction through the Senses*, London; New York: Routledge, 2010, p.169.

sensuous perception of digital cinema, it inevitably raises practical issues, such as technological determination, fetishism, and commercialism. Digital cinema induces the fantasy of technological determinism and the fetishism of capitalism by its computer-simulated images and bodily sensation. Hence, the transformation of cinema by digital technology could lead to the intensification of fetishism as an ideological corollary. Thus, digital cinema wanders between the spectacular attraction and the capitalistic fetishism of the image.

The aesthetics of digital virtualism affirms the materialism of the image in the evolution of technology, which means that digital technology expands the physicality and sensibility of cinema. It leaves behind the aesthetics of visual representation and passive observation based on seeing and hearing and pursues the aesthetics of sensuous feeling and positive operation conducted by all the sensory organs in the body. The aesthetics of digital virtualism corresponds to the sensuous change in the physical basis and infrastructure of contemporary cinema. It also means the simultaneous confrontation of the fetishism of capitalism, causing the commercialization of the image and the devastation of cinema as the apparatuses of dominant ideology. Karl Marx pointed out that the mechanisms of production and reproduction in capitalism serve to exploit surplus value, giving rise to fetishism as the extreme culture of commodity consumption:

As against this, the commodity-form, and the value-relation of the products of labour within which it appears, have absolutely no connection with the physical nature of the commodity and the material relations arising out of this. It is nothing but the definite social relation between men themselves which assumes here, for them, the fantastic form of a relation between things. In order, therefore, to find an analogy we must take flight into the misty realm of religion. There the products of the human brain appear as autonomous figures endowed with a life of their own, which enter into relations both with each other and with the human race. So it is in the world of commodities with the products of men's hands. I call this the fetishism which attaches itself to the products of labour as soon as they

are produced as commodities, and is therefore inseparable from the production of commodities.²⁸³

Similarly, Benjamin indicates that consumer capitalism uses visual appeal and exhibition to promote the sale of commodities. It also commercializes and commodifies mass culture and the arts.²⁸⁴ By the same token, Elsaesser and Hagener grasp the profound influence of digital capitalism on the world of cinema, in which the visual appeal of consumer capitalism is transformed to the ‘embodied perception something like the ideology of “late” capitalism’, as it extends the sensory potential of visual experience in order to “commodify” it’.²⁸⁵ The neoliberal and global capitalism of digital and computer technology expands the visual appeal of the image, which transforms to the new form of embodied perception. In the age of postmodern capitalism,²⁸⁶ digital technology maximizes and radicalizes the fetishism of cinema.

In this context, there is a great demand for the practical aspect of the digital arts. Frank Popper asserts that virtualism should be contemplated in terms of ‘the humanizing of technology’.²⁸⁷ He points out that ‘techno-aesthetic virtualism’ is the interrelation of technological and aesthetic change, which has been central in the emergence of virtual arts on the computer and the Internet since the 1980s and 1990s. Hence, Popper claims that the essence of the techno-aesthetic is ‘the humanization of technology’ through the artistic imagination. Moreover, the aesthetics of digital virtualism simultaneously opposes technological determinism and capitalistic commercialism. Digital virtualism is both the new aesthetics and the strategy for developing the humanistic materialism of cinema against the cold fetishism of digital capitalism. Digital virtualism affirms the physicality of the image, that is, the aesthetics of body and sense. However, it also opposes the capitalistic fetishism of cinema. It tries to achieve the redemption of cinema

²⁸³ Karl Marx, *Capital: A Critique of Political Economy*, translated by Ben Fowkes, London: Penguin Classics, 1990, p.165.

²⁸⁴ Walter Benjamin, *Little History of Photography, Selected Writings, Vol. 2, 1927-1934*, translated by Rodney Livingstone, Cambridge, Mass.: Harvard University Press, 1999, p.508.

²⁸⁵ Thomas Elsaesser and Malte Hagener, *Film Theory: An Introduction through the Senses*, London; New York: Routledge, 2010, p.169.

²⁸⁶ Antonio Negri and Michael Hardt, *Empire*, Cambridge, Mass.: Harvard University Press, 2001, p.356.

²⁸⁷ Frank Popper and Joseph Nechvatal, *Origins of Virtualism: An Interview with Frank Popper*, *CAA Art Journal*, Spring 2004, pp.64-66.

from the commercialization and fetishism of capitalism. Thus, digital virtualism is a contradictory pursuit to recuperate the humanization of technology from the capitalistic materialism in the new age of digital cinema.

2-4. The Aesthetics of Information

In this section, I demonstrate that the aesthetics of digital virtualism is closely related to the informational traits of the image. The informational nature of digital cinema derives from the technological, immaterial, and virtual characteristics of the image. Digital cinema is related to the numerical and algorithmic structure and system of images. After describing the informational nature of digital cinema originated in the symbolic and virtual images of computer simulation, I will move to a discussion of two different issues regarding the informational images of digital cinema; the contradictory combination of convergence and divergence, and the conceptual shift of cinema. Regarding the issue of convergence, I explore internal aspects regarding the convergence of a variety of cinematic images the external aspects with regard to the convergence of different media and art forms. While the former means the compositing and collage of images, the latter indicates the tendency of multimedia and transmedia. I also deal with the concept of divergence because the digitalisation of cinema coexists in the process of both convergence and divergence. I assert that convergence is a contradictory process both imbricating and conflicting with the tendency of divergence. Furthermore, I argue for the conceptual change of cinema in the age of digital images. The trend of the transcode and transmedia in the homogeneous format of digital images has brought about the conceptual transformation of traditional film in terms of the change in the media environment. Although there have been many attempts to redefine the concept of cinema in the digital age, they have not achieved consent. The re-conceptualization of cinema is a historical process aligned with the evolutionary process of digital cinema. This section examines a diversity of redefinitions of cinema in terms of the aesthetic frame of digital virtualism.

Before dealing with the issue of convergence and divergence, I describe the informational nature of digital cinema in terms of the ontology of images. First, the term ‘information’ is derived from the Latin verb *informare*, which means to give form or to form an idea. The term generally means the communication or reception of knowledge concerning a particular fact or circumstance. According to Norbert Wiener’s theory of cybernetics, information is ‘the amount of entropy’ in a system and organisation.²⁸⁸ The concept of information varies according to different approaches and contexts. In semiotics, the term information is related to the concept of signs or signals, which consists of pragmatics, semantics, and syntax. Beynon-Davies explains the multi-faceted concept of information in terms of signs and signal-sign systems.²⁸⁹ In media sociology, information is associated with the message and communication of a variety of media. Manuel Castells analyses the social, economic, and cultural dimensions of the information age, in terms of the complex networks of capital, commodity, human, knowledge, and information flow.²⁹⁰ He claims that the information society is characterized by the virtual flow of space and time by computer networks and digital media. For Michael. E. Hobart and Zachary. S. Schiffman, information is the complex interaction between technology and culture instead of the product of technology and media. They refer to classical, modern, and contemporary information ages to include the socio-cultural meaning of each:

The fundamental fact of information's historicity liberates us from the conceit that ours is the information age, a conceit that underlies Kauffmanesque inferences from "computer-simulation movies" to history. It allows us to stand outside our contemporary information idiom, to see where it comes from, what it does, and how it shapes our thought.²⁹¹

²⁸⁸ Norbert Wiener, *Cybernetics or Control and Communication in the Animal and the Machine*, New York: John Wiley & Sons, Inc., 1948, p.18.

²⁸⁹ Beynon-Davies P., *Information Systems: An Introduction to Informatics in Organisations*, Basingstoke, UK: Palgrave Macmillan, 2002, p.45.

²⁹⁰ M. Castells, *The Information Age: Economy, Society and Culture Volume 1: The Rise of the Network Society (second edition)*, Oxford: Wiley Blackwell, 2000, p.406.

²⁹¹ Michael. E. Hobart and Zachary. S. Schiffman, *Information ages: Literacy, Numeracy, and the Computer Revolution*, Baltimore, MD: The John Hopkins University Press, 2000, p.264.

Following Castells, Hobart, and Schiffman, I extrapolate that the informational nature of images is connected with their immaterial and virtual characteristics in the age of computer networks and digital culture. I point out that the informational nature of the image has a closer relation to the digital than it does to the filmic. In this sense, Flusser's assertion is slightly inadequate because it does not distinguish the ontological difference between film and digital images in view of information. According to Flusser, in the informational characteristics of the technical images of both analogue and digital media, the real, material and thing-like traits of archaic photographs on paper have disappeared:

Electromagnetic photographs, films and television images do not illustrate the devaluation of the material things nearly as well as photographs attached to paper in the old-fashioned way. If, in the case of such advanced images, the material basis of information has completely disappeared and electromagnetic photographs can be created artificially at will and processed by the receiver as pure information (i.e. the 'pure information society'), in the case of photographs of the old-fashioned type, one still holds something material, flyer-like, in one's hands; this something is without value, treated with contempt - and is becoming less and less valuable and treated with more and more contempt. In the case of classical photographs, there are still valuable bromide prints - even today the last vestiges of value attach to the 'original photograph' making it more valuable than a reproduction in a newspaper. But the photograph bound to paper nevertheless indicates the first step on the road to the devaluation of the material thing and valuation of information.²⁹²

Although his philosophy maintains a vital intuition about the informational and immaterial characteristics of technical images, such as film, TV, and digital images, Flusser does not distinguish precisely between film and digital images. Although he divides the age of technical images from the age of writing and texts, he overlooks the difference between filmic and digital images. Even if all technical images including film

²⁹² Vilém Flusser, *Towards a Philosophy of Photography*, translated by Anthony Matthews, London: Reaktion Books, 2000, pp.52-53.

and digital have the characteristics of information, this is clearly revealed by the digital image because film mainly depends on the causality and indexicality of physical reality. In other words, the digital image facilitates and expands the possibility of synthetic transformation of information images. In this sense, the immateriality and informational characteristic of the technical image are closer to digital art than to analogue arts, such as film. As I have already discussed, digital technology depends on the numerical, computational, fluid, gaseous manipulation and transformation of digits and pixels. The process is symbolic and abstract, achieving the possibility of composition and synthesis, whereas the filmic process is physical, concrete, solid, and stable, retaining the physical homogeneity of objects.

Therefore, because of the ontological difference between them, the digital image should be distinguished from the photographic image. Although both film and digital images are technical, as Flusser states, and have the virtual, immaterial, and informational nature of images, it is also clear that digital images have more to do with the informational traits of images than do photographic and representative images of film. This is because digital images significantly depend on numerical manipulation and computer simulation. The minimum unit of the digital image comprises digits and pixels. Unlike the analogue image, it does not have stable physicality and indexicality in the movement from place to place and inter-image communication. In the new age of digital art, the image has become information:

Computer-generated images, alternatively, are wholly created from algorithmic functions. Analogy exists as a function of spatial recognition, of course, but it has loosed its anchors from both substance and indexicality. And it is not simply that visuality has been given a new mobility wherein any pixel in the electronic image can be moved or its value changed at will. Because the digital arts are without substance and therefore not easily identified as objects, no medium-specific ontology can fix them in place. The digital arts render all expressions as identical since they are all ultimately reducible to the same computational notation. The basis of all representation is virtuality:

mathematical abstractions that render all signs as equivalent regardless of their output medium. Digital media are neither visual, nor textual, nor musical—they are simulations.²⁹³

Because the computer-generated image has immaterial virtuality and unlimited mobility, cinema has moved towards a new phase of convergence and divergence of media and the arts. The digital format mixes and exchanges all images, arts and media. The computer ignores their physical differences and translates them to a uniform number, either 0 or 1, in a binary system. Because they have the same format in either digits or pixels, they can be added and deducted freely. Although there are many different data formats and a diversity of studios using proprietary softwares, digital images are compatible and exchangeable by a variety of the methods of transcoding, converting, and optimizing based on encoding, decoding, and compression.²⁹⁴ Even if production teams have to work hard to make digital formats compatible, such as metadata loss or data degradation, digital images essentially have the hybrid and complex characteristics of datamoshing and changeability.²⁹⁵ In this way, digital technology converges and diverges all fields of arts—literature, painting, music, photograph, and film. They are bound in the same category under the name of digital arts: digital writing, digital music, digital picture, digital photo, digital cinema, and so on.

Regarding the internal aspect of convergence, digital cinema is the hybrid combination of a diversity of images, such as live-action images, computer-generated images, still photographic images, paintings, and even texts and signs. The computational synthesis of various images is connected to the crossover and fusion between different genres and techniques. Because digital cinema depends on the immaterial image, that is, the informational image, it is closely related to the new composite aesthetics of the image. While film is the art of editing, digital cinema is the art of synthesis and composition using computer graphics. The montage of film is replaced by the unlimited

²⁹³ D.N Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, p.10.

²⁹⁴ Huifang Sun, Xuemin Chen, and Tihao Chiang, *Digital Video Transcoding for Transmission and Storage*, New York, CRC Press, 2005, pp.99-104.

²⁹⁵ William Brown and Meetal Kutty, Datamoshing and the Emergence of Digital Complexity from Digital Chaos, *Convergence* 18(2), February 2012, pp.165-176.

transformation and manipulation of digital pixels by computer software. Cinema does not focus on honest reproduction and imitation, but on the imaginary transformation of reality. This is the reason that a large number of dominant genres now intensify the characteristics of magic, fantasy, adventure, science fiction, and spectacle in today's cinema.

Therefore, the new aesthetics of cinema is associated with the virtual fusion and combination of immaterial and informational images instead of the aesthetics of indexicality and physical reality. This requires the collage, pastiche, and intertextuality of cinematic images and the complexity and hybridity of texts and paintings, visuals and sounds, narrative and spectacle, cell animation and 3-D animation, live-action and virtuality, and film strips and computer graphics. Manovich terms the new phenomenon of image synthesis 'digital collage,' distinguishing it from filmic montage.²⁹⁶ Gurevitch suggests the concept of 'digital transaction' with regard to the nature of exchangeable images.²⁹⁷ William Brown presents the concept of 'cinematic monstrosity' in the complexity of humanity and non-humanity.²⁹⁸ Wood examines the expressive styles of cinema in the crossover between narrative and spectacle in the concept of 'timespace'.²⁹⁹

In terms of the external aspects of convergence, the informational nature of digital cinema goes beyond the territory of cinema. While the immateriality and informational characteristics of the digital image lead to the composite aesthetics of cinema internally, they also give rise to the tendency of the media and arts to converge externally. In light of the external relationship between cinema and other media, cinema gradually becomes a hybrid genre and multi-media because of the characteristics of information, that is, immaterial virtuality and unlimited mobility. We now watch movies on the computer and via the Internet as well as in the theatre. Before too long, many companies in the information telecommunication industry, such as Microsoft, Google, and Apple, will

²⁹⁶ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.136.

²⁹⁷ Leon Gurevitch, The Cinemas of Transactions: The Exchangeable Currency of the Digital Attraction, *Television & New Media* 11(5), 2010, pp.367-385.

²⁹⁸ William Brown, Beowulf: The Digital Monster Movie, *Animation, Volume 4, Issue 2, July 2009*, pp.153-168.

²⁹⁹ Aylish Wood, Timespaces in Spectacular Cinema: Crossing the Great Divide between Spectacle versus Narrative, *Screen* 43(4), 2002, pp.370-86.

develop combinations of television, computers, and mobile phones. The diversification of media means the extension of templates for watching movies. If we have a computer cinema file, we can enjoy movies anywhere at any time, which is the so-called new world of ‘one source and multi-use’. The cinema of today is not a static celluloid strip, but a mobile computer file and has become comprised of informational images and content in various templates, such as television, laptops, I-pads, and smart phones. Thus, digital cinema enters the ocean of information beyond the threshold of theatre. In this sense, Henry Jenkins defines the concept of convergence as the flow of multimedia:

Convergence: a word that describes technological, industrial, cultural, and social changes in the ways media circulates within our culture. Some common ideas referenced by the term include the flow of content across multiple media platforms, the cooperation between multiple media industries, the search for new structures of media financing that fall at the interstices between old and new media, and the migratory behavior of media audiences who would go almost anywhere in search of the kind of entertainment experiences they want. Perhaps most broadly, media convergence refers to a situation in which multiple media systems coexist and where media content flows fluidly across them. Convergence is understood here as an ongoing process or series of intersections between different media systems, not a fixed relationship.³⁰⁰

Jenkins stresses two core features of convergence: the tendency of multimedia and convergence as ongoing process. Convergence is a consistently historical process of media-mix, which takes place in an exchangeable intersection between new and old media. In this context, Jenkins states that ‘transmedia’ is the heart of the concept of convergence.³⁰¹ He asserts the concept of transmedia in terms of media connection and communication, that is, media intertextuality:

Transmedia, used by itself, simply means “across media.” Transmedia, at this level, is one way of talking about convergence as a set of cultural practices. Keep

³⁰⁰ Henry Jenkins, *Convergence Culture: Where Old and New Media Collide*, New York: New York University Press, 2006, p.282.

³⁰¹ *Ibid*, p.129.

in mind that Marsha Kinder in *Playing with Power* wrote about “transmedia intertextuality”, while I was one of the first to popularize the term, transmedia storytelling. Transmedia storytelling describes one logic for thinking about the flow of content across media. We might also think about transmedia branding, transmedia performance, transmedia ritual, transmedia play, transmedia activism, and transmedia spectacle, as other logics. The same text might fit within multiple logics.³⁰²

In this context, Jenkins analyses the franchise movie *The Matrix* and the TV series *Glee* as examples of the concept of ‘transmedia storytelling’ and ‘transmedia narrative’. For Jenkins, *The Matrix* exemplifies a new type of storytelling across a variety of entertainment media and art forms.³⁰³ While computer games reconfigure film narrative, animated shorts provide computer games with a background story. They need to be downloaded from the web or watched in a separate DVD. Fans race, dazed and confused, from theatres to the Internet, and every detail of the movie is dissected and debated according to every reinterpretation.³⁰⁴ *Glee* also provides an example of transmedia narrative, in which the audience follows the characters and situations across media. *Glee*’s transmedia strategies emphasize transmedia performance, with songs accessible on YouTube, iTunes, live performances, and so on, in a variety of media that the audience interprets to make sense of the larger *Glee* phenomenon.³⁰⁵ Jenkins demonstrates that *The Matrix* and *Glee* are prototypes of transmedia storytelling and narrative, in which the masses as the consumers of cultural products both communicate and play with the information in the context of the information society.³⁰⁶

³⁰² http://henryjenkins.org/2011/08/defining_transmedia_further_re.html. Henry Jenkins, *Transmedia 202: Further Reflections*, August 1, 2011.

³⁰³ Henry Jenkins, *Convergence Culture: Where Old and New Media Collide*, New York: New York University Press, 2006, pp.93-130.

³⁰⁴ *Ibid*, p.94.

³⁰⁵ http://henryjenkins.org/2011/08/defining_transmedia_further_re.html. Henry Jenkins, *Transmedia 202: Further Reflections*, August 1, 2011.

³⁰⁶ Henry Jenkins, *Convergence Culture: Where Old and New Media Collide*, New York: New York University Press, 2006, p.130.

Similarly, Wood points out that the combination of cinema and game is also a main trend related to convergence.³⁰⁷ She states that game engines are not only used in the games industry but also are shared across a range of media platforms, particularly popular cinema. This tendency of ‘machinima’ has proliferated in Hollywood’s cultural industry since the late 1990s. She uses the example of the digital fx company, Pixel Liberation Front, which exploits and shares game engines and artists to create computer-animated cinema, such as *Superman Returns* (2006), *Dreamgirls* (2006) and *Spider-Man 3* (2007). Instead of static storyboards, moving animatics are created, and the game engine allows different lighting, framing, and lens set-ups to be explored. The franchise and circularity of these popular cinemas and games represents the tendency of transmedia and remediation in the convergence culture of digital media and art forms.

Bolter and Grusin also suggest the concept of remediation among different media, asserting that ‘all mediation is remediation’.³⁰⁸ In particular, they point out that new media are the remediation of old media and that old media are simultaneously transformed by the influence of new media:

We call the representation of one medium in another remediation and we will argue that remediation is the defining characteristic of the new digital media. What might seem at first to be an esoteric practice is so widespread that we can identify a spectrum of different ways in which digital media remediate their predecessors, a spectrum depending on the degree of perceived competition or rivalry between the new media and the old.³⁰⁹

Bolter describes the new relationship between digital media and film narrative in terms of the remediation of the new and old media.³¹⁰ While film narrative depends on linearity, the narrative of games is circular and interactive. The remediation of cinema and games induces the interrelation and exchangeability of narrative forms. While film imitates

³⁰⁷ Aylish Wood, Proliferating Connections and Communicating Convergence, *Fibreculture Journal*, Issue 13, 2008, (n.p.)

³⁰⁸ J. David Bolter, Richard Grusin, *Remediation: Understanding New Media*, Cambridge, Mass.: MIT Press, 2000, p.55.

³⁰⁹ Ibid, p.45.

³¹⁰ J. David Bolter, Digital Media and the Future of Filmic Narrative, *The Oxford Handbook of the Film and Media Studies*, edited by Robert Kolker, Oxford, New York: Oxford University Press, 2008, pp.21-35.

interactive narrative and ceaseless spectacle, games also adopt filmic storytelling and verisimilitude. Film and new media reciprocally cooperate, conflict, and compete in order to persist in their own survival and sustainability.

In a similar context, Rodowick also highlights that the coexistence and conflict between film and digital media is inevitably a historical process. Indeed, the so-called new media may not be new for a number of reasons. First, the definition of new media encompasses too wide a variety of computationally processed artefacts, from CD-ROMs to computer games. In addition, the point of view that new media radically breaks with old media is based on the presumption that linear chronology disavows the relationship with the analogical past. Finally, digital cinema is a large-scale historical process instead of the creation of a new medium, by which existing old media are transcoded into the digital form.³¹¹ Therefore, Rodowick insists that the task of a new theory of cinema is to place the familiar questions posed by classical film theories into a new context. That is to say, the new aesthetics of digital cinema should be estimated by the historical and theoretical relationship with the old aesthetics of film, which include the indexicality of the cinematic image, the paradox of perceptual realism, and the new automatism of computer simulation, and information processing. According to Rodowick, the analogical arts are not replaced by the digital arts, and the ideas of old media remain in the new media. Hence, the theory of film persists in the new art form of digital cinema. Consequently, the art of cinema gradually integrates the creative characteristics of digital processes within the aesthetics of film, although the process of digitalisation deviates more and more from the aesthetics of film. As Rodowick asserts, this process is not one of linear creation. Neither is it a unilateral invention and an apocalyptic prophecy. Instead, it takes place on a long-term, historical and contradictory path of the convergence and divergence of media and the arts. It is an intense and tremendous struggle between old and new arts, that is, of film and digital cinema.

³¹¹ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass: Harvard University Press, 2007, pp.93-99.

Likewise, Giovana Fossati notes that convergence is a historical moment of ‘transition’.³¹² As Philip Rosen properly indicates, in the risk of ‘the historiography of conquest’ proposed in the ideal of ‘digital utopia’³¹³, the concept of convergence should not be understood as the conquest and emancipation of old media by new media. It is not a process in which digital technology conquers all media in the name of liberation from obsolete constraints. It is not a process of prophetic destiny, but a process of historical conflicts. In this sense, Fossati asserts the concept of transition, which is a historical moment and presence in ‘the aesthetics of film archive’:

Kittler and other theorists of (this kind of) convergence are in my view missing the importance of this transitional moment. It is here and now that things are happening. Transition is the media of today with its hybridizations of analog and digital. It is the in-betweenness that is meaningful in itself, and not a step towards digital purity that may occur someday. Reading this transition through the glasses of a future that is (perpetually) “not yet”, is at risk of prophetism, that will lead convergence as an idea to lose even more credibility...³¹⁴

For Fossati, media convergence is the moment of historical transition. It is not the prophecy of digital utopia, but the current process of filmic archival practice. Therefore, she anticipates the concept of divergence in order to grasp the momentum of the complex, practical process of archiving film. She proposes the concept of divergence to avoid misunderstandings of the meaning of convergence and to clarify the concept of convergence in light of the practical meaning of media transition as both historical and current moments:

I propose to add its antonym to the concept: divergence. Convergence/divergence are two inversely related concepts. They constantly remind of the dynamics of change and differentiation and, therefore, their use in combination best defines the

³¹² Giovana Fossati, *From Grain to Pixel: the Archival Life of Film in Transition*, Amsterdam University Press, 2009, p.135.

³¹³ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.323.

³¹⁴ Giovana Fossati, *From Grain to Pixel: the Archival Life of Film in Transition*, Amsterdam University Press, 2009, p.136.

transition in the media environment. In the case of archival practice, convergence/divergence describe what is happening in a field stretched between two forces, one heading towards convergence of technology, standards, and means, and the other heading towards diversification of means, multi-specialization and, literally, divergence.³¹⁵

Regarding the complex process of convergence and divergence, I recall the Deleuzian concepts of ‘deterritorialisation’ and ‘reterritorialisation’³¹⁶ in the field of media and cinema art, in which digital technology adjusts the borders and territories of existing media and the arts. This process encourages all the arts to re-examine and reorganize their old aesthetics, new content, and changing art forms. Hence, digital technology promotes a new classification of media and the arts. The category of the digital arts could be subdivided according to the diversity of genres, forms, and innate automatisms, thus discovering new territories transformed by digital technology. The obsolete forms of arts would then disappear and new concepts of art emerge in a whirling vortex of changing media in a transitory period in which media and the arts are newly diverged by digital technology. In the trend towards convergence and divergence, it is unavoidable that the cinema in the digital age communicates and exchanges competitively with adjacent media and arts in terms of content and form.

In the age of digital convergence and divergence, many theorists debate the reconfiguration of the concept of cinema. In this regard, Carroll’s appellation, ‘moving images’ as the new definition of cinema is appropriate and practical, although the concept is comprehensive and general. He begins with a definition of art in order to reach the concept of cinema. According to Carroll, ‘medium-essentialism’ is the flawed doctrine that each art form is its own distinctive medium.³¹⁷ This is because an art form is not a single material or implement. For example, many different materials or implements, such as film, flicker film, video, DVD, and digital cinema are in the same category of the art of

³¹⁵ Ibid, p.137.

³¹⁶ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, p.10.

³¹⁷ Noël Carroll, *Philosophy of Film and Motion Pictures: An Anthology*, edited by Noël Carroll and Jinhee Choi, Malden, MA: Wiley-Blackwell, 2006, p.113.

cinema. In addition, the use of multiple media in an art form is variable and flexible, not static and fixed. Over time, different kinds of media and a diversity of artistic genres are added and deducted according to social purposes and artistic intention. Artists can overcome their limitation of tools to expand their territories, styles, and expressions.³¹⁸ For these reasons, Carroll opposes Bazin's media-essentialism in which the essence of cinema is rooted in photographic transparency and realistic representation of filmic medium. Furthermore, he suggests the concept of the 'moving image' to define the art of cinema, particularly in the age of digitalisation, because he believes that in the near future cinema will comprise a diversity of media of moving images, such as film, television, CD-Rom, DVD, video, and computer media.³¹⁹ On one hand, his concept of the moving image captures the contemporary trend of cinema in which a diversity of media related to cinema is integrated by computer technology. His concept demonstrates the general phenomenon of convergence and divergence of different media and the arts.

However, as Rodowick properly points out, the concept of the moving image is too broad to serve as a definition of the art of the cinema.³²⁰ Although the concept of the moving image encompasses the universal traits of a variety of movement images, the images of television, computers, and mobile phones differ markedly from the cinematic image. As I have already stated, the essence of the arts depends on physical traits and inherent forms. Television images, such as news, events, and entertainment, are different from the artistic images of the cinema in terms of the essences of art forms, even though their appearances and homomorphoses are similar to those of the moving image. Therefore, it is better that the concept of cinema is redefined by the aesthetic characteristics of cinema, particularly the aesthetics of digital cinema, not the general concept of the moving image.

In contrast to Carroll's general conceptualisation, Peter Kiwitt considers the new concept of cinema the divergence of media and art forms in the digital age.³²¹ In his perspective, cinema should be distinguished from TV and the new media in terms of production

³¹⁸ Ibid, p.117.

³¹⁹ Ibid, p.126.

³²⁰ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, p.41.

³²¹ Peter Kiwitt, What Is Cinema in a Digital Age? Divergent Definitions from a Production Perspective, *Journal of Film and Video* 64(4), Winter 2012, pp.3-21.

practice. According to Kiwitt, although the convergence of moving images is spreading in terms of exhibition media, cinema remains cinema in terms of its form of production.³²² First, he notes the conceptual distinctions among technology, media, and forms. While in Carroll's definition, the concept of medium is vague, referring to 'implements', 'materials', and 'formal elements',³²³ Kiwitt distinguishes the concepts of technology, media, and forms. He asserts that the term technology includes the materials and devices used for creating, storing, transmitting, or displaying expression. He also claims that the term, form, matches the way of production, as in a mode of expression, such as an art form, and that the term, medium, corresponds with the method of exhibition in the sense of communication studies. In addition, he explains that, from a production perspective, form is defined by how we create expression (instead of what we create), and medium is defined by how we present expression (instead of what we create). For him, cinema is a form of production and a medium of exhibition, neither of which is bound to the technology of film stock.³²⁴ Based on the conceptual distinction between the form of production and the medium of exhibition, he distinguishes cinema form from TV form and new media form:

Cinema defined broadly by production practice is *a form of expression composed of edited live-action moving images, ideally emphasizing artistic form or content.* *Form*, as used in this definition of cinema, is the production of expression, the first realization of content. *Production* is used broadly in this sense, covering the entire process from speculation/development to postproduction. Content must also be realized in the sense of exhibition, referred to as *medium* herein. (Kiwitt's emphasis)³²⁵

According to Kiwitt, TV is 'a form of expression composed of switched live-action moving images as well as edited live-action moving images emphasizing communication'. He asserts that in their modes of production, cinema is an artistic form, whereas TV is a

³²² Ibid, p.19.

³²³ Noël Carroll, *Engaging the Moving Image*. New Haven: Yale University Press, 2003, p.6.

³²⁴ Peter Kiwitt, What Is Cinema in a Digital Age? Divergent Definitions from a Production Perspective, *Journal of Film and Video* 64(4), Winter 2012, p.7.

³²⁵ Ibid, p.9.

communicative form. In addition, they have a variety of channels and formats as exhibition media. Kiwitt finally asserts that cinema should be distinguished from TV in terms of artistic form, regardless of the convergence of technology and exhibition media relying on digital technology. He states that technology should converge, but its forms should diverge. Furthermore, because the convergence of technology and exhibition media does not redefine cinema as an art form, cinema should not be confused with the forms of new media. He concludes that cinema remains distinct from the forms of communicative and interactive TV and computer games.³²⁶

Although Kiwitt strictly distinguishes the difference between cinema and new media in terms of the form of production, there is no reason to hold that art forms are perpetually static and fixed in either production or exhibition. It is better to accept that the boundaries among art forms are consistently changing in the historical process of convergence and divergence, as in Fossati's assertion of historical 'transition' and film practice.

Moreover, many useful conceptualisations explain the new phenomenon of digital cinema. These include Manovich's 'database cinema', Mitchell's 'biocybernetic cinema', Brown's 'monstrous supercinema', Gurevitch's 'the cinema of transaction', and Cubitt's 'transnational cinema'.³²⁷ In the context of these new conceptualisations of digital cinema, this thesis suggests the aesthetics of digital virtualism. Before delineating a perfect concept of new cinema, I present the essence and tendency of digital aesthetics through the concept of historical hybridity and aesthetic complexity, computer simulation and synthesis, the materiality and attraction of digital cinema, and the convergence and divergence of informational images. This thesis holds that the new concept of cinema has spread through both the historical tendency and the aesthetic practice of digital virtualism.

³²⁶ Ibid, pp.17-19.

³²⁷ Sean Cubitt, Database Economy and Transnational Cinema, *Studies in Australasian Cinema*, Vol. 3, No. 2, 2009, pp.155-166.

3. Film Aesthetics and Digital Virtualism

In the preceding chapter, I defined digital virtualism as the aesthetics of historical hybridity and aesthetic complexity. I also postulated that digital aesthetics is intimately connected with the historicity and theories of film. In this chapter, I will examine the transformation and evolution of film theories in the digital age. In particular, I concentrate on realism, modernism, postmodernism, and digital aesthetics after postmodernism. This is because digital virtualism is closely related to the aesthetic implication of filmic reality and the imagination. I demonstrate the aesthetics of realism, modernism, postmodernism in the context of the ontology and epistemology of reality and illusion. I extrapolate the new aesthetics of digital cinema from the historicity of a diversity of film aesthetics.

In particular, I recount André Bazin's concept of filmic reality, Metz's impression of reality, Baudrillard's hyperreality and simulation, and digital aesthetics beyond postmodernism. Bazin's realist aesthetics focuses on the photographic ontology of film in time and space, although he does not miss the importance of filmic styles and subjectivity. I deal critically with the new perspectives of several researchers on the material image of film, which is also connected to the debate about the indexicality of digital cinema. Second, I investigate Christian Metz's concept of the imaginary in light of the significance of filmic fantasy and illusion. Although Metz's film semiotics seeks to replace the material nature of the filmic image with concepts of linguistics and psychoanalysis, I reappraise his complex position regarding the relation between filmic reality and the imaginary. Third, I deal with Jean Baudrillard's postmodern aesthetics in terms of the ontology of filmic reality and image. Despite his negative vision of hyperreality and simulation, I attend to his complex viewpoint of filmic 'white magic' and digital virtuality. Finally, I explore the new trend of digital aesthetics beyond postmodernism. The aesthetics of computer simulation and interactivity suggests the new possibility of image configuration and digital hybridity.

Consequently, through re-evaluating the main theories of film aesthetics in relation to the reality and the imagination, I conclude that it is necessary to theorise the new aesthetics of digital cinema in terms of the complex and hybrid reconfiguration of physical

indexicality and imaginary illusion. Thus, the aesthetics of digital virtualism presupposes the inextricable fusion between the actual and the potential, and reality and the imagination in the history of and disputes in film theory. In this context, this chapter connects to the next chapter, which argues the Deleuzian aesthetics of cinematic reality and creative virtuality.

3-1. Realism: Bazin and Indexicality

In this section, I deal with the issue of digital realism, which is confused with the traditional concept of realism based on Platonism. In the context of the ontological relationship between reality and the image, while traditional realism extrapolates the nature of image arts from the model of reality, digital realism raises fundamental questions of representative images.³²⁸ This is inevitable because digital images depend on computer simulation and synthesis. Therefore, this section will deal first with the dispute on ‘filmic indexicality’: Does cinema have indexical traces of reality? How can the new concept of realism move beyond the dispute surrounding indexicality? Furthermore, I move toward the issue of new concepts of realism in the age of digital cinema, such as Philip Rosen’s ‘digital mimicry’, Darley’s ‘second-order realism’, Manovich’s ‘synthetic realism’, Bordwell’s ‘intensified continuity’, Gunning’s ‘cinematic motion’, Franco Cassetti’s ‘sutured realism’, Hal Foster’s ‘traumatic realism’, Gerald Gaylard’s ‘new reality’, Brown’s ‘monstrosity’, Markos Hadjioannou’s ‘lost reality’, ‘Richard Rushton’s ‘more reality’, and so on. By examining a variety of conceptualisations of digital realism, I suggest that digital virtualism is the new form of cinematic realism in terms of the contradictory combination of reality and the image. Digital realism is then considered a blurred boundary, making the actual and the virtual indiscernible. In view of digital virtualism, the new concept of realism has to do with the historical hybridity and aesthetic complexity of the indexical traces of physical reality and the imaginational attraction of the fictional image.

³²⁸ Gregory Flaxman, *Gilles Deleuze and The Fabulation of Philosophy*, Minneapolis and London: University of Minnesota Press, 2012, p.117.

In the history of film theory, no one is better than Bazin to consider the ontology of cinema in terms of realism. Although there are many different opinions regarding his realist aesthetics, it is clear that he is considered one of the most prominent critics of film realism. In fact, he views the realism of film in the complex context of photographic ontology and aesthetic styles.³²⁹ This section explores the linkage of Bazin's complex viewpoints with the new concept of realism in digital cinema. Bazin's photographic ontology needs reinterpretation in terms of a more profound perspective on realism, one that moves beyond indexicality. It is important to draw the viable interference of digital realism from Bazin's ontology of cinema.

Bazin's argument is important for digital realism because he approaches the ontology of cinema in terms of the complex relation of technological development and aesthetic desire. On one hand, it is related to the contradiction between photographic imitation and artistic expression. Cinema has aspects of both technological reproduction and aesthetic reconfiguration. In this sense, Bazin's realism can be illuminated by both cinematic objectivity and cinematic subjectivity. On the other hand, it is associated with the aesthetics of time and space. Because cinema is a technical and virtual image in the time and space of reality, I investigate Bazin's realism in terms of cinematic space and time.

First, let me investigate Bazin's realism in terms of the relation between the objectivity and subjectivity of cinematic images. In general, Bazin's realism has been considered 'objective' realism. Here the term objective realism indicates the aesthetic tendency to focus on photographic reality and indexical traces instead of the subjective aspects of images. In fact, Bazin provides a crucial interpretation of the ontology of realism. He demonstrates the technological and photographic ability of a credible resemblance. For him, cinema is one of the most vital and viable tools available to accomplish the human aesthetic desire for imitation and representation. For Bazin, the history of art is none other than the history of resemblance, that is, the history of realism, which means that the

³²⁹ Referred to the recent arguments on Bazin's realism by Philip Rosen, Daniel Morgan, and Tom Gunning.

essence of humanistic art is a psychological and aesthetic desire for the imitation and reproduction of the external world.³³⁰ The artistic will to imitate nature ultimately is expressed in ‘the myth of total cinema’ in the age of the photograph and film via the stage of painting. While photographic art antisepticises time by the intervention of cold-blooded apparatuses, cinema achieves the emancipation of art from the limitations of space and time by adding movement to the art of static time. Hence, cinema is both the ‘mummy of change’ and ‘change mummified’. In other words, cinema reproduces and transcends time and space and creates the myth of the total imitation of nature. Hence, the total imitation of nature is the essence of cinematic art:

The primacy of the image is both historically and technically accidental. The nostalgia that some still feel for the silent screen does not go far enough back into the childhood of the seventh art. The real primitives of the cinema, existing only in the imaginations of a few men of the nineteenth century, are in complete imitation of nature. Every new development added to the cinema must, paradoxically, take it nearer and nearer to its origins. In short, cinema has not yet been invented!³³¹

However, theorists of ‘political modernism’ raise the fundamental criticism of Bazin’s theory of realism. They criticize Bazin’s ontology of cinema in view of the ideology and subjectivity of film. Jean Louis Baudry and Jean Louis Comolli argue that the camera lens is always subjective. The succession of images on the screen forces us to accept the ideological meaning ascribed by filmmakers.³³² The cinematic apparatus implies a subjective vision that reflects the worldview and opinions of the subject, both technologically and ideologically. Thus, according to Baudry and Comolli, Bazin’s argument is one-sided. They argue that Bazin misses the point that cinema has the

³³⁰ André Bazin, The Ontology of the Photographic Image, *What is Cinema? Vol.1*, translated by Hugh Gray, Berkeley: University of California Press, 1967, pp.9-16.

³³¹ André Bazin, The Myth of Total Cinema, *What is Cinema? Vol.1*, translated by Hugh Gray, Berkeley: University of California Press, 1967, p.21.

³³² See the essay on the insights of the subjectivity and ideology of cinematic apparatus. Jean Louis Baudry, Ideological Effects of the Basic Cinematographic Apparatus, *Narrative, Apparatus, Ideology: A Film Theory Reader*, edited by Philip Rosen, New York: Columbia University Press, 1986, pp.281-298.

characteristics of fiction and illusion in addition to the imitation and reproduction of real world.

Moreover, Peter Wollen reinterprets Bazin's photographic ontology by means of Peirce's semiology:

Bazin's starting point is an ontology of the photographic image. His conclusions are remarkably close to those of Peirce. Time and again Bazin speaks of photography in terms of a mould, a death-mask, a Veronica, the Holy Shroud of Turin, a relic, an imprint... Thus Bazin repeatedly stresses the existential bond between sign and object, which, for Peirce, was the determining characteristic of the indexical sign. But whereas Peirce made his observation in order to found a logic. Bazin wished to found an aesthetic. 'Photography affects us like a phenomenon in nature, like a flower or a snowflake whose vegetable or earthly origins are an inseparable part of their beauty.' Bazin's aesthetic asserted the primacy of the object over the image, the primacy of the natural world over the world of signs. 'Nature is always photogenic': this was Bazin's watchword.³³³

For Wollen, Bazin's photographic realism posits the relation between object and the indexical sign. Wollen contemplates Bazin's ontology of cinema on the grounds of the dualism of the object and the image. From Bazin's photographic realism, he extrapolates the ontological separation and hierarchy of the reality and cinematic images. Wollen's point is that Bazin's realism presupposes 'the primacy of the object over the image.' According to Wollen, Bazin asserts that physical reality is superior to the image, and cinema is comprised of indexical signs of the natural world. Gunning opposes the dualistic understanding of Bazin's realism, which is based on Peirce's semiotic concept of indexicality. On one hand, reading Bazin's realism in terms of indexicality causes confusion about Peirce's semiotics, which is because Peirce's indexicality should be understandable according to the organic tripod system of sign, index, and icon. On the

³³³ Peter Wollen, *The Semiology of the Cinema, Signs and Meaning in the Cinema*. Bloomington: University of Indiana Press, 1969, pp.125–126.

other hand, the indexical interpretation of Bazin's realism can miss the complexity of Bazin's realism regarding physical reality and cinematic images. Gunning claims that Bazin's ontology of the photographic image should not be delimited by the theory of objective realism, which relies on the indexical traces of physical reality. He points out that Bazin's descriptions of the photographic image are both evocative and elusive, beyond the boundary of representative realism. Gunning argues that Bazin's realism helps to understand and expand the complex concept of realism beyond indexicality:

While it would be foolish to claim that a photograph cannot be a sign of something (it frequently does perform this function), I would claim that signification does not form the basis of Bazin's understanding of the ontology of the photographic image and that his theory of cinematic realism depends on a more complex (and less logical) process of spectator involvement. Bazin describes the realism of the photograph as an "irrational power to bear away our faith" ("Ontology" 14). This "magical" understanding of photographic ontology is clearly very different from a logic of signs. In Peirce's semiotics, the indexical relation falls entirely into the rational realm.³³⁴

Similarly, Rosen also claims the complexity of Bazin's realism. Rosen argues that Bazin highlights 'a subject-based realism,' although political modernists in the 1970s considered him an idealist of objective realism.³³⁵ Rosen points out that Bazin emphasizes the significance of the stylistic response of individual artists as well as the credibility and indexicality of photographic images. He also notes the complex and multifaceted aspects of Bazin's realism. Rosen describes the complicated relation between objectivity and subjectivity in Bazin's realism:

Thus, if we read Bazin in terms of the subject-object opposition, there is a fundamental move that must always be kept in mind: the 'no more cinema' is by and for the subject. Bazin generally assumes a 'subjective' assigning of

³³⁴ Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No.1, 2007, p.33.

³³⁵ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.40.

significance to the concrete real, an activity that is abstract, but inevitable with respect to the concrete. But the opposite term of this abstraction from the real is not an absolute concrete objectivity that cinema can somehow make immediately available. It is rather a subjective striving, a subjective investment in the image precisely as 'objectivity.' This subjective projection is what serves Bazin's ontology in defining a cinematically specific phenomenological intentionality; and it is the stake of his analyses and his history of filmic style. It is a premise that can help maintain the complex interest of his work even after 1970s film theory.³³⁶

Rosen demonstrates that Bazin's objective realism is entangled with a special phenomenological intentionality. Rosen's view differs slightly from Gunning's. While the latter stresses the magic and attraction of cinema related to 'a more complex and a less logical process' of spectator involvement, Rosen emphasises the fact that Bazin's realism has a complex relation with artists' subjective intention and intervention in the ground of objective realism. Whilst Gunning goes beyond the semiotic logic of the sign and the theoretical frame of indexicality, Rosen maintains the theoretical significance of indexicality in Bazin's realism. Nevertheless, their concepts correspond in highlighting the complexity of Bazin's realism. In fact, it is clear that Bazin does not confine his realism within the boundary of indexicality and photographic reproduction:

Reality is not to be taken quantitatively. The same event, the same object, can be represented in various ways. Each representation discards or retains various of the qualities that permit us to recognize the object on the screen. Each introduces, for didactic or aesthetic reasons, abstractions that operate more or less corrosively and thus do not permit the original to subsist in its entirety. At the conclusion of this inevitable and necessary 'chemical' action, for the initial reality there has been substituted an illusion of reality composed of a complex of abstraction

³³⁶ Ibid, p.14.

(black and white, plane surface), of conventions (the rules of montage, for example), and of authentic reality. It is a necessary illusion.³³⁷

In this sense, Daniel Morgan argues that Bazin's realism implies a new perspective on realism. Morgan claims that Bazin denies the ontological dualism between the image and the object. Bazin's realism rejects the ontological identity of the cinematic image with physical reality. In other words, Bazin's photographic image does not mean the aesthetics of technological reproduction and imitation, but different realities beyond the resemblance and indexicality of physical reality. Morgan claims that Bazin's realism is based on the ontological monistic view that the image and the object exist in the same plane of immanence. For him, Bazin's photographic image is not the resemblance and representation of the object, but the object itself and thus a different reality. Therefore, he takes note of Bazin's statement of the relationship between the photographic image and physical reality:

The photographic image is the object itself, the object freed from temporal contingencies. No matter how fuzzy, distorted, or discolored, no matter how lacking in documentary value the image may be, it proceeds, by virtue of its genesis, from the ontology of the model; it is the model.³³⁸

Bazin does not give an obvious and absolute definition of his realism, and his view is mythical and metaphoric. However, Morgan claims that the core of Bazin's realism does not reside in the indexical traces of physical reality that rely on the separation between the model and the image, but in an aesthetics of complex reality that considers the image a different reality. According to Bazin (via Morgan), the cinematic image is not identical with the model; it is not an indexical sign of the model, but the model itself. Hence, the image is the object, and the model is an image. Bazin defines the photographic image of cinema in terms of the contingency and ambiguity of the material image (in Gunning's

³³⁷ André Bazin, *An Aesthetic of Reality: Cinematic Realism and the Italian School of the Liberation*, *What is Cinema? Vol.2*, translated by Hugh Gray, Berkeley: University of California Press, 1967, p.27.

³³⁸ André Bazin, *The Ontology of the Photographic Image*, recited by Daniel Morgan, *Rethinking Bazin: Ontology and Realist Aesthetics*, *Critical Inquiry*, Vol. 32, No. 3, Spring 2006, p.32.

words, ‘the magic of cinema,’ or in Deleuze’s terminology, ‘the indiscernibility between the actual and the virtual’), instead of the logic of signs or perceptual realism. Morgan tries to restore the sensation and materiality of cinematic images from Bazin’s realism:

There are two basic objections to perceptual realism. First, Bazin does not describe the films of Renoir or neorealism as realist on grounds that they *resemble* the experience of reality. He not only rejects verisimilitude as an essential component of realism, at various points coming close to directly opposing it to realism. He is also explicit that perceptual or psychological realism is an inadequate criterion for realism. Second, Bazin describes as realist a large number of films that have little to do with resemblance predicated on the contingency, flux, and ambiguity of reality.³³⁹

According to Morgan, because Bazin stresses the historicity and temporality of cinema, Bazin’s realism is distinguished from the aesthetics of spatial resemblance. The ontology of the cinematic image is ‘change mummified’ and ‘the mummy of change.’³⁴⁰ Morgan grasps Bazin’s statement that the film image is freed from ‘temporal contingencies.’³⁴¹ He asserts that Bazin degrades the spatial similarity of the image with the object. This is because Bazin considers that spatial resemblance is contingent and unstable, like the ‘usher’s flashlight’, in terms of the connection to a world outside the frame. In addition, he holds that film can give us new associations or different relationships with the object beyond spatial resemblance. Morgan claims that Bazin’s realism is the aesthetics of temporal contingency and ambiguous reality.³⁴²

³³⁹ Ibid, p.458.

³⁴⁰ André Bazin, *The Ontology of the Photographic Image, What is Cinema? Vol.1*, translated by Hugh Gray, Berkeley: University of California Press, 1967, p.15.

³⁴¹ Daniel Morgan, Rethinking Bazin: Ontology and Realist Aesthetics, *Critical Inquiry, Vol. 32, No. 3, Spring 2006*, p.453. Here Morgan and Gunning point out the mistranslation of Gray. Gray translates the phrase as ‘freed from the condition of time and space.’ Also, refer to Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies, Vol. 18, No.1, 2007*, p.49.

³⁴² Ibid, p.458.

Similarly, Rosen stresses the historical and temporal aspects of Bazin's realism. He postulates that Bazin's realism depends on the indexical sign of reality.³⁴³ However, Rosen indicates that indexicality is not a spatial likeness but a trace of temporal existence. For him, realism is the impulse to control time and the correspondence of the object and the subject in historicity and temporality. Although the photographic image was at one time considered a spatial presence, it soon appears as an irrefutable past existence. Cinema is both the desire to make the 'passing present', and the pursuit of referential pastness. Thus, Rosen states that the indexicality of photographic images involves historicity and temporality from the past to the present. He redefines Bazin's realism in terms of subjectivity and temporality. For him, Bazin's realism is the desire of human subjectivity to oppose the temporal constraints of physical reality. It is the aesthetics of temporal indexicality and historical representation beyond spatial likeness.³⁴⁴

In conclusion, Bazin's realism needs reevaluation according to the new perspective of realism. The photographic ontology of Bazin's realism should not be understood in terms of indexical traces of physical reality. It is not enough and even inappropriate that the concept of realism is defined only as photographic indexicality. As Gunning states, Bazin goes beyond the concept of indexical signs that rely on a logic of semiotics, in which the cinematic image loses its magic and attraction. In addition, Rosen asserts that Bazin's photographic ontology is a temporal and subjective aesthetics instead of spatial and objective realism. For Morgan, Bazin's realism gives us a clue for moving toward a new concept of realism. He claims that Bazin's ontology of the photographic image is not the aesthetics of resemblance and verisimilitude, but the aesthetics of the ambiguous image and contingent temporality.

I consider that the reinterpretation of Bazin's realism is connected with a new conceptualisation of realism in the age of the digital cinema. Traditional concepts of realism are based on the dualism of images and objects, which postulates the primacy of reality over the image. In the view of traditional realism, the cinematic image is none

³⁴³ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, pp.16-20.

³⁴⁴ *Ibid*, p.41.

other than the obsolete copy of original reality. However, when Bazin's realism is effectively reinterpreted by the new perspectives, the new concept of realism goes beyond indexical signs and representative realism. Deleuze articulates the aesthetic significance of Bazin's realism as a new type of image: a 'fact-image', or 'purely optical and sound images', which are fundamentally distinct from the sensory-motor situations of the action-image in the old realism.³⁴⁵ Deleuze accentuates that Bazin's appraisal of neo-realism presents the Bergsonian concept of matter-image, in which pure audio-visuals go beyond represented images. Furthermore, Deleuze considers Bazin's realism the aesthetics of complex temporality and crystal-image. For him, Bazin's emphasis of 'sequence shot' and 'a depth of field' implies a direct time-image, which reverses 'time's subordination to movement'.³⁴⁶ Gunning suggests that the new concept of realism is explored by the complex concept of cinematic motion beyond indexicality.³⁴⁷ For him, the attraction of cinema is caused by the material and magic nature of cinematic movement. In addition, Rosen states the significance of 'historical hybridity' based on cinematic temporality and subjectivity.³⁴⁸ He stresses the complex combination of the indexicality and subjectivity of cinema. According to Morgan, Bazin's realism is distinguishable from the traditional realism of resemblance and identification.³⁴⁹ Morgan proposes a new realism on the grounds that complex and ambiguous images are beyond indexical representation. For him, the cinematic image is not an imitation of physical reality, but a different kind of reality, that is, 'more reality'.

Similarly, Richard Rushton suggests that new realism is a 'more' and 'truer' real world.³⁵⁰ For him, cinematic images are not the representation but the exhibition of the real world. They are not the imitation of a model, but offer a bigger and more profound world, that is to say, a creative new world. He argues that films are part of the reality we typically

³⁴⁵ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, pp.1-2.

³⁴⁶ *Ibid.*, pp.107-109.

³⁴⁷ Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No. 1, 2007, p.48.

³⁴⁸ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.315.

³⁴⁹ Daniel Morgan, Rethinking Bazin: Ontology and Realist Aesthetics, *Critical Inquiry*, Vol. 32, No.3, Spring 2006, pp.443-481.

³⁵⁰ Richard Rushton, *The Reality of Film: Theories of Filmic Reality*, New York: Manchester University Press, 2011, p.11.

inhabit as part of the world we live in and as part of our lives. Films help us to shape what we call 'reality.' In the context of the Deleuzian ontology of image, the image is the world. Deleuze accurately indicates that 'cinema produces reality.'³⁵¹ For Deleuze, cinema does not produce a replica of the world, but a different new world. Deleuze intuits creative aspects of the world in the ontology of cinematic images. He illuminates the ontology of the cinema with the monism of the immanent plane, in which cinematic images are entwined indiscernibly and inextricably with physical reality. In Deleuze's intuition of the materiality of images, Rushton denies the rigid demarcation between considerations of the real and the non-real or illusion. For Rushton, the aesthetics of representation as related to a dichotomy between reality and cinematic illusion blocks a more important question: What can films do? Or what can we do with films?

It is such questions of the truth or adequacy of filmic representations that the present book tries to repudiate. I am well aware that cinema is often regarded as being one of what is known as the 'representational arts' or 'representational media', but what I want to take issue with here is the question of why anyone would feel the need to declare that cinema re-presents anything. Rather, what I want to argue by way of filmic reality is that films do no re-present anything. Instead, they create thing; they create realities, they create possibilities, situations and events that have not had a previous existence; they give rise to objects and subjects whose reality is filmic.³⁵²

Rushton argues that films do not produce something that is behind or beyond them; instead films are defined by what they produce. The reality of films does not lie behind them; instead, the reality of film is what films themselves are. Film is not a secondary but a primary material, that is, 'signaletic' material. In this sense, Rushton (via Deleuze) concedes Bazin's complexity and contradiction between representation and images and indicates the limitations of political modernism based on the strict distinction between

³⁵¹ Gilles Deleuze, *On the Time-Image, Negotiation: 1972-1990*, translated by Martin Joughin, New York: Columbia University Press, 1995, pp.57-61.

³⁵² Richard Rushton, *The Reality of Film: Theories of Filmic Reality*, New York: Manchester University Press, 2011, pp.3-4.

reality and the image, indexicality and illusion, transparency and reflection, and objectivity and subjectivity. For Rushton, the cinematic image is a new territory of physical reality. He posits that filmic reality comprises filmic experiences, effects, influences, feelings, and thoughts of the real world:

... films provide what might be called ‘reverential experiences’ that help us to flesh out our understanding of the world and our place in that world. Films make available concepts, feelings, and ways of seeing and relating to the world that contribute to what we understand as reality. What would our experience of reality be like without films? It would be entirely different, for films have changed the nature of reality itself. Films have given us new ways to dream, but those dreams have also made available new domains of reality.³⁵³

Hence, Rushton (via Deleuze) suggests a new concept of filmic reality. Cinematic realism proceeds to the new concept of creative realities beyond the boundary of representation and indexicality. As Bazin demonstrates, the concept of realism is multiple and creative. It is more and different reality, as it were, the aesthetics of virtualism:

The word “realism” as it is commonly used does not have an absolute and clear meaning, so much as it indicates a certain tendency toward the faithful rendering of reality on film. Given the fact that this movement toward the real can take a thousand different routes, the apologia for “realism” *per se*, strictly speaking, means nothing at all. The movement is valuable only insofar as it brings increased meaning (itself an abstraction) to what is created.³⁵⁴

Consequently, I define this new realism as virtualism. The new realism is the imbrication and indiscernibility of the actual and the virtual, the reality and the image, the past and the present, and life and the cinema. Many researchers have studied the new concept of realism in the age of digital cinema. As Gunning proposes, filmic reality has to do with

³⁵³ Ibid, p.7.

³⁵⁴ Andre Bazin, *Jean Renoir*, translated by W.W. Halsey II and William H. Simon, edited by Francois Truffaut, New York: Simon and Schuster, 1973, p.85.

the motion of cinema and the attraction of spectator beyond indexicality. Digital reality also includes Rosen's concept of 'historical hybridity.' Furthermore, the realism of the cinema implies the material ambiguity and temporal contingency of images, as Morgan indicates. Rushton's concept of 'new reality' helps us consider the filmic image as a new reality instead of mimesis and representation. Franco Casetti proposes the concept of 'sutured realism', which reconceptualises the illusion and subjectivity of cinema.³⁵⁵ Hal Foster suggests 'the return of the real' in the postmodern age in the concept of 'traumatic realism.'³⁵⁶

In this thesis, by exploring concepts of the new realism, I put forward the concept of virtualism, which implies 'the virtual conjunction'³⁵⁷ between physical reality and cinematic image. In the age of digital images, the new realism is connected to the aesthetics of virtualism. Digital virtualism is the bridge and interfaciality between actuality and virtuality, indexicality and imagination, physical reality and cinematic illusion, objectivity and subjectivity, and spatiality and temporality. Digital virtualism is the new realism, linking the indexical reality and the creative potential in the age of digital transition. As I have already described in a prior chapter, digital virtualism is based on computer simulation and synthesis in terms of technology and aesthetics. It also intensifies the materiality and bodily sensation of cinematic images. Digital virtualism embodies the convergent nature of informational images and proceeds to a new concept of cinema based on interactivity and networks. Therefore, digital virtualism is a new form of new realism.

3-2. Modernism: Metz and the Imaginary

In this section, I make two main points: one is the critique of Metz's film semiotics in terms of virtualism; the other is the complexity of Metz's concept of 'the impression of

³⁵⁵ Franco Casetti, *Sutured Reality: Film, from Photographic to Digital*, *October 138, Fall 2011*, pp.95-106.

³⁵⁶ Hal Foster, *Return of the Real: The Avant-garde at the End of the Century*, Cambridge, Mass.: MIT Press, 1996, pp.130-136.

³⁵⁷ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, p.109.

reality'. First, I will show that Metz's film semiotics disparages the materiality of cinematic images. This is because the semiotic position of film images, in relying on linguistics and psychoanalysis, gets rid of the material reality of filmic ambiguity and attraction. Second, I will argue that in his early essays, Metz's thought about the film image has to do with the dialectical attitude that the film image exists between reality and fantasy. Although this argument does not extrapolate to an untraversable river between the early and the late Metz, I will articulate the contradictory nature of film reality through the ambivalence of Metz's semiotics. In terms of digital virtualism, the film image is the threshold between the actual and the virtual, indexicality and imagination, and materiality and immateriality. The virtuality of film images is both real and unreal. It is a complex hybridity between reality and illusion. Through Metz's semiotics, I emphasise that the aesthetics of virtualism is an imbrication of reality and fantasy.

First, I point out that Metz's point focuses on the imaginary nature of film images, particularly the illusion and fantasy they produce in the spectators. In contrast to Bazin's realism, which concentrates on the physical reality of photographic images, Metz's semiotics focuses on the linguistic and psychological characteristics of film images. In fact, this position reflects the general perspective of political modernism in the 1960s and 1970s. A number of political modernists, such as Peter Wollen, Barbara Klinger, Colin MacCabe, Jean Louis Baudry, Jean Louis Comolli, and Stephen Heath, accentuated the ideological and psychological nature of film images. They asserted that the realism of cinema is nothing but illusionism, in which the unconsciousness of the subject is represented by the identification and regression to the mirror stage. For them, the reality of film consists of false illusions and absent desires represented by filmic apparatuses. Political modernists claim that the film image is none other than the effects of mental state and subjectivity, not the objective and material. For them, the verisimilitude of realism is not 'pure cinema' or the transparent imitation of world, but the subjective effects of illusions and desires, in which physical reality of film images is replaced by the ideological and the subjective. In this context, Christian Metz suggests that linguistics and psychology are two vital sources of film semiotics:

Because linguistics and psychoanalysis are both sciences of the symbolic and are even, come to think of it, the only two sciences whose immediate and sole object is the fact of signification as such (obviously all sciences are concerned with it, but never so frontally or exclusively). To be slightly cavalier, linguistics-together with its close relations, notably modern symbolic logic-can be regarded as taking for its share the exploration of the secondary process, and psychoanalysis that of the primary process: that is to say, between them they cover the whole field of the signification-fact taken in itself. Linguistics and psychoanalysis are the two main 'sources' of semiology, the only disciplines that are semiotic through and through.³⁵⁸

Metz draws linguistics and psychology into the theory of cinema because he thinks that the nature of the cinema depends on the meaning and impression of reality in the representative process of objective reality. Therefore, he argues that the disciplines are systematically able to explain the signification and the subjective effect of the cinema. Metz explains the image as sign and its structure as the science of cinematic semiotics, which reaches beyond the simple frame of impressionist criticism.

As Barthes did before him, Metz designates the cinema as a language by borrowing from the structural linguistics of Saussure. He draws the signification of the cinema from the relationship between the signifier and the signified. He distinguishes the cinema from natural language, and defines it as 'language without *langue*'³⁵⁹ for three reasons. First, unlike natural language, cinema is not bilateral but unilateral communication. Furthermore, the cinematic relationship between signifier and signified is one of mechanical reproduction, while natural language has only an arbitrary relation between the signifier and the signified. That is, the meaning of the word 'dog' depends on arbitrary situations, but the image of a dog in the cinema is directly related to the reproductive image of the dog.

³⁵⁸ Christian Metz, *The Imaginary Signifier: Psychoanalysis and the Cinema*, translated by Celia Britton, Annwyl Williams, Ben Brewster, and Alfred Guzzetti, Bloomington: Indiana University Press, 1982, p.18.

³⁵⁹ Christian Metz, *Film language: A Semiotics of the Cinema*, translated by Michael Taylor, New York: Oxford University Press, 1974, p.303.

Finally, Metz maintains that double articulation is absent from cinema.³⁶⁰ Cinema lacks not only the first articulation by the combination of morphemes (words) but also the second articulation by the combination of phonemes (alphabet). It does not have a basic unit to reduce. The smallest unit in the cinema, the shot is closer to the sentence than the word because its meaning is unlike the phoneme, which does not have a meaning in itself. In this way, the signification of cinema does not operate in a paradigmatic relation, but in a syntagmatic relation. Therefore, narrative is more important than the image in cinema because a code cannot be derived from the image, whereas narrative makes meanings in a syntagmatic relation. Consequently, the semiotics of cinema becomes the science of studying the form and structure of narrative as apparatuses of the signification of the cinema.

Metz thus demonstrates that the nature of language and story are followed by the cinema, and the action of the cinema is story telling. He emphasizes the priority of narrative in the semiotics of the cinema.³⁶¹ It is no accident that Metz disparages the nature of spectacle in the early cinema and considers D. W. Griffith's *The Birth of a Nation* (1915) an initiation of systematic film. He places a higher value on storytelling than on the cinematic image. The semiotics of cinema privileges the structure of signification over the system of narrative. In this context, Metz meets Freud. In other words, Metz meanders in his quest for the interpretation of cinematic language, much as Freud roamed in search of the interpretation of dreams. For Metz, cinema is a science of interpretation behind the

³⁶⁰ Pier Paolo Pasolini sharply criticizes on the Metz's theory regarding the absence of double articulation. He maintains that cinema is closer to poetry rather than language. The essence of cinema is not language, grammar, and narrative, but image, style, and poem. Thus, the original form of cinematic image is subjective and emotional images in memory and dream. He told that inherent styles in the cinema of poetry are presented by the technique of free indirect discourse that mixed the subject and the object with each other. In contrast to the opinion of Metz, Pasolini indicates that cinema also has double articulation; shot as morpheme and cineme (objects in frame) as phoneme. See Pier Paolo Pasolini, *The Cinema of Poetry, Movies and Methods, Vol.1*, translated by Marianne de Vettimo and Jacques Bontemps, edited by Bill Nichols, Berkeley: University of California Press, 1976, pp.542-558.

³⁶¹ Christian Metz, *Some Points in the Semiotics of the Cinema, Film language: a Semiotics of the Cinema*, Translated by Michael Taylor, Oxford, New York: Oxford University Press, 1974, p.96. "Thus, it was in a single motion that the cinema became narrative and took over some of the attributes of a language. Today still, the so-called film procedures are in fact filmic narrative. This, to my mind, justifies the priority of the narrative film in the filmosemiological enterprise – a priority that must not of course become an exclusivity."

image, instead of the perception of the image in front of us. He thinks that truth exists not in front of us, but behind us. In his prominent book, *The Imaginary Signifier*, he centred on the issue of how the psychology of Freud has contributed to the scientific cognition of cinematic signification:

The 'other scene', which is precisely not so called, is the cinematic screen (closer to phantasy from the outset): what unfolds there may, as before, be more or less fictional, but the unfolding itself is fictive: the actor, the 'decor', the words one hears are all absent, everything is recoded (as a memory trace which is immediately so, without having been something else before), and this is still true if what is recorded is not a 'story' and does not aim for the fictional illusion proper. For it is the signifier itself, and as a whole, that is recorded, that is absence: a little rolled up perforated strip which 'contains' vast landscapes, fixed battles, the melting of the ice on the River Neva, and whole life-times, and yet can be enclosed in the familiar round mental tin, of modest dimensions, clear proof that it does not 'really' contain all that.³⁶²

For Metz, cinema is a fantasy, a fictional illusion, and a signifier, whereas, for Bazin, cinema is a copycat, imitation, and reproduction of reality. When the signifier of cinema symbolizes an absent object and becomes a sign of signification, how then does the absent object return? It returns into the unconscious desire of the audience, which, alone in a dark theatre, imagines absent objects like voyeurs gazing through the dim keyhole called the screen. Metz's scopic regime of the cinema is the combination of two processes: shooting as the absence of the spectator and projection as the absence of the actor; and the absence of the object and the codification of the absent object. According to Metz's terminology, the scopic regime of cinema represents absent objects that exist at a distance but are sought through voyeurism and visual impulse, which are related to perceptual passion. Through fetishism, the spectator gratifies his unconscious desire by

³⁶² Christian Metz, *The Imaginary Signifier: Psychoanalysis and the Cinema*, translated by Celia Britton, Annwyl Williams, Ben Brewster, and Alfred Guzzetti, Bloomington: Indiana University Press, 1982, pp.43-44.

identification with the absent object. Hence, the cause is something that does not exist, and the semiologist is a person who rediscovers absent things.

The semiotics of Metz indicates the unconscious desire of the spectator behind cinematic signification. It consciously explores the operational method of the unconsciousness in the structure of the cinematic signifier and the system of narrative. However, aside from the theory of cinematographic apparatuses, the semiotics of cinema is not able to save the subjectivity and activity of the spectator from the unconsciousness of the subject-spectator because unconscious desire is a dominant element in cinematic signification. Metz considers spectators an existence captivated by the unconscious desire of identification and fetishism through the scopic regime of cinema.

Meanwhile, following Metz (or Barthes and Stephan Heath), we ask the following: Is the signification of cinema reasonably defined by the activity of language? In the light of the validity of cinematic signification, is the opinion of Peter Wollen, which is based on the semiotics of Peirce, more feasible than that of Metz, which is based on the semiology of Saussure? Peter Wollen suggests that cinema should be understood as a complex of three aspects: index, icon, and symbol:

More than anybody else Godard has realised the fantastic possibilities of the cinema as a medium of communication and expression. In his hands, as in Peirce's perfect sign, the cinema has become an almost equal amalgam of the symbolic, the iconic and the indexical. His films have conceptual meaning, Pictorial beauty and documentary truth.³⁶³

In contrast to Bazin, Metz's reliance on the linguistics of Saussure and the psychoanalysis of Lacan is an important disadvantage. It is impossible to replace the representative system of the cinema with the syntagmatic analysis of narrative because the materiality of the image as the nature of the cinema cannot be reduced to 'language'. As image, the

³⁶³ Peter Wollen, *Signs and Meaning in the Cinema*, Bloomington: Indiana University Press, 2009, p.154.

cinema has innate characteristics, such as colours, sounds, depth, duration, and various material traces. It thus surpasses the limits of language and interpretation.

Consequently, I claim that Metz's overall assertion of film semiotics is one sided because it overlooks the material traits of film images. In terms of the virtuality of the cinema, the film image should be defined as the complex relation between material reality and imaginary illusion. The film image should not be reduced to the scientific logic of linguistics and psychology because it would lose the ambiguity and sensation of material images. There is no doubt that the material immediacy of the cinema cannot be translated to the logic of language. The stream of audio and visual images in the spectacle of cinema precedes the representative system of narrative. It also promotes sensuous feeling over scientific analysis. For this reason, Gilles Deleuze intuits the ontology of cinema as image in his influential books on aesthetics, *The Logic of Sense* and *Cinema 1 & 2*, in which he argues that sensibility takes priority over reason:

Peirce's strength, when he invented semiotics, was to conceive of signs on the basis of images and their combinations, not as a function of determinants which were already linguistic. This led him to the most extraordinary classification of images and signs..... the sign in Peirce apparently combines the three kinds of image, but not in any kind of way: the sign is an image which stands for another image (its object), through the relation of a third image which constitutes 'its interpretant', this in turn being a sign, and so on to infinity.³⁶⁴

Deleuze maintains that the movement, that is, the material nature of the image would be removed if the image were replaced by the utterance of language. This is because cinematic narrative is the result of the combination of images. He condemns Metz's subjective idealism because the latter deletes the movement of objects, that is, the modulation of objects. In contrast, Deleuze praises Pierce because he theorizes that a sign is not the function of language determinants, but the combination of images. In this

³⁶⁴ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, London: Continuum International Publishing Group, 2005, p.29.

context, Deleuze develops his creative theory of the cinema in terms of materialism and non-linguistic semiotics, in which movement as matter, and time as the interval of movement, encounters the audio-visual sense and signs.

With this in mind, let us move to the issue of recent reappraisals of Metz's early essay, *On the Impression of Reality in the Cinema* (1965). Gunning raises the issue that Metz has a slightly different perspective on the nature of film images in this early essay, whereas Metz in later writings considers filmic realism 'a dangerous ideological illusion', as later apparatus theorists do.³⁶⁵ Gunning claims that Metz's early essay simply attempts to give a psychological effect based film phenomenology. Gunning accentuates that 'the impression of reality' derives from the movement of film images, which requires the phenomenological perception and participation of spectators on the screen:

Metz locates the realistic effect of cinematic motion in its "participatory" effect. "Participation" seems to be a magic word in theories of realism that seek to overcome the dead ends encountered by correspondence theories of cinema. For Bazin, participation describes the relation between the photographic image and its object. Likewise, his description of the spectator's active role in the cinematic style that makes use of depth-of-field composition ("it is from [the spectator's] attention and his will that the meaning of the image in part derives" [Bazin's *The Evolution of the Language of Cinema*, p.36]) indicates an active participation by the viewer. For Metz, similarly, participation in the cinematic image is both "affective and perceptual," engendering "a very direct hold on perception," "an appeal of a presence and proximity" (Metz's *On the impression of Reality in the Cinema*, p.4).³⁶⁶

Through the re-evaluation of Metz's early essay, Gunning asserts that the reality of film depends on cinematic motions and the spectator's perceptual participation, going beyond indexical traces of photographic images. In fact, Metz firmly states that the

³⁶⁵ Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No.1, 2007, p.41.

³⁶⁶ Ibid, p.41.

phenomenological presence of visual appearances on the screen begets the reality of impression, that is, the psychological effects of cinematic movement.³⁶⁷ For Metz, the cinematic motion is one of the most important causes of the spectator's impression of reality beyond the indexicality of photography:

The strict distinction between object and copy, however, dissolves on the threshold of motion. Because movement is never material but is always visual, to reproduce its appearance is to duplicate its reality. In truth, one cannot even "reproduce" a movement; one can only re-produce it in a second production belonging to the same order of reality, for the spectator as the first. It is not sufficient to say that film is more "living," more "animated" than still photography, or even that filmed objects are more "materialized." In the cinema the impression of reality is also the reality of the impression, the real presence of motion.³⁶⁸

In particular, Metz argues that the reality of the impression is also unreal because it consists of nothing but the spectator's illusion and fantasy, which is immaterial and impalpable. However, Metz emphasizes that the cinematic motion combines with the spectator's sensation and perceptive reception of visual images. In this sense, Gunning terms the projected moving image of cinema 'perceiving motion'.³⁶⁹ As Gunning points out, Metz claims that the impression of reality is produced by not only the visual appearance of film images but also the spectator's physical and perceptive participation:

Thus, the sum of the spectator's impressions, during a film's projection, is divided into two entirely separate "series": according to Henri Wallon's the "visual series" (that is to say, the film, the diegesis) and the "proprioceptive series" (one's sense of one's own body) and, therefore, of the real world, which continues to be a factor, though weakened, as when one shifts around in one's seat for a more

³⁶⁷ Christian Metz, *On the Impression of Reality in the Cinema*, *Film language: a Semiotics of the Cinema*, Translated by Michael Taylor, Oxford, New York: Oxford University Press, 1974, pp.9-13.

³⁶⁸ *Ibid*, p.9.

³⁶⁹ Tom Gunning, *Moving Away From the Index: Cinema and the Impression of Reality*, *A Journal of Feminist Cultural Studies*, Vol. 18, No.1, 2007, p.42.

comfortable position. It is because the world does not intrude upon the fiction and constantly deny its claim to reality as happens in the theater that a film's diegesis can yield the peculiar and well-known impression of reality that we are trying to understand here.³⁷⁰

Metz indicates the double status of spectators in the process of film screening. He states that the spectator is disconnected from the real world within the space of filmic diegesis but that he also is connected with the real world in the space of a real theatre. Particularly, Metz emphasises that the perceptual participation of the spectator takes place in the space of a real theatre. He demonstrates that the 'transference' of theatrical reality invokes the spectator's 'affective, perceptual, and intellectual activity'. Therefore, for Metz, the impression of filmic reality is the combination and interaction between the fictional space of filmic diegesis and the real space of spectator's perceptual participation:

All arguments of this kind show that a much clearer distinction is needed even in terminology, where the word "real" is forever playing tricks on us between two different problems: on the one hand, the impression of reality produced by the diegesis, the universe of fiction, what is represented by each art, and, on the other hand, the reality of the vehicle of the representation in each art. On the one hand, there is the impression of reality; on the other, the perception of reality, that is to say, the whole question of the degree of reality contained in the material available to each of the representative arts. It is indeed because the art of theater is based on means that are too real that the belief in the reality of the diegesis finds itself compromised.³⁷¹

Gunning draws the phenomenological importance of cinematic motion and spectator's sensation from Metz's concept of 'the impression of reality'. He claims that the 'mercurial', 'protean', and 'mobile' nature of cinematic motion can provide an aesthetic

³⁷⁰ Christian Metz, *On the Impression of Reality in the Cinema*, *Film language: a Semiotics of the Cinema*, Translated by Michael Taylor, Oxford, New York: Oxford University Press, 1974, p.11.

³⁷¹ *Ibid*, pp.12-13.

analysis of a diversity of film styles with an important tool beyond the proscriptive nature of classical films theories.³⁷² In addition, Gunning proposes that the movement of film images and the spectator's sensual attraction can provide a meaningful connection between cinema and the new media.³⁷³ For him, cinema has an affinity with the new media as an art of motion relying on the spectator's perceptive participation and sensual attraction, which goes beyond filmic indexicality.

While Gunning takes note of the relation between the 'impression of reality' and the 'perceiving motion' of cinema, Rushton elicits the complexity of filmic reality from Metz's assertion. He pays attention to Metz's definition of the film image as the 'imaginary signifier'.³⁷⁴ Rushton asks whether Metz's definition depends on the opposition between reality and the imagination. Instead, Rushton extrapolates that Metz accurately defines the complex nature of film reality. He asserts that Metz properly grasps 'the reality of the imaginary', as well as 'the imagination of reality'. In other words, for Rushton, Metz's assertion shows both the dialectic tension between and imbrication of the material reality and the immaterial imagination of cinema. In this context, Rushton claims that Metz's concept of 'the imaginary' is different from that of illusion or a fantasy. As Silverman points out,³⁷⁵ Rushton separates Metz from both Freud and Lacan. For Metz (via Rushton), the cinematic imagination is not Lacanian fetishism or hallucination, but is the reality of the film image:

But what is imaginary there, in Metz's essay, is not necessarily an illusion. Rather, on way of drawing the contours of the reality we call cinema is by way of the imaginary: 'imagining' what the world is like by way of our cinematic experience is part and parcel of working out and experiencing that world and its reality.³⁷⁶

³⁷² Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No.1, 2007, p.45.

³⁷³ Ibid, p.48.

³⁷⁴ Christian Metz, *The Imaginary Signifier: Psychoanalysis and the Cinema*, translated by Celia Britton, Annwyl Williams, Ben Brewster, and Alfred Guzzetti, Bloomington: Indiana University Press, 1982, pp.3-16.

³⁷⁵ K. Silverman, *The Threshold of the Visual World*, New York, London: Routledge, 1996, p.124.

³⁷⁶ Richard Rushton, *The Reality of Film: Theories of Filmic Reality*, New York: Manchester University Press, 2011, p.80.

Based on the ontological ambivalence of film images, Rushton explains that Metz's concept of the imaginary indicates the contradictory nature of reality and the imagination. For Metz, the definition of filmic reality is the imaginary; simultaneously, the imaginary is not necessarily fetishistic fantasy, but a different and new reality consisting of cinematic experience and reality.

Moreover, Metz points out that the imaginary experience of filmic reality is two-fold: a visual reality on the screen and a participatory reality of theatrical installation. Metz states that the double process of filmic reality designates the imaginary nature of cinema: the primary identification (with apparatuses, installation) and the secondary identification (with diegetic space). He asks, "What is characteristic of the cinema is not the imaginary it may happen to represent, but that imaginary that it is from the start."³⁷⁷

According to Rushton, Metz denies the distinction between reality and illusion by defining the filmic reality as the imaginary. When Metz defines the reality of film as the imaginary, he asks whether the imaginary nature of film reality is good or bad. For Rushton, Metz's concept of the imaginary goes beyond fetishistic fantasy and illusion. Rushton explains that Metz's 'the imaginary' has nothing to do with a 'bad' and 'dangerous' hallucination of film images. Instead, it is both good and bad or it is neither good nor bad. The imaginary nature of film is cinematic reality beyond moral judgment. In this sense, Rushton asserts that defining the reality of film as imaginary does not disparage the cinema as illusion or pretension. Instead, the imaginary reality of film is, for Metz, its most innate and essential attribute.³⁷⁸ Rushton concludes that the cinema is imaginary reality beyond fetishistic illusion and fantasy:

Beyond Freud, we might even consider that Metz's position inherits Edgar Morin's marvellous theses on cinema's 'imaginary man': 'The cinema is the

³⁷⁷ Christian Metz, *Psychoanalysis and Cinema: The Imaginary Signifier*, translated by Celia Britton, Annwyl Williams, Ben Brewster and Alfred Guzzetti. London: Macmillan, 1982, p.44.

³⁷⁸ Richard Rushton, *The Reality of Film: Theories of Filmic Reality*, New York: Manchester University Press, 2011, p.81.

dialectical unity of the real and the unreal'. By way of cinema's imaginary illusions, humans have the capacity to remake themselves, to reinvent themselves: '[Films] come back upon our waking life to mold it, to teach us how to live or not to live... We must try to question them - that is, to reintegrate the imaginary in the reality of man'³⁷⁹

According to Rushton's reappraisal of Metz's concept, the reality of film is the imaginary, and the imaginary reality of film goes beyond the threshold of passive illusion and fantasy. In terms of filmic virtualism, Rushton's argument is useful in establishing the new concept of filmic reality between indexicality and the imagination. This is because, as I have consistently argued in this thesis, digital virtualism is based on the hybrid combination and virtual conjunction between the actual and the virtual, the material and the immaterial, and physical reality and the imagination. Hence, I suggest that the aesthetics of virtualism can be a useful tool in theorising the ambivalence and contradiction of the cinema between the real and the imaginary.

Similarly, Francesco Casetti's concept of 'sutured reality' can provide clues to theorise the complexity of film reality. Casetti demonstrates that the concept of reality has always occupied a 'double position' in film theory.³⁸⁰ He states that physical indexicality as the source of the image is linked to the phenomenological and psychological effect of the image. For him, the filmic reality is both a precondition and a construction of the image. From this point of view, Casetti proposes the concept of 'sutured reality':

Resurrecting an old and unfashionable word, I suggest that these cues must provide a "suture." Not every "sutured" discourse is necessarily "realistic"—scientific discourses may be sutured too, even if in a different way. Nevertheless, my argument is that an impression of reality is generated in film through the

³⁷⁹ Ibid, p.105.

³⁸⁰ Franco Casetti, Sutured Reality: Film, from Photographic to Digital, *October 138, Fall 2011*, pp.97-98.

establishment of a link that simultaneously provides an imaginary discursive coherence and an apparent re-establishment of reality.³⁸¹

Borrowing the concept from Lacan's work,³⁸² he claims that the term 'suture' indicates the very moment in which the structure of the discourse is 'sealed,' an instance of cohesion is established, and the density of reality is restored. Through the concept of 'sutured reality' as the linkage between the indexical and the imaginary, he emphasises the interactive cohesion and density of a wide range of filmic components and elements.³⁸³

Furthermore, Cassetti asserts that the concept of 'sutured reality' can contribute to illuminating digital aesthetics in terms of the combination of photographic indexicality and computer animation. For him, the end of photographic film implies not the end of a realistic attitude, but a new transformation of it. Digital cinema is associated with the new reality of computer animation. Cassetti argues that the aesthetics of digital cinema relies not simply on the material reality of film, but 'on the sum of its discursive practices.'³⁸⁴ In his view, digital reality is the practical linkage and contradictory negotiation between physical indexicality and the imaginary impression of cinema:

Digital realism is a field in need of much more inquiry. What I want to make clear is that the satisfaction of the basic "claim for the real" that cinema expresses is never fulfilled by a single element—even if it is the apparently fundamental indexicality of the signifier or the "transparency" of the representation. This issue is taken up in a recent book by Dudley Andrew, *What Cinema Is!*—a sort of manifesto praising film as an essentially realistic art. I would add that realism is produced by a negotiation between contradictory elements—a negotiation capable of providing a "suturing point." It is the presence of these "sutures"—always

³⁸¹ Ibid, p.96.

³⁸² Jacques-Alain Miller, Suture: Elements of the Logic of the Signifier, *Screen 18(4)*, Winter 1977/78, pp.4-30.

³⁸³ Franco Cassetti, Sutured Reality: Film, from Photographic to Digital, *October 138*, Fall 2011, p.104.

³⁸⁴ Ibid, p.96.

provisional, always fragile—that connects the digital to the realm of reality rather than to the realm of animation.³⁸⁵

In summary, in this section I explicated the complex traits of Metz's semiotics. On one hand, in his semiotics the reality of film, relying on linguistics and psychoanalysis, falls into the realm of scientific logics and rationality by which the vivid material nature of film images is degraded. On the other hand, Metz's concept of the impression of image indicates that the reality of film has a close relation to the imaginary nature of film. As Gunning points out in his re-evaluation of Metz's theory, the impression of reality is associated with cinematic motion and the spectator's perceptive participation. In addition, the reality of film, as Rushton refers, combines with the imaginary nature of film beyond a fetishistic illusion and hallucination. The physical reality of film cannot be separated from the imaginary nature of cinema. As Cassetti indicates, it should be 'sutured' by a variety of filmic elements and practices. It also evokes the importance of filmic styles and sensual perception, as Gunning states.

In this context, I contribute the concept of filmic virtualism. The reality of cinema, either photographic or digital, is the dialectical combination of indexical materiality and imaginary immateriality, which raises the issue of the importance of cinematic movement and the spectator's sense in the age of digital cinema. This is because digital cinema presents the 'new and enhanced' contradiction between reality and the imaginary. As I already examined in the preceding chapters, the hybrid concept of virtualism as the aesthetics of digital virtualism is a theoretical attempt to designate the nature of cinema in terms of the complexity of filmic reality and imagination. In the next section, I expand this theoretical attempt by critically examining of postmodern hyper-reality.

3-3. Postmodernism: Baudrillard and Hyperreality

³⁸⁵ Ibid, p.106.

This section investigates Baudrillard's thoughts of the cinematic image in relation to the aesthetics of digital virtuality. First, I deal with his concept of hyperreality and simulation in terms of the ontological relation between reality and the image. I claim that Baudrillard's concepts are based on the primacy of the hyper-real image over physical reality, which beckons toward the aesthetical nihilism of the distinction between the actual and the virtual, the material and the immaterial, and the real and the imaginary. Second, I argue his contradictory complexity of the force of cinema in contemporary postmodern culture. Although he consistently degrades the capacity and effect of cinema by the concept of hyperreality and simulation, he concedes the importance and potentiality of film as 'white magic' and 'seduction'. Finally, I examine his negative perspectives on the proliferation of digital virtuality. He claims that digital virtuality results in the annihilation of reality by the pursuit of 'technological perfect' and 'integral reality'. By recounting Baudrillard's postmodern aesthetics, I explore the ontological monism of filmic reality and the aesthetical positivity of digital virtualism.

First, let me begin with Baudrillard's viewpoint of the ontology of the image. Baudrillard defines the image as a special sign that is no longer real.³⁸⁶ For him, the image does not have the referent of material objects. Hence, he conceptualises the image as the 'hyperreal' in relation to reality, which means the excess and loss of reality, simultaneously.³⁸⁷ For him, the hyperreality of the image goes beyond physical reality. It denies and destroys the material reality, instead of imitating and representing the real object and referent. By conceptualising 'hyperreality' beyond reality, Baudrillard describes the paradoxical status of the image in the postmodern view that the signs of the real substitute for the real:

The real is produced from miniaturized cells, matrices, and memory banks, models of control - and it can be reproduced an indefinite number of times from these. It no longer needs to be rational, because it no longer measures itself

³⁸⁶ Jean Baudrillard, *Simulacra and Simulation*, translated by Sheila Faria Glaser, Ann Arbor: University of Michigan Press, 1994, p.6.

³⁸⁷ Andrew Robinson, Jean Baudrillard: Hyperreality and Implosion, *Ceasefire Magazine*, August 2012. <http://ceasefiremagazine.co.uk/in-theory-baudrillard-9/>

against either an ideal or negative instance. It is no longer anything but operational. In fact, it is no longer really the real, because no imaginary envelops it anymore. It is a hyperreal, produced from a radiating synthesis of combinatory models in a hyperspace without atmosphere.³⁸⁸

According to Nicholas Oberly, the conceptual crux of hyperreality is the simulation and simulacrum.³⁸⁹ He argues that simulation is characterized by a blending of reality and representation. Baudrillard classifies the image into four successive stages: the reflection of a basic reality, the perversion of a basic reality, the absence of a basic reality, and no relation to any reality whatever. In the last stage, the image transforms to its own pure simulacrum,³⁹⁰ which is the perfect loss of the relation with reality and representation. For Baudrillard, the simulacrum of the image no longer represents reality. It is nothing but the hyperreal simulation of the real. Baudrillard mentions that simulation is no longer that of a territory, a referential being or a substance. It is the generation by models of a real without origin or reality: a hyper-real.³⁹¹ Thus, the image, for him, is both hyperreality and simulation, that is, the copy without an origin. The copy of the image no longer has an origin, a reality, an authenticity, analogy, and indexicality. Instead, it destructs and overturns the original of reality. For Baudrillard, the world of the image is the realm of the simulacrum, in which takes place the loss of both physical reality and the original. He raises the issue that the image cannot represent the authenticity of reality. For him, the simulation of the image presents the crisis and impossibility of representation:

Such is simulation, insofar as it is opposed to representation. Representation stems from the principle of the equivalence of the sign and of the real (even if this equivalence is Utopian, it is a fundamental axiom). Simulation, on the contrary, stems from the Utopia of the principle of equivalence, from the radical negation of the sign as value, from the sign as the reversion and death sentence of every

³⁸⁸ Ibid, pp.2-3.

³⁸⁹ Nicholas Oberly, *Theories of Media Keywords Glossary: Reality, Hyperreality*, The Chicago School of Media Theory, 2003. <http://csmt.uchicago.edu/glossary2004/realityhyperreality.htm>

³⁹⁰ Jean Baudrillard, *Simulacra and Simulation*, translated by Sheila Faria Glaser, Ann Arbor: University of Michigan Press, 1994, p.6.

³⁹¹ Jean Baudrillard, *Simulations*, translated by Paul Foss, Paul Patton and Philip Beitchman, New York: Semiotext(e), 1983, p.12.

reference. Whereas representation attempts to absorb simulation by interpreting it as a false representation, simulation envelops the whole edifice of representation itself as a simulacrum.³⁹²

Melanie Chan points out that Baudrillard's concept of simulacra and simulation is based on contemporary capitalism since the 1960s, in which the separation between symbolic system and agency proliferated.³⁹³ In his early book, *The Consumer Society* (1970), Baudrillard departs from Marxist thought, which explores the possibility of social innovation by the actual force of commodity production.³⁹⁴ Instead, he asserts that the consumer society is driven by symbolic systems and mediated agencies. Baudrillard claims that the actual production of the commodity is separate from the virtual process of its signs and signification. In consumer society, the actual object and referent are replaced by the symbolic system and images mediated by technological media.

Accordingly, William Merrin argues that Baudrillard postulates the clear distinction between symbolic and semiotics and has a strong critical sympathy with the symbolic as a higher mode of existence.³⁹⁵ For Baudrillard, the transformation of capitalism from commodity production to symbolic signification brings about the primacy of the symbolic image over actual reality. In this regard, Merrin establishes a link between Baudrillard's concept of the simulacrum and the ontology of technological media. In particular, Merrin contrasts Baudrillard's pessimistic view to McLuhan's optimistic view of the symbolic mediation of media and images:

³⁹² Jean Baudrillard, *Simulacra and Simulation*, translated by Sheila Faria Glaser, Ann Arbor: University of Michigan Press, 1994, p.6.

³⁹³ Melanie Chan, Virtually Real and Really Virtual: Baudrillard's Procession of Simulacrum and The Matrix, *International Journal of Baudrillard Studies*, Vol. 5, No.2, July 2008, (n.p.)

³⁹⁴ Meanwhile, Christopher Jacobi contends that there is an important shift between the early and late Baudrillard; 'Baudrillard's early works like *The System of Objects* (1968) or *The Consumer Society* (1970) can be seen as an extension of critical sociology of everyday life and as an update of Marxist thought, "exchange value" in particular. Later works by Baudrillard like *Fatal Strategies* (1983) or *Cool Memories* (1987) are distinctively different in their orientation and promote nihilistic (decisively contra-Marxist) ideas'. Christopher Jacobi, *What do Baudrillard's Theories of 'Simulation' and 'Hyper-reality' Tell Us about the Information Society?*, 2012.

http://www.essex.ac.uk/sociology/documents/pdf/ug_journal/vol7/2012SC224_ChristopherJacobi_FINAL.pdf

³⁹⁵ William Merrin, Speculation to The Death: Machinic Integration and Transformation Within A Virtualized Reality, *International Journal of Baudrillard Studies*, Vol. 4, No.2, July 2007, (n.p.)

Thus electronic media are one of the main sources of the sign's production and replacement of the symbolic, leading him to reverse McLuhan's conclusion that they lead to a direct, extended, real participation in the world. Instead, he argues, they offer a "filtered, fragmented world", "industrially processed" by the media "into sign material". "So we live", Baudrillard says, "sheltered by signs, in the denial of the real", safe in our absence from the world, whilst enjoying the alibi of participation provided by its semiotic simulacrum. The media, therefore, simultaneously actualise and spectacularly dramatise the real and de-actualise it, distancing us from it in the perfection of its simulation and its consumption in a safe, semiotic form.³⁹⁶

According to Douglas Kellner, Baudrillard considers media, such as TV, photographs, film, and digital gadgets, 'key simulation machines' that reproduce images, signs, and codes constituting an autonomous realm of hyper-reality and the obliteration of the social.³⁹⁷ Baudrillard argues that the hyperreal image simulated by technological media gives rise to the 'obscenity' of the world and the 'inertia' of the mass caused by the meaninglessness of reality and the impossibility of representation.³⁹⁸ He describes that the excess and explosion of information and the image causes the 'implosion' of all meaning.³⁹⁹ The hyperreal image and simulated sign implode the meaning of reality and the subjectivity of the mass. Baudrillard's nihilist vision of the hyperreal image is specifically revealed in his later essays. He sarcastically envisions the digitalisation of media and the virtualization of images in terms of 'the desert of the real':

Illusion, dreams, passion, madness, drugs but also artifice and simulacrum were the natural predators of reality. All these have lost their energy as if they were

³⁹⁶ Ibid.

³⁹⁷ D. Kellner, Jean Baudrillard After Modernity: Provocations on a Provocateur and Challenger, *International Journal of Baudrillard Studies*, Vol. 3, No. 1, 2006, p.28.

³⁹⁸ Jean Baudrillard, Metamorphosis Metaphor Metastasis, *The Ecstasy of Communication*, translated by Bernard and Caroline Schütze, edited by S. Lotringer, New York: Semiotexte(e), 1988, p.44.

³⁹⁹ Jean Baudrillard, The Masses: The Implosion of the Social in the Media, translated by Marie Maclean, edited by M. Poster, *Jean Baudrillard: Selected Writings*, Stanford: Stanford University Press, 2001, p.210-222.

suffering from some incurable, surreptitious disease (that might very well be reality itself). One needs then to find an artificial equivalent for them. Otherwise, once it has reached a critical mass, reality will spontaneously destroy itself. It will implode by itself – which it is already doing now, making room for the Virtual in all its forms. The Virtual is the ultimate predator, the plunderer of reality.⁴⁰⁰

Baudrillard's ontology of the image, which is based on the unreal and falsity of the simulacrum and virtuality, certainly contrasts Deleuze's concepts. Although they share the similar terminology of 'simulacrum', by comparing differences between Baudrillard and Deleuze, we arrive at a point opposite simulacrum. Above all, in terms of the aesthetical ontology of images, Baudrillard separates absolutely the simulacrum of the image from the material reality. For him, the hyperreal simulation is no longer the realm of physical reality; it loses the material object and referent. The 'divine irrelevance of the image'⁴⁰¹ is segregated from the real meaning of the physical world. For him, the image is never exchanged for the real. He considers that the image is only exchanged for itself. For Baudrillard, the image exists not in physical reality, but in the spectacle and play of symbolic images and signs. In this regard, Baudrillard articulates that the simulacra of the image and the sign are not in the realm of physical reality, but in the world of 'symbolic exchange', which breaks down the materiality and movement of the world.⁴⁰²

In contrast, Deleuze argues for the material nature of the image. For Deleuze, simulacra are not contrary to physical reality, but are new forms of reality, which is not the unreal or non-real, but the real itself. In terms of material monism, Deleuze claims that the simulacra of the image are the realm of materiality, in which the movement of objects and the complexity of time ceaselessly encounter and interact in the plane of immanence.⁴⁰³

⁴⁰⁰ Jean Baudrillard, *Violence of the Virtual and Integral Reality*, translated by Marilyn Lambert-Drache, *International Journal of Baudrillard Studies*, Vol. 2, No. 2, July 2005, (n.p.)

⁴⁰¹ Jean Baudrillard, *Simulacra and Simulation*, translated by Sheila Faria Glaser, Ann Arbor: University of Michigan Press, 1994, p.4.

⁴⁰² Jean Baudrillard, *Symbolic Exchange and Death*, translated by Iain Hamilton Grant, London: SAGE, 1993, p.40.

⁴⁰³ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam. London: The Athlone Press, 1986, p.61.

According to Clair Colebrook, Baudrillard considers only one side of the relation between the real and the simulation, reality and the image, the material and the immaterial, and the actual and the virtual.⁴⁰⁴ Colebrook claims that Baudrillard's ontology of the image is based on the rigid distinction between the actual and the virtual, while Deleuze conceives the endless becoming of the actual and the virtual. For Deleuze, the actual is already an image, and actual being is produced by virtual possibilities. The physical reality emerges and transforms from the becoming process of the virtual, the image, and the simulacrum. Deleuze emphasises the incessant and endless 'becoming' of the actual and the virtual and the real and the imaginary. For Deleuze, the reality is always the 'actual-virtual circuit',⁴⁰⁵ in which the actual is virtualising, and the virtual is actualising. Deleuze's simulacrum does not mean the similarity and analogy of the image to the model. It is not a reproductive image of reality, but physical reality itself. They are nothing but the multiplicity of singularity, which Deleuze calls 'the univocity of being'.⁴⁰⁶

Conversely, for Baudrillard, the ontological separation of the image from reality entails the negative worldview of simulacra. According to Gary Genosko, Baudrillard arrives at a 'hopeless' reality, in which the simulation and virtualisation of the image falls down the 'alibi of referent' and the 'effect of the sign'.⁴⁰⁷ Baudrillard offers a pessimistic vision in postmodern society, which exhibits the 'special effect'⁴⁰⁸ of simulated images instead of the authenticity of physical reality. In a sense, his cynical assertion of hyperreal images paradoxically invokes his hopeless sympathy with the authenticity and transparency of the real. He contrasts the 'good' realm of physical reality to the 'bad' territory of simulacra. For him, the simulacrum is a 'false' evil in opposition to 'true' reality. Consequently, as Christopher Norris observes, Baudrillard's postmodern ontology of

⁴⁰⁴ Claire Colebrook, *Gilles Deleuze*, London: Routledge, 2002, pp.98-99.

⁴⁰⁵ Gilles Deleuze and Claire Parnet, *Dialogues 2*, translated by Hugh Tomlinson and Barbara Habberjam, New York: Columbia University Press, 2007, pp.150-151.

⁴⁰⁶ Ibid, p.206. See Alain Badiou on the philosophy of Deleuze. Alain Badiou, *Deleuze: the Clamor of Being*, Minneapolis: University of Minnesota Press, 2000, p.143.

⁴⁰⁷ Gary Genosko, *Baudrillard and Signs – Signification Ablaze*, London, New York: Routledge, 1994, p.41.

⁴⁰⁸ Jean Baudrillard, *The Intelligence of Evil Or The Lucidity Pact*, translated by Chris Turner, Oxford and New York: Berg, 2005, p.80.

images relies on a 'sceptical mistrust', in which 'there is no possibility of distinguishing truth from falsehood'.⁴⁰⁹ Baudrillard concludes that the simulacrum of the virtual image is the 'perfect extermination' of physical reality.⁴¹⁰

Baudrillard's ontology of the image, which postulates the absolute isolation from the material reality, is connected to the radical criticism of the cinema in relation to the precession of hyperreal images. Baudrillard's position on the cinema is ambivalent but consistent. On one hand, he intensely favours cinematic magic and illusion. For him, the cinema is a 'mythical image', celebrated irreplaceably and blessed specially by its attractive imagination. Of his intimacy with cinema, he says, "I like the cinema. Of all the spectacles it's even the only one I do like".⁴¹¹ Because of his intense fascination with cinematic magic, Baudrillard firmly appraises the affirmative capacity and possibility of cinematic movement and time:

cinema too can recover the specific quality of the image – which is both complicit with, and apparently foreign to, narration – having its own static intensity, though fired with all the energy of movement, crystallizing a whole course of events in a still image by a principle of condensation that runs counter to the principle of high dilution and dispersion of all our current images. In Godard, for example.⁴¹²

Nevertheless, for Baudrillard, the cinema is none other than the 'white magic'⁴¹³ of simulated images, separating and seducing the mass from the world of actual reality. He strongly denounces the hyperreal images of cinema. Baudrillard contrasts the 'pure image' of the photograph to the 'simulated' image of cinema. For him, while the photograph is a medium maintaining the power of illusion and enigma, cinema is an

⁴⁰⁹ Norris Christopher, *Reclaiming Truth: Contribution to a Critique of Cultural Relativism*, London: Lawrence and Wishart Ltd, 1996, pp.182-183.

⁴¹⁰ Jean Baudrillard, *The Vital Illusion*, New York: Columbia University Press, 2000, p.63.

⁴¹¹ Jean Baudrillard, *Baudrillard Live: Selected Interviews*, edited by Mike Gane. London: Routledge, 1993, p.29.

⁴¹² Jean Baudrillard, *Within the Horizon of the Object: Photographies, 1985–1998*, edited by Peter Weibel, Ostfildern-Ruit: Hatje Cantz, 1999, pp.134-135.

⁴¹³ Jean Baudrillard, *The Spirit of Terrorism*, translated by Chris Turner, London, New York: Verso, 2002, pp.29-30.

‘impure’ and ‘contaminated’ image fabricating and manipulating the actual movement and the real time. He describes that, while the photographed image leaves behind the ‘impenetrable enigma’ and illusion of the object, the illusionary capacity of cinematic images vanishes in the evolution of the technological process from silent movies to talkies, colour, high technology, and special effects. In other words, Baudrillard claims that the technological development of cinema toward realism causes the disappearance of the imaginary and the magic nature of cinematic image. While the photograph denies the reality of the image but retains the pure state of illusion, cinema pursues physical reality but loses the illusionary traits of the image. Here Baudrillard’s point is that the cinema reaches the hyperreal state by its technological simulation of physical reality, in which the ‘pure’ illusion of the image increasingly disappears:

the photographic image is the purest because it simulates neither time nor movement and confines itself to the most rigorous unreality. All the other forms (cinema, video, computer generated images) are merely attenuated forms of the pure image and its rupture with the real.⁴¹⁴

Baudrillard criticises the ‘impure’ hyperreality of technological images. Technological automatism deprives the cinematic image of magical illusion as well as traces of reality. For Baudrillard, the technological development of the virtual image results in the loss of the pure image, the annihilation of physical reality, and the hyperreality of simulated images.⁴¹⁵

In this regard, Gerry Coulter points out that Baudrillard’s concept of cinematic hyperreality is associated with the obsession of technology and realism.⁴¹⁶ According to Coulter, Baudrillard’s concept of cinema has been on a ‘downward trajectory’ over the past century, from the fantastic and mythical, to the realistic and hyperrealistic. In

⁴¹⁴ Jean Baudrillard, *The Intelligence of Evil Or The Lucidity Pact*, translated by Chris Turner, Oxford, New York: Berg, 2005, p.97.

⁴¹⁵ Jean Baudrillard, *The Gulf War Did Not Take Place*, translated by Paul Patton. Bloomington: University of Indiana Press, 1995, p.49.

⁴¹⁶ Gerry Coulter, Jean Baudrillard and Cinema: The Problems of Technology, Realism and History, *Film-Philosophy* 14(2), 2010, p.8.

particular, for Baudrillard, the technological development of cinematic virtuality, progressing from talkies, to colour, to the recent digital technology, has resulted in the ‘further degradation of the image’.⁴¹⁷ Moreover, with increasing simulation and ‘special effects’, cinema no longer believes in itself.⁴¹⁸ It is not the representation of physical reality, but the ‘disappearance of the reality’.⁴¹⁹ For Baudrillard, the hyperreal image of cinema mediated technological virtuality exterminates the ‘pure’ dream and fantasy of images.

Although it is true that Baudrillard disparages the technological virtuality and ontological reality of the cinema, he also suggests the examples of some ‘good’ films in terms of the ‘growing blurring between the real and the virtual’.⁴²⁰ As it were, his complex position on cinema does not dismiss the possibility of ‘good’ films, such as *Minority Report* (Stephen Spielberg, 2002), *Mulholland Drive* (David Lynch, 2001), and *The Truman Show* (Peter Weir, 1998). Baudrillard considers that these ‘good’ films treat the increasing indistinction between the real and the virtual. In contrast, Baudrillard consistently alerts against ‘bad’ films of pornography and ‘cool cinema’ of disaster and terrorism,⁴²¹ which remove the possibility of illusion in the radical sense.⁴²² Baudrillard definitely criticises the hyperreal ontology of cinematic images and the ‘desperate’ state of technological virtuality. Nevertheless, his fascination with cinematic images leads to his vision that there is a minimal possibility for the restoration of cinematic illusion and fantasy. Regarding this point, as Coulter points out,⁴²³ we can discover Baudrillard’s ambivalent attitude toward cinematic images, in which he tries to give a strict warning about the

⁴¹⁷ Ibid, p.9.

⁴¹⁸ Jean Baudrillard, *Paroxysm: Interviews With Philippe Petit*, translated by Chris Turner, New York: Verso, 1998, pp.110-111.

⁴¹⁹ Jean Baudrillard, *The Intelligence of Evil Or The Lucidity Pact*, translated by Chris Turner, Oxford, New York: Berg, 2005, p.125.

⁴²⁰ Jean Baudrillard, The Matrix Decoded: Le Nouvel Observateur Interview with Jean Baudrillard, translated by Gary Genosko and Adam Bryx, *International Journal of Baudrillard Studies*, Vol. 1, No. 2, 2004, (n.p.)

⁴²¹ Jean Baudrillard, *Symbolic Exchange and Death*, translated by Iain Hamilton Grant, London: Sage, 1993, p.32.

⁴²² Jean Baudrillard, *Art and Artefact*, edited by Nicholas Zurbrugg, London: SAGE Publications, 1997, p.8.

⁴²³ Gerry Coulter, Jean Baudrillard and Cinema: The Problems of Technology, Realism and History, *Film-Philosophy* 14(2), 2010, p.9.

disempowering aspect of our contemporary lives, despite his pessimistic vision of hyperreal images.

Baudrillard's view of *The Matrix* trilogy (Andy and Larry Wachowski, 1999-2003) precisely shows his position on cinematic ontology. He criticises that *The Matrix* trilogy is dedicated to attesting to the separation of simulacrum and the virtual world from actual reality. For him, the virtual world of *The Matrix* is nothing but absolute isolation from the reality and the 'disappearance of the real'⁴²⁴. *The Matrix*'s virtual images replace reality with technological simulation. Thus, he denounces not only technological virtuality but also aesthetic confusion based on the rigid distinction between the actual and the virtual. *The Matrix*, for Baudrillard, cannot be a 'good' movie because it eludes his concept of hyperreality as the binary opposition between the actual and the virtual:

The most embarrassing part of the film is that the new problem posed by simulation is confused with its classical, Platonic treatment. This is a serious flaw. The radical illusion of the world is a problem faced by all great cultures, which they have solved through art and symbolization. What we have invented, in order to support this suffering, is a simulated real, which henceforth supplants the real and is its final solution, a virtual universe from which everything dangerous and negative has been expelled. And *The Matrix* is undeniably part of that. Everything belonging to the order of dream, utopia and phantasm is given expression, 'realized'. [...] *The Matrix* is surely the kind of film about the matrix that the matrix would have been able to produce.⁴²⁵

In this sense, Catherine Constable argues that Baudrillard's concept of hyperreality concerns the 'mythic aspects' of the virtual world.⁴²⁶ She claims that Baudrillard denies the dichotomy between the real and the hyperreal, and focuses on the 'mythological

⁴²⁴ Jean Baudrillard, *Impossible Exchange*, translated by Chris Turner, London, New York: Verso, 2001, p.145.

⁴²⁵ Jean Baudrillard, *The Matrix Decoded: Le Nouvel Observateur Interview with Jean Baudrillard*, translated by Gary Genosko and Adam Bryx, *International Journal of Baudrillard Studies*, Vol. 1, No. 2, 2004, (n.p.)

⁴²⁶ Catherine Constable, *Baudrillard reloaded: Interrelating Philosophy and Film Via The Matrix Trilogy*, *Screen 47(2)*, Summer 2006, p.241.

material' within the virtual world of the simulacrum. For Constable, Baudrillard's mythic aspect is not the 'hope of returning to the real',⁴²⁷ but a new alternative within a pure simulacrum. She claims that Baudrillard's hyperreality reconceptualises a single, all-encompassing, universe of simulation as a series of differential worlds.⁴²⁸ She explains that Baudrillard's hyperreality should be grasped according to the concept of 'difference' and 'progression' within the universe of simulacra. For Constable, the mythological material within simulacra leads to a re-interpretation of Baudrillard's concept of hyperreality as a progressive potentiality and alternative beyond his nihilist vision:

In Baudrillard's work the image of the mirror curving over on itself, imploding dialectical opposition, is also the visual demarcation of a final zero, signifying the end of meaning and choice within the hyperreal. The possible, alternative, differential worlds of science fiction are merged into the single universe of simulation with the result that there are no possibilities or alternatives any more. The Matrix Trilogy reintroduces the concept of the differential into its version of the hyperreal. This is done through the presentation of a series of hyperreal worlds: the matrix, the vats, Zion and the machine city, among others... The introduction of the concepts of difference and progression to the hyperreal means that The Matrix Trilogy can be seen to draw on Baudrillard's imagery without promulgating his nihilism.⁴²⁹

In contrast to Constable's positive reinterpretation of Baudrillard's hyperreality in terms of the 'mythic material' within the universe of simulacra, Andrew Gordon claims that Baudrillard's view of simulated virtuality does not suggest a vision of the affirmative possibility of physical reality.⁴³⁰ For Gordon, Baudrillard's simulacrum is none other than a 'symbolic system' of codes and signs separated from the realm of the real. Baudrillard's

⁴²⁷ Ibid, p.239.

⁴²⁸ Ibid, p.249.

⁴²⁹ Ibid, p.241.

⁴³⁰ Andrew Gordon, The Matrix Paradigm of Postmodernism or Intellectual Poseur? (Part Two), *Taking the Red Pill: Science, Philosophy and the Religion in The Matrix*, edited by Glenn Yeffeth, Dallas, Texas: Benbella Books, 2003, p.112.

vision of simulacra, which relies on the ‘symbolic intervention’ and ‘implosion’,⁴³¹ does not conceive any positive implication in relation to the interaction with physical reality. In this sense, Gordon articulates that the solution of *The Matrix* trilogy is more reasonable than is Baudrillard’s sceptical assertion of the redemption of the real. For Gordon, this is because Neo’s hope of ‘returning to the real’ or ‘true love’ provides a practical alternative to the ‘symbolic implosion’ of simulacra: “*The Matrix* offers a solution to the problem of simulation whereas Baudrillard believes there is none”.⁴³²

Although there are many different views of Baudrillard’s concept of simulation, it is clear that he designates the nature of cinematic images in terms of hyperreality and virtuality beyond the representative territory of physical reality. As Coulter points out, Baudrillard was well aware of the ‘mythical properties’ of the cinematic images.⁴³³ In addition, David Clarke indicates that Baudrillard’s thought on simulation and its relation to seduction carries significant, untapped potential for film theory.⁴³⁴ Baudrillard states that the heart of the cinematic myth is seduction.⁴³⁵ He defines seduction as ‘the destiny of appearance’, as opposed to the ‘truths of deep structure’.⁴³⁶ For Baudrillard, seduction is the pure form of radical obscenity, which is visible and undifferentiated. He claims that, while simulation is a disenchanted form, seduction is an ‘enchanted form’. Thus, the seduction of cinema is the ‘enchanted’ realm of appearance and illusion beyond actual objects. For Baudrillard, the power of cinema originates in the fascinating, magic, attractive force of signs and spectacles. The seduction of the cinematic image is the symbolic, illusionary and ‘diabolical’ challenge to the truth of reality.⁴³⁷ It is a slippage of reality, and it seduces reality by the play of signs and illusions. As Clark accurately points out,

⁴³¹ Jean Baudrillard, *Symbolic Exchange and Death*, translated by Iain Hamilton Grant, London: SAGE, 1993, p.4.

⁴³² Andrew Gordon, The Matrix Paradigm of Postmodernism or Intellectual Poseur? (Part Two), *Taking the Red Pill: Science, Philosophy and the Religion in The Matrix*, edited by Glenn Yeffeth, Dallas, Texas: Benbella Books, 2003, p.106.

⁴³³ Gerry Coulter, Jean Baudrillard and Cinema: The Problems of Technology, Realism and History, *Film-Philosophy* 14(2), 2010, p.6.

⁴³⁴ David B. Clarke, Dreams Rise in the Darkness: the White Magic of Cinema, *Film-Philosophy*, Vol. 14, No. 2, 2010, p.22.

⁴³⁵ Jean Baudrillard, *Seduction*, translated by Brian Singer, London: Macmillan, 1990, p.95.

⁴³⁶ Jean Baudrillard, *Jean Baudrillard : Selected Writings*, edited by Mark Poster, Cambridge: Polity, 2001, pp.163-164.

⁴³⁷ Jean Baudrillard, *The Evil Demon of Images*, translated by Paul Patton and Paul Foss, Sydney: Power Institute Publications, 1987, p.13 and pp.45-46.

Baudrillard indicates the illusionary nature of cinematic images in his concept of simulation and seduction.⁴³⁸

Similarly, Alan Cholodenko observes that Baudrillard approaches film with the primal joy of a child, with fascination, illusion, myth, magic, seduction and cryptic complexity.⁴³⁹ Moreover, he emphasises that Baudrillard's assertion of hyperreal films is none other than the criticism of 'hyperrealkitsch', that is, the pure and empty simulation of hyperreal cinema. For Cholodenko, Baudrillard's hyperreal cinema is the 'hyper-Cryptic Complex' and 'hyperreal-attraction' beyond real referents and representation.⁴⁴⁰ Cholodenko argues that Baudrillard's hyperreal cinema is a contradictory articulation of the reality and virtuality of cinematic images:

But hyperreal film is not a matter of simple reversal, of film becoming reality and reality becoming film, but rather of film becoming at once more and less film than film and at the same time more and less reality than reality, as hyperreality is reality at once more and less reality than reality and at the same time more and less film than film. In other words, it is a matter not of simple reversal but rather of hyper-indetermination, as each takes off on its own hyperanimated, hyperanimatic trajectory, each denegating the other and itself more and more, leaving one in an increasingly definitive state of radical, virtual uncertainty.⁴⁴¹

In this regard, Baudrillard's ambivalent position on cinematic ontology is connected to an intense refutation of the domination of hyperreal cinema. In particular, in his later writings he strongly criticizes the increasing virtuality of cinematic images simulated by digital technology. According to Merrin, in his later works Baudrillard rethinks hyperreality as 'virtuality'. Merrin explains that Baudrillard separates the concept of virtuality from the Aristotelian logic of 'virtual reality' with its connotations of an

⁴³⁸ David B. Clarke, *Dreams Rise in the Darkness: the White Magic of Cinema*, *Film-Philosophy*, Vol. 14, No. 2, 2010, p.32.

⁴³⁹ Alan Cholodenko, *The 'ABCs' Of B, Or: To Be And Not To Be B*, *Film-Philosophy*, Vol. 14, No. 2, 2010, pp.97-98.

⁴⁴⁰ *Ibid.*, p.100.

⁴⁴¹ *Ibid.*, p.99.

inferior, artificial reality. Merrin argues that Baudrillard's virtuality is that which takes the place of the real and thus is its final solution insofar as it both accomplishes the world in its definite reality and marks its dissolution. Baudrillard claims that the 'technical perfection' of digital images results in the haziness of the actual object and the radical disavowal of reality.⁴⁴² The virtuality of digital images destroys the world of representation and causes the 'death of god' and a 'desert of the real'.⁴⁴³ The 'excess of the real' pursued by digital simulation brings about the 'extermination of the real'. The meaning and signification of the realistic image implode in the virtuality of digital simulation.⁴⁴⁴ Baudrillard pessimistically envisions the total annihilation of physical reality and historical time in the virtuality of digital images:

The same goes for everything that has to do with virtual reality and synthesized models. Digital and programmed, the real does not even have time to happen. It is sanitized (prophylactisé), pulverized, short-circuited in its shell like the crime in *Minority Report*. Thinking itself is anticipated by models of artificial intelligence. Time itself, the time already lived out that has no more time to take place, is captured and spirited away by virtual time, which we choose, mockingly no doubt, to call "real time." The historical time of the event, the psychological time of affect and passion, the subjective time of judgment and will, all are being questioned simultaneously. We will not even give time to time.⁴⁴⁵

In this context, Baudrillard degrades the digital aesthetics of 'real time' and 'interaction'.⁴⁴⁶ For him, real time and interactive aesthetics are a kind of 'violence' against time and the event. On the real-time screen simulated by computer manipulation, all possibilities are realized virtually, which means the end to their possibility. All

⁴⁴² Jean Baudrillard, *Within the Horizon of the Object: Photographies, 1985–1998*, edited by Peter Weibel, Ostfildern-Ruit: Hatje Cantz, 1999, pp.148-149.

⁴⁴³ Jean Baudrillard, *Simulations*, translated by Paul Foss, Paul Patton and Philip Beitchman, New York: Semiotext(e), 1983, p.40.

⁴⁴⁴ Jean Baudrillard, *Symbolic Exchange and Death*, translated by Iain Hamilton Grant, London: SAGE, 1993, p.4.

⁴⁴⁵ Jean Baudrillard, *Violence of the Virtual and Integral Reality*, translated by Marilyn Lambert-Drache, *International Journal of Baudrillard Studies*, Vol. 2, No. 2, July 2005, (n.p.)

⁴⁴⁶ Jean Baudrillard, *Virtuality and Events: The Hell of Power*, translated by Chris Turner, *International Journal of Baudrillard Studies*, Vol. 3, No. 2, July 2006, (n.p.)

potentialities of cinematic images are auto-programmed by computer simulation beyond both actual and material time. In addition, the virtual manipulation of images by computer programs and interaction results in the disruption and perversion of realistic images. As Merrin properly mentions, Baudrillard indicates that technological ‘interaction’ is the loss of humanity to machines and digital gadgets that is, ‘technical fetishism’ and ‘biological confusion’.⁴⁴⁷ Eventually, Baudrillard claims that real time and interaction mediated by digital simulation cause the dematerialization of historical time and reality. For him, the aesthetics of digital virtuality is ‘violence’ against physical reality and humanity.

Furthermore, Baudrillard asserts that digital virtuality is ‘the end of aesthetic illusion’, as well as the extermination of physical reality and historical time.⁴⁴⁸ Baudrillard defines the digital virtuality as ‘integral reality’, in which the annihilation of physical reality and aesthetic illusion takes place in the spectacle of simulated images. Integral reality is the world of virtuality pursued by technological perfection and realistic desire. The desire for perfect realism begets the faultless images of computer cinema as modified and manipulated by computer simulation. For Baudrillard, the cinematic virtuality synthesized by the computer is not only ‘technical fetishism’ but also aesthetic violence. There is no room for fuzziness or tremor; neither is space left to chance. Baudrillard claims that the digital cinema as manipulated by technological perfection is no longer conveys images of pure illusion, signs, appearance, and magic. Therefore, the integral reality of digital cinema, for him, is ‘the death of pure illusion and sign’.⁴⁴⁹

It is clear that Baudrillard describes the aesthetics of digital virtuality in terms of his consistent pessimism regarding technological progress and realism. Nevertheless, Baudrillard dreams of the pure illusion and poetic seduction of cinematic images, especially in his later works. He suggests the concept of ‘tremor’ along with

⁴⁴⁷ Willam Merrin, *Speculating to the Death: Machine Integration and Transformation Within A Virtualized Reality*, *International Journal of Baudrillard Studies*, Vol 4, No 2, July 2007, (n.p.)

⁴⁴⁸ Jean Baudrillard, *Violence of the Virtual and Intergral Reality*, translated by Marilyn Lambert-Drache, *International Journal of Baudrillard Studies*, Vol. 2, No. 2, July 2005, (n.p.)

⁴⁴⁹ Ibid.

Lichtenberg's aphorism.⁴⁵⁰ Baudrillard attempts to derive a new possibility in the 'hopeless' world of hyperreality and digital virtuality. In the violence and misery of the world, he desperately covets 'genuine images' of cinema as the 'hologram of the world':

I dream of an image that would be the automatic writing of the singularity of the world – after the Iconoclastic dream of Byzantium... The Iconoclasts rejected violently all other images, human-made icons that, according to them, were mere simulacra of the divine, acheiropoiesis. Similarly, we, modern iconoclasts, might reject all those images that are mere simulacra resembling the real, or an idea, an ideology, whichever truth. Most images are of that type, but virtual images even more so. They resemble nothing.⁴⁵¹

According to Chan, Baudrillard's later works suggest the possibility of reality in the limit of simulacra.⁴⁵² Chan claims that Baudrillard's notion of 'systemic anomalies'⁴⁵³ can be read in a positive light because it offers the meaningful potential of reality in digital virtuality. Chan evaluates that Baudrillard attempts to discover a new symbolic domain of images in the inevitable gap between reality and simulacrum. In addition, Merrin states that Baudrillard's radical analysis of digital virtuality remains one of the best mythologies in accessing the postmodern techno-culture as the desert of the real.⁴⁵⁴ He claims that Baudrillard's extreme denial of the possibility of digital images is a useful tool in the analysis of the extreme domination of simulacra. In this sense, Baudrillard could be a useful provocateur⁴⁵⁵ in the development of an aesthetical concept and theoretical strategy of simulation and digital virtuality, despite his exaggerated polarization and gloomy prospect. As Cholodenko wisely points out, Baudrillard's complicated position on the cinematic image and digital virtuality should be contemplated as the ambivalent

⁴⁵⁰ Ibid.

⁴⁵¹ Ibid.

⁴⁵² Melanie Chan, Virtually Real and Really Virtual: Baudrillard's Procession of Simulacrum and The Matrix, *International Journal of Baudrillard Studies*, Vol. 5, No.2, July 2008, (n.p.)

⁴⁵³ Jean Baudrillard, *The Vital Illusion*, New York: Columbia University Press, 2000, p.78.

⁴⁵⁴ William Merrin, Speculation to The Death: Machinic Integration and Transformation Within A Virtualized Reality, *International Journal of Baudrillard Studies*, Vol. 4, No.2, July 2007, (n.p.)

⁴⁵⁵ Douglas Kellner, Jean Baudrillard, *Stanford Encyclopedia of Philosophy*, 2007.

<http://plato.stanford.edu/entries/baudrillard/>

relationship between the hyperreality of today's apocalyptic world and the 'radical uncertainty' of hyperreal 'bad' cinema.⁴⁵⁶

In summary, in this section I argued that Baudrillard's ontology of cinematic images is based on the superiority of hyperreality and simulation over material objects and referents, which indicates the desperate status of physical reality by the proliferation of computer simulation. For him, digital virtuality pursued by 'technological perfect' and the obsession of realism gives rise to the extermination of physical reality. He claims that the excess of reality causes the loss of reality in simulated images of digital virtuality. His pessimistic view absolutely separates the aesthetics of digital virtuality from the positive potential of physical reality and the pure illusion of cinematic images.

Nonetheless, it is reasonable to mention Baudrillard's complex position of cinematic images and digital virtuality. He takes note of mythological and magic traits of cinema by the concept of simulation and seduction. He suggests a practical possibility of 'good' movies in blurred boarder between physical realty and simulacrum, against hyperreal 'bad' movies exhibiting the spectacle of pornography and terrorism. He dreams the pure illusion and 'uncertainty revolution'⁴⁵⁷ of cinematic images despite of the obsession of technical perfect and realism by computer-simulated images. I conclude that Baudrillard's positive assertion of cinematic images in his later works should be reappraised in terms of the aesthetics of digital virtualism. It implies the complex imbrication and interaction between physical reality and the illusionary image. In the next chapter, I demonstrate that Deleuze's affirmative aesthetics of digital virtuality go beyond Baudrillard's negative aesthetics of hyperreality and simulation.

3-4. After Postmodernism: Digital Aesthetics beyond Postmodernism

⁴⁵⁶ Alan Cholodenko, The 'ABCs' Of B, Or: To Be And Not To Be B, *Film-Philosophy*, Vol. 14, No. 2, 2010, p.108.

⁴⁵⁷ Jean Baudrillard, *Baudrillard Live: Selected Interviews*, edited by Mike Gane. London: Routledge, 1993, p.70.

In this section, I deal with new tendencies of digital aesthetics after postmodernism. With the growth of computer simulation, media convergence, and interactive aesthetics, the aesthetics of digital images raises the issues of postmodern hyper-reality. There is a significant imperative to examine the similarities and differences between postmodernism and digital aesthetics in the changing world of the information society and the digital revolution.

Here, my point is that digital ontology goes beyond postmodernism, although digital images share some of the characteristics of postmodernism. In fact, the postmodern aesthetic was born and has grown in the environmental condition of analogue images. Historically, the emergence and prosperity of postmodernism precedes the full-fledged development of digital images since the 1990s. While postmodernism mainly depends on analogue technology, the digital aesthetic is based on the interactivity and convergence of computer media. Furthermore, in terms of cinematic reality, digital aesthetics proposes a different ontology of image configuration from postmodernism. While postmodern aesthetics radically postulates the superiority of hyper-real images over physical reality, digital virtualism suggests the hybrid aesthetics of physical reality and virtual image. In this section, I emphasize that digital virtualism moves toward a new phase of image configuration beyond postmodern simulation and hyper-reality.

Regarding postmodernism and digital aesthetics, early disputes focused on the close relationship between postmodernism and digital cinema. Andrew Darley argues that the emergence of the digital image since the 1990s is associated with the aesthetics of postmodernism.⁴⁵⁸ Darley asserts that the first 3D animation movie, *Toy Story* (1995), presented the hyper-real aesthetics of postmodernism beyond the representative aesthetics of realism. For him, digital cinema has to do with the aesthetics of postmodernism in terms of the method of image configuration such as parody, pastiche, and collage. In a similar context, Lev Manovich points out that digital technology has an intimate

⁴⁵⁸ Andrew Darley, *Visual Digital Culture: Surface Play and Spectacle in New Media Genres*, London, New York: Routledge, 2000, pp.81-100.

relationship with the aesthetics of postmodernism. He considers computer technology based on the logic of ‘cut and paste’ to be related to new forms of postmodern culture in which the reality is consistently manipulated and transformed by the computer-simulated image itself:

And at the same time, to large extent it is this software which made post-modernism possible. The shift of all cultural production to first electronic tools such as switchers and DVEs (1980s) and then to computer-based tools (1990s) greatly eased the practice of relying on old media content in creating new productions. It also made media universe much more self-referential, because when all media objects are designed, stored and distributed using a single machine — computer — it becomes much easier to borrow elements from already existing objects. Here again the Web became the perfect expression of this logic, since new Web pages are routinely created by copying and modifying already existing Web pages. This applies both for home users creating their home pages and for professional Web, hypermedia, and game development companies.⁴⁵⁹

However, I would argue that the aesthetics of digital virtuality surpasses postmodern aesthetics despite the formal similarity and homogeneity between the digital image and postmodern aesthetics. Historically, while postmodern movements have gradually decreased since the late 1990s, the development of digital technology has proliferated more and more since that time. In other words, contemporary digital culture raises different questions in a new historical context beyond the boundary of postmodernism. Moreover, in terms of image aesthetics, ‘de-historicity’⁴⁶⁰ and the hyper-reality of postmodernism have nothing to do with the interactive and participatory aspects of digital

⁴⁵⁹ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.126.

⁴⁶⁰ Fredric Jameson, Postmodernism, or The Cultural Logic of Late Capitalism, *New Left Review* 1/146, July-August 1984, pp.66-80.

Fredric Jameson categorizes postmodern cinema as ‘nostalgia films’ and ‘conspiracy films’ that are de-historicized and ruptured by the social atmosphere of ‘post-capitalism’. He indicates that the cinema of postmodernism reveals the spirit of the age in a distorted representation of the total mapping of post-capitalism. Examples are *Chinatown* (1974) directed by Roman Polansky, *Conformist* (1970) by Bernardo Bertolucci, *Body Heat* (1981) by Lawrence Kasdan, Sydney Pollack’s *Three Days of The Condor* (1975), David Cronenberg’s *Videodrome* (1983), Alan Pakula’s obsession trilogy *Klute* (1971), *The Parallax View* (1974), and *All the President’s Men* (1976), and so on.

virtuality. The digital aesthetics aligned with the new socio-cultural demand of information and network in the twenty-first century has gradually separated from the aesthetics of postmodernism. Although Darley and Manovich grasp the tendency of postmodernism in the methodology of computer simulation (e.g., pastiche, parody, and digital collage), the aesthetic of digital virtualism proceeds to a broader concept and new levels of cinematic images. This difference between postmodernism and digital aesthetics is derived from the spread of digital convergence and interactivity beyond the hyper-reality of postmodernism based on the dichotomy between reality and image. The digital aesthetic, especially digital virtualism in my terminology, is a hybrid imbrication and a virtual conjunction between reality and images, while postmodernism depends on the primacy of simulacrum over physical reality. The aesthetic of digital virtualism is a denial of the dualistic separation between reality and image, and an affirmation of creative traversal and production of new reality. Thus, the end of postmodern history is replaced by the beginning of digital aesthetics. Although the historical imbrication and aesthetic homogeneity between postmodernism and digital aesthetics are still persistent, digital virtualism distinguishes its aesthetical ontology from postmodern de-historicity and hyper-reality.

In this context, Manuel Castells's theory of 'network society'⁴⁶¹ gives a socio-cultural basis of theoretical arguments related to the decay of postmodernism and the historical transition to a new aesthetic. The spread of digital aesthetics is closely associated with the interactive networking of digital information. With regard to the theory of the information society, there are many mainstream scholars highlighting the new utopia of capitalism based on information and knowledge: Daniel Bell's 'post-industrial society',⁴⁶² Peter Drucker's 'knowledge society',⁴⁶³ and Alvin Toffler's 'third wave'.⁴⁶⁴ Castells approaches the theory of the information society by the framework of 'the network society.' Above all, unlike the mainstream scholars' uncritical opinion of capitalism,

⁴⁶¹ M. Castells, *The Information Age: Economy, Society and Culture Volume 1: The Rise of the Network Society (second edition)*, Oxford: Wiley Blackwell, 2000, pp.28-33.

⁴⁶² Daniel Bell, *The Coming of Post-industrial Society: a Venture in Social Forecasting*, New York: Basic Books, 1976, pp.47-120.

⁴⁶³ Peter F. Drucker, *Post -Capitalist Society*, New York, NY: HarperBusiness, 1993, p.45.

⁴⁶⁴ Alvin Toffler, *The Third Wave*, New York: Morrow, 1980, pp.329-336.

Castells illuminates the process of the digital information revolution in terms of the ‘restructuring of capitalism’.⁴⁶⁵ He denies the technological determinism of the mainstream scholars and stresses that the network society implies the comprehensive networks of all elements of society including economic, political, and socio-cultural factors. In addition, Castells suggests more general and radical characteristics of the network society than Jan van Dijk, who first used the term ‘network society’.⁴⁶⁶ Castells claims that information networks have become the basic units of contemporary capitalism. For him, the network society is the new social morphology and an architecture in which the complex networks of capital, commodity, human, knowledge, and information flow and entangle without individual separation. Finally, Castells emphasizes the core role of computer networks and the Internet. He defines the network society as ‘flow society’,⁴⁶⁷ in which capital and labour, human and information are linked and exchanged by computer networks and digital media. He also notes that computer networks and the Internet promote the global network society beyond geographical boundaries. Consequently, for Castells, the rise of interactive networks by new digital media results in the diversification of mass audience and the ‘culture of real virtuality’ in which all realities are virtually perceived and communicated through symbols:

What is then a communication system that, in contrast to earlier historical experience, generates real virtuality? *It is a system in which reality itself (that is, people’s material/symbolic existence) is entirely captured, fully immersed in a virtual image setting, in the world of make believe, in which appearances are not just on the screen through which experience is communicated, but they become the experience.* (Castells’s emphasis)⁴⁶⁸

⁴⁶⁵ M. Castells, *The Information Age: Economy, Society and Culture Volume 1: The Rise of the Network Society (second edition)*, Oxford: Wiley Blackwell, 2000, p.135.

⁴⁶⁶ Jan van Dijk, *The Network Society*, London: SAGE, 2006, pp.32-41.

⁴⁶⁷ M. Castells, *The Information Age: Economy, Society and Culture Volume 1: The Rise of the Network Society (second edition)*, Oxford: Wiley Blackwell, 2000, pp.407-409.

⁴⁶⁸ *Ibid*, p.404.

While Castells focuses on the sociological implication of digital networks, Antonio Negri and Michael Hardt suggest more politically radical and class-centred perspectives of digital culture and aesthetics beyond postmodernism. In particular, they consistently assert ‘new forms of class antagonism’ in postmodern capitalism.⁴⁶⁹ Negri and Hardt emphasise the increased possibility of class struggle in postmodern society, opposing the de-historicity and nihilism of postmodernism. They consider the aesthetics of postmodernism the cultural logic of neoliberal and global capitalism. As Negri and Hardt claim, the empire of multinational capitalism no longer has an ‘outside’.⁴⁷⁰ Neoliberalism throws away the public sphere and neutral territory of humans and society (education, health, culture, environment, democratic values, and even the human body) into the cold water of privatization and egoism under the logic of fetishism in financial capitalism. Neoliberalism relies on unlimited competition and absolute efficiency. In addition, factory labour is converted to ‘social labour’ by the flexible system of capital accumulation and the generalisation of ‘immaterial labour’ forced by computerization and informationisation.⁴⁷¹ As ‘the social worker’, who is working and living in the immaterial and virtual networks, the middle class falls into the proletariat. The real subsumption of labour by capital pervades all areas of society. While the invasion of capital spreads into the lifeworld of people, the resistance of people to protect their lives and the public sphere develops into a full-scale phase, or to borrow Negri’s words, the global multitude struggle for the right to ‘global citizenship’.⁴⁷² Even if many economists and futurologists foresee that the information-oriented and knowledge-based economy will give rise to the elimination of the class struggle, the antagonism between capital and labour extends to the whole of the informationised society beyond the factory. Unlike the abstract thoughts of some postmodernists, the lifeworld of the masses as captured by capitalism is tightly bound up with commercialisation and privatisation. However, the more multinational corporations fiercely subsume the public sphere and the lifeworld of people, the more the multitude struggles to protect its lifeworld and citizenship. The productive desire and deviant traversal of the multitude becomes stronger in countries

⁴⁶⁹ Antonio Negri, *Revolution Retrieved*, London: Red Notes, 1988, p.2.

⁴⁷⁰ Antonio Negri and Michael Hardt, *Empire*, Cambridge, Mass.: Harvard University Press, 2001, p.12.

⁴⁷¹ Ibid, p.291 and p.409.

⁴⁷² Ibid, pp.396-400.

around the world where capital invades and destroys the rights of people and the public sphere. Therefore, the cultural logic of postmodernism also has historical and practical meanings in the context of the movement of global citizenship and collective intelligence related to anti-capitalism. Negri and Hardt highlight the subjective and practical struggle for global citizenship of the multitude beyond historical scepticism and postmodern nihilism.

As a result, Castelles's 'network society' and Negri and Hardt's 'autonomia movement of multitude' indicates the limitation of postmodernism in the informationised society reliant on computer networks and immaterial labour. According to them, the digital, global, and network society requires new thoughts and aesthetics beyond postmodernism. In this context, many analysts proclaim the demise of postmodern aesthetics somewhere in the late 1990s or early 2000s. Linda Hutcheon claims that the postmodern moment has passed, even though its discursive strategies and its ideological critique continue to live on. Hutcheon declares that postmodernism needs a new label of its own.⁴⁷³ Alan Kirby also declares the death of postmodernism and explores its historical successor, 'pseudo-modernism'.⁴⁷⁴ He asserts that, while the shift from modernism to postmodernism did not stem from any profound reformation in the conditions of cultural production and reception, the spread of new digital technologies violently re-structured the relationship between the author and the reader and the text and the viewer:

Postmodernism conceived of contemporary culture as a spectacle before which the individual sat powerless, and within which questions of the real were problematised. It therefore emphasised the television or the cinema screen. Its successor, which I will call pseudo-modernism, makes the individual's action the necessary condition of the cultural product. Pseudo-modernism includes all television or radio programmes or parts of programmes, all 'texts', whose content and dynamics are invented or directed by the participating viewer or listener (although these latter terms, with their passivity and emphasis on reception, are

⁴⁷³ L. Hutcheon, *The Politics of Postmodernism*, New York, London: Routledge, 2002, p.181.

⁴⁷⁴ Alan Kirby, The Death of Postmodernism and Beyond, *Philosophy Now* 58, 2006, pp.34-37.

obsolete: whatever a telephoning Big Brother voter or a telephoning football fan are doing, they are not simply viewing or listening).⁴⁷⁵

Similarly, Nicolas Bourriaud announces the demise of postmodernism and the imperative demand of alternative aesthetics in the global network society.⁴⁷⁶ He claims that postmodernism has the historical background between of the oil crisis in 1973 and the end of Cold War in 1989. He argues that postmodernism is connected with the economic crisis related to world energy consumption. For him, postmodernism is ‘the philosophy of mourning,’ confronted with the economic and social crisis of capitalism between the 1970s and the 1990s. It is a long melancholic episode in our cultural life, a loss of historical direction and a depression of lost reality. In particular, he claims that the collapse of the globalized financial system in the autumn of 2008 appears to mark a definite turning point from postmodernism to a new aesthetic. He believes that the overall catastrophe of capitalism caused by the global economic crisis in 2008 requires a new perspective and vision to overcome the nihilism of postmodernism. Bourriaud calls this new aesthetic ‘altermodernism’,⁴⁷⁷ which means a different and alternative aesthetic beyond postmodernism. He argues that altermodernism is a heterochronic temporality and a spatially nomadic strategy in the global network society.

At the level of the aesthetic ontology of the digital image, there are two different ways to go beyond the delimitation of postmodernism; one direction is realism, the other is modernism. While realism focuses on the representation of physical reality, modernism concentrates on the illusion and experiment of virtual images. The limit and crisis of postmodernism again evokes the aesthetic of realism and modernism in new conditions of digital technology and network society. Although the points between realism and modernism are slightly different, they are entangled with each other in order to move forward an alternative aesthetic after postmodernism. The aesthetics of ‘post-postmodernism’ stems from new forms of realism and modernism. It is both realism and

⁴⁷⁵ Ibid.

⁴⁷⁶ Nicolas Bourriaud, *Altermodern*, Tate Triennial, London: Tate Publishing, 2009, p.12.

⁴⁷⁷ Ibid.

(post) modernism and neither realism nor (post) modernism. The new aesthetic after postmodernism was born and has grown in the new environment of digital networks. It is the aesthetic of digital virtualism based on the historical hybridity and aesthetic complexity. After investigating the dispute of new realism and alternative modernism after postmodernism, this thesis concludes that digital virtualism can provide an alternative to post-postmodernism.

There have been many attempts to go beyond the limit of postmodern aesthetics in terms of new realism. Hal Foster proposes the concept of ‘the return of the real’.⁴⁷⁸ According to him, postmodern images should be read as a third way between referential and simulacra, connected and disconnected, affective and affectiveless, critical and complacent. He names the third way ‘traumatic realism’,⁴⁷⁹ based on subjective affection to objectivity. For him, the concept of traumatic realism is an effective method that goes beyond the impassivity and indifference of superficial images in postmodern aesthetics:

Below I will suggest that some contemporary work refuses this age-old mandate to pacify the gaze, to unite the imaginary and the symbolic against the real. *It is as if this art wanted the gaze to shine, the object to stand, the real to exist, in all the glory (or the horror) of its pulsatile desire, or at least to evoke this sublime condition.* To this end it moves not only to attack the image but to tear at the screen, or to suggest that it is already torn. For the moment, however, I want to remain with the categories of *trompe-l'oeil* and *dompte-regard*, for some post-pop art develops illusionist trickings and tamings in ways that are distinct from realism not only in the old referential sense but in the traumatic sense outlined above. (Foster’s emphasis)⁴⁸⁰

While Foster proposes to overcome the superficiality and nihilism of postmodernism by returning to new realism based on traumatic affection and subjectivity, Gerald Gaylard

⁴⁷⁸ Hal Foster, *Return of the Real: The Avant-garde at the End of the Century*, Cambridge, Mass.: MIT Press, 1996, p.168.

⁴⁷⁹ Ibid, pp.130-136.

⁴⁸⁰ Ibid, pp.140-141.

suggests the concept of ‘postmodern archaic’ to describe the return of the real in the age of the digital image.⁴⁸¹ He claims that the development of digital technology in the area of the arts leads to the resurgence of realism. Gaylard calls this new realism a peculiarly postmodern form of realism, that is, ‘postmodern archaic’. The concept is contradictory. On one hand, it indicates the continuity of postmodern aesthetics in digital arts; on the other hand, it presents the concept of new realism that relies on the spontaneity and participation beyond postmodernism. For Gaylard, the concept of new realism combines postmodernism in the aesthetic frame of digital virtuality:

Moreover, I am arguing that virtuality is not confined to technology, but involves a wider set of cultural practices that tend to rework the "real" in the service of commodification. I want to call these cultural practices the "postmodern archaic" because they use the enablements and blandishments of digital technology to test and ratify current notions of virtuality and reality by comparison with a version of the past. How are we to understand this plethora of digital products and practices, all raising in some way reality and realism and the relationship between them?⁴⁸²

In particular, Gaylard cites reality TV series like *Survivor* as a prime example of ‘postmodern archaic’. He argues that *Survivor* is a complex genre that is a combination of a tourism show, a game show, a detective program, a reality show, and a docu-soap-opera. It is postmodern, realistic, and digital simultaneously. Gaylard describes the contradiction of postmodern archaic in terms of time and space. On one hand, the postmodern archaic is temporal realism based on the ‘illusion of spontaneity’. It denies a linear and conventional realistic narrative and presents live and unexpected moments. It implies the illusion of spontaneity, credibility, immediacy, and participation. On the other hand, the postmodern archaic is a spatial realism that relies on ‘the nostalgia of natural space’. It is a new trope of old, primitive, ancient bush and ruin. It is the authentic and the virtual, the reality and the archaic guise. Consequently, Gaylard suggests that the aesthetics of digital virtuality raises issues of new reality beyond postmodern hyper-

⁴⁸¹ Gerald Gaylard, Postmodern Archaic: The Return of the Real in Digital Virtuality, *Postmodern Culture Vol.15:1*, 2004. (n.p.)

⁴⁸² Ibid.

reality. He considers postmodern archaic the new form of realism beyond the scepticism and indifference of postmodernism. It shows a spontaneous and complex form of digital virtuality.

In terms of new modernist aesthetics beyond postmodernism, Timotheus Vermeulen and Robin van den Akker propose the concept of ‘metamodernism’.⁴⁸³ They metaphorically state that the history beyond ‘the end of history’ and the art beyond ‘the end of art’ are newly begun beyond the age of postmodernism. For them, this historical transition is derived from the threefold ‘threat’ of the credit crunch, a collapsed centre, and climate change around the early 2000s. Vermeulen and Akker indicate that the opposite effects of the threats inspire doubt, reflection, and move out of the postmodern into the metamodern. For them, metamodernism is a new *sens*, a new meaning, and direction beyond postmodernism.

Vermeulen and Akker demonstrate that, ontologically, metamodernism is the oscillation and structure of feeling between a typically modern enthusiasm and a markedly postmodern irony.⁴⁸⁴ Epistemologically, metamodernism is the aesthetics of neoromanticism in which people take a history’s purpose as if it exists even though it will never be fulfilled. They argue that metamodernism is a-topic metaxis between the utopic syntaxis of modernism and the dystopic parataxis of postmodernism. For Vermeulen and Akker, the aesthetics of metamodernism is the tension and oscillation between modern desire and postmodern doubt about the sense of it all. In this context, they consider the so-called quirky cinema of Michel Gondry and Wes Anderson to be associated with the metamodern aesthetics.⁴⁸⁵ Vermeulen and Akker state that the movies are characterized by a childlike naivety opposed to the sarcasm and indifference of postmodern cinema in the 1990s. For them, the metamodern aesthetics is a diversity of aesthetic movements after postmodernism, such as Remodernism, Reconstructivism, Renewalism, the New

⁴⁸³ Timotheus Vermeulen and Robin van den Akker, Notes on Metamodernism, *Journal of Aesthetics & Culture* 2, 2010, pp.1–15.

⁴⁸⁴ Ibid, pp.4-5.

⁴⁸⁵ Ibid, p.7.

Sincerity, the New Weird Generation, Stuckism, Freak Folk, and so on. They investigate the aesthetics of post-postmodernism in view of new modernism.

However, I am critical of Vermeulen and Akker and suggest that they do not properly grasp the influence of digital technology with regard to aesthetics after postmodernism. They overlook the technological reasons for aesthetic transformation. In addition, I would say that they should consider the relationship between metamodernism and realism in terms of the ontology of cinematic images. This is because aesthetics after postmodernism, essentially, should establish a new relation between reality and cinematic images. Although they emphasize a modern commitment and romanticism, the substantial limit and crisis of postmodernism is caused by the ontological dichotomy of reality and image. The dynamic process of reality implodes the exclusive aesthetics of postmodernism, which relies on the primacy of the image realm over the real world. Thus, aesthetics after postmodernism should grasp the technological dynamism of reality and the hybrid imbrication of cinematic images.

In this sense, Robert Samuels's concept of 'auto-modernism' is useful to argue digital aesthetics after postmodernism.⁴⁸⁶ He considers the combination of technological automation and human autonomy as a key aspect of the new culture. In particular, he takes note of the fact that the innovative uses of digital technology dismiss cultural relativism, social constructivism, and aesthetic pastiche of postmodernism. For Samuels, the automation of digital innovation expands human freedom and subjectivity beyond the superficial and short-lived aesthetics of postmodernism. He stresses that computer media and networks prompt the new culture of auto-modernity by automation, multitasking, and sharing all different media and information. For Samuels, auto-modernity implies the trump of universal reason and subjective autonomy beyond the uncertainty and relativism of postmodernism:

⁴⁸⁶ Robert Samuels Auto-modernity After Postmodernism: Autonomy and Automation in Culture, Technology, and Education, *Digital Youth, Innovation, and the Unexpected*, edited by T. McPherson, Cambridge, MA: MIT Press, 2008, pp. 219–240.

To clarify what I mean by automodernism, I will examine several common technologies that are used heavily by digital youth in the early twenty-first-century globalized Western world: personal computers, word processors, cell phones, iPods, blogs, remote-controlled televisions, and first-person shooter computer games. These technological objects share a common emphasis on combining a high level of mechanical automation with a heightened sense of personal autonomy. In fact, this unexpected and innovative combination of autonomy and automation can be read as the defining contradictions of contemporary life in general and digital youth in particular. Importantly, while automation traditionally represents a loss of personal control, autonomy has been defined by an increase in individual freedom; however, automodernity constantly combines these two opposing forces in an unexpected way.⁴⁸⁷

In a similar perspective, Kirby's concept, 'digimodernism', has a grasp of the aesthetic core after postmodernism.⁴⁸⁸ He suggests the new paradigm of digimodernism to describe the influence of computer technology on new aesthetics beyond postmodernism. In his declaratory essay, "The Death of Postmodernism and Beyond" in 2006, Kirby observed the decisive decay of postmodernism and the emergence of pseudo-modernism caused by the spread of digital technology and participatory viewers. He re-proposes pseudo-modernism to the more expanded concept of digimodernism, because pseudo-modernism is a concomitant social shift and one aspect of digimodernism.⁴⁸⁹ By the conceptualisation of digimodernism, Kirby asserts that the contemporary phenomenon of computerisation and web 2.0 lead to the humanistic issue of reality and the new aesthetics of participation and interactivity, sweeping postmodern sarcasm and melancholy away. Kirby defines the main characteristics of digimodernism in terms of new textual art form emerging beyond postmodernism.⁴⁹⁰

⁴⁸⁷ Ibid, p.228.

⁴⁸⁸ Alan Kirby, *Digimodernism: How New Technologies Dismantle the Postmodern and Reconfigure Our Culture*, New York, London: Continuum, 2009, pp.124-165.

⁴⁸⁹ Ibid, p.3.

⁴⁹⁰ Ibid, p.1.

In turn, Kirby claims that the cultural tendency of digimodernism is becoming more and more prevalent across all types of culture and art forms, ranging from reality TV to Hollywood fantasy blockbusters, from Web 2.0 platforms to the most sophisticated videogames, and from certain kinds of radio shows to crossover fiction. He asserts that digimodern texts are characterized by the textual intervention of viewers in the creation and configuration of cultural contents and artworks. For Kirby, digital technology permits viewers to intervene into texts creatively. The clicking and pressing by viewer's fingers and thumbs make new and different texts, narratives, and art forms. He analyses these new modern modes of auteurism and textuality by concrete examples of cyberspace; the multiple authorship of Wikipedia, the real-time communication of Facebook and Twitter, the participatory contents of Youtube, the interactive narrative of computer games, and so on.⁴⁹¹ In particular, Kirby examines the digimodern texts of cinema inspired by computer-generated virtual images; the naive and pure reality and fantasy of children's films like *The Lord of the Rings* (2001-2003) or *The Chronicles Of Narnia* (2005), 3D computer animations since *Toy Story* (1995), the new reality movement of Dogme 95, the New Puritan aesthetics of simplicity, the human issues of the Stuckists, and the public reality of Youtube. Kirby suggests the new aesthetic of digimodernism is based on the dominance of children's stories, the new reality and earnestness, and the endless narrative beyond postmodern aesthetics.⁴⁹²

As a result, Kirby argues that these digital texts are vital examples showing the authentic reality of the contents and the 'pseudoautism' of viewers beyond the hyper-image and passiveness of postmodernism. He asserts that the digimodern pseudoautism provokes the modern desire and creative fanaticism of public masses in digital aesthetics. In a different use with common sense, he stresses the positive traits of pseudoautism in digital texts in terms of individual creativity; modernism requires a neurosis, while postmodernism invokes schizophrenia.

⁴⁹¹ Ibid, pp.50-72.

⁴⁹² Alan Kirby, *Digimodernism: How New Technologies Dismantle the Postmodern and Reconfigure Our Culture*, New York, London: Continuum, 2009, pp.124-165.

Many theorists demonstrate the decay of postmodernism and the emergence of the new aesthetics with the spread of digital culture and arts. Foster and Gaylard suggest the return of the real in the perspectives of new realism. Bourriaud presents the aesthetics of altermodrnism based on multiple temporality and nomadic viatorisation in the global network society. Vermeulen and Akker suggest the concept of metamodernism, which means the resurgence of modern enthusiasm and romanticism beyond postmodern irony. Samuels highlights the expansion of subjective control and individual autonomy by digital automation. Kirby claims that digimodernism is a new aesthetic of the interactive textuality and multiple authorship. These theories intuit the new aesthetics of digital images beyond postmodernism in terms of realism and modernism.

In addition, my point for the new aesthetics is the aesthetic ontology of cinematic images. I suggest the aesthetic of digital virtualism, which goes beyond the demarcation between physical reality and virtual images, indexicality and manipulation, reproduction and pastiche, and finally, traditional realism and postmodern scepticism. The new aesthetic of digital virtualism inherits the historical hybridity and ontological complexity of a wide range of film aesthetics. Based on computer simulation and digital interactivity, digital virtualism expands the filmic reality and expressive force.

In terms of realist aesthetics, digital cinema intensifies the verisimilar and credible representation of objects. With the help of computer technology, digital images describe more 'vivid' and 'real' the indexical traces of objects. I argue that computer simulation contributes to the seamless representation of real objects, that is, the intensification of filmic reality. In addition, I point out that the realism of digital images is related to the spectator's 'illusionism'. According to Stephen Prince, digital cinema heightens the spectator's 'perceptual realism' or 'immersive aesthetics'.⁴⁹³ Similarly, Warren Buckland suggests the concept of the 'fourth realism'⁴⁹⁴ in order to explain the new manoeuvre of digital cinema. He explains that the realistic characteristics of the digital image rely on

⁴⁹³ Stephen Prince, *Digital Visual Effects in Cinema: The Seduction of Reality*, New Brunswick, N.J.: Rutgers University Press, 2012, pp. 31-37 and pp.183-220.

⁴⁹⁴ Warren Buckland, *Between Science Fact and Science Fiction; Spielberg's Digital Dinosaurs, Possible World, and the New Aesthetic Realism*, *Screen* 40(2), 1999, pp.185-186.

Stephen Heath's psychoanalytic 'suture' and David Bordwell's 'cognitivism'. Buckland claims that digital images reinforce the spectator's 'psychological realism' by the structuralizing of unconscious desire. In this context, I claim that digital cinema simultaneously heightens the indexical and the imaginary. It is both material reality and perceptive 'illusionism'. It is an 'embodied simulation'⁴⁹⁵ of the body and the mind, the object and the subject and the actual and the virtual. Digital images strengthen the complex contradiction between physical reality and psychic illusion, indexicality and fantasy, the object and the subject, and the actual and the virtual.

Furthermore, the contradictory nature of digital images expands the possibility of cinematic expression. The virtual nature of computer-animated images suggests the creative aesthetics of cinematic configuration and assemblage. Vivian Sobchack notes that 'the movement of the line' arouses the creative openness and expressive force of animated-images.⁴⁹⁶ For her, the animated figures created by the movement of the line go beyond the indexicality and photorealism of cinema. Sobchack emphasizes that the incomplete anamorphic figuration causes the creative and expressive force of animated and simulated images. Similarly, Patrick Power argues that the aesthetics of 3D computer animation is associated with the expansion of cinematic expression.⁴⁹⁷ The expressive aesthetics of 3D animation works as the uneven and complex effects of 'modality cues' in which realistic and naturalistic coding orientations are mixed with the expressive level of computer micromanipulation. For him, the seamless performance capture technology in James Cameron's *Avatar* (2009) is an important example of the expressive synthesis of the real and the virtual. Power emphasizes that 3D computer simulation intensifies the expressive aesthetics of cinematic images, as well as heightened photorealism as immersive spectacle.

⁴⁹⁵ Patrick Power, Character Animation and the Embodied Mind-Brain, *Animation: An Interdisciplinary Journal*, Vol. 3(1), 2008, pp.25-48.

⁴⁹⁶ Vivian Sobchack, The Line and the Animorph or 'Travel is More Than Just A to B', *Animation: An Interdisciplinary Journal*, Vol. 3(3), 2008, pp.251-265.

⁴⁹⁷ Patrick Power, Animated Expressions: Expressive Style in 3D Computer Graphic Narrative Animation, *Animation: An Interdisciplinary Journal*, Vol. 4(2), 2009, pp.107-129.

Consequently, I claim that the aesthetics of digital virtualism simultaneously intensifies both filmic reality and expressive imagination. The ontology of digital images is based on the contradictory imbrication between the actual and the virtual, the indexical and the symbolic, the real and the unreal, and representation and manipulation. In this sense, I argue that the digital aesthetics expands and transforms the incessant process of becoming and assemblage with the gaseous intersection and conflation of real world and virtual image. The diffusion of computer synthesis and digital interactivity heightens the expressive complexity of cinematic images. Digital virtualism suggests the assemblage aesthetic of creative expression and configuration in the movement and time of cinematic images. In the next chapter, I demonstrate the digital implication of Deleuze's cinema ontology.

4. Gilles Deleuze and Digital Virtualism

In this chapter, I explore the influence of Deleuze on the aesthetics of digital virtualism. Above all, Deleuze's philosophy of cinema has significant implications for the development of film theory. This is because his philosophy of cinema suggests the ontology of the material image beyond the dichotomy between physical reality and virtual image. For him, cinema is not the 'degraded copy' of reality but different *realities*. He denies the aesthetics of representation and suggests the materiality of the image in an aesthetics of movement and time. I will argue that, based on the philosophy of simulacra, his aesthetics of movement and time is associated with the force of cinema, which produces new *realities* beyond a representative reality.

Moreover, Deleuze's philosophy of cinema is related to the aesthetics of digital cinema. He highlights the virtuality of cinema, which consists of two different aspects of lives and images in actuality, existing in an 'actual-virtual circuit'.⁴⁹⁸ Whereas virtual images actualise, actual reality becomes the virtual. Deleuze suggests the virtual ontology of cinematic images as not actual, but real. The virtuality of cinema is the creative potential of cinema. Digital virtuality, founded on computational simulation and synthesis, is connected to Deleuze's aesthetics of cinematic virtuality. Digital virtualism heightens the aesthetics of creative potential beyond the actual reality. Deleuze suggests the aesthetics of virtuality beyond indexicality and actuality.

This chapter consists of three different sections: the philosophy of simulacra, the aesthetics of the movement-image, and time-image. In the first section, I deal with philosophical ontology of simulacra. While Plato's simulacra postulated the priority of Idea and reality over image, Baudrillard's simulacra extrapolate the primacy of image world over physical reality. Deleuze overturns the dualism of reality and image. He asserts 'the eternal return'⁴⁹⁹ of difference and repetition in the plane of immanence. Deleuze goes beyond the world of representation and copy. His philosophical monism and univocity of simulacra suggests the subjective perspective of rhizome and

⁴⁹⁸ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.80.

⁴⁹⁹ Friedrich Wilhelm Nietzsche, *Nietzsche, Vol. I: The Will to Power as Art*, London: Routledge & Kegan Paul, 1981, p.154.

assemblage and deterritorialisation and becoming. Deleuze offers a clue to the creative and practical aesthetics of synthesis and configuration, traversing reality and image, and media and art forms beyond the conventional world of copy and representation.

In the next section, I will deal with the significance of the movement-image. Deleuze considers that cinema is a composition of images and signs that comprise preverbal, intelligible content.⁵⁰⁰ For him, cinema is neither language nor science, but consists of material images. Thus, he grasps the material attributes of the image by its movement. He claims that the image is a material reality and thus the movement of reality. In this sense, Deleuze opposes various approaches that consider cinema as a logic, a language, a psychological hermeneutics, a phenomenology, and a science of semiology. He claims that cinema is not an image to which movement is added, but a movement-image in itself.⁵⁰¹ He does not interpret what lies behind the image, but classifies the movement of the image. His cinema book is not a history or hermeneutics of image, but is instead a classification and taxonomy of the image.⁵⁰²

In addition, I take a note of the concept of ‘moleculisation’ and ‘chromatisation’ of movement-image.⁵⁰³ For Deleuze, the montage of cinematic images implies a ‘spiritual automaton’ based on the microbiology, ethology, and particle physics in the quantum state of the virtual images. Thus, I elicit the singularity of digital movement-images from the dynamic movement of molecular lights, colours, and sounds. I re-define the movement-image in the digital cinema in terms of the microscopic manipulation and biocybernetic synthesis promoted by digital informatics and techno-aesthetic.

Finally, I deal with the issues of spectator’s sense and spiritual automaton. Deleuze conceptualises the movement-image of cinema by a sensory-motor schema beyond representative copy, which is not the copy of physical reality, but the complex linkage of

⁵⁰⁰ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, Preface to the English edition.

⁵⁰¹ Ibid, p.3.

⁵⁰² Ibid, Preface to the French edition.

⁵⁰³ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, pp.84-85.

spectator's sensation, perceptions, affections, and actions. In this manner, Deleuze's aesthetics of the movement-image is connected to the materiality, sensation, and virtuality of the digital cinema. As I defined in the second chapter, digital virtualism is the aesthetics of the materiality and sensation of the virtual image. Digital virtualism pays attention to the sensuous attraction and automated spirituality of moving images. It is the aesthetics of the movement and sensation of material images, not of resemblance and indexicality.

In the last section, I explore Deleuze's aesthetics of the time-image in the context of digital virtualism. First, I will demonstrate the relationship between the movement-image and the time-image. Deleuze states that the movement-image is the indirect representation of time and the time-image is the direct representation of time. Both are different aspects of time. For him, the relation of movement and time is not exclusive, but complementary. While the rupture of the movement-image begets the pure moment of time, time depends on the movement-image and belongs to it. Thus, time is a variation of movement. Time is abnormal, aberrant, and decentred movement.⁵⁰⁴

Deleuze then demonstrates the crystal-image in the hybrid and complex relation between the movement-image and time-image. He defines the crystal-image as the complex combination of the actual and the virtual, like a mirror.⁵⁰⁵ It is the indiscernible confusion of the real and imaginary. For him, the crystal-image is an internal and opaque circuit between the actual and the virtual. He indicates that the crystal-image consists of the most fundamental operation of time and is the perpetual foundation of time. The crystal-image is not chronological time but 'pure time' and the 'gushing of the time'.⁵⁰⁶ For Deleuze, the crystal-image is indiscernible, multiple, inextricable and coexistent time, in which the past coexists with the present, and the actual entwines with the virtual. Through the crystal-image, he suggests the creative potential of a new reality of images. In this context, the aesthetics of digital virtualism pursues the complex and coexistent

⁵⁰⁴ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, pp.35-36.

⁵⁰⁵ Ibid, p.69.

⁵⁰⁶ Ibid, p.82.

relation between reality and image, movement and time, the actual and the virtual, and the objective and the subjective. This is possible because digital cinema strengthens the simulation and synthesis of virtual images by computer technology.

Finally, I will suggest that based on Deleuze's aesthetics of crystal-image, the Deleuzian aesthetics of digital virtuality elicits the subjective and practical aesthetics of cinema, that is, the ethics of cinema, which requires the subjective and practical configuration of cinematic images. Deleuze states that the new aesthetics of digital virtuality requires the 'struggle with informatics'. In this sense, digital ethics is the incessant process of becoming and assemblage. It is a configurative process of creative realities, which implies the belief in our world and the power of cinematic images. Digital virtualism suggests the subjective and participatory configuration and composition of cinematic images and art forms.

4-1. The Ontology of Simulacra: From Representation To Virtual Conjunction

My point in this section is that Deleuzian concept of simulacra suggests the composite aesthetics of virtualism beyond the representative ontology of cinematic images. Deleuze's ontology of simulacra denies the opposition between physical reality and imaginary illusion. It provides the aesthetics of digital virtualism with two important implications in relation to film theory: On one hand, the virtual image in the universe of simulacra is not the disappearance of physical indexicality, but instead the new form of physical reality. On the other hand, the imaginary illusion of virtual images is not the copy or representation of physical reality, but the incessant becoming process of physical reality. In other words, the virtual image of film comprises *the new and creative realities* in the Deleuzian simulacrum and virtuality. While the realm of the simulacrum is the same as in our world, filmic images are both physical reality and 'more reality'. Hence, Deleuze proposes the ontological univocity between the material world and the

simulacrum and reality and the cinematic image: ‘The modern world is one of simulacra’.⁵⁰⁷

Accordingly, the Deleuzian aesthetics of virtualism proceeds to the composite aesthetic of cinematic images beyond the representative ontology of images. Based on the concept of Deleuzian simulacra, the aesthetics of digital virtualism subsumes both physical indexicality and imaginary illusion, which is because digital virtuality is the extended realisation of filmic simulation. Hence, digital virtualism presents the ‘enhanced’ and ‘intensified’ contradiction of filmic virtuality between the real and the imaginary, the actual and the virtual, and the object and the subject. In this section, I demonstrate that based on Deleuze’s monism of simulacra, digital virtualism is the composite aesthetics of creative reality.

Let me first investigate the concept of the simulacrum in terms of the relation between physical reality and filmic images. There are many different views of the simulacrum and simulation. I will compare Plato, Benjamin, and Baudrillard with the Deleuzian concept of simulation. The comparison provides an appropriate demonstration of the affirmative possibility of the filmic images in terms of simulation and virtuality. Through the Deleuzian concept of simulacra, I assert that the aesthetics of digital virtuality is the ontology of the cinematic image in pursuit of a new reality of the immanent monism of simulacra.

In the history of western philosophy, the simulacrum is a contentious concept that concerns the relation between physical reality and its representation. In terms of artistic mimesis, the concept of simulacrum originated in the ancient Greek philosopher Plato. He demonstrated that a simulacrum is the mimetic expression of reality. For him, the simulacra cannot attain the Idea, which is the essence of reality. Hence, the simulacrum is an imperfect representation. Plato considers that the world of the simulacrum is able to show only a false representation of reality, which is also not the essence of the real world:

⁵⁰⁷ Gilles Deleuze, *Difference and Repetition*, translated by Pall Patton, London: Continuum International Publishing Group, 2004, French Preface.

Therefore, imitation is surely far from the truth; and, as it seems, it is due to this that it produces everything—because it lays hold of a certain small part of each thing and that part is itself only a phantom. For example, the painter, we say, will paint for us a shoemaker, a carpenter, and the other craftsmen, although he doesn't understand the arts of any one of them. But, nevertheless, if he is a good painter, by painting a carpenter and displaying him from far off, he would deceive children and foolish human beings into thinking that it is truly a carpenter.⁵⁰⁸

For Plato, the truth consists of three stages: the Idea, technical imitation, and artistic imitation. In particular, artistic imitation is the lowest and the furthest stage from the Ideal. The first category consists of the immortal ideal, and the second category is the sensible world, such as nature or human society, and reflects the Ideal. The last stage is the world of art, such as literature and painting, which reflects the second category. Plato asserts that since Homer, poets have been only imitators making bad representations. He also devaluates art and mimesis as inferior to the products of artisans. For him, the first value is the world of the Idea, as in his concept of an ideal republic, whereas the prisoners in Plato's 'Allegory of the Cave' can never reach the truth and can understand only a false world of simulacra.⁵⁰⁹

By defining the relationship between reality and the simulacrum as mimesis, Plato presents the philosophical dualism of truth and falsity, the actual and the virtual, objectivity and subjectivity, and essence and phenomenon, which has carried through in the history of western thought. In terms of these dichotomies, the simulacra of images are regarded as a kind of representative aesthetics. Consequently, Plato claims that the simulacrum is the representative world of falsity, which is inferior to the realm of truth and the Idea. For him, the artistic image is a 'false' copy of original reality.

⁵⁰⁸ Plato, *The Republic*, translated by Allan Bloom, New York: Harper Collins Publisher, 1991, p.281.

⁵⁰⁹ Plato, *Plato's The Republic*, edited by B. Jowett, New York: The Modern Library, 1941, Book VI. 516b–c.

For Walter Benjamin, the concept of simulation is associated with the concept of 'reproduction'.⁵¹⁰ He defines filmic images as the 'mechanical reproduction' of physical reality. For him, the film image mechanically imitates and represents physical objects and events. Benjamin claims that film is a representative copy of original reality. In this sense, Benjamin's simulation is opposite physical reality on the grounds of the ontological separation between physical reality and filmic images. Moreover, Benjamin argues that mechanical reproduction gives rise to the 'decay of aura'. Hence, filmic images destroy the aura of physical reality. For Benjamin, the simulated copy of the film is the loss of the originality and the aura:

What is aura, actually? A strange weave of space and time: the unique appearance or semblance of distance, no matter how close it may be. While at rest on a summer's noon, to trace a range of mountains on the horizon, or a branch that throws its shadow on the observer, until the moment or the hour become part of their appearance—this is what it means to breathe the aura of those mountains, that branch.⁵¹¹

For Benjamin, the aura of physical reality is attenuated by the mechanical reproduction of filmic images. He argues that filmic simulacra create a new form of reality beyond the aura of traditional arts. While Plato considers simulation the world of false mimesis, Benjamin argues that filmic simulacrum is a new type of representation. Although Benjamin's concepts of 'mechanical reproduction' and 'the decay of aura' postulate the ontological separation of physical reality and filmic images, he highly values the validity and possibility of filmic virtuality. Benjamin contrasts the techno-aesthetical potential of film to the limits of traditional arts.⁵¹² For him, the mechanical reproduction of film makes way for new perceptions, such as tactile sense and optical unconsciousness. In addition, Benjamin considers the democratic possibility of artwork beyond fascism in the

⁵¹⁰ Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction*, 1935, translated by Harry Zohn, *Film Theory and Criticism*, edited by Gerald Mast etc., Oxford; New York: Oxford University Press, 1992, p.666.

⁵¹¹ Walter Benjamin, *Little History of Photography*, *Selected Writings Vol.2 1927-1934*, translated by Rodney Livingstone, Cambridge, Mass.: Harvard University Press, 1999, pp.518-519.

⁵¹² Mark Poster, *The Second Media Age*, Cambridge: Polity Press, 1995, pp.13-14.

advent of the age of mechanical reproduction and mass art, whereas the Frankfurt School degrades the capability of mass art in the frame of cultural industry based on entertainment and consumption.⁵¹³ Benjamin optimistically proposes that the force of filmic images allows the public to acquire the possibilities of political awakening through mass art. After all, unlike Plato, Benjamin notes the representative force of simulation and virtuality in relation to physical reality. This is a practical advantage of Benjamin's theory of filmic image despite the conceptual drawbacks of 'reproduction' and 'aura', which rely on the ontological dualism of physical reality and filmic images.

Unlike the representative capacity of the filmic image, Baudrillard claims that simulation is the disappearance and extermination of physical reality.⁵¹⁴ Although he criticises that *The Matrix* distorts his proposition of simulacrum,⁵¹⁵ it is clear that his ontology of simulacrum is founded on the radical denial of physical reality in the virtual world of the matrix. Baudrillard's simulacrum is a 'symbolic exchange'⁵¹⁶, which is separate from the territory of actual and material reality. He pays attention to the sign of the real beyond actual objects and referents. However, his symbolic sign falls into the trap of the impossibility of representation within the virtual world of simulacra:

By crossing into a space whose curvature is no longer that of the real, nor that of truth, the era of simulation is inaugurated by a liquidation of all referentials - worse: with their artificial resurrection in the systems of signs, a material more malleable than meaning, in that it lends itself to all systems of equivalences, to all binary oppositions, to all combinatory algebra. It is no longer a question of imitation, nor duplication, nor even parody. It is a question of substituting the signs of the real for the real, that is to say of an operation of deterring every real

⁵¹³ Max Horkheimer and Theodor W. Adorno, *The Culture Industry: Enlightenment as Mass Deception, Dialectic of Enlightenment: Philosophical Fragments*, edited by Gunzelin Schmid Noerr, translated by Edmund Jephcott, Stanford, Calif.: Stanford University Press, 2002, pp.94-136.

⁵¹⁴ Jean Baudrillard, *Impossible Exchange*, translated by Chris Turner, London, New York: Verso, 2001, p.145.

⁵¹⁵ Jean Baudrillard, *The Matrix Decoded: Le Nouvel Observateur Interview with Jean Baudrillard*, translated by Gary Genosko and Adam Bryx, *International Journal of Baudrillard Studies*, Vol. 1, No. 2, 2004, (n.p.)

⁵¹⁶ Jean Baudrillard, *Symbolic Exchange and Death*, translated by Iain Hamilton Grant, London: SAGE, 1993, p.40.

process via its operational double, a programmatic, metastable, perfectly descriptive machine that offers all the signs of the real and short circuits all its vicissitudes. Never again will the real have the chance to produce itself - such is the vital function of the model in a system of death, or rather of anticipated resurrection, that no longer even gives the event of death a chance.⁵¹⁷

Thus, for Baudrillard, the image of filmic virtuality has nothing to do with material actuality and indexicality. Although he has an intense affection for the ‘white magic’ of filmic images, he certainly denounces filmic images for resulting in the detachment and destruction of physical reality. For him, the hyperreality of film is no longer the reflection of the real, or the exchange of pure images. Based on the pessimism of technological simulation and historical progress, he concludes that the simulated images of digital virtuality are akin to violence, crime and viruses that terrorize physical reality and the pure image:

Think about it: it is the virtual itself that is negationist. It is the virtual that takes away the substance of the real, setting it off balance. We are living in a society of negationism by virtue of its virtuality. Disbelief reigns everywhere. No event is perceived as “real” anymore. Criminal attempts, trials, wars, corruption, opinion polls: all of that is either falsified or undecidable... The mirror of information has been broken. The mirror of historical time has been broken... The reign of the virtual is also the reign of the principle of uncertainty. It is the inevitable counterpart of a reality turned unreal by excess of positivity.⁵¹⁸

In contrast, Deleuze presents opposite viewpoints of the simulacrum and virtuality. Whereas Baudrillard pessimistically exaggerates the domination of simulacra and digital virtuality, Deleuze has insights into the transformation of reality in the world of simulacra and the image. Whereas for Baudrillard, the simulacra are a world of evil and violence,

⁵¹⁷ Jean Baudrillard, *Simulacra and Simulation*, translated by Sheila Faria Glaser, Ann Arbor: University of Michigan Press, 1994, p.3.

⁵¹⁸ Jean Baudrillard, *Violence of the Virtual and Integral Reality*, translated by Marilyn Lambert-Drache, *International Journal of Baudrillard Studies*, Vol. 2, No. 2, July 2005, (n.p.)

for Deleuze they comprise a creative reality and practical activity. Baudrillard maintains that in the condition of contemporary life, simulacra and virtual images are separate from original objects and events. However, Deleuze sheds new light on simulacra from an entirely different angle. For him, simulacra are not contrary to reality, but are physical reality and not falsity or fallacy. Virtual images are not fictional copies of material reality but *different realities*, that is, *new forms of realities*. He takes a materialist position on the ontological monism of the image, which is a decisive difference from Baudrillard. Deleuze acknowledges the real possibility and creative potential of an image based in material monism:

The simulacrum is not a degraded copy. It harbors a positive power which denies the original and the copy, the model and the reproduction. At least two divergent series are internalized in the simulacrum-neither can be assigned as the original, neither as the copy. It is not even enough to invoke a model of the Other, for no model can resist the vertigo of the simulacrum. There is no longer any privileged point of view except that of the object common to all points of view. There is no possible hierarchy, no second, no third...⁵¹⁹

In this sense, Deleuze's philosophy of simulacra has nothing to do with the postmodern negationism of Baudrillard nor with the representative theory of realism. Unlike Baudrillard, Deleuze believes in the creative possibility of the image. Moreover, Deleuze's simulacrum does not mean the similarity and analogy of image to the model. It is not a reproductive image of reality, but physical reality itself. The original and the copy are both equally independent and juxtaposed. They are nothing but the multiplicity of singularity, which Deleuze calls 'the univocity of being'.⁵²⁰

Historically, the aesthetics of mimesis, that is, the logic of imitation and representation, has dominated the theory of art and image since the Plato and Aristotle. However, in the

⁵¹⁹ Gilles Deleuze, *The Logic of Sense*, translated by Mark Lester and Charles Stivale, London: Continuum International Publishing Group, 2004, p.299.

⁵²⁰ Ibid, p.206. See Alain Badiou on the philosophy of Deleuze. Alain Badiou, *Deleuze: the Clamor of Being*, Minneapolis: University of Minnesota Press, 2000, p.143.

aesthetics of difference and repetition, sensuous figures and rhizomes, from Spinoza and Nietzsche to Deleuze, replace the philosophy of mimesis with the aesthetics of assemblage and configuration. The concept of difference and repetition in the philosophy of Deleuze is definitely vital.⁵²¹ It is related to Nietzsche's thought on the 'eternal return'⁵²², which proceeds to univocity and the multiple constitutions of being, singularity and individuality as not reduced by totality, universality and identification. As Daniel W. Smith properly points out, Deleuze overturns Plato's simulacra along with Nietzsche's thought of the 'eternal return'. Deleuze's simulacrum is the 'inversion of Platonism'.⁵²³ It overturns the dualism of reality and image, original and copy, and model and representation. Thus, the Deleuzian philosophy of difference and repetition reverses the logic of imitation and representation.

The Deleuzian concept of the simulacrum is based on the monism of material reality in which the separation between original and copy disappears. Accordingly, the simulacrum is a sensuous figure repeated eternally by the differences in matter. Deleuze claims that simulacra are the world that the confrontation between the original and the copy has collapsed in the rhizomatic resonance of being and sense. The world of simulacra reveals the innate differences in being and in art. It is also a positive potential denying both the original and the copy simultaneously. It is the arrangement and constitution of a diversity of a series of events between reality and the cinematic image. Thus, for Deleuze, the cinematic image is a creative, compositing reality in an arrangement, assemblage, and resonance of multiple individuals. In Deleuze's world of simulation, the cinematic image is not only imaginary and subjective but also real and objective. Deleuze denies the idealism of the image and advocates its materiality. Both reality and the image are the physical world and both have interactive potentiality.

⁵²¹ Gilles Deleuze, *Difference and Repetition*, translated by Paul Patton, London: Continuum International Publishing Group, 2004, p.17.

⁵²² Friedrich Wilhelm Nietzsche, *Nietzsche, Vol. I: The Will to Power as Art*, London: Routledge & Kegan Paul, 1981, p.154.

⁵²³ Daniel W. Smith, The Concept of the Simulacra: Deleuze and the Overturning of the Platonism, *Essays on Deleuze*, Edinburgh: Edinburgh University Press, 2012, pp.3-4.

In terms of the simulation of images, Hal Foster gives a useful comparison of the conceptual difference of ‘repetition’ or ‘reproduction’,⁵²⁴ by which he investigates the relation between reality and simulation, and original and copy. According to Foster, while Benjamin’s concept of reproduction attends to the fact that filmic images are the ‘mechanical’ copy of original reality, Lacan accentuates the ‘repetition’ of absent unconsciousness, which means a ‘traumatic’ returning to reality. While Barthes’s *Camera Lucida* is concerned with the representative and psychological effects of the photographic ‘punctum’, Andy Warhol’s pop art displays the spectacle of mass media and commodity-signs, which causes the screening and disruption of physical and traumatic reality. Foster claims the return to ‘traumatic reality’ beyond the superficial copy of original images. He criticizes that the simulation and repetition of postmodern images results in the lack of reality and the indifference of the masses.

Hence, the Deleuzian concept of ‘difference’ and ‘repetition’ suggests the configurative aesthetics of simulated images beyond the dualism between original and copy.⁵²⁵ For Deleuze, the world of simulated images, which pursues the similarity and homogeneity of the original and the copy, is not photographic reproduction or superficial repetition, but the ‘becoming’ process of a new reality that comprises the immanent plane and the accidental events of difference and multiplicity. Here the confrontation between the original and the copy collapses, and the logic of representation is overturned by the simulacra of Deleuze.

Deleuze’s thought on the homogeneity of the cinematic image and material reality is derived from Bergson’s *Matter and Memory*. Bergson argues that the image of objects is utterly real and embodies their existence. For him, the existence of the world is within matter itself.⁵²⁶ Everything is matter and image, simultaneously. The matter is the image, and vice versa. The human body is an image; the brain-memory is also an image.

⁵²⁴ Hal Foster, *The Return of the Real: the Avant-garde at the End of the Century*, Cambridge, Mass.: MIT Press, 1996, pp.132-136.

⁵²⁵ Gilles Deleuze, *Difference and Repetition*, translated by Pall Patton, London: Continuum International Publishing Group, 2004, p.346.

⁵²⁶ Henri Bergson, *Matter and Memory*, translated by N. Paul and W. Palmer, New York: Zone Books, 1991, p.19.

Bergson suggests the homogeneity and unification of material universe, in which simulated images cannot be separated from the world of physical movement and time. Similarly, Deleuze claims that the movement of physical reality is no longer opposed to the 'psychic reality of consciousness'.⁵²⁷ Hence, the world of the image perceived by human sensation and consciousness cannot be divided from the physical reality of the external world. The image, that is, the psychic reality, is within the united world of physical reality.

Bogue argues that Deleuze develops Bergson's account of the equation between image and matter by adding the identity of matter and light.⁵²⁸ That is, Deleuze explains that the simulation of the virtual image flows, blocks, and filters light as the nature of things.⁵²⁹ For Deleuze, the virtuality of the cinematic image is the same as the cosmic flow of physical matter and light. According to Bogue, Deleuze's thought of the identity of matter-light allows us to conceptualize the perceptual and integrated relationship between the visual simulation of cinematic images and the actual reality of material world.⁵³⁰ Hence, the cinema is the simulation of virtual images, which are none other than the circuit and flow of matter-light. It is the world of physical reality beyond the representative copy of originals.

Furthermore, Deleuze's aesthetic monism of physical reality and its virtual simulation is related to human sensation and perception. On the immanent plane of material reality and virtual simulation, Deleuze claims that human sensation and perception are also the material. Sensation is realized in the substances of matter, which convert into sensation. In the world of Deleuze's simulacra, no arts are distinguished by an analogy and identification with a model or an original. They are classified only by the differences in material substances and human sensation. Therefore, for Deleuze, simulacra do not comprise the world of fiction and fantasy. Instead, they are the world of the material

⁵²⁷ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.63.

⁵²⁸ Ronald Bogue, *Deleuze on Cinema*, New York, London: Routledge, 2003, pp.33-34.

⁵²⁹ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, pp.88-89

⁵³⁰ Ronald Bogue, *Deleuze on Cinema*, New York, London: Routledge, 2003, p.34.

image, which is the material reality of the simulated and virtual image and the creative time-space of sensuous desire and the image. In other words, unlike the logic of representation and the hermeneutics of signification, Deleuze provides insight into the art of both the material image and the cinema of sense and sensation, which are living and vibrating in the dynamism of our brain-blood:

...the distinction between two states of oil painting assumes a completely different, aesthetic and no longer technical aspect-this distinction clearly does not come down to 'representational or not,' since no art and no sensation have ever been representative. In the first case *sensation is realized in the material* and does not exist outside of this realization. It could be said that sensation (the compound of sensations) is projected onto the well-prepared technical plane of composition, in such a way that the aesthetic plane of composition covers it up.⁵³¹

David Freedberg and Vittorio Gallese's concept of 'embodied simulation' is useful to extrapolate the material nature of cinematic simulation and human sensation. Like Deleuze, they hold that human artistic perception is the material process of human sense. In particular, they explain the material process by the discovery of 'mirror neurons' and the concept of 'embodied simulation'.⁵³² For them, recent neuroscientific research shows the material mechanism by which the human brain invokes artistic emotion and reaction. Freedberg and Gallese claim that the process of artistic perception and cognition is caused by the material mechanism of 'embodied simulation' between the physical object, the simulated image, and the human body. In other words, the simulation of cinematic images is an integrated and embodied process of material objects and the human body, such as the brain, eyes, ears, and bodily sensations.

⁵³¹ Gilles Deleuze and Felix Guattari, *What is Philosophy?*, translated by Hugh Tomlinson and Graham Burchell, New York: Columbia University Press, 1996, p.193.

⁵³² David Freedberg and Vittorio Gallese, Motion, Emotion and Empathy in Esthetic Experience, *Trends in Cognitive Sciences*, Vol. 11, No.5, pp.198-203.

Similarly, for Deleuze, the cinematic image is both physical reality and human sense: that is, the “Brain is the screen.”⁵³³ He states that the perception of cinema is the same as the human perception. Furthermore, he claims that cinematic perception is superior to human perception.⁵³⁴ For Deleuze, cinematic perception is more effective than ordinary perception. Technological apparatuses, such as the camera and the screen, allow the cinema to portray perceptions of physical reality that are superior to human perception. Deleuze suggests affirmative views of filmic technology and simulation aesthetics. For him, the cinematic image is not the reproduction and copy of material reality and human perception, but a new form of material reality and perception, which produces new realities beyond the limits of the human body and sense.

In this sense, Rushton emphasizes that the cinema is the symbiotic conglomeration of spectator and screen.⁵³⁵ For him, the presentation of film is indistinguishable from the perception of the spectator. Likewise, Bogue argues that visual perception is in things.⁵³⁶ He states that there is no spectatorship outside a film. The image produces cinematic reality in a reciprocal process with subjects. The reality of cinema is derived from the combination of subject and screen. There is no split between being and being perceived in terms of the virtuality of the simulated image. Consequently, based on the monism of simulacra, cinematic images produce material reality in an integrated process of human sensation and perception. Thus, cinema is the material process of creative simulation beyond the imitation and copy of physical reality.

In terms of the simulation of virtual images, my next point is that the Deleuzian aesthetics of simulacra and virtuality offers a clue for theorising the assemblage aesthetics of cinema—the configurative aesthetics of ‘virtual conjunction’ in the universe of simulation:

⁵³³ Gilles Deleuze, *The Brain is the Screen: An Interview with Gilles Deleuze*, translated by Marie Therese Guirgis, *The Brain is the Screen: Deleuze and the Philosophy of Cinema*, edited by Gregory Flaxman, Minneapolis: University of Minnesota Press, 2000, pp.365-374.

⁵³⁴ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.2.

⁵³⁵ Richard Rushton, *The Reality of Film: Theories of Filmic Reality*, New York: Manchester University Press, 2011, p.141.

⁵³⁶ Ronald Bogue, *Deleuze on Cinema*, New York, London: Routledge, 2003, p.34.

Any-space-whatever is not an abstract universe, in all times, in all places. It is a perfectly singular space, which has merely lost its homogeneity, that is, the principle of its metric relations or the connection of its own parts, so that the linkages can be made in an infinite number of ways. It is a space of virtual conjunction, grasped as pure locus of the possible. What in fact manifests the instability, the heterogeneity, the absence of link of such a space, is a richness in potentials or singularities which are, as it were, prior conditions of all actualisation, all determination.⁵³⁷

Aesthetically, virtual conjunction is the hybrid combination of the actual and the potential, the material and the immaterial, the object and the subject, and physical reality and the imagination. In addition, it subsumes the technological process of filmic simulation, such as the camera's movement, selective montage, and the illusionary screen. In particular, the numerical and algorithmic composition and manipulation of digital cinema intensify the virtual conjunction of cinematic images. Hence, the Deleuzian concept of simulacra and virtual conjunction proposes the digital aesthetics of compositing and configuration beyond the imitation and copy of physical reality.

In this context, I propose that Deleuze's concept of 'rhizome' and 'becoming' is closely associated with the aesthetics of digital simulation and virtuality. Deleuze's philosophy of simulacra reinterprets the relation between image and reality in the monism of materialism and develops the practical concept of rhizomatic configuration. Reality and image as material entities are not a relation of resemblance and representation, but a rhizomatic traversal produced by multiplicity. One of his principle volumes, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, begins with an explanation of the concept of the rhizome:

⁵³⁷ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, p.109.

Let us summarize the principal characteristics of a rhizome: unlike trees or their roots, the rhizome connects any point to any other point, and its traits are not necessarily linked to traits of the same nature; it brings into play very different regimes of signs, and even nonsign states. The rhizome is reducible neither to the One nor the multiple. ... Unlike the tree, the rhizome is not the object of reproduction: neither external reproduction as image-tree nor internal reproduction as tree-structure. The rhizome is an antigenealogy. It is a short-term memory, or antimemory. The rhizome operates by variation, expansion, conquest, capture, offshoots.⁵³⁸

In this manner, Deleuze and Guattari attend to the principle of the multiple configurations of the rhizome instead of the hierarchical modes of traditional Platonism. Here simulacra are not the reproductive objects of truth, models and reality. The philosophy of the rhizome concerns the principle of virtual conjunction and networks instead of reproduction. Regarding the image, the rhizome presents the philosophy of repetition and configuration resulting in accidental differences and interactive events instead of the imitation and representation of something fixed and static. Accordingly, the copy that dies in the logic of analogy and identification is changed in the philosophy of the rhizome into the immediate presentation of difference, which cannot be identified with the original. After criticizing the reproductive principle based on Platonism through the concept of the rhizome, Deleuze goes on to explain the principle of 'becoming' as the philosophy of subjective practice:

What is at question in the rhizome is a relation to sexuality—but also to the animal, the vegetal, the world, politics, the book, things natural and artificial—that is totally different from the arborescent relation: all manner of "becomings." A plateau is always in the middle, not at the beginning or the end. A rhizome is made of plateaus.⁵³⁹

⁵³⁸ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, p.21.

⁵³⁹ *Ibid*, p.21.

In the philosophy of the rhizome, Deleuze and Guattari attempt to delineate the practical meaning of philosophical concepts. For them, the world of simulacra leads to the logic of the innovation of the world by the affirmation of multiple beings. Their philosophy never stays in the world of actuality. They proceed to the realm of virtuality, in which the potential and possibility of a new world is revealed. Hence, the practical consequence of Deleuzian philosophy is the ceaseless nomadicity through traversal, a deterritorialisation that is finally serves as a war-machine against the territory of the state.⁵⁴⁰

As Rodowick argues, Deleuze's philosophy of the rhizomatic becoming is related to the issue of Deleuzian ethics.⁵⁴¹ It implies a belief in the world and the power of transformation on the immanent plane of simulacra. Deleuze states, "We need reasons to believe in this world".⁵⁴² In this sense, Rodowick argues that the Deleuzian notion of becoming means the ethical choice to believe in this world, in which we exist now, alive and changing, and not in some transcendent or ideal world.⁵⁴³ This is an affirmation of the relation between the world and human beings, the world and the arts, and the world and cinema. Deleuze presents the ethics of cinematic images as the univocity of being. The simulated images of cinema exist in the relation of the movement, time, and change in physical reality, which is not a copy of material reality, but the becoming, differentiation and multiplicity of being. In terms of the simulated images of cinema, the Deleuzian notion of becoming suggests the belief in being and physical reality, the possibility and creation of new reality, and the subjective and practical configuration of virtual images beyond representative imitation and copy.

In another view, Flaxman demonstrates that Deleuzian aesthetics of becoming and configuration concerns the aesthetics of science fiction (sci-fi). This is because sci-fi is

⁵⁴⁰ Ibid, pp.367-368.

⁵⁴¹ D. N. Rodowick, *The World, Time, Afterimages of Gilles Deleuze's Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010, p.99.

⁵⁴² Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, London: Continuum International Publishing Group, 2005, p.167.

⁵⁴³ D. N. Rodowick, *Afterimages of Gilles Deleuze's Film Philosophy*, edited by D. N. Rodowick, Minneapolis : University of Minnesota Press, 2010, p.100.

devoted to the ‘not yet’, the ‘otherwise’, or the ‘Outside’.⁵⁴⁴ According to Flaxman, the recourse to science fiction strikes Deleuze with the force of an absolute exigency because the genre pursues an experiment in experience that deterritorialises the concepts of representation. In other words, the signs and events of science fiction demand new means of expression. This genre moves from the question of ‘what is...?’ to the new question of ‘what if...?’⁵⁴⁵ Flaxman explains that Deleuze proposes the new expressions and experiments of unknown worlds in a concept of science fiction that departs from the known world of representative images. Deleuze suggests the new frontier of cinematic images as a kind of ‘metacinema’⁵⁴⁶ of simulated images going beyond the copy image of representative reality. Hence, Flaxman proposes that the future of philosophy would be science philosophy (sci-phi). Similar to Deleuze’s notion of sci-fi, Flaxman’s ‘sci-phi’ evokes the new realities and styles based on unknown experiments and expressions of the world and the image. Hence, Flaxman claims that the philosophy of the future is the ordination of singularities and the assemblage of components.⁵⁴⁷

I would add that the ontological future of the cinema depends on the assemblage and configuration of virtual images. The simulacra of Deleuze suggest an aesthetics of rhizomatic configuration, in which the dynamic relation between physical reality and the cinematic image creates a practical potential to overturn the logic of representative simulation. In the universe of simulacra, cinematic images rely on the new styles and expression of physical reality beyond the realm of representative imitation and copy. In the Deleuzian concept of digital virtualism, the new aesthetics of cinema is the aesthetics of becoming and configuration by the virtual conjunction of simulated images.

4-2. Cinematic Movement: Materiality and Sensation

⁵⁴⁴ Gregory Flaxman, *Gilles Deleuze and the Fabulation of Philosophy*, Minneapolis: University of Minnesota Press, 2012, p.295.

⁵⁴⁵ Ibid, p.296.

⁵⁴⁶ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.59.

⁵⁴⁷ Gregory Flaxman, *Gilles Deleuze and the Fabulation of Philosophy*, Minneapolis: University of Minnesota Press, 2012, p.323.

In this section, I first argue that Deleuze's concept of the movement-image has vital implications for the aesthetics of digital virtualism because digital images move toward the new dimension of the material image beyond indexicality. Deleuze's movement-image postulates that the nature of cinema does not seek the indexical traces of reality but presents the material magic and sensation of images. Deleuze states that the materiality of the image is realised by the movement of cinematic images. In particular, concerning the conceptual extension of Deleuzian movement-image in the age of digital cinema, this thesis claims that the dynamic motion and synthesis of digital molecular particles produce the new mode of the movement-image. Digital collage based on pixel simulation and software algorithm creates the new concept of cinematic motion beyond filmic montage. It suggests the hybrid aesthetics of digital information images predicated on the singular multiplicity and aesthetic assemblage of microscopic data components.

My next point is that the movement-image is associated with the spectator's sense. According to Deleuze, the thing and the perception of the thing are the same.⁵⁴⁸ Here the perception of the thing is made possible by the spectator's sense. The movement-image of the cinema combines with the spectator's sense. Thus, the attraction of cinematic movement stems from the spectator's sense. I consider that Deleuze's movement-image suggests the issue of the spectator's bodily sensation. In particular, digital images strengthen the role of bodily sensation by the movement of material images. Digital aesthetics presents the interactivity of the screen and the interfaciality of the spectator. I conclude that digital virtualism newly expands the significance of cinematic motion and the spectator's sense by the digital transformation of cinema.

With regard to the movement-image, my last point is about its spiritual force. It implies that movement-image has three avatars: perception-image, action-image, and affection-image.⁵⁴⁹ These avatars are the regime and system of movement-images. This regime of movement-images proceeds to the coincidence of object and subject. Therefore, sensory-motor schema of the movement-image produces the mental image by an acentric set of

⁵⁴⁸ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.63.

⁵⁴⁹ *Ibid.*, p.65.

variable elements that act and react with each other, in which the movement-image moves forward from motion to 'e'motion. Here I suggest that the movement-image is related to the role of the spectatorship's impression, affection, pathos and attraction. It also has to do with the issue of the spectator's immersion in the screen in digital cinema. In this sense, the eruption of movement is connected with the moment of pure time-image.

First, I examine the issue of the material image through the concept of cinematic movement. According to Deleuze, the image is the movement of matter. It is not a copy or replica of matter, but the material itself. In discussing Bergson's, *Duration and Simultaneity*, Deleuze states the importance of Einstein's theory of relativity. Deleuze, following Bergson and Einstein, demonstrates that things are the line and figure of lights and blocks of space-time.⁵⁵⁰ The thing is not the consciousness that is light; it is the set of images, or the light, which is consciousness immanent to matter. He criticises that traditional philosophy and phenomenology separate consciousness from matter. For Deleuze (via Bergson), all consciousness is not the consciousness of something, but something in itself. Things are luminous by themselves without anything illuminating them. Matter moves and changes in an immanent plane. In short, Deleuze indicates that the plane of immanence is a set of movement-images, a collection of lines or figures of light, and a series of blocks of space-time. Therefore, in the philosophy of material monism, the image is also the movement of the matter. Like the atom, body, brain, and eyes, the image also consists of moving and changing matter in our world:

This infinite set of all images constitutes a kind of plane of immanence. The image exists in itself, on this plane. This in-itself of the image is matter: not something hidden behind the image, but on the contrary the absolute identity of the image and movement. The identity of the image and movement leads us to conclude immediately that the movement-image and matter are identical.⁵⁵¹

⁵⁵⁰ Ibid, pp.60-61.

⁵⁵¹ Ibid, p.59.

For Deleuze, the world of the image is matter and movement. This proposition has a vital and viable force in the aesthetics of the image. This is because the concept of the image as matter hints at going beyond the logic of the dichotomy between reality and the image. Because Deleuze's ontology of image repudiates the binary relationship of dominance and subordination between reality and the image, we can proceed to the potential and creative aesthetics of cinematic images. It has two different meanings: the image is matter and movement simultaneously. From these propositions, we can draw the ontological implications of cinema and then of digital cinema. In short, the cinematic image is the movement of matter.

On one hand, the first proposition, 'the image is the matter', rejects the diversity of film theories that rely on semiology and hermeneutic phenomenology. The cinematic image is not a language, science, or index. Instead, it is material and sensational, and simultaneously intangible and impalpable. Semiological language can never grasp the image of cinema. In this sense, Gunning also points out that the 'magical' understanding of cinematic images is clearly very different from the logic of signs. Like Deleuze, he criticizes that Peirce's semiotics and the indexical relation falls into the rational realm.⁵⁵² The materiality of cinematic images goes beyond the limitation of language and hermeneutic logic. Hence, Deleuze states that semiology abolishes the image and tends to dispense with the sign.

In addition, the materiality of intangible and impalpable images goes beyond the indexicality of reality. This is because the image is not a representative index of matter, but of the material, which is not the copy of reality, but the 'sensory-motor schema', which is linked with the perception-image, action-image, and affection-image. In Deleuze's taxonomy of images, while the perception-image is the master of space and long shots, the action-image is the master of time and medium shots. The affection-image is the coincidence and close-up of subject and object between perception and action. The assemblage of the three different images consists of a special image, a centre of

⁵⁵² Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No.1, 2007, p.33.

indetermination and the contingent centre of the movement-image.⁵⁵³ According to Rushton, Deleuze's core concept of the movement-image is the 'universal variation'.⁵⁵⁴ That is, all is movement and all is image, and no image is ever static. Rushton argues that Deleuze's taxonomy of images is dedicated to a variety of ways of the world and the movement. In other words, the material image of cinema is the assemblage and configuration of a diversity of movement-images that are different, creative, and offer new *realities*.

The Deleuzian concept of the materiality of images has important implications in the aesthetic dispute on realism. This is because the material image already presupposes the vitality of cinematic movement and sensation beyond indexicality and copy. As discussed in chapter 3, several scholarly disputes involve Bazin's concept of realism in relation to the materiality of the image and the concept of new reality. Whilst Wollen and political modernists stress that Bazin's realism is objective, thus missing the ideological and subjective aspects of cinema, recent theories re-evaluate the material ambiguity and complexity of Bazin's realism. While Rosen points out that Bazin's realism stresses the role of the subject and the style of the artist,⁵⁵⁵ Morgan indicates that Bazin intuits the complex materiality of images beyond the photographic resemblance of physical reality.⁵⁵⁶ Gunning proposes that the dispute on cinematic nature regarding the emergence of digital cinema moves toward the movement of the cinematic image beyond indexicality.⁵⁵⁷

Based on Deleuzian ontology, this thesis argues that digital virtualism is the aesthetics of the material image. It considers the cinematic image reality itself, that is, material modes of different realities. Digital virtualism proceeds to the aesthetics of the assemblage and

⁵⁵³ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.66.

⁵⁵⁴ Richard Rushton, *Cinema after Deleuze*, London, New York: Continuum International Publication Group, 2012, pp.27-29.

⁵⁵⁵ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.26.

⁵⁵⁶ Daniel Morgan, Rethinking Bazin: Ontology and Realist Aesthetics, *Critical Inquiry*, Vol. 32, No.3, Spring 2006, pp.443-481.

⁵⁵⁷ Tom Gunning, Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No.1, 2007, p.44.

configuration of *creative realities*. It goes beyond *a reality*, especially a conventional and obsolete reality. As Markos Hadjioannou states, *the world* is always missing in the frame of reference and indexicality⁵⁵⁸ because a representative world is not *the world*, but *a world*. The index is nothing but *a view* of the world. In the world of cinematic images, reality is not singular, but plural. Hence, the aesthetics of digital virtualism claims that cinematic images are material images that are perpetually assembling, configuring, and being in the plane of immanence. Thus, digital virtualism goes beyond the aesthetics of indexicality and representation.

The meaning of ‘beyond indexicality’ is twofold. One simple answer is to dismiss and exclude indexicality from digital aesthetics. In other words, the term assumes that digital cinema has nothing to do with indexical traces. As Rosen properly points out, this assumption is not correct. According to his concept of ‘digital mimicry’⁵⁵⁹, first, the digital camera still collects the light of indexical reality. Digital cinema is also nothing but the computer manipulation of indexical images. Furthermore, digital cinema includes a variety of photographic images and forms. Therefore, cinema has always relied on the indexical traces of physical reality. Similarly, digital cinema has ‘a minimum indexicality’ of reality, even though digital images mainly depend on computer simulation and the manipulation of reality.

However, on the other hand, the aesthetics of cinema goes beyond the logic of indexicality in terms of aesthetical ontology, according to Morgan and Gunning (via Deleuze). The ontology of digital images rejects the strict demarcation between reality and image. In terms of material monism, the virtual image of cinema is none other than a different mode of reality. The actual image also exists in the circuit of virtual images. Therefore, the image is not the copy of reality, but different types of *realities*, that is, creative and potential *realities*. The aesthetics of virtualism suggests the monism of the material image beyond the indexical and reproductive image of reality. The materiality of image is the complexity and imbrication of movement, time, and sensation. In this sense,

⁵⁵⁸ Markos Hadjioannou, In Search of Lost Reality: Waltzing with Bashir, *Deleuze and Film*, edited by David Martin-Jones and William Brown, Edinburgh: Edinburgh University Press, 2012, p.107.

⁵⁵⁹ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.307.

the image of cinema goes beyond the logic of indexicality. The ontology of digital cinema is also associated with the materiality of the image, that is, the movement and sensation of the image beyond indexicality and representation.

Therefore, we should grasp the contradictory imbrication of image and reality, reproduction and simulation. Cinema has always been based on both indexicality and manipulation. On one hand, cinema is the index of reality. On the other hand, it goes beyond the logic of indexicality. Cinema is always the synthesis and manipulation of reality, whether in digital simulation or by photographic manipulation. The principle of cinema is based on the artistic manipulation of images, even when the images are optical and photographic. Hence, cinema is the contradictory combination of physical reality and virtual images, indexicality and manipulation, either analogue or digital. As it were, first film and then digital cinema are internal circuits that bridge actuality and virtuality. Cinema is the aesthetics of virtuality, which is the bridge and threshold between the actual and the real. Based on the virtuality of cinema, digital cinema introduces a different and expanded way of the synthesis and manipulation of cinematic images, which depends on computational simulation and modular configuration. Digital cinema expands the virtuality of cinematic images. Digital virtualism is the aesthetics of *expanded* virtuality. It expands the contradiction of cinematic images between reality and image, indexicality and manipulation, analogue and digital, object and subject, and technology and aesthetics. In this sense, digital virtualism is the aesthetics of historical hybridity and aesthetic complexity.

The second proposition is that the image is the movement. It is closely associated with the first proposition, 'the image is the matter'. That is, the materiality of cinematic images begets the movement of the image because the matter is the movement. Deleuze states that the identity of image with movement stems from the identity of matter with light.⁵⁶⁰ The image is matter living, moving and changing. It is an incessant flow of movement in the plane of immanence. In short, in Deleuze's definition, the movement-

⁵⁶⁰ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.58.

image is both the object and the modulation of the object.⁵⁶¹ The modulation is not a resemblance, a code, or a mould. It is a variation of mould, a transformation, code-graft, multiplicity, and reconstitution. For Deleuze, cinema is both the object and the movement.

Regarding the movement of cinematic images, Deleuze begins with the basic components: the frame, the shot, and the montage. According to him, the frame is ‘the determination of a closed system’ and is ‘geometric and physical’.⁵⁶² That is, it consists of celluloid strips of film. Simultaneously, Deleuze indicates that the frame is also a ‘framing’. As it were, the frame is divided into zones and bands and is related to the angle of framing. It is the relation with ‘out-of-field’.⁵⁶³ He describes that the frame goes beyond the limits of the frame to communicate with out-of-field objects, such as Bazin’s mask. He explains that all framing determines an ‘out-of-field’. Next, whereas the frame is considered the physically basic element of cinema, the shot is considered the movement-image. He states that cutting (decoupage) is the determination of the shot and the shot is the determination of the movement, which is established in the closed system of elements or parts of the set. In particular, he defines the movement of the shot by the relation between the whole and the parts. For him, the shot is the open movement between the frame and the montage:

The shot in general has one face turned towards the set, the modifications of whose parts it translates, and another face turned towards the whole, of which it expresses the - or at least a – change. Hence the situation of the shot, which can be defined abstractly as the intermediary between the framing of the set and the montage of the whole, sometimes tending towards the pole of framing, sometimes tending towards the pole of montage. The shot is movement considered from this

⁵⁶¹ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.27.

⁵⁶² Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, pp.12-13.

⁵⁶³ *Ibid*, p.16.

dual point of view: the translation of the parts of a set which spreads out in space, the change of a whole which is transformed in duration.⁵⁶⁴

In addition, Deleuze illuminates the relationship between the movement and the time of the shot. For him, the shot is the mobile section of duration. He stresses that the movement of the shot presents not only spatial aspects but also temporal perspectives. He states that the movement-image of the shot is related to an open whole that changes in duration. Pointing to Epstein and Bazin's intuition, Deleuze highlights the temporality of the movement-image of the shot and cinematic reality.⁵⁶⁵ He recalls Bazin's statement that whereas the photograph is a kind of 'moulding', the cinema realizes the paradox of moulding in the time of the object and taking the imprint of its duration as well. He also states that Epstein comes closest to the concept of the shot, which is a mobile section, that is, a temporal perspective or a modulation. Deleuze (via Epstein and Bazin) considers that the movement-image of the shot is a temporal duration, distinguishing cinema from photograph.

In this context, Rushton explains that Deleuze's concept of *plan* in French is different from the term 'take' in English.⁵⁶⁶ The English term 'shot' is close to a spatial concept, whereas the French term '*plan*' includes both the 'shot' as a spatial concept and the 'take' as a temporal concept. Ronald Bogue also argues the difference between the French *plan* and the English *shot*.⁵⁶⁷ He argues that the double sense of plan as spatial distance and temporal continuity aptly captures the nature of movement as indivisible, qualitative multiplicity. Bogue explains that Deleuze's *plan* is a single movement that expresses the open whole of duration. It is related to the multiple elements within various sets and subsets of the film in movement and duration. Consequently, Deleuze effectively describes the temporality and spatiality of the movement-image of the shot by referring to the meaning of *plan* in French.

⁵⁶⁴ Ibid, p.20.

⁵⁶⁵ Ibid, p.24.

⁵⁶⁶ Richard Rushton, *Cinema after Deleuze*, London, New York: Continuum International Publication Group, 2012, p.14.

⁵⁶⁷ Ronald Bogue, *Deleuze on Cinema*, New York, London: Routledge, 2003, pp.44-45.

Deleuze also defines the concept of montage as the whole moving and changing in space and time. While the frame and the shot means separated units and parts, the concept of montage embraces the whole and the unity of movement. Montage is the cutting and linking of shots. Thus, Deleuze states that montage is ‘the determination of the whole’⁵⁶⁸ by means of continuities, cutting and false continuities. In this view, montage as the whole has two aspects: the unity of movement and the indirect image of time. The montage as the whole allows the unity and composition of movements by the combination of separated shots. Montage is the whole as it moves and changes. In addition, montage creates indirect images of time by separating the whole from direct and pure time. Montage is the movement-image emancipated from the image of time. In this sense, montage is the composition and assemblage of movement-images as constituting an indirect image of time.⁵⁶⁹

In a conceptual extension of Deleuze’s movement-image and montage, I extrapolate a new mode of cinematic motion based on the computer synthesis and digital collage from the concept of ‘molecularisation’ and ‘spiritual automaton’.⁵⁷⁰ For Deleuze, the cinematic movement is derived from the dynamic montage of molecular particles, which gives rise to the automated spirituality of virtual images. Digital techno-aesthetic expands and transforms the dynamic movement of filmic motion and mentality. While computer technology enhances the molecular movement of the information image-surface, digital aesthetics heightens the dynamic hybridity of singular modulation and quantum speed. As Wood argues, the aesthetics of digital synthesis presents the new type of the movement and perception, in which the transformation and configuration of image elements arouse a diversity of ‘genetic manipulation’ at the level of pixel and data.⁵⁷¹ For instance, digital technologies using 3D virtual camera, motion/performance capture, and computer animation software in *Avatar* create ‘ecological configuration’ of cinematic space and movement in the multiple intersection and interfaciality of digital codes and simulation

⁵⁶⁸ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.29.

⁵⁶⁹ Ibid, p.30.

⁵⁷⁰ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, pp.84-85, p.156.

⁵⁷¹ Aylish Wood, Pixel Visions: Digital Intermediates and Micromanipulations of the Image, *Film Criticism*, September 2007, pp.72-94.

algorithms.⁵⁷² In this context, I articulate that the aesthetics of computer synthesis and digital collage creates the new regime of material images and filmic movement, which implies the technological transformation from film grains to computer pixels, and the ‘historical transion’ from the ontology of photochemical representation to the aesthetics of digital assemblage as well.⁵⁷³

Meanwhile, after explaining the importance of montage as the unity of movement-images, Deleuze describes four different schools of montage.⁵⁷⁴ While Griffiths and the American school conceive of the composition of movement-images as an organism, Eisenstein and the Russian school developed the concept of dialectic montage. While the pre-war French school showed the quantitative trend to montage, the German Expressionists presented the intensive trend to montage. In particular, Deleuze evaluates Eisenstein’s dialectical montage compared with Griffith’s organic montage. Whereas Griffith suggests continuous and parallel montage concealing the intervals and gaps of opposite shots, Eisenstein proposes the dialectical nature of montage, that is, the qualitative leap and the creation of the third order. Eisenstein stresses the importance of the interval. The intervals of movement-images both engender the qualitative leap and raise the power of the instant.

Here, my point is that Eisenstein’s ‘montage of attraction’ is associated with the concept of digital spectatorship, based on the materiality and sensation of images. The concept of Eisenstein’s attractive montage allows us to connect the movement-image with spectatorial attraction. This connection between montage and the spectator’s sense helps us develop the concept of the materiality and sensation of digital cinema. In particular, I note Deleuze’s concept of ‘pathetising’. Deleuze explains that Eisenstein’s montage induces the attraction and pathos of spectators. He elicits the concept of the spectator’s pathos from an explanation of Eisenstein’s montage of attraction:

⁵⁷² Aylish Wood, Where Codes Collide: The Emergent Ecology of Avatar, *Animation: An Interdisciplinary Journal* 7(3), November 2012, pp.309-322.

⁵⁷³ Giovana Fossati, *From Grain to Pixel: the Archival Life of Film in Transition*, Amsterdam University Press, 2009, pp.140-145.

⁵⁷⁴ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, pp.30-55.

Of course, attraction must firstly be understood in its spectacular sense. Then also in an associative sense: the association of images as a Newtonian law of attraction. But, furthermore, what Eisenstein calls ‘attractional calculus’ marks this dialectical yearning of the image to gain new dimensions, that is, to leap formally from one power into another. The jets of water and fire raise the drop of milk to a properly cosmic dimension. And it is consciousness which becomes cosmic at the same time as it becomes revolutionary – having reunited in a final leap of pathos the whole of the organic in itself –earth, air, fire and water. We will see later how, in this way, montage of attractions constantly makes the organic and the pathetic communicate with one another.⁵⁷⁵

Here Deleuze explains the significance of Eisenstein’s montage by referring to the concept of ‘pathos’. Deleuze (via Eisenstein) highlights that montage is the whole of film, that is to say, the Idea. For Deleuze, the movement-image of Eisenstein’s attractive montage creates the link between the pathetic and the organic. It is both a qualitative leap and a pathetic development, that is, ‘pathetisation’, the importance of which⁵⁷⁶ Deleuze again explains in *Cinema 2: the Time-Image*. He evaluates that Eisenstein’s concept of attraction and pathos presents the essential relation between nature and humanity, cinema and thoughts. By referring to Eisenstein’s montage of attraction, Deleuze demonstrates that the movement-image of cinema produces ‘a shock to thought’, communicating vibrations to the cortex, thus directly affecting the nervous and cerebral system.

Consequently, he accurately expresses the force of cinematic movement: ‘Automatic movement gives rise to a spiritual automaton in us, which reacts in turn on movement.’⁵⁷⁷ Deleuze indicates that Eisenstein’s concept of the movement-image grasps the force of cinematic thought. According to Deleuze, the automatic image of cinema evokes concepts or thoughts, which then return to the moment of ‘the affect’. It is the images of

⁵⁷⁵ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, p.36.

⁵⁷⁶ Ibid, p.181.

⁵⁷⁷ Ibid, p.156.

emotion, passion, and pathos in Eisenstein's concept. The movement of material image gives rise to the affect and pathos in the final moment of cinematic movement. The movement-image results in the unity and monism between humans and the world, action and thought, senses and physical movement:

It is indeed true that the three relationships between cinema and thought are encountered together everywhere in the cinema of the movement-image: the relationship with a whole which can only be thought in a higher awareness, the relationship with a thought which can only be shaped in the subconscious unfolding of images, the sensory-motor relationship between world and man, nature and thought. Critical thought, hypnotic thought, action-thought.⁵⁷⁸

In this sense, Colman properly evaluates Deleuze's implications for cinematic movement.⁵⁷⁹ According to her, Deleuze's concept of the movement-image is not only a technical term but also a mental term. Although the movement-image depends on equipment and technical ability, it can also engage mental movement. Colman points out that Deleuze's movement-image produces human thought and the reality of world. For Deleuze, the technological automation of film is associated with the automatic movement of cinematic images. Moreover, the automation of the movement-image produces spiritual automaton, by which images are mixed with thought and emotion. For him, cinematic images are an automatic machine that creates simultaneously thought, emotion, affect, and pathos in the monism of the sensory-motor schema.

Consequently, the core of Deleuze's assertion of cinematic movement is that the automatic movement of cinema produces spiritual automaton by the unity of sensory-motor schema. He draws on Eisenstein's concept of attraction and pathos in the relation between thought and cinema. Cinematic movement produces the identification of image, concept, and affect, which is the unity of the sensory and physical movement and humanity and nature. In both analogue film and digital cinema, the movement-image

⁵⁷⁸ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.263.

⁵⁷⁹ Felicity Colman, *Deleuze and Cinema: The Film Concepts*, Oxford: Berg, 2011, pp.27-29.

creates the affection and pathos of the spectator according to sensory-motor schema. The aesthetics of the movement-image, by creating the identity of thought, affection, and pathos of human, persists in sensory-motor integration.

In this context, we should reconsider and re-evaluate Deleuze's aesthetics of the movement-image in the age of digital cinema. This thesis asserts that digital aesthetics re-appropriates the concept of the attraction of material images and the pathos of spectators from Deleuze's concept of the movement-image. In fact, computer simulation and digital synthesis differ from the montage of film images. This is because in digital images, the frame and shot do not comprise the minimum unit of image composition. Instead, as Manovich points out, the basic unit of composition is the pixel and data.⁵⁸⁰ The aesthetics of digital assemblage is based on the software algorithm and data informatics. However, Deleuze's concept of the movement-image is not only valid but also vital in illuminating the aesthetic ontology of digital images. This is because Deleuze's movement-image is not only a technological concept but also an aesthetic concept of cinematic ontology. Deleuze's concept of the movement-image is the aesthetics of material images, the shifting universal, varieties of images, spiritual automaton, as well as the spectator's attraction, pathos and affection. In Deleuze's definition, the cinema is a composition of images and signs. The cinema, as a material image and a different reality, is the movement itself. Thus, Deleuze suggests not the semiology or hermeneutics of images, but the taxonomy of images, which is a complex classification of different types of images of perception, action, affection, impulses, reflections, and relations. Even though the classification of digital images goes beyond the basic classification of filmic components of frame, shot, and montage, we need to understand the conceptual implication of Deleuze's movement-image. It is the aesthetics of the material movement of images, their parts and wholes changing in duration and change. For Deleuze, the aesthetic concept of montage is the determination of the whole moving and changing in space and time and is still a strong tool in cinematic movement. Deleuze's concept of the movement-image alludes to a composite aesthetics of digital images based on the synthesis and manipulation of computer pixels and data.

⁵⁸⁰ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.133.

With regard to the aesthetics of digital cinema, this thesis argues that Deleuze's concept of the movement-image can be differentiated and specified in the new milieu of digital virtualism. I consider that Deleuze's concept of the attraction and pathos of the movement-image can be newly considered in terms of the materiality, molecularisation sensation, and spirituality of the digital image. In previous sections, I evaluated the diversity of useful concepts of digital attraction and affection. In particular, Gunning highlights the importance of cinematic motion and spectator's attraction in relation to the study of new media. Wood suggests the concept of 'digital affection', based on digital dressing and micromanipulation, borrowing from Deleuze, Foster, and Massumi's concept of 'affection'. Gurevitch proposes the concept of 'digital transaction', which relies on the exchange and networking of digital images as a special type of cinematic attraction in the age of cybernetic networks. Brown argues that the monstrosity of digital images, which transverse the human and the non-human, creates a new phase of super-cinema and digital complexity relying on datamoshing and glitch arts. These digital theories offer clues that are useful in developing the attraction of cinematic movement.

I would add the aesthetic ontology of digital virtualism. The movement-image of cinema is connected to the aesthetics of digital virtualism. I define the aesthetics of digital virtualism in terms of computer simulation and synthesis, the materiality and sensation of cinema, and the informational nature of images. Digital virtualism is dedicated to the spiritual automaton of the digital movement-image. It is a new affection and pathos produced by computer simulation and synthesis. It means the configuration and assemblage of surface and depth, spectacle and emotion, and fantasy and reality. In other words, the movement-image of digital cinema creates a new type of thought and pathos. It is a historical hybridity and aesthetic complexity of the actual and the virtual, human and nature, technology and thought. The digital movement-image is founded on the materiality of molecular images and the sensations of the spectator. For example, the emotional pathos of spectators of a 3-D digital movie, such as *Avatar* (2009), stems from the technological attraction of spectacular stereoscopic images and the sensuous

immersion of spectators in the 3-D screen.⁵⁸¹ In addition, one of the most important factors in Sony's computer game for Playstation 3, *The Last of Us* (2012), is the creation of emotional and affectional affinity between the player and the game's characters, which relies on the interactivity and network of informational images.⁵⁸² Digital cinema creates the spectator's emotional pathos and sensational attraction by digital movement-images based on computer simulation and synthesis of pixels and data. This concerns the technological and sensuous attraction of digital images, which is material and composite. In this sense, digital virtualism presents a new form of the movement-image in the unity of sensory-motor schema. In short, digital virtualism is the aesthetics of the digital movement-image. It is founded on the molecular assemblage and singular multiplicity of material images and the emotional attraction of spectators caused by data informatics and computer synthesis.

4-3. Digital Time: Crystal-Image and Digital Virtualism

In this section, I explore the implications of Deleuze's concept of the time-image for the aesthetics of digital cinema. After examining the relation between the movement-image and the time-image, this section concludes that the aesthetics of the time-image suggests new types of cinematic ontology. In particular, I pay attention to the concept of the crystal-image, which is indiscernibility and inextricability between movement and time, the past and the present, and the actual and the virtual. I consider that the concept is the core of Deleuze's aesthetics of cinema. The aesthetics of digital virtualism is in intimate rapport with Deleuze's concept of the crystal-image. Moreover, as the conclusion of Deleuze's cinema book indicates, the informational nature of digital cinema is connected to the aesthetics of the crystal-image. It evokes the primary concepts of digital virtualism, such as digital synthesis, intertextuality, network, convergence and interactivity. Thus,

⁵⁸¹ Leon Gurevitch, The Birth of a Stereoscopic Nation: Hollywood, Digital Empire and the Cybernetic Attraction, *Animation: An Interdisciplinary Journal* 7(3), pp.239-258.

⁵⁸² Refer to the interview with Gustavo Santaolalla, who is a composer of the music of *The Last of Us*. http://www.youtube.com/watch?v=Ejdcun2Jo4&oref=http%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DEjdcun2Jo4&has_verified=1.

we should take note of the aesthetical implications of Deleuzian virtuality, although Deleuze could not conceive of the full-fledged diffusion of digital cinema.

I begin by explicating the concept of the time-image, which immediately requires its relation with the movement-image and the crystal-image. After investigating the concept of the time-image in relation to the movement-image, I will proceed to the implication of crystal aesthetics in the age of digital information-image.

In Deleuze's image taxonomy, the time-image and the movement-image are the core of cinema aesthetics. The time-image is a historical and an aesthetic concept, simultaneously. Here, it is necessary to emphasize the relationship between the movement-image and the time-image. Historically, the time-image is pure time emerged from the rupture of the movement-image. Aesthetically, it is also the mode of presentation drawn from the filmic via filmstrips. My point is that the primacy of the time-image should not be presupposed over the movement-image. Their relationship is not exclusive, but complex and interdependent. They are two different regimes and types of cinematic images. They are considered different modes of filmic images and realities. Deleuze mentions the relationship between the movement-image and the time-image:

It is not a matter of saying that the modern cinema of the time-image is 'more valuable' than the classical cinema of the movement-image. We are talking only of masterpieces to which no hierarchy of value applies. The cinema is always as perfect as it can be, taking into account the images and signs which it invents and which it has at its disposal.⁵⁸³

In this sense, Rushton also emphasizes that Deleuze's thought has little to do with affirming the richness of the time-image against the poverty of the movement-image.⁵⁸⁴ The assertion that the time-image is better and the movement-image is 'worse' is a

⁵⁸³ Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986, x.

⁵⁸⁴ Richard Rushton, *The Reality of Film: Theories of Filmic Reality*, New York: Manchester University Press, 2011, p.127.

serious misunderstanding of Deleuze's taxonomy of cinematic images. The relation between the movement-image and the time-image is not a matter of hierarchical judgment, which automatically assumes the superiority of the time-image over the movement-image. Rushton claims that the both ontological regimes of cinematic images are neither better nor worse, but real. He argues that the functional relation between the movement-image and the time-image concerns two different types of cinematic reality:

Cinematic perception has its own aspirations and is capable of its own modes of perceiving. For the movement-image the modes of perceiving are ones that depend upon a clear distinction between the real and the unreal, where, in the final account, everything is found to be in its place. The time-image, on the other hand, presents a different type of reality, on which acknowledges the presence of the past and the ways that the past is enveloped in the present. This is another way of saying that the time-image presents an indistinguishability between the real (present) and the unreal (past).⁵⁸⁵

With this typology in mind, I examine Deleuze's historical and aesthetical viewpoint of the time-image. Deleuze states that the time-image emerged after the Second World War, because the ruin of war and the new post-war conditions gave rise to a new system of thought and image.⁵⁸⁶ In particular, he follows Bazin who suggests the aesthetic criteria of realism, instead of the social content. Deleuze pays attention to the ambivalent and transparent form of neorealism in terms of the perspectives of new image aesthetics, instead of political aspects:

it was a matter of a new form of reality, said to be dispersive, elliptical, errant or wavering, working in blocs, with deliberately weak connections and floating events. The real was no longer represented or reproduced but 'aimed at'. Instead of representing an already deciphered real, neo-realism aimed at an always ambiguous, to be deciphered, real; this is why the sequence shot tended to replace

⁵⁸⁵ Ibid, p.147.

⁵⁸⁶ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, pp.1-13.

the montage of representations. Neorealism therefore invented a new type of image, which Bazin suggested calling 'fact-image'.⁵⁸⁷

Deleuze argues that what defines neorealism is the build-up of purely optical and sound situations, which are fundamentally distinct from the sensory-motor situations of the action-image in the old realism. He similarly evaluates the emergence of the new post-war films by Welles, Resnais, Hitchcock, Ozu, Bresson, Antonioni and Godard. For him, the modern post-war films present the new cinema of the time-image beyond the movement-image. They heralded the birth of pure optical-sound situation, replacing the action-image and sensory-motor schema. Hence, according to Deleuze, while the movement-image is an indirect image of time, the time-image is a direct image of time:

This is the triple reversal which defines a beyond of movement. The image had to free itself from sensory-motor links; it had to stop being action-image in order to become a pure optical, sound (and tactile) image. But the latter was not enough: it had to enter into relations with yet other forces, so that it could itself escape from a world of clichés. It had to open up to powerful and direct revelations, those of the time-image, of the readable image and the thinking image. It is in this way that opsigns and sonsigns refer back to 'chronosigns', 'lectosigns' and 'noosigns'.⁵⁸⁸

For Deleuze, the time-image means the emergence of pure optical and sound images beyond the movement-image. It implies that movement should not be perceived as a sensory-motor image but grasped and thought of as another type of image. The movement-image has not disappeared, but now exists only as the first dimension of an image that never stops growing. Deleuze asserts that the time-image appears in the looseness of sensory-motor schema and the crisis of action-images, that is, the crisis of cinematic movement.

⁵⁸⁷ Ibid, p.1

⁵⁸⁸ Ibid, p.23.

According to Rushton,⁵⁸⁹ the movement-image is an indirect image of time because its form presupposes that the world can be brought into a right, proper, and stable order if certain specific actions are performed. The movement-image is the discovery of an image of the world by a camera-eye that is not human. It is defined by actions and reactions, and it aspires to myriad solutions, such as those in Nazi, Soviet, and American narrative cinema. Thus, the movement-image implies that changes need not happen within the stable system of sensory-motor schema.

Rushton also explains Deleuze's concept of the time-image by referring to two core criteria: the temporality and stability of cinematic images.⁵⁹⁰ On one hand, in terms of temporality, Rushton argues that, whereas the movement-image is the present, the time-image is the limit of presence. The time-image is the past, memory, renascence, and duration. It is the coexistence between the past and the present. Deleuze states that the time-image is 'a little time in pure state'.⁵⁹¹ On the other hand, in terms of the stability of images, Rushton also claims that Deleuze's concept of the time-image indicates the inability to find such solutions. The time-image means a certain inability to work out right, proper, and stable solutions. It goes beyond the capacities of narrative and character. Hence, the time-image is a cinematic system of openness: It is open to change; its solutions are also open.

Here, I emphasize that the time-image is the virtual, which could be an important theoretic premise of digital virtualism. It implies that Deleuzian virtualism is based on the complex relation of the movement-image and the time-image and the actual and the virtual. Deleuze states that the direct time-image is a 'virtual phantom', whereas the indirect time-image, that is, the movement-image, is the actual.⁵⁹² For Deleuze, the time-image is a non-localizable relation between a pure optical situation and a sound situation. It replaces the sensory-motor situation of movement-images. Thus, it is the virtual, that

⁵⁸⁹Richard Rushton, *Cinema after Deleuze*, London, New York: Continuum International Publication Group, 2012, p.5.

⁵⁹⁰ Ibid, p.6.

⁵⁹¹ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.169.

⁵⁹² Ibid, p.41.

is, the indiscernibility and coexistence of the presence and the absence, and the present and the past, whereas the movement-image concerns the present and the actual.

However, the virtual is not opposed to the real, but to the actual.⁵⁹³ We should understand that the relation between the actual and the virtual is an actual-virtual circuit on the spot. It is a crystal-image:

This perpetual exchange between the virtual and the actual is what defines a crystal; and it is on the plane of immanence that crystals appear. The actual and the virtual coexist, and enter into a tight circuit which we are continually retracing from one to the other. This is no longer a singularization, but an individuation as process, the actual and its virtual: no longer an actualization but a crystallization. Pure virtuality no longer has to actualize itself, since it is a strict correlative of the actual with which it forms the tightest circuit. It is not so much that one cannot assign the terms 'actual' and 'virtual' to distinct objects, but rather that the two are indistinguishable.⁵⁹⁴

In this regard, crystal images are indiscernible and inextricable imbrication between the actual and the virtual, movement-image and time-image. Here I point out that the time-image is the virtual and the movement-image is the actual. I emphasize that Deleuze defines the new form of crystal image as residing in the entwined circuit of two different modes of cinematic images.

Consequently, the Deleuzian aesthetics of digital virtualism should be grasped in terms of the complex circuit of the movement-image and the time-image and the actual and the virtual. This is why the aesthetics of digital virtualism could be an ontological alternative in the dispute on film theories, particularly about the relation between physical indexicality and the imaginary illusion. The reality of film and digital cinema should be

⁵⁹³ Gilles Deleuze, *Bergsonism*, translated by Hugh Tomlinson and Barbara Habberjam. NY: Zone, 1988, p.96.

⁵⁹⁴ Gilles Deleuze and Claire Parnet, *Dialogues 2*, translated by Hugh Tomlinson and Barbara Habberjam, New York: Columbia University Press, 2007, pp.150-151.

theorized in terms of the complex relation between actual reality and the virtual imagination. As result, Deleuze's concept of the crystal image suggests the inextricable circuit and imbrication of cinematic movement and time, the actual and the virtual, reality and the imagination. Deleuzian concept of the crystal image indicates an assemblage aesthetics of digital virtualism.

Markos Hadjioannou claims that the Deleuzian concept of crystal images is a complex combination of reality and the imagination in the theory of film and digital cinema. Hadjioannou argues that the reinventing of time is not the 're-presentation', but the constant 're-generation' of an actual time and a virtual time.⁵⁹⁵ It is not a matter of whether the cinematic image is analogical to physical reality or not. For Hadjioannou, the simulation of time presents the creative power of cinema through the incessant process of assemblage and becoming of the actual and the virtual, the real and the unreal, physical indexicality and the imaginary. Hadjioannou indicates that the power of cinema in Deleuzian virtuality stems from the potential for the cinematic moving image to induce new life and thought, that is, reconnection with the world. Thus, for Deleuze, the crystal image of cinema, which is the bridge between movement and time, offers a clue to the inextricable relation between cinematic reality and virtuality:

The crystalline regime renegotiates the distinction between real and imaginary leading to what is in fact an indecipherable indiscernibility between the two. The real and the imaginary within the crystal image become facets of the same world... within the crystalline regime the dream becomes actual by transforming the real, while the real becomes simultaneously a manifestation of the dream. The on layer of existence follows on from the other in a way that the present passing of time is just that contracted point where all the past is virtually present, and where every action is a motion that moves into the past to reveal the desires and

⁵⁹⁵ Markos Hadjioannou, In Search of Lost Reality: Waltzing with Bashir, *Deleuze and Film*, edited by David Martin-Jones and William Brown, Edinburgh: Edinburgh University Press, 2012, p.110.

disorientations of the future. The imaginary, in other words, is a state of existing as much as the real is a state of virtuality.⁵⁹⁶

In terms of the crystal image and digital virtuality, Seung-hoon Jeong proposes the concept of the ‘quasi-interface’ between the object and the cinema.⁵⁹⁷ The concept originates in the Deleuzian concept of the crystal image, which means the indiscernibility between the actual and the virtual, the present and the past, and the real and the imaginary. Jeong attempts to develop a Deleuzian concept of the crystal image by theorizing the concept of ‘interfaciality’ between actual objects and virtual images.⁵⁹⁸ For him, the cinematic illusion of interfaciality is neither pure similarity and the classical imitation of original, nor postmodern simulation without an original. He tries to access the new cinematic potential of virtual illusion by denying both the representative copy and superficial simulation of images. Jeong defines the illusion of interfaciality as an optical allusion to a virtual interface in the surface of the object.⁵⁹⁹ For him, Deleuzian crystal images evolve the concept of the quasi-interface between cinema and the spectator, which implies the actualization of the virtual, the interconnection between 2-D (the image) and 3-D (the object), and deterritorialisation in the immanent plane of virtuality:

The Kernel of this circuit lies in the figurative transformation of things becoming quasi-interfaces. This becoming as figuration is thus a sort of cinematic illusion that enables immanent interfaciality to surface on to visuality. And the gap between interface and immanence decreases along the spectrum from quasi-camera to quasi-screen, so that a quasi-screen, often taking up most or all of the physical screen, appears not detached from the BwO but attached to it as though two virtualities had merged or the immanent BwO were nothing but its own

⁵⁹⁶ Ibid, p.112.

⁵⁹⁷ Seung-hoon Jeong, *The Surface of the Object: Quasi-Interfaces and Immanent Virtuality*, *Deleuze and Film*, edited by David Martin-Jones and William Brown, Edinburgh: Edinburgh University Press, 2012, pp.210-212.

⁵⁹⁸ Ibid, p.213.

⁵⁹⁹ Ibid, p.215.

sense-effect... This truth is obvious but still worth mentioning, because it gives more pertinence to the notion of interfaciality as ‘immanent virtuality’.⁶⁰⁰

In this regard, Jeong claims that the aesthetics of the crystal image is connected to the potentiality and becoming of the world and cinematic images by the notion of ‘interfaciality’ as ‘immanent virtuality’. For him, the world reveals itself as an interface that is a cinematic plane of immanence. Jeong articulates that the quasi-screen of the cinematic image causes an imagined transformation of the world, which is the interfaciality of the new reality and the potential of the world.⁶⁰¹

In particular, based on the discussion of quasi-interface and digital virtuality, I point out the fact that the possibility of crystal images and interfaciality in the digital era is proliferating because technological virtuality and spectator’s immersion, which are promoted by computer simulation and synthesis, intensify physical indexicality and imaginary illusion simultaneously. Borrowing Deleuze’s terminology, the cinematic image of digital simulation implies the aesthetics of ‘virtual conjunction’.⁶⁰² It is the configurative and expressive aesthetics of the actual and the potential, the movement-image and the time-image, physical indexicality and imaginary illusion. The aesthetics of digital virtuality is driven by computer simulation and the synthesis between different images and media. It is connected to the intertextuality, convergence, and interactivity of digital virtualism. Hence, in terms of the digital virtuality of crystal images, I claim that digital cinema reinforces the complex contradiction between material reality and virtual images on the immanent plane of cinematic simulation and interfaciality.

Next, based on the assemblage aesthetics of the crystal image in the actual-virtual circuit, let us move to the discussion of digital information images. In particular, I explore the practical implication of Deleuzian ontology in relation to the aesthetics of digital virtualism. I will conclude that Deleuze’s aesthetics of the time-image evokes the

⁶⁰⁰ Ibid, p.219.

⁶⁰¹ Ibid, p.223.

⁶⁰² Gilles Deleuze, *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1983, p.108-111.

virtuality and subjectivity of digital cinema. This section reinterprets Deleuze's position on electronic, informational and digital images in terms of his aesthetics of the time-image. As a philosopher of subjectivity, Deleuze maintains the struggle against the negativity of the informational image, which is not only political but also aesthetic. I extrapolate the aesthetic base of digital virtualism from Deleuze's view of the time-image and digital information image. Although Deleuze could not discuss digital cinema in detail, his cinema aesthetics of the crystal image has gained acceptance over time as the informational image has become increasingly complex and influential. Indeed, we cannot help 'beginning' from his 'conclusions':

A return to the extrinsic point of view obviously becomes necessary: the technological and social evolution of automata. Clockwork automata, but also motor automata, in short, automata of movement, made way for a new computer and cybernetic race, automata of computation and thought, automata with controls and feedback. The configuration of power was also inverted, and, instead of converging on a single, mysterious leader, inspirer of dreams, commander of actions, power was diluted in an information network... But new automata did not invade content without a new automatism bringing about a mutation of form. The modern configuration of the automation is the correlate of an electronic automatism. The electronic image, that is, the tele and video image, the numerical image coming into being, had either to transform cinema or to replace it, to mark its death.⁶⁰³

In light of the fact that *Cinema 2: Time-Image* was written in 1985, Deleuze's intuitive discernment that electronic and computer images declare the death of the cinema is marvellous. He had the insight that 'the technological and social evolution of automata' leads to the transformation and replacement of cinema. He continuously points out that the new image is internalized in a unitary existing image:

⁶⁰³ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.254.

The new images no longer have any outside (out-of-field), any more than they are internalized in a whole; rather, they have a right side and a reverse, reversible and non-superimposable, like a power to turn back on themselves. They are the object of a perpetual reorganization, in which a new image can arise from any point whatever of the preceding image.⁶⁰⁴

The question, then, concerns the kind of transformation that emerges in the age of the new automatism, which is caused by electronic and computer images. Deleuze first maintains the importance of an omni-directional space that constantly varies its angles and co-ordinates. In the age of the new automatism, the organization of space loses its privileged direction and human posture on the screen. Alternatively, the new image constitutes ‘a table of information’ and an ‘opaque surface of data’. Therefore, the electronic and computer image, compelled by the evolution of new technological automata, is ‘information replacing nature, and the brain-city, the third eye, replacing the eyes of nature.’⁶⁰⁵ In addition, he indicates that new automata give rise to the autonomy of sound in which the two images, aural and visual, have a complex relation. Finally, they bring about the new spiritual automatism and full-blown substitution of the movement-image by the time-image. Deleuze clearly points out that the age of new automata invokes a significant change in the essence and characteristics of the image.

Eventually, Deleuze defines the digital information image as the new automatism of the time-image. For him, the digital image is *the aesthetic expansion of the time-image*. He indicates that the new automata of electronics and computers give rise to a new automatism of the time-image. The new automation of cinema can fully accomplish the visual and aural system through the expansion of the aesthetic dimension, at which the modern cinema of time-image has already arrived. For Deleuze, the time-image means the virtual conjunction of the past and the present and the visual and the aural, which does not reconstitute a whole but instead enters into an ‘irrational relation’ with indiscernible and dissymmetrical trajectories. It is the aesthetic expansion of the multiple

⁶⁰⁴ Ibid, p.254.

⁶⁰⁵ Ibid, pp.254-255.

dimension of time. Thus, the digital expansion of the time-image implies that the information image achieves the inextricably present complexity and hybridity of the passing time and the upcoming future. Digital time is the molecular multiplicity and autonomous imbrication of all elements of cinematic images in the virtual fusion of temporality. In short, Deleuze asserts that the information image replaces nature in the new automatism of digital time.⁶⁰⁶

In terms of digital time, Babet Mangolte accentuates the difference between filmic instantaneity and digital transformation.⁶⁰⁷ While celluloid film depends on the material process of temporal succession, digital cinema loses the palpable experiences of celluloid films, editing machines, and screen projectors. For her, this means the elimination of the material process of shooting and editing and production and exhibition. Mangolte claims that the degradation of the material process brings about the loss of the filmic moment and duration. In contrast, for her, digital time introduces a new temporality of numerical synthesis and transformation, terminating the consecutive flow of the physical reality of photographic images. For Mangolte, digital images are difficult to communicate in the temporal duration of cinema. She argues that digital time is the loss of physical reality and temporal instantaneity:

In the world of digital, time is encoded in a bit-map, and there can be no entropy. In the compression algorithm of a digital image. Only what changes in the shot is renewed. That which is the same in the shot stays the same in the digital image, in contrast to the constantly changing emulsion grain from one frame to the next in the film image... Time is fixed as in a map in digital and is totally repeatable with no degradation due to copying loss, while silver-based film is structured by time as entropy, therefore unrepeatable. The unpredictability of time passing and time

⁶⁰⁶ Ibid, p.258.

⁶⁰⁷ Babette Mangolte, *Afterwards: A Matter of Time: Analog versus Digital, the Perennial Question of Shifting Technology and Its Implications for an Experimental Filmmaker's Odyssey*, *Camera Obscura Camera Lucida: Essays in Honor of Annette Michelson*, edited by Richard Allen and Malcolm Turvey, Amsterdam: Amsterdam University Press, 2003, pp.261-274.

past, the slippage between one and the other, and the pathos of their essentially ineluctable difference are lost.⁶⁰⁸

Although Mangolte claims that digital time is opposed to the material continuity of filmic time, the Deleuzian concept of the time-image emphasizes the inextricable hybridity of actual duration and virtual time, past time and the passing present, and physical indexicality and imaginary time. Philip Rosen proposes the concept of 'historical hybridity', which emphasises the historical continuity of digital images with filmic temporality.⁶⁰⁹ To assert the virtual temporality of digital images is not to deny material time and duration, but to propose the expansion of materiality and physical indexicality. Similarly, Jeong tactfully describes digital virtuality as the new form of filmic reality: 'This virtuality as "the reality of the virtual itself", therefore, has nothing to do with [the] "virtual reality" (VR) that imitates reality in an artificial medium and thus forms non-immanent actuality in diegesis'.⁶¹⁰

Likewise, Hadjioannou argues that digital time is also associated with the material reality of cinema. For him, the sense of digital time is not tied to the image but to its medium of display. The digital bitmap does not deteriorate the cinematic reality because it is simply a set of numerical configurations whose relations and functions strictly follow the predetermined commands of a programmer and the computer's operations.⁶¹¹ In this sense, the virtuality of digital time is the new form of filmic reality. It expands the complex hybridity of the filmic time-image between the actual and the potential into the cinematic reality of digital virtuality.

On the other hand, Hadjioannou asserts the distinctiveness of digital time in relation to filmic time. He points out that the specificity of digital time rests in the temporality of

⁶⁰⁸ Ibid, p.264.

⁶⁰⁹ Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, p.315.

⁶¹⁰ Seung-hoon Jeong, The Surface of the Object: Quasi-Interfaces and Immanent Virtuality, *Deleuze and Film*, edited by David Martin-Jones and William Brown, Edinburgh: Edinburgh University Press, 2012, p.215.

⁶¹¹ Markos Hadjioannou, Into Great Stillness, Again and Again: Gilles Deleuze's Time and the Constructions of Digital Cinema, *Rhizomes, Issue 16, Summer 2008*, (n.p.)

real time and the present.⁶¹² For Hadjioannou, the Deleuzian new automatism of the digital time-image evokes the ‘intensified’ configuration and manipulation in the interactivity of real time. For him, digital time creates tension between the past and the present. It is an inextricable combination of past being and the passing present. The future of information images simulated by computer technology depends on the assemblage aesthetics of an archival database. The molecular and numerical manipulation of digital images results in the configurative aesthetics of the past and the present in the virtuality of digital time.

Barbara Filser argues that digital information images produce new values and thought regarding cinematic reality.⁶¹³ Similarly, Peter Weibel demonstrates that the development of quantum technology induces an aesthetics of the new temporality of digital images. He argues that the digital time of information images promotes a new potential of real time and interactivity.⁶¹⁴ For Hadjioannou, digital time intensifies the temporality of the present as the continual and instantaneous renewal of the image in real time, which means that it is disconnected from a time past and a time in passing. Based on the concept of Deleuzian virtuality, Hadjioannou claims that the specificity of digital time is the incessant becoming of new images in the temporality of the interactive present of cinematic images and spectators:

...the digital can become a constant and instantaneous invitation for transformation and a metamorphosing activity. Accessed in the present, its potential for manipulation is the constant promise that flings the encounter into the open vastness of a future where access is a structure of change itself. Imperatively, though, this relation is based firmly on the grounds of the agency on the part of the individual because it is activity from the outside that endures, not the mathematical configurations in themselves. Time is placed on the experience

⁶¹² Ibid.

⁶¹³ Barbara Filser, Gilles Deleuze and a Future Cinema: Cinema 1, Cinema 2 – and Cinema 3?, *Future Cinema: The Cinematic Imaginary after Film*, edited by Jeffrey Shaw and Peter Weibel, Germany: ZKM/Center for Art and Media Karlsruhe, and Cambridge, Massachusetts: MIT Press, 2003, pp.214-217.

⁶¹⁴ Peter Weibel, The Intelligent Image: Neurocinema or Quantum Cinema?, *Future Cinema: The Cinematic Imaginary after Film*, edited by Jeffrey Shaw and Peter Weibel, Germany: ZKM/Center for Art and Media Karlsruhe, and Cambridge, Massachusetts: MIT Press, 2003, pp.594-603.

of the event and its potentialities, between technology and worlds rather than the medium's own operations. Here is where time can be imaged, or even imagined – either way, where a sense of time can be felt.⁶¹⁵

In this context, I articulate that the Deleuzian aesthetics of the digital time-image allows the complex configuration and assemblage of a diversity of component elements of cinematic images, which indicates the expressive and experimental potential of digital simulation and manipulation beyond the realm of representative indexicality. For Deleuze, digital time is the conceptual extension of the filmic time-image. It is a hybrid combination of actual duration and virtual temporality. The temporality of digital images intensifies the tensions and contradictions between the present and the past, the actual and the virtual, and indexicality and the imaginary. In the realm of digital virtualism, cinematic time proposes the expressive and configurative aesthetics of images. It is based on the temporality of the present real-time and the interactive database. In short, the digital time-image is the assemblage aesthetics of hybrid temporality between actual reality and the virtual image. It reinforces the configurative force of cinematic images in the present real-time and in interactive manipulation.

Finally, I argue for the subjectivity and ethics of the digital time-image. Deleuze definitely alerts us to the duplicity of the digital information image in terms of subjective becoming and aesthetic configuration. While the information image is a new automatism expanding the reality of cinematic images, it also carries with it political and aesthetical negativity. For him, digital information images are both the potential of new cinema and the weakening of spiritual automaton. Based on the ethical view of the actualization of the virtual, Deleuze claims the ‘internal struggle’ and ‘overcoming’ to the information images:

The irrational cycle of the visual and the sound is related by Syberberg to information and its overcoming. Redemption, art beyond knowledge, is also

⁶¹⁵ Markos Hadjioannou, *Into Great Stillness, Again and Again: Gilles Deleuze's Time and the Constructions of Digital Cinema*, *Rhizomes, Issue 16, Summer 2008*, (n.p.)

creation beyond information. Redemption arrives too late (the point shared by Syberberg and Visconti); it appears when information has already gained control of speech-acts, and when Hitler has already captured the German myth or irrational. But the too-late is not only negative; it is the sign of the time-image in the place where time makes visible the stratigraphy of space and audible the story-telling of the speech-act. The life or afterlife of cinema depends on its internal struggle with informatics. It is necessary to set up against the latter the question which goes beyond it, that of its source and that of its addressee, the head of Wagner as spiritual automaton, the Parsifal couple as psychic automata.⁶¹⁶

This proposition that ‘the life or afterlife of cinema depends on its internal struggle with informatics’ is twofold. Above all, it means that modern cinema is already surrounded by informational images. It also implies that the cinema, as an informational image, should be committed to the complex attributes of a new image, to the division of the visual and sound, to non-totalized fragmentation, and to organization irreducible to causality and indexicality. It is the virtual conjunction of the actual and the virtual and the fusion of the real and the imaginary.

On the other hand, regarding informatics, Deleuze raises the questions, ‘What is the source and what is the addressee?’⁶¹⁷ He keeps his eyes on the negative attributes of informational images, such as ‘Hitler, Hollywood, violence, pornography, and business’.⁶¹⁸ He pays attention to the limit of the informational image. Modern cinema that goes beyond the continuous, closed, narrative features of the movement-image should surmount the negative attributes of informatics through the extension of the time-image. According to this logic, the informational image is not a perfect factor, but only an attributor of technological and social evolution in its developmental phase. Accordingly, the aesthetic life of cinema will inevitably be terminated at the limit, unless the

⁶¹⁶ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.259.

⁶¹⁷ Ibid, p.258.

⁶¹⁸ Ibid, p.253.

informational image overcomes the negative attributes by questioning its source and addressee. Deleuze uses Syberberg's films, *Hitler, Ein Film aus Deutschland* (1978), and *Parsifal* (1981), to argue that any information is not sufficient to defeat Hitler, and that it is necessary to surpass information and overturn the image to defeat Hitler. Going beyond information raises the questions of source and addressee. In other words, it means that the technology and mechanism of information should combine with the aesthetics of the time-image in order to surpass the negative factors of the informational image in the new automation of cinema.

Ultimately, Deleuze's theory requires a full-scaled time-image as spiritual and psychic automata. He claims that cinematic automata in the age of the electronic and computer image should proceed to a new automatism, mechanical aesthetics and crystal image. In order to overcome the limits of the informational image and to achieve the full-blown time-image, he requires that the new automatism of informational and numerical images should advance the new subjectivity and spectatorship of cinema consistently by questioning the source and addressee of the informational image.

Although it is clear that he did not have the opportunity to witness the whole meaning of the digital age in his lifetime, Deleuze attempted to conceptualise the aesthetics of the new automatism in the age of the emerging electronic and computer image. Similarly, in the 1930s, Walter Benjamin asserted the concept of 'politicizing art' against the aesthetical politics of Fascism because "This is the situation of politics which Fascism is rendering aesthetic. Communism responds by politicizing art."⁶¹⁹ In the 1980s, Deleuze tried to develop Walter Benjamin's critical point that the conceptual change of art and the advent of the age of mass art are caused by the technological reproducibility of film by the subjective re-examination of information in the age of the computer image. Whereas, in the 1930s, Benjamin focused on the possibility of film as a mass art, in the 1980s,

⁶¹⁹ Walter Benjamin, The Work of Art in the Age of its Technological Reproducibility, 1935, *The Work of Art in the Age of its Technological Reproducibility, and Other Writings on Media*, translated by Edmund Jephcott and Harry Zohn, edited by Michael William Jennings, Brigid Doherty, and Thomas Y. Levin, Cambridge, Mass.: Harvard University Press, 2008, p.42.

Deleuze tried to discover an affirmative subjectivity based on the joyful desire and creativity of the multitude in the reality of the informational image.

In this context, it is now possible to raise questions about the ethical tasks of digital aesthetics from the viewpoint of Deleuze, which include the following: whether the informational image in the digital age is dominated by capitalism and state power; whether digital cinema is ruled by the negative attributes of informational images, such as Hitler, Hollywood, violence, pornography, business, and neoliberalism, as the radical ideology of multinational capitalism; whether the multitudes struggle against the negativity of the informational image; and whether the full-fledged time-image as the new automatism of digital culture could evolve into a practical aesthetics of creative art and the affirmative subjectivity of the multitude.

For Deleuze, going beyond information does not only mean making political cinema. On one hand, it is both a pure speech-act and creative storytelling.⁶²⁰ On the other hand, it is the deconstruction and division of all elements of cinema. In short, it is the redemption and evolution of the time-image as spiritual and psychic automata. Deleuze suggests that the new subject of digital automata as the source and addressee of information proceeds to the nomadic 'war-machine',⁶²¹ struggling with capitalism and its aesthetic expression. Here the new automata of digital cinema politically and aesthetically combine with the new automatism of the time-image.

Deleuze suggests that we should question both the 'source and the addressee' of information.⁶²² This means that he not only stayed within the contemplative bounds of theoretical hermeneutics but also his philosophy accentuated the joyful desire and affirmative potential of the multitude as both war-machine and nomad. In his practical ethics, Deleuze maintained that the age of new cinema should be prepared aesthetically

⁶²⁰ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, London: Continuum International Publishing Group, 2005, p.259.

⁶²¹ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, pp.367-368.

⁶²² Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, pp.258-259.

and subjectively by the internal struggle of informational images. Therefore, Deleuze's aesthetic of the time-image proceeds to a new configurative aesthetics of becoming and assemblage beyond the nostalgia of representative images. In this sense, Deleuze questions the source and addressee of information in the age of the digital image. He theorizes the new aesthetics of assemblage and configuration beyond imitation and representation in terms of the crystal image, in which new spiritual and psychic automata of cinema inspire the nomadic war-machine, deterritorialisation, the creative will to art, and the affirmative desire of the multitude in the age of the informational image.

Timothy Murray demonstrates that Deleuze's assertion of the struggle with information images should be understood in terms of the complex crystallisation of digital time. He claims that Deleuze's concern about digital information images is related to not only the computer simulation of cinematic space but also the potential transformation of cinematic time itself.⁶²³ This is because time is closely associated with the thought on cinema and reality. In this sense, Murray opposes Manovich's assertion of computer manipulation, which indicates a shift from temporal montage to spatial montage. While Manovich considers the concept of montage as the technological compositing of the image, Deleuze extrapolates the cinematic image from the relation between cinematic movement, time and thought.

Thus, Murray asserts that Deleuze's argument of the combat against informatics is to protect the very stakes of the time-image and spiritual automaton as machinic thought. For Murray, the struggle with the information image implies the incessant recombination of information processing and data synthesis in the increasing complexity of new computer technology. Hence, he recalls Deleuze's concept of the 'montrage',⁶²⁴ replacing the spatial notion of montage. The crisis of the time-image promoted by informatics evokes the cinematic imperative of the 'montrage of time'.⁶²⁵ For Murray, Deleuze's

⁶²³ Timothy Murray, *Digital Baroque: New Media Art and Cinematic Folds*, Minneapolis: University of Minnesota Press, 2008, pp.244-245.

⁶²⁴ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.40.

⁶²⁵ Timothy Murray, *Digital Baroque: New Media Art and Cinematic Folds*, Minneapolis: University of Minnesota Press, 2008, p.247.

struggle of informatics indicates the ‘montrage of becoming’ in the crystallisation of digital time. It is the endless process of becoming and assemblage, which means the creation of new spiritual automaton in the ‘irrational interval’ and the ‘impossibility’ of digital time.⁶²⁶ In this sense, Murray concludes that the struggle against the information image suggests a new aesthetics of digital virtuality based on the crystallised-time of computer images:

In the context of new media art, I propose that we consider the form or event of the irrational interval in relation to a series of impossible events: *archival intensities, interactivities, coded automatons, and the returns of the future*. As extensions of the time-image, its fabulations and its irrational intervals, the new media image capitalizes on the complexification of information science and culture by mixing and matching its softwares and hardwares, while experimenting with the crystallized density of the digital point to foreground the extended frontiers of virtual reality (as that event of the virtual touching upon the actual).⁶²⁷

Garrett Stewart also argues that the digital time of information images concerns the aesthetics of the virtual configuration of cinematic images.⁶²⁸ He presupposes the different timing of the image between mechanical procession and electronic process. ‘Digitime’ is not a sprocketed drop of frames past the aperture, but a coded phasing in and out of the graphic grid. It is also not ocular rhythm at the threshold of perception, but an algorithm beneath it.⁶²⁹ For Stewart, digitime is ‘electronic mutation’ and ‘compositing time’ instead of mechanical succession.⁶³⁰ He asserts that the digitime of the image is no longer segmental, incremental, and sequential. In the virtuality of digitime, all forms of cinematic images are determined by ‘internal interchange’, which change over time.

⁶²⁶ Ibid, p.248.

⁶²⁷ Ibid, p.249.

⁶²⁸ Garrett Stewart, Cinemomics versus Digitime, *Afterimages of Gilles Deleuze’s Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010, p.347.

⁶²⁹ Ibid, p.331.

⁶³⁰ Ibid, p.330.

Thus, for Stewart, digitime is the emergence of new temporal models across all modes of screen narration between ‘European humanism’ and ‘American science fiction’.⁶³¹

Furthermore, Stewart claims that the new modes of digitime cause a ‘new distance’ between cinematic images and subjective perception.⁶³² In light of Deleuze’s statements questioning the sources and addresses of the information image, Stewart’s intuition of the new distance of digital images is useful to explore the new possibility of digital time and ethics. He indicates that the new cinema of digital images brings about the separation between and dismantling of the actual and the virtual, the actor and the digital agent, and the subject and the image. The dismantling stems from the ontological indiscernibility and instability of computer -simulated images. The virtuality of digital images is mixed with the actuality of physical reality in computer software and databases. As Stewart points out,⁶³³ on one hand, the compositing aesthetics of digital images results in the unstable temporality of image processing. On the other hand, it causes the decentring of the spectator in the surface play of spectacle images, which raises the issue of subjectivity and ethics in the digital time of information images.

Therefore, the aesthetics of digital virtualism raises the theoretical and practical task of digital ethics in the contemporary spread of information images. In the struggle with informatics, Deleuze emphasizes belief in both the world and the power of cinematic images. For him, belief in being and cinema is an incessant process of becoming and thought. Hence, the aesthetics of digital virtualism responds to the Deleuzian ethics of differentiation and virtual conjunction:

We must believe in the body as in the germ of life, a seed that splits the pavement, that is conserved and perpetuated in the holy shroud or mummy’s wrappings, and which bears witness to life and to this very world such that is. We need an ethic or

⁶³¹ Ibid, p.338.

⁶³² Ibid, p.336.

⁶³³ Ibid, p.336.

faith that makes idiots laugh, not a need to believe in something else, but a need to believe in this world, of which fools are a part.⁶³⁴

Rodowick points out that Deleuze's aesthetics of the time-image presupposes the importance of digital ethics.⁶³⁵ He argues that Deleuze's ethics comprise a moral reasoning that wants to give back to us the belief in the capability of perpetuating life as a movement, change, becoming, that is, the eternal recurrence of difference. Similar to Deleuze, Rodowick emphasises that we must believe in the body and the flesh, and the material reality and the potential virtuality of the world as the becoming of being instead of the sceptical yearning for another transcendent world. For Rodowick, the aesthetics of Deleuzian virtuality requires the subjective and ethical task of digital cinema:

Belief must then be reconnected to the two principles of Deleuze's system. Skepticism is the sign of a thought disconnected from Life comprised of a single substance and a time of constant becoming. But Being and thought are in Life; they speak with a single voice and become in the same time, such that skepticism must be overcome with another will to power, which draws its energy from Life's potential for self-differentiation, and moralism overcome by choosing to believe in the ever renewable possibility of beginning again—eternal recurrence.⁶³⁶

Consequently, I state that the aesthetics of Deleuzian virtualism is closely related to the ethics of digital cinema. Bogue argues that the Deleuzian aesthetics of the time-image is connected to 'an ethic of choosing to choose and a faith that allows belief in this world'.⁶³⁷ For Bogue, the ethics of the time-image means thinking and seeing differently the beliefs and choices in the world.⁶³⁸ Similarly, I presuppose an aesthetics of assemblage and configuration in the virtuality of the digital time-image. The aesthetics of

⁶³⁴ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.173.

⁶³⁵ D. N. Rodowick, *The World, Time, Afterimages of Gilles Deleuze's Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010, p.112.

⁶³⁶ *Ibid*, p.112.

⁶³⁷ Ronald Bogue, *To Choose to Choose-to Believe in This World, Afterimages of Gilles Deleuze's Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010, p.129.

⁶³⁸ *Ibid*, p.127.

digital virtualism is an ethical and subjective attempt to create a new, potential, different, and heightened reality of our world. I conclude that Deleuzian ethics, based on the belief in the world and being, suggests the aesthetical task of the virtual configuration and assemblage of digital time-image.

In summary, Deleuze's concept of the time-image is a significant clue regarding the approach to the aesthetical ontology of cinema in the age of digital image. Deleuze suggests the multiple dimension of time, in which the past coexists with the passing present, which also shares the fragmentation of the future. For him, the new mode of cinema presents not only the simulation of space and movement but also the multiple configuration of time. It is the inextricable and indiscernible crystallisation of the actual and the virtual, the movement-image and the time-image, and the real and the imaginary. In the world of Deleuze's simulacra, the complex assemblage of movement and time is the beginning of the new system of the image. The crystal image is composed of the aesthetics of the rhizome, of becoming, and serial configuration instead of imitation and representation. Deleuze looks at cinematic ontology from the new perspective of the crystal image. He also theorizes the potential of the subjective assemblage and becoming of digital cinema for creative desire and nomadic traversal.

In this context, I assert that, because the aesthetical ontology of digital cinema is derived from the deconstruction and reconfiguration of movement and time, the new automatism of digital cinema begins in Deleuze's concept of the crystal image. Numerical and composite information based on computer technology deconstructs and reconfigures physical reality beyond the aesthetics of imitation and representation. The aesthetics of digital virtualism enhances the crystallisation of the cinematic movement and the digital time. Based on the ceaseless division and synthesis of informational images, it invokes a new automatism of digital cinema. On one hand, digital virtualism is a denial of the representational copy of computer-generated images. The digital virtualism intensifies the physical reality of cinema, and simultaneously goes beyond its indexical traces. On the other hand, the aesthetics of digital virtualism reinforces the imaginary and expressive characteristics of the cinematic image. The digital virtualism advocates the positive and

creative potential of computer-simulated images. It is the contradictory combination of physical reality and imaginary illusion.

In conclusion, I elicit the concept of the digital ethics from the aesthetics of crystal-image and digital virtualism. This is because the technological evolution does not automatically guarantee the aesthetic achievement. The creative possibility of new artform depends on aesthetic practices and ethic tasks rather than technology itself. Although there is no doubt that the digital technology expands and transforms the expressive possibility and aesthetic potential of film art, the positive possibility of digital technology could be at risk by technological fetishism and de-historical ideology. In this ambivalent context, I suggest the *ethical aesthetics* of digital virtualism that film productions and artistic practices *should* expand and maximise the technological and aesthetic potentials of digital virtuality. While the concept of digital virtuality indicates the objective nature and trend of digital arts, the aesthetics of digital virtualism implies subjective and practical diffusion of digital virtuality. Thus, the digital virtualism is a theoretical and practical methodology, which strengthens the positive and active potentials of digital technology and virtual images. The digital virtualism moves towards the conceptual extension of filmic virtuality and crystal-image in the digital age. In the new milieu of computer simulation and global networks, digital technology encounters the intertextuality and interactivity of cinematic images. The digitalisation of cinema virtually re-configures the images of deconstruction and fragmentation. Deleuze's aesthetics of the crystal image is both the bridge between and the imbrication of the actual and the virtual, the movement-image and the time-image, and the indexical and the imaginary. Thus, physical reality and virtual image should be combined creatively in the actual-virtual circuit. The crystallisation of cinema is increasingly involved in the complexity and hybridity of cinematic movement and time. The hybrid aesthetics of digital cinema requires subjective and practical tasks of digital ethics. Deleuze questioned both the source and the addressee of information images. The aesthetic assemblage and configuration of digital images is connected to the ethical task of the digital virtualism.

Conclusion

In this thesis, I have demonstrated the aesthetic ontology of digital virtualism. I conclude that digital virtualism is the inextricable imbrication of the actual and the virtual, the material and the immaterial, the real and the imaginary. I elicit the assemblage and configuration aesthetics of cinematic images from the spread of digital images. On one hand, digital virtualism is associated with the intensification of physical reality. Digital technology creates new realities in the cyberspace of computer simulation. It reinforces the complex relationship between the real world and the cinematic image. On the other hand, the digital image strengthens the imaginary nature of cinema beyond material indexicality. The fantasy and illusion of cinema are increased by the technological spectacle of computer-simulated images. By theorising the digital virtualism, I emphasise that the imaginary nature of cinema is a symbiotic relationship with the physical indexicality. The diffusion of digital cinema implies the intensified contradiction between cinematic reality and imagination. Thus, this thesis reaches the theoretical conclusion that the aesthetics of digital virtualism proceeds to the assemblage of cinematic images and the practical task of digital ethics.

Regarding the assemblage aesthetics, digital virtualism presents three main tendencies of contemporary cinema in terms of hybrid aesthetics. First, I point out that the combination of technology and aesthetics is proliferating. Although the spread of computer simulation expands the expressive possibility of cinema, the development of digital technology itself is neither utopia nor dystopia. Whilst Baudrillard rebukes the technological perfect and digital virtuality as violence to the physical reality and pure image,⁶³⁹ Frank Popper envisions the affirmative future of digital virtualism as the humanization of ‘techno-aesthetics’.⁶⁴⁰ Moreover, while Gene Youngblood appraises that computer cybernetic cinema brings about the expansion of human sense and the possibility of new reality,⁶⁴¹

⁶³⁹ Jean Baudrillard, *Violence of the Virtual and Integral Reality*, translated by Marilyn Lambert-Drache, *International Journal of Baudrillard Studies*, Vol. 2, No. 2, July 2005, (n.p.)

⁶⁴⁰ Frank Popper and Jeseoph Nechvatal, *Origins of Virtualism: An Interview with Frank Popper*, *CAA Art Journal*, Spring 2004, pp.64-66.

⁶⁴¹ Gene Youngblood, *Expanded Cinema*, New York: P. Dutton & Co., Inc., 1970, pp.179-185.

Philip Rosen denounces the ‘historiography of conquest’ in ‘digital utopia’.⁶⁴² The reality of digital cinema is a historical process rather than a utopian ideal.

Hence, I emphasize the ambivalent aspects of digital aesthetics. On one hand, digital technology intensifies the ‘perceptual realism’⁶⁴³ of spectators and the ‘attraction’ of spectacle images.⁶⁴⁴ Aylish Wood argues, digital dressing and micromanipulation cause ‘digital affection’, and expand the expressive capacity of cinema.⁶⁴⁵ On the other hand, the digital image provokes the fetishistic desire of technological perfect and digital gadgets. In this sense, Scott McQuire indicates that digital techno-aesthetics is not simply ‘realism’ but ‘reality’ in the historical context of contemporary capitalism.⁶⁴⁶ Willemen gives a warning that digital fantasy falls down the ‘stockbroker aesthetics’ of Hollywood cultural capitals.⁶⁴⁷

As Kristen Whissel observes, digital technology can function as a catalyst to spatialize time and dramatize history.⁶⁴⁸ For her, the ‘digital multitude’ such as computer-generated swarms, armies, and hordes stand for occulted histories, repress pasts, and interrogate the idea that there is the great power of crowd. In digital spectacle movies such as *The Lord of Rings: The Two Towers* (Peter Jackson, 2002), *The Mummy series* (Stephen Sommers etc., 1999-2008), *Troy* (Wolfgang Petersen, 2004), *I, Robot* (Alex Proyas, 2004), *Star Was Episode 2-Attack of the Clones* (George Lucas, 2002), *The Matrix Reloaded* (Andy and Lana Wachowski, 2003), and *300* (Zack Snyder, 2007), digital technology contributes to dramatizing the apocalyptic change of history and the heroic worldview of Hollywood.

⁶⁴² Rosen, Philip Rosen, *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001, pp.315-326.

⁶⁴³ Stephen Prince, *Digital Visual Effects in Cinema: The Seduction of Reality*, New Brunswick, N.J.: Rutgers University Press, 2012, pp.31-37.

⁶⁴⁴ Tom Gunning, *The Cinema of Attractions, Early Film, Its Spectator and the Avant-Garde, Early Cinema, Space, Frame, Narrative*. London: British Film Institute, 1986, pp.56-57.

⁶⁴⁵ Aylish Wood, Digital Intermediates and Micromanipulations of the Image, *Film Criticism, September 2007*, pp.72-94.

⁶⁴⁶ Scott McQuire, Impact Aesthetics: Back to the Future in Digital Cinema?: Millennial fantasies, *Covergence, Vol. 6, No. 2*, 2000, pp.41-61.

⁶⁴⁷ Paul Willemen, Indexicality, Fantasy, and the Digital, *Inter-Asia Cultural Studies (14:1)*, 2013, pp.126-127.

⁶⁴⁸ Kristen Whissel, The Digital Multitude, *Cinema Journal, Vol. 49, No. 4, Summer 2010*, pp.90-110.

Furthermore, Laura Mulvey argues that digital technology arouses the new model of fetishism and spectatorship.⁶⁴⁹ She notes that digital technology causes the resurgence of the still image, such as the ability to pause a DVD and the manipulation of image frames. For Mulvey, the freezing images of digital cinema cause the ‘delay of linear narrative’, which enables a ‘fetishistic control’.⁶⁵⁰ Although Maria Walsh emphasizes that the psychoanalytic unconsciousness persists in the complex process of cinematic continuity and discontinuity,⁶⁵¹ it is clear that digital interactivity has elicited a new mode of ‘controlled fetishism’ beyond the traditional fetishism of the spectator’s representative identification.⁶⁵² The freeze frame of digital moving images has provoked the new concept of feminist aesthetics and spectatorship with the intensification of digital interactivity.

Therefore, I stress the viewpoint of the balance between digital utopia and dystopia. I conclude that the techno-aesthetic of digital virtualism is the new form and expansion of cinematic virtuality. Although digital technology expands the verisimilar reality and spectacle attraction of cinematic images, the techno-aesthetics of digital cinema can fall into the trap of technological fetishism and ‘California ideology’. Thus, digital techno-aesthetics should be dialectically approached in terms of a contradictory hybridity between technology and aesthetics.

Second, I indicate that digital virtualism is the hybrid aesthetics between live-action and computer-animated images. Lev Manovich describes digital cinema as a particular case of animation which uses live-action footage as one of its many elements.⁶⁵³ The digital cinema does not depend completely on live-action materials that are shot by digital camera, stored by computer memory, and edited using software programs. At the same

⁶⁴⁹ Laura Mulvey, *Death 24x a Second: Stillness and the Moving Image*, London: Reaktion Books, 2006, pp.30-31.

⁶⁵⁰ Ibid, p.144.

⁶⁵¹ Maria Walsh, Against Fetishism: The Moving Quiescence of Life 24 Frames a Second, *Film Philosophy*, Vol. 10, No 2, 2006, pp.1-10.

⁶⁵² Laura Mulvey, *Death 24x a Second: Stillness and the Moving Image*, London: Reaktion Books, 2006, p.167.

⁶⁵³ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.302.

time, it does not fully rely on 3D animation, which is drawn by computer and coloured by compositing tools. It is a combination of the two, and created using a variety of digital images in the work of reproduction, storage, transformation, modification, and synthesis. This hybridity changes not only the concept of the live-action movie, but also our original conception of animation. It is clear that the two different streams will converge toward a new concept of digital cinema.

In this sense, Richard Linklater's 'digital rotoscoping' technique in *Waking Life* (2001) and *A Scanner Darkly* (2006) carries important implications in terms of the hybrid aesthetics of live-action and animated images. Digital rotoscoping combines the hand-touch technique of cell animation with digital post-production using Photoshop software. Computer synthesis and digital effects effectively transform the filmic live-action images. As Linklater's movies deal with the main characters' anxiety and wandering between reality and fantasy, the digital rotoscoping technique reveals the unstable and floating border between the recorded reality and the animated images. Through the digital manipulation of the filmic image, Linklater presents the imbrication of film and animation, live-action and computer manipulation, and reality and dream.

The development of computer animation provokes new aesthetic concepts. Vivian Sobchack argues that computer-generated images return us to the contradiction and dialectic between 'animation' and 'automation'.⁶⁵⁴ For her, while 2D cell animation distinguishes mechanical movement from the 'real' movement of 'life', Pixar's 3D computer-animated *WALL-E* (Andrew Stanton, 2008) embodies the signs of both automated-mechanical movement and programmed-electronic self-movement. The little trash compactor in *WALL-E* is a 'category-blurring' entity which embodies not only mechanical and animistic modelling but also autonomous and autopoietic synthesis.⁶⁵⁵ Sobchack asserts that the computer-animated aesthetics of *WALL-E* function as a 'transitional object' with both mechanical treads and a microchip core. Moreover, for Sobchack, the transition of computer electronic aesthetics evokes a 'transitional

⁶⁵⁴ Vivian Sobchack, Animation and Automation, or, the Incredible Effortfulness of Being, *Screen* 50(4), Winter 2009, pp.375-391.

⁶⁵⁵ Ibid, p.385.

subject',⁶⁵⁶ implied a primary shift from the desolate terrestrial vision of human absence to the quasi-human curiosity and sensibility of the 'touched' robot WALL-E. Sobchack concludes that computer-animated cinema bridges the blurred threshold between the animated and the animate, movement and liveness, animation and automation, and human and computer.⁶⁵⁷

Furthermore, Jenna Ng takes note of the motion capture technology in *Avatar* (2009), in which computer-generated images comprise more than eighty percentage of the film.⁶⁵⁸ She argues that motion capture technology is a bridge between live-action and computer-animated images, the object and the captured, the actual and the virtual, the indexical and the simulated image. The computer-animated images captured and fabricated by motion capture technology are the hybrid combination of indexical objects and virtual simulation, rather the object itself. The motion capture technology accelerates the virtual fusion between perceptual reality and computer simulation, and live-action and animated images.

William Brown proposes the concept of 'monstrous cinema' between human and non-human, the actual and the virtual, live-action and computer images.⁶⁵⁹ For him, *Beowulf's* virtual images synthesized by computer present the aesthetics of 'digital complexity' between human and animal, live-action and 3D animation, the actual indexicality and the virtual imagination. In addition, as Hadjioannou indicates, *Waltz with Bashir* (Ari Folman, 2008) shows the new form of digital hybrid realism.⁶⁶⁰ While the theme of the movie deals with the historical trauma regarding the massacre of Palestinian refugees, the form skillfully combines with a diversity of aesthetic forms named 'a unique sort of animated, fictional docu-psycho-autobiography'⁶⁶¹, or 'digitographic documentary'.⁶⁶² For

⁶⁵⁶ Ibid, p.387.

⁶⁵⁷ Ibid, p.391.

⁶⁵⁸ Jenna Ng, Seeing Movement: On Motion Capture Animation and James Cameron's *Avatar*, *Animation: An Interdisciplinary Journal*, Vol. 7, No. 3, 2012, pp.273-286.

⁶⁵⁹ William Brown, *Beowulf: The Digital Monster Movie*, *Animation*, Volume 4, Issue 2, July 2009, pp.153-168.

⁶⁶⁰ Markos Hadjioannou, In Search of Lost Reality: *Waltzing with Bashir*, *Deleuze and Film*, edited by David Martin-Jones and William Brown, Edinburgh: Edinburgh University Press, 2012, pp.113-119.

⁶⁶¹ Jayson Harsin, The Responsible Dream: On Ari Folman's *Waltz with Bashir*, *Bright Lights Film Journal*, Issue 63, February 2009. <http://brightlightsfilm.com/63/63waltz.php#Uz1Sj621akB>

Hadjoannou, *Waltz with Bashir* presents one of the significant examples of crystal-image and digital virtualism. It is because the movie suggests the aesthetics of ‘the unreal real’.⁶⁶³ The technological conflation of live footages, 2D drawings, digital rotoscopings, and computer graphics is connected to the aesthetic hybridity of reality and dream, indexicality and virtuality, movement-image and spiritual automata, historical memory and complex temporality, and finally the analog and the digital. As David Martin Jones illustrates, there have been many remarkable films presenting the new mode of hybrid-images since the 1990s: *Groundhog Day* (1993), *Pulp Fiction* (1994), *Sliding Doors* (1997), *Run Lola Run* (1998), *Being John Malkovich* (1999), *The Cell* (2000), *Memento* (2000), *Irreversible* (2002), *Eternal Sunshine of the Spotless Mind* (2004), *50 First Dates* (2004), and so on.⁶⁶⁴ Those have explored the indistinguishable and inextricable imbrication between movement and time, the object and the subject, the actual and the virtual, the reality and the imaginary. In recent days, the diffusion of digital technology has expanded the nature and tendency of cinematic hybridity. In the conceptual extension of Deleuzian hybridity, I conclude that the technological development of computer synthesis reinforces the hybrid aesthetics of digital virtualism. It proceeds to the assemblage aesthetics of computer-simulated images, which means the extension of the expressive capacity of digital images.

Finally, I emphasize that the aesthetics of digital virtualism expands the complex hybridity between cinematic narrative and spectacle. Leon Gurevitch claims that the spread of digital images results in the aesthetic fusion between filmic narrative and spectacle.⁶⁶⁵ He indicates that Hollywood narrative convention is mixed with the cybernetic image of ‘digital attraction’. In addition, David Bolter explains the ‘remediation’ between filmic narrative and digital spectacle.⁶⁶⁶ While film incorporates

⁶⁶² Markos Hadjoannou, In Search of Lost Reality: Waltzing with Bashir, *Deleuze and Film*, edited by David Martin-Jones and William Brown, Edinburgh: Edinburgh University Press, 2012, p.113.

⁶⁶³ Ibid, p.108.

⁶⁶⁴ Damian Sutton and David Martin-Jones, *Deleuze Reframed: a Guide For the Arts Student*, London, New York: I.B. Tauris, 2008, pp.96-101.

⁶⁶⁵ Leon Gurevitch, Problematic Dichotomies: Narrative and Spectacle in Advertising and Media Scholarship, *Popular Narrative Media 2.2*, Liverpool University Press, 2009, pp.143-158.

⁶⁶⁶ J. David Bolter, Digital Media and the Future of Filmic Narrative, *The Oxford Handbook of the Film and Media Studies*, edited by Robert Kolker, Oxford, New York: Oxford University Press, 2008, pp.21-35.

the ceaseless spectacle and interactivity from computer games, digital media imitates the filmic storytelling and verisimilitude.

The combination of narrative and spectacle is two-fold. On one hand, the linear convention of the Hollywood narrative combines with the superficial images of digital spectacle. According to David N. Rodowick, *The Matrix* is a marvellous example of how Hollywood has always responded ideologically to the appearance of new technologies.⁶⁶⁷ A number of digital spectacle movies, such as *The Matrix* (1999–2003), *Avatar* (2009), *Transformers* (2007–2011), and *Man of Steel* (Zack Snyder, 2013), have been incorporated into the representative narrative convention of Hollywood. On the other hand, new forms of non-linear narrative have emerged in the development of digital technology. For example, Mike Figgis's *Timecode* (2000) suggests the possibility of multiple perspectives and a non-linear narrative. The film consists of four incessant ninety-minute takes which are composed as one-shot, one-scene by four digital cameras. The screen simultaneously exhibits the four different takes, which intertwine through the subject of love and obsession that the characters share. However, the exhibition of the different stories and sounds simultaneously on the screen prevents the spectators from passively following each narrative. Instead, the spectators must actively infer and interpret what they are watching. Thus, *Timecode* presents the new methodology of the complex narrative, multiple screens, and interactive spectatorship.

Therefore, I accentuate that the digital cinema intensifies the complementary and reciprocal relationship between narrative and spectacle. As Brown clearly indicates, the cinematic image, either photochemical or digital form, has essentially the material nature before narrative.⁶⁶⁸ The image pre-exists narrative. However, the image simultaneously requires narrative to offer us a cinematic meaning. Showing combines with telling. In this sense, it is clear that the cinema is the hybrid imbrication of the narrative and spectacle. Furthermore, digital cinema enhances the possibility of non-linear narrative and the sensuous attraction of spectacular images. I conclude that digital cinema presents the

⁶⁶⁷ D. N. Rodowick, *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007, p.5.

⁶⁶⁸ William Brown, The Pre-Narrative Monstrosity of Images: How Images Demand Narrative, *Image & Narrative*, Vol. 12, No. 4, 2011, pp.43-55.

‘increased contradiction’ between narrative and spectacle by the virtual simulation of computer technology. It simultaneously and contradictorily intensifies the reality of cinematic meaning and the fantasy of spectacle image.

Consequently, I come to the conclusion that digital hybridity presents the aesthetic task of configuration and assemblage between physical reality and cinematic imagination, technology and aesthetics, live-action and computer simulation, narrative form and spectacle image. The aesthetics of digital hybridity raises an issue of subjectivity and digital ethics. Deleuze intuits that the task of philosophy moves from knowledge to aesthetics and ethics. For him, the ethics is to create ‘the new form of life’.⁶⁶⁹ In this context, while Rodowick argues that digital ethics is based on the ‘belief and becoming of the being’,⁶⁷⁰ Bogue stresses the force of ‘thinking and choice’ in digital time.⁶⁷¹ I articulate that digital ethics is the aesthetic pursuit of the ‘power of the false’,⁶⁷² which implies the potential of the virtual image of the cinema.

In terms of the practical possibility of cinema art, digital cinema gives rise to the democratic diffusion of the production, distribution, and consumption of cinema: cheaper digital video cameras and simpler movie-making, easier compositing tools and editing software, more convenient screening through digital devices beyond the threshold of theatre. With the help of computer-mobile networks, we can make and enjoy movies anytime and anywhere. Cinema is everywhere, from theatres to mobile phones. The popularization and democratization of cinema encourages the multitudes to express their lives and thoughts freely and actively. The art of digital cinema is drawing closer to the daily lives of the multitudes.

⁶⁶⁹ Gilles Deleuze, *Nietzsche and Philosophy*, translated by Hugh Tomlinson, New York: Columbia University Press, 1986, p.185.

⁶⁷⁰ D. N. Rodowick, *The World, Time, Afterimages of Gilles Deleuze’s Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010, p.112.

⁶⁷¹ Ronald Bogue, *To Choose to Choose-to Believe in This World, Afterimages of Gilles Deleuze’s Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010, p.127.

⁶⁷² Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.127.

However, does the spread of digital technology proceed to the intensification of cinematic subjectivity without any parameters? In a sense, although the access to cinema becomes easier, the subjectivity of the masses tends to be eroded by capitalist commercialization and state regulation. The more that people have access to and enjoy movies with the help of digital technology, the more that capitalism—especially multinational and neoliberal capitalism—invades the public sphere of cinema art and culture. Therefore, the multitude in the digital age cannot help but prevent their autonomous art and democratic culture from the offense of commercialisation and technological fetishism by demanding public access to culture and the arts.

Meanwhile, the digitalisation of cinema expands the interactivity of the cinematic spectator. Digital technology arouses a considerable change in spectatorship by the proliferation of computer synthesis and interactive aesthetics. Whether 3D movies, or head-mounted videos or holograms, digital virtuality goes beyond the unilateral representation and passive appreciation of the image and proceeds to the aesthetics of participation and communication. It fundamentally breaks the perspective and vision-centrism of 2D space of film, and highlights the tactile, sensual and empirical aspects of cinema in 3D space. The representative strategy of mainstream cinema, which, since the Renaissance, has tried to bring spectators to an ideological position by the scopic regime of visual perspective and the system of narrativisation, is threatened by the new spectatorship of digital cinema. In virtual time and space, spectators have an increasing possibility to participate positively and play as users beyond the position of passive observers.⁶⁷³ An active spectator user could realize utopian hopes and desires through positive participation and communication in simulated environment of digital images. It virtually goes beyond the oppression of the present time and cybernetically surpasses the restricted present space. A utopian hope and desire is to overcome tedious and suppressed reality. In other words, digital virtuality creates the possibility of new reality in computer-simulated images. It is a creative potential for the emancipation of people's lives.

⁶⁷³ Lev Manovich, *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001, p.40.

However, this process of artistic emancipation is neither linear nor automatic. It is complex and contradictory because the logic of perceptual realism works in the process. Although it is clear that the computer simulation and the interactive aesthetics lead to the active attitude of the spectator, it also brings the spectator to the world of illusionary immersion with realistic verisimilitude. They emerge in virtual time and space and escape from the cold-bloodedness of reality. With the principle of perceptual realism, the new world of digital virtuality makes it easier for spectators to fall into fictional diegesis. Digital virtuality causes a contradictory subjectivity in spectators: viewer and user, passive consumer and active player, and uncritical immersion and positive interactivity. The digital virtuality maximizes the illusion and fantasy of the image. In the process, the passivity and positivity of the cinematic subject are simultaneously intensified in immersion and deviation, hallucination and awakening, verisimilitude and interactivity.⁶⁷⁴

Therefore, it is important that these two possibilities, either the apparatus for passive escapism or the tools of subjective innovation, are not decided in advance. This decision is made in the course of practical aesthetics and cinematic practice. It is the process of endless becoming in the ‘actual-virtual circuit’,⁶⁷⁵ and the contradictory ‘struggle with informatics’⁶⁷⁶. In this sense, digital virtualism suggests the digital ethics of interactive communication and positive participation with the assemblage aesthetics of cinematic virtuality. It means the affirmative action that converts the time and space of cinematic virtuality from the ruling territory of the capitalistic fetishism to the plateau of joyful desire of the multitude. In line with the concepts of Benjamin’s ‘politicizing art’⁶⁷⁷ and

⁶⁷⁴ James Monaco, *How to Read a Film: Movies, Media, and Beyond (4th edition)*, New York: Oxford University Press, 2009, p.614.

⁶⁷⁵ Gilles Deleuze and Claire Parnet, *Dialogues 2*, translated by Hugh Tomlinson and Barbara Habberjam, New York: Columbia University Press, 2007, pp.150-151.

⁶⁷⁶ Gilles Deleuze, *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989, p.259.

⁶⁷⁷ Walter Benjamin, The Work of Art in the Age of its Technological Reproducibility, 1935, *The Work of Art in the Age of its Technological Reproducibility, and Other Writings on Media*, translated by Edmund Jephcott and Harry Zohn, edited by Michael William Jennings, Brigid Doherty, and Thomas Y. Levin, Cambridge, Mass.: Harvard University Press, 2008, p.42.

Deleuze's 'rhizomatic becoming',⁶⁷⁸ digital virtualism discovers the affirmative potential of cinematic subjectivity and autonomous movement in the virtual world of cinema.

⁶⁷⁸ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987, p.21.

Bibliography

Artaud, Antonin. *To Have Done with the Judgment of God, Selected Writings*, translated by Helen Weaver, edited by Susan Sontag, Berkeley: University of California Press, 1976, p.571.

Aumont, Jacques. *The Image*, London: British Film Institute, 1997.

Badiou, Alain. *Deleuze: the Clamor of Being*, Minneapolis: University of Minnesota Press, 2000.

Baudrillard, Jean. *Art and Artefact*, edited by Nicholas Zurbrugg, London: SAGE Publications, 1997.

Baudrillard, Jean. *Baudrillard Live: Selected Interviews*, edited by Mike Gane. London: Routledge, 1993.

Baudrillard, Jean. *Impossible Exchange*, translated by Chris Turner, London, New York: Verso, 2001.

Baudrillard, Jean. *Jean Baudrillard: Selected Writings*, edited by Mark Poster, Cambridge: Polity, 2001.

Baudrillard, Jean. *Metamorphosis Metaphor Metastasis, The Ecstasy of Communication*, Translated by Bernard and Caroline Schütze, edited by S. Lotringer, New York: Semiotexte(e), 1988.

Baudrillard, Jean. *Paroxysm: Interviews With Philippe Petit*, translated by Chris turner, New York: Verso, 1998.

Baudrillard, Jean. *Seduction*, translated by Brian Singer, London: Macmillan, 1990.

Baudrillard, Jean. *Simulations*, translated by Paul Foss, Paul Patton and Philip Beitchman, New York: Semiotext(e), 1983.

Baudrillard, Jean. *Simulacra and Simulation*, translated by Sheila Faria Glaser, Ann Arbor: University of Michigan Press, 1994.

Baudrillard, Jean. *Symbolic Exchange and Death*, translated by Iain Hamilton Grant, London: SAGE, 1993.

Baudrillard, Jean. *The Evil Demon of Images*, translated by Paul Patton and Paul Foss, Sydney: Power Institute Publications, 1987.

Baudrillard, Jean. *The Gulf War Did Not Take Place*, translated by Paul Patton, Bloomington: University of Indiana Press, 1995.

Baudrillard, Jean. *The Intelligence of Evil Or The Lucidity Pact*, translated by Chris Turner, Oxford and New York: Berg, 2005.

Baudrillard, Jean. The Matrix Decoded: Le Nouvel Observateur Interview with Jean Baudrillard, translated by Gary Genosko and Adam Bryx, *International Journal of Baudrillard Studies*, Vol. 1, No. 2, 2004.

Baudrillard, Jean. *The Spirit of Terrorism*, translated by Chris Turner, London, New York: Verso, 2002.

Baudrillard, Jean. The Masses: The Implosion of the Social in the Media. translated by Marie Maclean, edited by M. Poster, *Baudrillard: Selected Writings*, Stanford: Stanford University Press, 2001.

Baudrillard, Jean. *The Vital Illusion*, New York: Columbia University Press, 2000.

Baudrillard, Jean. Violence of the Virtual and Intergral Reality, translated by Marilyn Lambert-Drache, *International Journal of Baudrillard Studies*, Vol. 2, No. 2, July 2005.

Baudrillard, Jean. Virtuality and Events: The Hell of Power, translated by Chris Turner, *International Journal of Baudrillard Studies*, Vol. 3, No. 2, July 2006.

Baudrillard, Jean. *Within the Horizon of the Object: Photographies, 1985–1998*, edited by Peter Weibel, Ostfildern-Ruit: Hatje Cantz, 1999.

Baudry, Jean Louis. Ideological Effects of the Basic Cinematographic Apparatus, *Narrative, Apparatus, Ideology: A Film Theory Reader*, edited by Philip Rosen, New York: Columbia University Press, 1986.

Bazin, André. *Jean Renoir*, translated by W.W. Halsey II and William H. Simon, edited by Francois Truffaut, New York: Simon and Schuster, 1973.

Bazin, André. The Myth of Total Cinema, *What is Cinema? Vol.1*, translated by Hugh Gray, Berkeley: University of California Press, 1967.

Bazin, André. The Ontology of the Photographic Image, *What is Cinema? Vol.1*, translated by Hugh Gray, Berkeley: University of California Press, 1967.

Bell, Daniel. *The Coming of Post-industrial Society: a Venture in Social Forecasting*, New York: Basic Books, 1976.

Belton, John. Digital 3D Cinema: Digital Cinema's Missing Novelty Phase, *Film History*, Vol. 24, Indiana University Press, 2012.

Benjamin, Walter. *Little History of Photography, Selected Writings, Vol. 2, 1927-1934*, translated by Rodney Livingstone, Cambridge, Mass.: Harvard University Press, 1999.

Benjamin, Walter. *The Work of Art in the Age of Mechanical Reproduction*, 1935, translated by Harry Zohn, *Film Theory and Criticism*, edited by Gerald Mast etc., Oxford; New York: Oxford University Press, 1992.

Benjamin, Walter. *The Work of Art in the Age of its Technological Reproducibility, 1935, The Work of Art in the Age of its Technological Reproducibility, and Other Writings on Media*, translated by Edmund Jephcott and Harry Zohn, edited by Michael William Jennings, Brigid Doherty, and Thomas Y. Levin, Cambridge, Mass.: Harvard University Press, 2008.

Bergson, Henri. *Matter and Memory*, translated by N. Paul and W. Palmer, New York: Zone Books, 1991.

Bogue, Ronald. *Deleuze on Cinema*, New York, London: Routledge, 2003.

Bogue, Ronald. *To Choose to Choose-to Believe in This World, Afterimages of Gilles Deleuze's Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010.

Bolter, J. David. *Digital Media and the Future of Filmic Narrative, The Oxford Handbook of the Film and Media Studies*, edited by Robert Kolker, Oxford, New York: Oxford University Press, 2008.

Bolter, J. David. *The Desire for Transparency in an Era of Hybridity. Leonardo (39:2)*, 2006.

Bolter, J. David. and Grusin, Richard. *Remediation: Understanding New Media*, Cambridge, Mass.: MIT Press, 2000.

Bordwell, D. *Intensified Continuity: Visual Style in Contemporary American Film, Film Quarterly 55(3)*, 2002.

Bourriaud, Nicolas. *Altermodern*, Tate Triennial, London: Tate Publishing, 2009.

Brown, William. *Avatar: Stereoscopic Cinema, Gaseous Perception and Darkness, Animation: An Interdisciplinary Journal 7(3), August 2012.*

Brown, William. *Beowulf: The Digital Monster Movie, Animation, Volume 4, Issue 2, July 2009.*

Brown, William. *Man without a Movie Camera, Movies Without Men: Towards a Posthumanist Cinema? Film Theory and Contemporary Hollywood Movies*, edited by Warren Buckland, New York: Routledge, 2009.

Brown, William The Pre-Narrative Monstrosity of Images: How Images Demand Narrative, *Image & Narrative*, Vol. 12, No. 4, 2011.

Brown, William and Kutty, Meetal. Datamoshing and the Emergence of Digital Complexity from Digital Chaos, *Convergence* 18(2), February 2012.

Bryant, Antony. *Digital and Other Virtualities: Renegotiating the Image*, London: I. B. Tauris, 2010.

Buckland, Warren. Between Science Fact and Science Fiction; Spielberg's Digital Dinosaurs, Possible World, and the New Aesthetic Realism, *Screen* 40:2, 1999.

Burch, Noël. *In and Out of Synch: The Awakening of a Cinema-Dreamer*, Aldershot: Scholar Press, 1991.

Carroll, Noël. *Engaging the Moving Image*. New Haven: Yale University Press, 2003.

Carroll, Noël. *Philosophy of Film and Motion Pictures: An Anthology*, edited by Noël Carroll and Jinhee Choi, Malden, MA: Wiley-Blackwell, 2006.

Cassetti, Franco. Sutured Reality: Film, from Photographic to Digital, *October* 138, Fall 2011.

Castells, Manuel. *The Information Age: Economy, Society and Culture Volume 1: The Rise of the Network Society (second edition)*, Oxford: Wiley Blackwell, 2000.

Castells Manuel et al., *Mobile Communication and Society: a Global Perspective: A Project of the Annenberg Research Network on International Communication*, Cambridge, Mass.: MIT Press, 2007.

Cavell, Stanley. *The World Viewed: Reflections on the Ontology of Film*, Cambridge, Mass.: Harvard University Press, 1979.

Chan, Melanie. Virtually Real and Really Virtual: Baudrillard's Procession of Simulacrum and The Matrix, *International Journal of Baudrillard Studies*, Vol. 5, No. 2, July 2008.

Chatterjee, Amritesh and Jayanta. Digital Ecosystem for Knowledge, Learning, and Exchange: Exploring Socio-technical Concepts and Adoption, *Digital Eco-Systems: Third International Conference*, edited by Fernando Antonio Basile Colugnati etc. New York: Springer, 2010.

Cholodenko, Alan. The 'ABCs' Of B, Or: To Be And Not To Be B, *Film-Philosophy* Vol. 14, No. 2, 2010.

Christopher, Norris. *Reclaiming Truth: Contribution to a Critique of Cultural Relativism*, London: Lawrence and Wishart Ltd., 1996.

Clarke, David B. Dreams Rise in the Darkness: the White Magic of Cinema, *Film-Philosophy*, Vol. 14, No. 2, 2010.

Colman, Felicity. *Deleuze and Cinema: The Film Concepts*, Oxford: Berg, 2011.

Constable, Catherine. Baurillard reloaded: Interrelating Philosophy and Film Via The Matrix Trilogy, *Screen* 47(2), Summer 2006.

Colebrook, Claire. *Gilles Deleuze*, London: Routledge, 2002.

Coulter, Gerry. Jean Baudrillard and Cinema: The Problems of Technology, Realism and History, *Film-Philosophy* 14(2), 2010.

Cubitt, Sean. Database Economy and Transnational Cinema, *Studies in Australasian Cinema*, Vol. 3 No. 2, 2009.

Darley, Andrew. Second-order Realism and Post-modernist Aesthetics in Computer Animation, 1993, *A Reader in Animation Studies*, edited by Jayne Pilling, London: John Libbey Publishing Ltd, 2011.

Darley, Andrew. *Visual Digital Culture: Surface Play and Spectacle in New Media Genres*, London, New York: Routledge, 2000.

Davis, Douglas. The Work of Art in the Age of Digital Reproduction, *Leonardo*, Vol. 28, No. 5, New York, 1995.

Debord, Guy. *Society of Spectacle*, translated and edited by Ken Knabb, London: Rebel Press, 1983.

Debray, Régis, *Media Manifestos: On the Technological Transmission of Cultural Forms*, London: Verso, 1996.

Debray, Régis. *Life and Death of Image*, translated by Ginguok Jeong, Seoul: Vision and Language Press, 1994.

Deleuze, Gilles. *Bergsonism*, translated by Hugh Tomlinson and Barbara Habberjam. NY: Zone, 1988.

Deleuze, Gilles. *Cinema 1: The Movement-Image*, translated by Hugh Tomlinson and Barbara Habberjam, London: The Athlone Press, 1986.

Deleuze, Gilles. *Cinema 2: The Time-Image*, translated by Hugh Tomlinson and Robert Galeta, Minneapolis: University of Minnesota Press, 1989.

Deleuze, Gilles. *Difference and Repetition*, translated by Paul Patton, London: Continuum International Publishing Group, 2004.

Deleuze, Gilles. *Nietzsche and Philosophy*, translated by Hugh Tomlinson, New York: Columbia University Press, 1986.

Deleuze, Gilles. *On the Time-Image, Negotiation: 1972-1990*, translated by Martin Joughin, New York: Columbia University Press, 1995.

Deleuze, Gilles. *The Brain is the Screen: An Interview with Gilles Deleuze*, translated by Marie Therese Guirgis, *The Brain is the Screen: Deleuze and the Philosophy of Cinema*, edited by Gregory Flaxman, Minneapolis: University of Minnesota Press, 2000.

Deleuze, Gilles. *The Logic of Sense*, translated by Mark Lester and Charles Stivale, London: Continuum International Publishing Group, 2004.

Deleuze, Gilles and Guattari, Felix. *Anti-Oedipus: Capitalism and Schizophrenia 1*, translated by Robert Hurley, Mark Seem, and Helen R. Lane, Minneapolis: University of Minnesota Press, 1983.

Deleuze, Gilles and Guattari, Felix. *A Thousand Plateaus: Capitalism and Schizophrenia 2*, translated by Brian Massumi, Minneapolis: University of Minnesota Press, 1987.

Deleuze, Gilles and Guattari, Felix. *What is Philosophy?*, translated by Hugh Tomlinson and Graham Burchell, New York: Columbia University Press, 1996.

Deleuze, Gilles and Parnet, Claire. *Dialogues 2*, translated by Hugh Tomlinson and Barbara Habberjam, New York: Columbia University Press, 2007.

Dijk, Jan van. *The Network Society*, London: SAGE, 2006.

Doane, Mary Ann. *The Indexical and the Concept of Medium Specificity*, *Differences: A Journal of Feminist Cultural Studies* (18:1), 2007.

Drucker, Peter F. *Post-Capitalist Society*, New York, NY: HarperBusiness, 1993.

Dudley, Leonard. *Information Revolution in the History of the West*, Cheltenham, U.K., Northampton, Mass.: Edward Elgar Publishing, 2008.

Eisenstein, Sergei. *Film Form: Essays in Film Theory*, translated by Jay Leyda, New York: Harcourt, 1977.

Eisenstein, Sergei. *Film Form, Film Theory & Criticism*, edited by Leo Braudy and Marshall Cohen, Oxford: Oxford University Press, 2009.

Elsaesser, Thomas. Louis Lumière-the Cinema's First Virtualist?, *Cinema Futures: Cain, Abel or cable?: The Screen Arts in the Digital Age*, edited by Thomas Elsaesser and Kay Hoffmann, Amsterdam: Amsterdam University Press, 1998.

Elsaesser, Thomas and Hagen, Malte. *Film Theory: An Introduction through the Senses*, London; New York: Routledge, 2010.

Export, Valie. Expanded Cinema: Expanded Reality, *Expanded Cinema: Art, Performance, Film*, edited by A. L. Rees, David Curtis, Duncan White, and Steven Ball, London: Tate Publishing, 2011.

Filser, Barbara. Gilles Deleuze and a Future Cinema: Cinema 1, Cinema 2 – and Cinema 3?, *Future Cinema: The Cinematic Imaginary after Film*, edited by Jeffrey Shaw and Peter Weibel, Germany: ZKM/Center for Art and Media Karlsruhe, and Cambridge, Massachusetts: MIT Press, 2003.

Flaxman, Gregory. *Gilles Deleuze and The Fabulation of Philosophy*, Minneapolis and London: University of Minnesota Press, 2012.

Flusser, Vilém. *Towards A Philosophy of Photograph*, London: Reaktion Books, 2000.

Fossati, Giovana. *From Grain to Pixel: the Archival Life of Film in Transition*, Amsterdam University Press, 2009.

Foster, Hal. *The Return of the Real: The Avant-garde at the End of the Century*, Cambridge, Mass.: MIT Press, 1996.

Freedberg, David and Gallese, Vittorio. Motion, Emotion and Empathy in Esthetic Experience, *Trends in Cognitive Sciences, Vol. 11, No.5*, 2007.

Garrahan, Matthew. Digital Film Sales Resuscitate Hollywood Revenue Stream, *Financial Times Article, January 9, 2014*.
<http://www.ft.com/cms/s/0/0282cc28-78d8-11e3-831c-00144feabdc0.html#axzz2xXOCqBIS>

Gaylard, Gerald. Postmodern Archaic: The Return of the Real in Digital Virtuality, *Postmodern Culture, Vol.15:1*, 2004.

Genosko, Gary. *Baudrillard and Signs – Signification Ablaze*, London, New York: Routledge, 1994.

Giannetti, Louis. *Understanding Movies (12th edition)*, New York: Pearson, 2010.

Gibson, William. *Neuromancer*, London: Harper Collins, 1993.

Gordon, Andrew. The Matrix Paradigm of Postmodernism or Intellectual Poseur? (Part Two), *Taking the Red Pill: Science, Philosophy and the Religion in The Matrix*, edited by Glenn Yeffeth, Dallas, Texas: Benbella Books, 2003.

Grau, Oliver. *Virtual Art from Illusion to Immersion*, Cambridge, Mass.: MIT Press, 2003.

Grosz, Elizabeth. *Architecture from the Outside: Essays on Virtual and Real Spaces*, Cambridge: MIT Press, 2002.

Gurevitch, Leon. Problematic Dichotomies: Narrative and Spectacle in Advertising and Media Scholarship, *Popular Narrative Media* 2.2, Liverpool University Press, 2009.

Gurevitch, Leon. The Birth of a Stereoscopic Nation: Hollywood, Digital Empire and the Cybernetic Attraction, *Animation: An Interdisciplinary Journal* 7(3), 2012.

Gurevitch, Leon. The Cinemas of Transactions: The Exchangeable Currency of the Digital Attraction, *Television & New Media* 11(5), 2010.

Gunning, Tom. The Cinema of Attractions, Early Film, Its Spectator and the Avant-garde, *Early Cinema, Space, Frame, Narrative*. London: British Film Institute, 1986.

Gunning, Tom. The Cinema of Attractions, Early Film, Its Spectator and the Avant-Garde, *The Cinema of Attractions Reloaded*, edited by Wanda Strauven, Amsterdam: Amsterdam University Press, 2006.

Gunning, Tom. Moving Away From the Index: Cinema and the Impression of Reality, *A Journal of Feminist Cultural Studies*, Vol. 18, No. 1, 2007.

Gunning, Tom. What's the Point of an Index? or Faking Photographs, *Nordicom Review* (1:2), 2004.

Haraway, Donna. A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century, *The Feminism and Visual Culture Reader*, edited by Amelia Jones, New York, London: Routledge, 2003.

Hadjioannou, Markos. In Search of Lost Reality: Waltzing with Bashir, *Deleuze and Film*, edited by David Martin-Jones and William Brown, Edinburgh: Edinburgh University Press, 2012.

Hadjioannou, Markos. Into Great Stillness, Again and Again: Gilles Deleuze's Time and the Constructions of Digital Cinema, *Rhizomes*, Issue 16, Summer 2008.

Hardt, Michael. *Gilles Deleuze: An Apprenticeship in Philosophy*, Minneapolis: University of Minnesota Press, 1993.

Harsin, Jayson, The Responsible Dream: On Ari Folman's *Waltz with Bashir*, *Bright Lights Film Journal*, Issue 63, February 2009.

<http://brightlightsfilm.com/63/63waltz.php#.Uz1Sj621akB>

Hegel, G.W.F. *Phenomenology of Spirit*, translated by A.V. Miller, Delhi: Shri Jainendra Press, 1998.

Heim, Michael. *The Metaphysics of Virtual Reality*, Oxford: Oxford University Press, 1993.

Hills, Ken. *Digital Sensations*, Minneapolis, London: University of Minnesota Press, 1999.

Hobart, M. E. and Schiffman, Z. S. *Information ages: Literacy, Numeracy, and the Computer Revolution*, Baltimore, MD: The John Hopkins University Press, 2000.

Holson, Laura M. Disney Moves Away From Hand-Drawn, *New York Times article*, September 18, 2005.

<http://www.nytimes.com/2005/09/18/business/media/18disney.html?pagewanted=all>

Honan, Mat. Google's New Tools Show How Deep Glass Will Embed in Our Lives, *Wired: Gadget Lab Article*, November 19, 2013.

Hoorn, Johan F. *Epistemics of the Virtual*, Amsterdam, Philadelphia: John Benjamins Publishing Company, 2012.

Horkheimer, Max and Adorno, Theodor W. The Culture Industry: Enlightenment as Mass Deception, *Dialectic of Enlightenment: Philosophical Fragments*, edited by Gunzelin Schmid Noerr, translated by Edmund Jephcott, Stanford, Calif.: Stanford University Press, 2002.

Hutcheon, Linda. *The Politics of Postmodernism*, New York, London: Routledge, 2002.

Jacobi, Christopher. *What do Baudrillard's Theories of 'Simulation' and 'Hyper-reality' Tell Us about the Information Society?*, 2012.

http://www.essex.ac.uk/sociology/documents/pdf/ug_journal/vol7/2012SC224_ChristopherJacobi_FINAL.pdf

Jameson, Fredric. Postmodernism, or The Cultural Logic of Late Capitalism, *New Left Review I/146, July-August 1984*.

Jeong, Seung-hoon. The Surface of the Object: Quasi-Interfaces and Immanent Virtuality, *Deleuze and Film*, edited by David Martin-Jones and William Brown, Edinburgh: Edinburgh University Press, 2012.

Jenkins, Henry. *Convergence Culture: Where Old and New Media Collide*, New York: New York University Press, 2006.

- Jenkins, Henry. *Transmedia 202: Further Reflections*, August 1, 2011.
http://henryjenkins.org/2011/08/defining_transmedia_further_re.html.
- Kellner, D. Jean Baudrillard After Modernity: Provocations on a Provocateur and Challenger, *International Journal of Baudrillard Studies*, Vol. 3, No. 1, 2006.
- Kellner, Douglas. Jean Baudrillard, *Stanford Encyclopedia of Philosophy*, 2007.
<http://plato.stanford.edu/entries/ baudrillard/>
- Kiwitt, Peter. What Is Cinema in a Digital Age? Divergent Definitions from a Production Perspective, *Journal of Film and Video* 64(4), Winter 2012.
- Kipper, Gregory and Rampolla, Joseph. *Augmented Reality: an Emerging Technologies Guide to AR*, Amsterdam, Boston, MA: Syngress/Elsevier, 2013.
- Kirby, Alan. *Digimodernism: How New Technologies Dismantle the Postmodern and Reconfigure Our Culture*, New York, London: Continuum, 2009.
- Kirby, Alan. The Death of Postmodernism and Beyond, *Philosophy Now* 58, 2006.
- Lee, Seung-Hyun. *Incorporating Mobile Multimedia Into Everyday Life: Diffusion and Use of Mobile TV*, PhD thesis at the University of Wisconsin-Madison, 2008.
- Lévy, Pierre. *Becoming Virtual: Reality in the Digital Age*, New York, London: Plemum Trade, 1998.
- Lévy, Pierre. Welcome to Virtuality, *Digital Creativity*, edited by Colin Beardon and Lone Malmberg, London, New York: Routledge, 2009.
- Lichtman, Howard L. *Telepresence, Effective Visual Collaboration and the Future of Global Business at the Speed of Light*, the Human Productivity Lab Whitepaper, 2006.
http://www.humanproductivitylab.com/telepresencepaper/hpl_telepresence_paper.pdf.
- Licklider, J. C. R. Man-Computer Symbiosis, *IRE Transactions on Human Factors in Electronics*, Vol. HFE-1, March 1960.
- Mangolte, Babette. Afterwards: A Matter of Time. Analog Versus Digital, the Perennial Question of Shifting Technology and Its Implications for an Experimental Filmmaker's Odyssey, *Camera Obscura Camera Lucida: Essays in Honor of Annette Michelson*, edited by Richard Allen and Malcolm Turvey, Amsterdam: Amsterdam University Press, 2003.
- Manovich, Lev. *The Language of New Media*, Cambridge, Mass.: MIT Press, 2001.
- Marx, Karl. *Capital: A Critique of Political Economy*, translated by Ben Fowkes, London: Penguin Classics, 1990.

Massumi, Brian. *A User's Guide to Capitalism and Schizophrenia*, Cambridge, Mass: MIT Press, 1992.

Massumi, Brian. *Parables for the Virtual: Movement, Affect, Sensation*, New Haven, CT: Duke, 2002.

Maxwell, Anne. *Colonial Photography: Representations of the 'Native' and the Making of European Identities*, London: Leicester University Press, 2000.

McMullan, John. *The Digital Moving Image: Revising Indexicality and Transparency*, IM 7: Diegetic Life Forms II Conference Proceedings, 2011.

McQuire, Scott. *Technology, Theory, Culture & Society, Vol. 23(2-3)*, London, Thousand Oaks, New York: SAGE Publications, 2006.

McQuire, Scott. *Impact Aesthetics: Back to the Future in Digital Cinema?: Millennial fantasies*, *Covergence, Vol. 6, No. 2*, 2000.

Merrin, William. *Speculation to The Death: Machinic Integration and Transformation Within A Virtualized Reality*, *International Journal of Baudrillard Studies, Vol. 4, No.2, July 2007*.

Metz, Christian. *Film language; A Semiotics of the Cinema*, translated by Michael Taylor, New York: Oxford University Press, 1974.

Metz, Christian. *Psychoanalysis and Cinema: The Imaginary Signifier*, translated by Celia Britton, Annwyl Williams, Ben Brewster and Alfred Guzzetti. London: Macmillan, 1982.

Metz, Christian. *The Imaginary Signifier: Psychoanalysis and the Cinema*, Bloomington: Indiana University Press, 1977.

Miller, Jacques-Alain. *Suture: Elements of the Logic of the Signifier*, *Screen 18, No. 4 (1977/78)*.

Minsky, Marvin. *Robotics*, Garden City, N.Y. : Anchor Press/Doubleday, 1985.

Mitchell, W. J. T. *The Work of Art in the Age of Biocybernetic Reproduction*, *Modernism/Modernity 10(3)*, 2003.

Monaco, James. *How to Read a Film: Movies, Media, and Beyond (4th edition)*, New York: Oxford University Press, 2009.

Morgan, Daniel. *Rethinking Bazin: Ontology and Realist Aesthetics*, *Critical Inquiry, Vol. 32, No. 3, Spring 2006*.

Mulvey, Laura. *Death 24x a Second: Stillness and the Moving Image*, London: Reaktion Books, 2006.

Murray, Timothy. *Digital Baroque: New Media Art and Cinematic Folds*, Minneapolis: University of Minnesota Press, 2008.

Negri, Antonio. *Revolution Retrieved*, London: Red Notes, 1988.

Negri, Antonio and Hardt, Michael. *Empire*, Cambridge, Mass.: Harvard University Press, 2001.

Negroponte, Nicholas. *Being Digital*, New York: Knopf, 1995.

Nelmes, Jill. *Introduction to Film Studies*, Oxon, New York: Routledge, 2007.

Ng, Jenna. Seeing Movement: On Motion Capture Animation and James Cameron's *Avatar*, *Animation: An Interdisciplinary Journal*, Vol. 7, No. 3, 2012.

Nietzsche, Friedrich Wilhelm. *Nietzsche: The Will to Power as Art, Vol. I*, London: Routledge & Kegan Paul, 1981.

Novak, Marcos. *Cyberspace: First Steps*, edited by Michael L. Benedikt, Cambridge, MA: MIT Press, 1991.

Oberly, Nicholas. *Theories of Media keywords Glossary: Reality, Hyperreality*, The Chicago School of Media Theory, 2003.

<http://csmt.uchicago.edu/glossary2004/realityhyperreality.htm>

Ohanian, Thomas A. and Phillips, Michael E. *Digital Filmmaking: The Changing Art and Craft of Making Motion Pictures*, Boston: Focal Press, 2000.

Oxford English Dictionary Online,

<http://www.oed.com.ezproxy2.library.usyd.edu.au/view/Entry/223829?redirectedFrom=virtual#eid>

Oxford English Dictionary Online,

<http://www.oed.com.ezproxy2.library.usyd.edu.au/view/Entry/91618?rskey=ArNiiu&result=1&isAdvanced=false#eid>

Poster, Mark. *The Second Media Age*, Cambridge: Polity Press, 1995.

Pasolini, Pier Paolo. *The Cinema of Poetry, Movies and Methods, Vol.1*, translated by Marianne de Vettimo and Jacques Bontemps, edited by Bill Nichols, Berkeley: University of California Press, 1976.

Paul, Beynon-Davies. *Information Systems: An Introduction to Informatics in Organisations*, Basingstoke, UK: Palgrave Macmillan, 2002.

Peirce, Charles Sanders. *Dictionary of Philosophy & Psychology, Vol. 2*, edited by James Mark Baldwin, New York: Macmillan, 1902.

Plato. *Plato's The Republic*, edited by B. Jowett, New York: The Modern Library, 1941.

Plato, *The Republic*, translated by Allan Bloom, New York: Harper Collins Publisher, 1991.

Popper, Frank and Nechvatal, Joseph. Origins of Virtualism: An Interview with Frank Popper, *CAA Art Journal, Spring 2004*.

Poster, Mark. Postmodern Virtualities, *Body & Society, Vol. 1(3-4)*, 1995.

Prince, Stephen. *Digital Visual Effects in Cinema: The Seduction of Reality*, New Brunswick, N.J.: Rutgers University Press, 2012.

Prince, Stephen. True Lies-Perceptual Realism, Digital Images, and Film Theory, *Film Quarterly, Vol. 49, No. 3*, 1996.

Power, Patrick. Animated Expressions: Expressive Style in 3D Computer Graphic Narrative Animation, *Animation: An Interdisciplinary Journal, Vol. 4(2)*, 2009.

Power, Patrick. Character Animation and the Embodied Mind-Brain, *Animation: An Interdisciplinary Journal, Vol. 3(1)*, 2008.

Rees A. L. *A History of Experimental Film and Video*, London: BFI Publishing, 2002.

Rees, A. L. Expanded Cinema and Narrative: A Troubled History, *Expanded Cinema: Art, Performance, Film*, edited by A. L. Rees, David Curtis, Duncan White, and Steven Ball, London: Tate Publishing, 2011.

Robinson, Andrew. Jean Baudrillard: Hyperreality and Implosion, *Ceasefire Magazine, August 2012*. <http://ceasefiremagazine.co.uk/in-theory-baudrillard-9/>

Robson, Eleanor. *Mathematics in Ancient Iraq: A Social History*, New York: Princeton University Press, 2008.

Rodowick, D. N. *Gilles Deleuze's Time Machine*, Durham: Duke University Press, 1997.

Rodowick, D. N. *The Virtual Life of Film*, Cambridge, Mass.: Harvard University Press, 2007.

Rodowick D. N. *The World, Time, Afterimages of Gilles Deleuze's Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010.

Rosen, Philip. *Change Mummified*, Minneapolis, London: University of Minnesota Press, 2001.

Rushton, Richard. *Cinema after Deleuze*, London; New York: Continuum, 2012.

Rushton, Richard. *The Reality of Film: Theories of Filmic Reality*, New York: Manchester University Press, 2011.

Samuels, Robert. Auto-modernity After Postmodernism: Autonomy and Automation in Culture, Tech-nology, and Education, *Digital Youth, Innovation, and the Unexpected*, edited by T. McPherson, Cambridge, MA: MIT Press, 2008.

Shelton, Ted. *Business Models for the Social Mobile Cloud Computing*, Hoboken, N.J.: John Wiley & Sons, 2013.

Shields, Rob. *The Virtual*, London, New York: Routledge, 2003.

Silverman, K. *The Threshold of the Visual World*, New York, London: Routledge, 1996.

Sitney, P. Adams. *Visionary Film: The American Avant-garde, 1943-2000*, Oxford, New York: Oxford University Press, 2002.

Skagestad, Peter. *Philosophy and Cognitive Science-Peirce, Virtuality, Semiotic*, presented to the Twentieth World Congress of Philosophy, in Boston, Massachusetts, August 10-15, 1998.

Smith, Daniel W. *The Concept of the Simulacra: Deleuze and the Overturning of the Platonism, Essays on Deleuze*, Edinburgh: Edinburgh University Press, 2012.

Sobchack, Vivian. "At the Still Point of the Turning World" Meta-Morphing and Meta-Stasis, *Meta-morphing: Visual Transformation and the Culture of Quick-Change*, edited by Vivian Sobchack, Minneapolis : University of Minnesota Press, 2000.

Sobchack, Vivian. Animation and Automation, or, the Incredible Effortfulness of Being, *Screen 50(4), Winter 2009*.

Sobchack, Vivian. The Line and the Animorph or 'Travel is More Than Just A to B', *Animation: An Interdisciplinary Journal, Vol. 3(3)*, 2008.

Stewart, Garrett. Cinemonics versus Digitime, *Afterimages of Gilles Deleuze's Film Philosophy*, edited by D. N. Rodowick, Minneapolis: University of Minnesota Press, 2010.

Sutton, Damian and Martin-Jones, David. *Deleuze Reframed: a Guide For the Arts Student*, London, New York: I.B. Tauris, 2008.

Sun, Huifang. Chen, Xuemin and Chiang, Tihao. *Digital Video Transcoding for Transmission and Storage*, New York, CRC Press, 2005.

Toffler, Alvin. *The Third Wave*, New York: Morrow, 1980.

Tolstoy Leo. *What is Art?*, translated by Aylmer Maude, Oxford; New York: Oxford University Press, 1962.

Trinkle, Dennis A. The Basics, *The History Highway: A 21st-century Guide to Internet Resources*, edited by Dennis A. Trinkle and Scott A. Merriman, New York: M.E.Sharpe, 2006.

Turing, Alan Mathison. *The Essential Turing: Seminal Writings in Computing, Logic, Philosophy, Artificial Intelligence, and Artificial Life plus The Secrets of Enigma*, edited by Jack Copeland, Oxford: Clarendon Press, 2004.

Vermeulen, Timotheus and Akker, Robin van den. Notes on Metamodernism, *Journal of Aesthetics & Culture* 2, 2010.

Vertov, Dziga. *Kino-Eye: the Writings of Dziga Vertov*, translated by Kevin O'Brien, edited by Annette Michelson, Berkeley: University of California Press, 1984.

Walsh, Maria. Against Fetishism: The Moving Quiescence of Life 24 Frames a Second, *Film Philosophy*, Vol. 10, No 2, 2006.

Weibel, Peter. The Intelligent Image: Neurocinema or Quantum Cinema?, *Future Cinema: The Cinematic Imaginary after Film*, edited by Jeffrey Shaw and Peter Weibel, Germany: ZKM/Center for Art and Media Karlsruhe, and Cambridge, Massachusetts: MIT Press, 2003.

Whissel, Kristen. The Digital Multitude, *Cinema Journal*, Vol. 49, No. 4, Summer 2010.

Wiener, Norbert. *Cybernetics or Control and Communication in the Animal and the Machine*, New York: John Wiley & Sons, Inc., 1948.

Willemsen, Paul. Indexicality, Fantasy, and the Digital, *Inter-Asia Cultural Studies* (14:1), 2013.

Wollen, Peter. The Semiology of the Cinema, *Signs and Meaning in the Cinema*. Bloomington: University of Indiana Press, 1969.

Wollen, Peter. The Two Avant-Gardes, *Readings and Writings: Semiotic Counter-Strategies*, London: Verso, 1975.

Wood, Aylish. Digital afx: Digital Intermediates and Micromanipulations of the Image, *Film Criticism*, September 2007.

Wood, Aylish. Pixel Visions: Digital Intermediates and Micromanipulations of the Image, *Film Criticism*, September 2007.

Wood, Aylish. Proliferating Connections and Communicating Convergence, *FibreCulture Journal*, issue 13, 2008.

Wood, Aylish. Re-Animating Space, *Animation: An Interdisciplinary Journal* 1(2), 2006.

Wood, Aylish. Timespaces in Spectacular Cinema: Crossing the Great Divide between Spectacle versus Narrative, *Screen* 43(4), 2002.

Wood, Aylish. Where Codes Collide: The Emergent Ecology of Avatar, *Animation: An Interdisciplinary Journal* 7(3), November 2012.

Young, Paul and Duncan, Paul. *Art Cinema*, Cologne: Taschen, 2009.

Youngblood, Gene. *Expanded Cinema*, New York: P. Dutton & Co., Inc., 1970.

Youngblood, Gene. What We Must Do, *Fluid Screens, Expanded Cinema*, edited by Janine Marchessault and Susan Lord, Toronto, Buffalo, London: University of Toronto Press, 2007.

Zuse, Horst. *The Life and Work of Konrad Zuse*, EPE Online.
<http://web.archive.org/web/20080601210541/http://www.epemag.com/zuse/part4a.htm>

Filmography

Adebar, Dir. Peter Kubelka, 1957.

All the President's Men, Dir. Alan Pakula, 1976.

Anemic Cinema, Dir. Marcel Duchamp, 1926.

Arnulf Reiner, Dir. Peter Kubelka, 1958-1960.

Arrival of a Train, Dir. Auguste and Louis Lumiere, 1895.

A Scanner Darkly, Dir. Richard Linklater, 2006.

Avatar, Dir. James Cameron, 2009.

Ballet Mechanique, Dir. Fernand Leger, 1924.

Batman Begins, Dir. Christopher Nolan, 2005.

Beowulf, Dir. Robert Zemeckis, 2007.

Being John Malkovich, Dir. Spike Jonze, 1999.

Blade Runner, Dir. Ridley Scott, 1982.

Body Heat, Dir. Lawrence Kasdan, 1981.

Chinatown, Dir. Roman Polansky, 1974.

Conformist, Dir. Bernardo Bertolucci, 1970.

Dog Star Man, Dir. Stan Brakhage, 1966.

Dreamgirls, Dir. Bill Condon, 2006.

Eternal Sunshine of the Spotless Mind, Dir. Michel Gondry, 2004.

Festen (The Celebration), Dir. Thomas Vinterberg, 1998.

Gravity, Dir. Alfonso Cuarón, 2013.

Groundhog Day, Dir. Harold Ramis, 1993.

Harry Potter series, Dir. Chris Columbus etc., 2001-2011.

Hitler, Ein Film aus Deutschland (Hitler, A Film from Germany), Dir. Hans-Jürgen Syberberg, 1978.

Hulk, Dir. Ang Lee, 2003.

Idiots, Dir. Lars von Trier, 1998.

I, Robot, Dir. Alex Proyas, 2004.

Irreversible, Dir. Gaspar Noé, 2002.

Jurassic Park, Dir. Steven Spielberg, 1993.

King Kong, Dir. Peter Jackson, 2005.

Klute, Dir. Alan Pakula, 1971.

Lemon, Dir. Hollis Frampton, 1969.

Lichtspiel:Opus seires, Dir. Walter Rutmann, 1921.

Man of Steel, Dir. Zack Snyder, 2013.

Man with the Movie Camera, Dir. Dziga Vertov, 1929.

Minority Report, Dir. Stephen Spielberg, 2002.

Mission Impossible series, Dir. Brian De Palma etc., 1996-2006.

Memento, Dir. Christopher Nolan, 2000.

Monster House, Dir. Gil Kenan, 2006.

Mothlight, Dir. Stan Brakhage, 1959.

Mulholland Drive, Dir. David Lynch, 2001.

October, Dir. Sergei Eisenstein, 1928.

Parsifal, Dir. Hans-Jürgen Syberberg, 1981.

Pulp Fiction, Dir. Quentin Tarantino, 1994.

Razor Blades, Dir. Paul Sharits, 1968.

Rhythmus series, Dir. Hans Richter's, 1921-1925.

Run Lola Run, Dir. Tom Tykwer, 1998.

Russian Ark, Dir. Aleksandr Sokurov's, 2002.

Shrek series, Dir. Andrew Adamson, Vicky Jenson etc., 2000-2010.

Sin City, Dir. Robert Rodriguez, 2005.

Sliding Doors, Dir. Peter Howitt, 1997.

Star Wars Episode 1-The Phantom Menace, Dir. George Lucas, 1999.

Star Wars Episode 2-Attack of the Clones, Dir. George Lucas, 2002.

Strike, Dir. Sergei Eisenstein, 1924.

Studie seires, Dir. Oskar Fishinger, 1929-1932.

Superman Returns, Dir. Bryan Singer, 2006.

Symphonie Diagonale, Dir. Viking Eggeling, 1921.

Terminator 2, Dir. James Cameron, 1991.

The Abyss, Dir. James Cameron, 1989.

The Batman series, Dir. Christopher Nolan etc., 1992-2012.

The Battleship Potemkin, Dir. Sergei Eisenstein, 1925.

The Birth of a Nation, Dir. David Griffith, 1915.

The Cell, Dir. Tarsem Singh, 2000.

The Chronicles Of Narnia: The Lion, the Witch and the Wardrobe, Dir. Andrew Adamson, 2005.

The Island, Dir. Michael Bay, 2005.

The Lawnmower Man, Dir. Brett Leonard, 1992.

The Lord of the Rings, Dir. Peter Jackson, 2001-2003.

The Matrix series, Dir. Andy Wachowski, Lana Wachowski, 1999-2003.

The Mummy series, Dir. Stephen Sommers etc., 1999-2008.

The Parallax View, Dir. Alan Pakula, 1974.

The Polar Express, Dir. Robert Zemeckis, 2004.

The Return to Reason, Dir. Man Ray, 1923.

The Spider-Man series, Dir. Sam Raimi etc., 2002-2012.

The Sprinkler Sprinkled, Dir. Auguste and Louis Lumiere, 1895.

The Truman Show, Dir. Peter Weir, 1998.

Three Days of The Condor, Dir. Sydney Pollack, 1975.

Timecode, Dir. Mike Figgis, 2000.

Titanic, Dir. James Cameron, 1997.

Toy Story, Dir. John Lasseter, 1995.

Toy Story 3, Dir. Lee Unkrich, 2010.

Transformers series, Dir. Michael Bay etc., 2007-2011.

Tron, Dir. Steven Lisberger, 1982.

Troy, Dir. Wolfgang Petersen, 2004.

Videodrome, Dir. David Cronenberg, 1983.

Voyage to the Moon, Dir. Georges Méliès, 1902.

Waking Life, Dir. Richard Linklater, 2001.

WALL-E, Dir. Andrew Stanton, 2008.

Waltz with Bashir, Dir. Ari Folman, 2008.

War of the Worlds, Dir. Steven Spielberg, 2005.

Wavelength, Dir. Michael Snow, 1967.

Workers Leaving the Lumiere Factory, Dir. Auguste and Louis Lumiere, 1895.

2001; A Space Odyssey, Dir. Stanley Kubrick's, 1968.

300, Dir. Zack Snyder, 2007.

50 First Dates, Dir. Peter Segal, 2004.